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Address.

WHAT POSITION SHALL UNIVERSITIES TAKE WITH REGARD TO INVESTIGATION?¹

BY THOMAS DWIGHT, M.D., LL.D., BOSTON,
Professor of Anatomy in Harvard Medical School.

WHEN the honor was done me of asking me to take part in this discussion, my first thought, after the sensation of complacency at the compliment, was that there could hardly be a *discussion* where all held probably very nearly the same views, and that the great difficulty would be to say anything that would not be better said by another. Then as I began to think more carefully, I saw that the question was not, as I had at first imagined it to be, "What shall universities do to encourage those on their staffs to investigate?" It is far wider than that. It comprises a whole group of questions concerning which there may be every shade of opinion. So the more I thought, the more I admired the wisdom the committee had shown in their choice of a subject. Later still, it dawned upon me that surely it is a most satisfactory sign of progress that this Society should meet to discuss such a subject, with the conviction that, though without the shadow of a legal right to make claims, we are, nevertheless, sure of a sympathetic hearing from both universities and the public. First of all let us consider the place of investigation in education as a means of mental training, quite apart from any definite results. Surely this alone opens a wide field for one afternoon's ramble, in which there are diverging and recrossing paths enough to furnish us the surprises of unexpected partings and un hoped-for reunions.

I would here remark that perhaps some confusion is possible from different interpretations of the word, "investigation." According to some, it means simply practical work, object teaching, or, better still, object study. According to others, it is the search for something new. With regard to the value of the former we are all pretty well agreed. We do not need to be told what an advance it is over the old way of learning the statements of others concerning matters well within the sphere of observation. It may sometimes be carried too far; but in view of its great usefulness, we will not quarrel with a little abuse. With what is meant by the second interpretation the case is different. Excepting some singularly gifted natures, it does not, in my opinion, concern the student. The universal or even very general application of this method is the result of an extreme reaction. It rests on a fallacy. Because investigation is a good thing, and worthy of encouragement, which all must admit, it is assumed to be good for all, and an accepted method of education, which conclusion I cannot adopt. It is for the beginner to learn what is worth learning in his particular field first of all. It is not easy in these days to learn all that is worth learning even in a very restricted department. To start on investigation with this only half learned is a direct injury to the student, whom it turns to premature specialization. It is both foolish and cruel to exact investigation as a part of the regular training of every student, and very unjust to imply that those whose taste does not lie that way are mentally inferior to those who dabble

in research, no matter how ineffectively. It may be replied that, granting this, still it is a good and necessary training for those who in after life are to become investigators. I incline to dissent still; for the born investigator (and no other is worth much trouble) no more needs encouragement to investigate than the fish does to swim. I would, if anything, restrain him till his education has become broad and his mind mature. He will very quickly more than make up the lost time. Then let him have every encouragement.

As regards education I speak as a professor in a medical school, whose career has been so placed that he has seen this school develop into a department of a university. I feel that, in common with others, it has reached a point when it is in danger from the side of its scientific friends who mistake or will not learn the true purpose of a medical school. I so rarely find myself in complete accord with Huxley that I cannot forbear, though it is not for the first time, quoting his deliberate opinion that whoever adds one tittle that is unnecessary to medical education is guilty of a very grave offence. If this be true, as I firmly believe it is, we must look to it that the candidate for the degree of M.D. be not robbed of his time, none too long for learning medicine as an art, by specially conducted excursions into abstract science. It may be said, and said truly, that without such auxiliaries the education of the student wants something of the breadth which his should have who aspires to stand on the pinnacle, but this only emphasizes the fact, now becoming daily clearer, that there has grown up the need of what may be called advanced medicine. Some would have this strictly post-graduate, but it is probably wiser to have a difference in the course. On the one hand, there is the young man who aspires to be a conscientious, everyday practitioner of medicine, looking forward to a life of hard work among suffering humanity. Such a one is not to be refused the degree of an honored university, and told superciliously to go to the little school round the corner. Neither is he who, looking at the matter more as a scholar, desires through his studies to train himself to teach others and to widen the horizon of knowledge, to be told that we have no help to offer to one of his ideals. We must provide for both, but with what power I have I shall always protest against sacrificing the first to the second, though the latter is the one with whom my tastes incline me to sympathize.

To sum up thus far, I conclude that it is not the duty of universities to urge, still less to force, original investigation upon students. It should be at hand for those whose zeal is so great that it will take no denial.

The next question is what universities should do for research in the community at large. Are more prizes and scholarships to be offered? As to prizes I should hesitate to say yes. It is not well that they should be too common; but of scholarships for deserving men we can hardly have too many. It is most desirable that the universities should award them. They cannot, indeed, give the funds, but these being provided, committees from the universities should give their time, care and experience to their proper administration. This is a most beneficent and dignified attitude for a university, midway between the generous donor and the deserving student, to see that the generosity of the former is neither neglected nor abused.

¹ Address opening the discussion at the Annual Meeting of the American Society of Naturalists and Affiliated Societies, December 29, 1899.

The next, and last, aspect of the question that I shall consider is, What shall a university do for the support and encouragement of investigators within its walls? The primary function, in my opinion, of a professor is to teach; but with certain exceptions of rare merit, it is necessary for his reputation and influence that he should do original work. The first duty of the university to him is that he should not be overburdened with teaching. The next problem is, how the expenses of his work are to be met. These must vary with the department. For some lines of research distant expeditions are requisite, necessarily so costly that they can hardly be provided for otherwise than by national or private munificence. But putting these aside, and speaking more particularly of biological and morphological work, the problem reduces itself to this: what help shall the university give to the investigator, (1) in the matter of providing the material, namely, the subject matter for the study; (2) the machinery and reagents for the work; (3) the means of illustrating it, and finally, of publishing the paper. The last need is not urgent on account of the great number of journals of all kinds, but it exists in isolated cases. Till comparatively recently the position of universities has been much like that of the Piekwick Club, which when sending its honored founder and his companions on their travels saw no objection to every member paying his own bills. But professors for the most part suffer from "that perpetual lack of pence which vexes public men," and those who are not yet professors are, of course, vexed the more. Is it fair that a serious tax ever increasing in direct ratio to his merit should be laid on the investigator, especially as the university profits in no small degree by his success? I am sure we shall all agree it is not. But then difficulties present themselves as to how this help is to be given and distributed, assuming that the university admits the claim. Who are to be the chief beneficiaries? The most distinguished or the most needy? The oldest because of his years? Or the youngest because of his youth? And again, is it just that the university should furnish large sums for bringing out papers of unknown merit? It seems to me that the most feasible way, if the money can be procured, is to place a sum in the hands of the professor at the head of each scientific department, to be spent for the good of that department, including publication, according to his discretion, or his lack of it. Should the latter be painfully apparent, the resulting unpopularity will surely be irresistible, and thus there will be a check on a system which may at first seem too arbitrary.

Original Articles.

EPISTAXIS.¹

BY FREDERIC C. COBB, M.D., BOSTON.

THE subject of this paper is too much within the experience of all physicians to allow me to hope that I can present many points of novelty and interest not already known to you all. Yet the causes and treatment of this affection are not uniformly considered by the general practitioner and specialist, and each may learn from the other in his treatment of the disease.

¹ Read at a meeting of the Boston Society for Medical Improvement, November 6, 1899.

Bleeding from the nose, to quote from Thomas Watson, may be a warning, a remedy, or a disease. The first two statements, that it is a warning and a remedy, used, I think, to be the idea of the older practitioners, when blood letting, either natural or artificial, was regarded as a panacea for all things. The last part of Watson's statement, that it is a disease, has obtained much more of late years, and is a natural reaction against the earlier practice of blood letting already spoken of. It should in reality be called a symptom, it seems to me, either of some local lesion in the nose, or of some general disease elsewhere. It may be said that cases of nose-bleed are sometimes idiopathic, but as our knowledge of pathology grows, we find fewer instances of idiopathic and more of causative elements previously overlooked.

The causes of nose-bleed may be divided into local and general. Perhaps the commonest local cause of epistaxis is deformity of the nasal septum. The mechanism of the bleeding in such cases is simple. A sharp anterior deviation of the nasal cartilage thrusts it broadside to the air current, and particles of dust and grit lodge upon the delicate mucous membrane, causing it to become inflamed and covered with a coating of crusts and scabs. These soon become such an annoyance to the patient that he scratches the surface with his finger nail or handkerchief in order to rid himself of the discomfort, thus causing a small ulceration which reaches some time later a blood-vessel and hemorrhage results.

Examination of the nostril shows the vessels on the anterior part of the septum dilated, and if the bleeding point be found, it is within reach of the finger nail of the patient's hand. Ulceration may, however, occur without the use of the finger nail where the surface of the septum is sufficiently inflamed. Epistaxis may occur further back on the septum, but this is more uncommon, and is, it seems to me, more apt to be a symptom of some graver disease. Of the more important local lesions causing epistaxis, fracture is perhaps the most common, and this may occur at the junction of the septum and cartilage, or from the driving in of the nasal bones. Fracture or dislocation of the cartilage is the common cause of bleeding in boxing. Of all lesions the new growths of the nose cause the most severe hemorrhage, especially the angiomas and angiosarcomata. Death has resulted from the former in cases reported by Panas and Richet, but fortunately such cases are rare. In my experience few non-malignant tumors cause bleeding except the angiomas, and even in the malignant growths, except those mentioned, hemorrhage of any severity is unusual. Foreign bodies in the nose seldom cause bleeding, although allowed to remain in the nostril for years. Of the constitutional diseases leading to epistaxis we have first plethora, a somewhat vague expression, and anemia. Epistaxis from plethora I have never seen, although it seems too well known to be doubted. Epistaxis from anemia must be very infrequent in the absence of any local lesions, and in both plethora and anemia one would require proof that no local lesion had existed. If we consider the hemorrhagic diathesis is it not fair to assume that some local break in continuity must exist, as it does in other parts of the body? This of course need be but slight in the nose, as, for instance, the local removal of crusts and scabs from the anterior nares. When we consider that it is only of late years that the nose has been carefully examined, we can easily suppose that slight nasal lesions have often been over-

looked in the report of cases. Curious cases of vicarious menstruation by bleeding from the nose, when the normal channels have been blocked, are recorded, but are of purely physiological interest. Venous hemorrhage from obstruction of the jugular, due to tight stocks or neckwear, are reported, but are to be taken with some reservation. Such stocks were worn by an enormous number of people at one time, and yet it is not claimed that any large number of persons suffered from epistaxis as a result.

Syphilis, phthisis and alcohol are given by Browne as predisposing causes. The bleeding in phthisis is rather apt to take place in the posterior nares, and blood crusts seen there are often the only lesion to be found. Epistaxis in syphilis is not frequent, and I have only records of two cases, both from septal ulcerations and associated with necrosis. One of these had also periostitis of the nasal bones.

But there is one constitutional disease which, in my experience, at least, has been associated with epistaxis very frequently, and that is nephritis. This, although mentioned with many others by the books, I do not find emphasized as a common cause. Hemorrhage resulting from this cause is usually severe, since the disease affects the walls of the arteries. In order to put this point in a stronger light I will cite two cases:

CASE I. C. D. September 26, 1896, had so severe a hemorrhage from the right nostril that the posterior nares were plugged by the family physician. Twenty-four hours later the plug was removed, but the bleeding at once recurred, and he was forced to replace the plug, which this time was allowed to remain in position for five days. On its removal the bleeding again recurred with as much violence as ever and it became necessary to resort to a third tampon to stop it. I saw the patient after the third tampon had been in position for forty-eight hours. Both anterior and posterior plugs were very foul and were carefully removed, and a ten-per-cent. solution of cocaine on absorbent cotton was placed in the anterior nares. After this had been allowed to remain in the nostril a few minutes it was withdrawn and the nostril carefully examined. A small projecting point on the septum was found and carefully cauterized with a crystal of chromic acid. No further hemorrhage occurred for two weeks, when on cleaning the nostril I accidentally loosened a scab caused by the chromic acid and a quite severe hemorrhage was the result.

This was promptly checked by a plug of cotton soaked in cocaine for a few minutes and a second cauterization, after which no bleeding occurred. As the bleeding point was well back on the septum out of reach of the finger, and as the hemorrhage was severe enough to be evidently arterial, I asked for an examination of the urine, which showed one-half per cent. albumin. Two years afterwards he died of nephritis. The bleeding had been the first sign by which attention had been called to the nephritis.

CASE II. D. T., age fifty-four, came to me March 13, 1894, saying that he hawked blood from the posterior nares; lungs negative; no signs in nose or throat to account for hemorrhage. Examination of the urine showed considerable albumin. Nearly a year and a half later I heard that he was dying of Bright's disease.

Other such cases could be cited, but they only serve to show that the urine should be carefully examined in cases of severe nose-bleed. That milder

cases may also be associated with the uric-acid diathesis I am sure, and I could cite examples where this has been the case. Enough has been said, however, to point out that cases of epistaxis should receive a good general examination, as well as a local one. The symptoms of epistaxis are too well known to be gone into at any length. Of course, where the origin is the anterior part of the septum, the bleeding is from the nostril corresponding to the lesion. When the bleeding occurs in the mouth the diagnosis of the locality of the lesion is not so evident. It is often a question, in such cases, whether the hemorrhage comes from the lungs or from the nasopharynx or nose. This question is often not easily settled and can only be decided by the presence of a bleeding point in the upper air tract. Sometimes a very sharp deviation in one nostril may determine the direction of the blood backward to the throat, instead of forward to the meatus.

The presence of bloody scabs and crusts in the nasopharynx is fairly good evidence of nasal bleeding, even if no blood has been thrown out of the nose. If there has been severe coughing or vomiting it is possible that the nasopharynx could have been filled with blood from below.

Prognosis.— Experience shows that epistaxis is liable to recur if the exciting cause is not eliminated, just as bleeding in any other locality repeats itself. Even if the vessel causing the trouble is blocked, others become diseased and break, with the same result. Where the bleeding is due to erosion of superficial vessels, caused by crusts and ulcerations of the cartilaginous septum, destruction of the larger vessels and removal of irritation caused by the scabs and crusts, and directions as to how to prevent their again forming, will prevent recurrence. In cases due to a more central disease, that disease should be treated.

Treatment.— The treatment of epistaxis varies much with the severity of the attack. Mild forms may be arrested by simple measures, such as ice to the side of the nose, cold to the spine, hot or cold water injections into the nares. After operations the patient is usually advised to try, in case of bleeding, ice-cold water injected into the nose. Most authors advise a preliminary trial of these simple measures before resorting to the more unpleasant ones. Hot mustard foot baths, ligation of the extremities, pressure of the facial artery, have also been recommended. Practically the most satisfactory procedure is to examine the septum with a strong light concentrated by a head mirror, and, if possible, ascertain the bleeding point on the septum.

The practical difficulties in the case are usually the great amount of blood and clots, which make the examination difficult. For this reason cocaine on pledgets of cotton should be introduced. The solution used should be from five to ten per cent., and should be left in from five to ten minutes. If this fails to stop the bleeding, suprarenal capsule may be used. Until about a year ago this latter agent was almost unknown. Its effect on the blood-vessels of the mucous membrane is almost magical, and it does not seem to injure the delicate lining of the nose in any way. This solution may be prepared from the tablets, or from powders, in about a ten-per-cent. solution. Its only disadvantage when used in operations is that subsequent bleeding may occur.

Pledgets of cotton soaked in a five- to ten-per-cent. cocaine solution should be first tried. These have two advantages — one of contracting the bleeding vessels in the mucous membrane, and the other that of increasing the lumen of the nostril for purposes of packing and making that process less painful.

If a bleeding point is found on the septum, it should be touched with a crystal of chromic acid fused on a probe, or by the galvanocautery heated to a dull-red heat. If this should fail, or a bleeding point cannot be found on account of the bleeding, suprarenal capsule, prepared as above described, in a ten-per-cent. solution may be used, and the bleeding point again searched for. If both these remedies fail, packing must be resorted to, and a few words with regard to the manner of packing may not be amiss. The method of packing, as usually practised, has several disadvantages. This method consists in plugging the posterior nares with a sponge drawn up into the nasopharynx by a stout string, which has been passed in by means of a Bellocq's canula, or a catheter. The anterior nares are plugged for a half inch or so with cotton or gauze. This method depends for its success on rendering the pressure of the effused blood in the nose equal to the arterial pressure. It takes no account of the bleeding spot itself. Its disadvantages are the very great discomfort to the patient of the posterior plug, and the possibility of injury to the ears by its pressure on the Eustachian openings, and the introduction of germs through the packing, which soon becomes foul. It is unnecessary, at present, since with cocaine we can introduce antiseptic gauze in long narrow strips as far as the posterior nares, and beginning at the bottom by strip on strip until the nostril is well packed. The gauze should be introduced with a pair of long forceps, or a notched probe, the first piece being laid along the floor. The gauze should be passed in about three inches, the distance to the posterior nares being measured by a finger in the posterior nares, if necessary. The gauze should be all in one strip for purposes of removal afterwards. The Eustachian prominence is thus left free. The packing should be left in twenty-four to forty-eight hours, and it cannot be too strongly emphasized that it should be put in with great gentleness, and very carefully withdrawn. It will be found that after the gauze has been thoroughly moistened with nasal secretion it can be withdrawn with less danger of pulling off the clots formed by the blood, and thus renewing the bleeding.

To sum up briefly: The causes of bleeding from the nose may be local or general. The local causes are more apt to be ulcerations of the blood-vessels, resulting from scabs and crusts on the septum. These may be caused by irritation, as in deflected septum, by foreign bodies (although this is rare), by new growths, and especially by operations for sarcomata. The general causes are plethora and anemia, the hemorrhagic diathesis, acute febrile diseases, vicarious menstruation and disease of the kidneys, syphilis, phthisis and alcohol. It seems to the writer that the occurrence of severe bleeding should lead to an examination of the kidneys as a cause.

Treatment. — Cauterization of the bleeding point on the septum with chromic acid, or galvanocautery, after cocaine. Suprarenal extract to be tried, its only disadvantage being the possible renewal of the hemorrhage from the reaction of the blood-vessels.

Plugging when resorted to should be done by strips of gauze introduced along the floor of the nose by means of long forceps, the Eustachian prominence not to be occluded. Packing should be left in twenty-four to forty-eight hours, and withdrawn with the utmost care.

APPENDICITIS IN A HERNIAL SAC.¹

BY JENJAMIN TENNEY, M.D., BOSTON.

NOT very long ago I was called to see a patient of Dr. W. L. Watson's, in Lincoln, Mass. She was seventy-nine years old, not vigorous but wiry. The day before, she began to have severe pain in the right groin, some abdominal pain and nausea, accompanied by much general prostration. Her bowels had been more constipated than usual for several days, and she had been eating less. Her tongue was thinly coated, pulse but little more rapid than normal, temperature 101°, and she had attempted to vomit several times.

On examination we found a tender swelling in the right groin, half-way between the pubic and iliac spines and just below Poupart's ligament, about the size of a walnut. It was doughy to the touch, not very movable, and gave no impulse on cough. The skin was not reddened. Six years before, she noticed this "lump" after some extra exertion, but it had never troubled her beyond being occasionally rather tender to pressure. It was not in the least tympanitic, and the abdomen was nowhere tender except just above Poupart's ligament on this side. Thinking it probably an old omental hernia suddenly strangulated, gentle taxis was tried and quickly given up as causing intense pain and doing no good. A large poultice was applied and she was made as comfortable as possible. Next day the symptoms were all decidedly worse, the swelling larger, and she requested operation to get rid of the pain. Considering her age and great prostration I began with local anesthesia, using the stronger Schleich solution. There was much fat under the skin, and there was great difficulty in isolating anything at first, but finally a mass of fat was lifted out, the size of a small hen's egg, which was pretty solid and which had a strong cord-like structure as a pedicle leading down to the femoral ring. My first thought was of a prolapsed ovary with tube attached, but as my thumb penetrated a small cavity, and about a teaspoonful of pus, with characteristic odor, escaped with some small hard masses, I decided that I had an inflamed herniated appendix. It was tied and cut off close to the ring, to which it was tightly adherent. The pain caused by manipulating the pedicle was so intense that a few whiffs of ether were given. The wound was carefully washed out and sewed up with gauze drainage down to the stump, but there was a slight infection of the wound, doubtless from the rupture of the sac, which disappeared in a few days, and her recovery was uneventful otherwise. Three inches of appendix had been removed. The small, hard masses had the exact size and shape of raisin seeds, and with the story of a plum pudding a few days before, I thought I had a double rarity, but Dr. Mallory pronounced them fecal masses.

Hernia of the appendix alone is unusual, though hardly to be called rare. Two lists were published in

¹ Read at a meeting of the Boston Society for Medical Improvement, November 6, 1899.

1895, one of 98 cases by Bajardi, and one of 25 by McAdam Eccles. Since then, Van Hook, of Chicago, has reported one inguinal case, Good and Rose, of London, each one case of femoral hernia, and the writer's is the fourth reported. Not having access to the original paper of Bajardi, I do not know how many cases are included in both his list and Eccles's, but there cannot be many, as Eccles's cases are mostly from London hospital records and museum specimens.

Counting the above four cases with Eccles's 25, we have inguinal hernias, 12, femoral, 16. From Bajardi's table we have inguinal, 57; femoral, 40; obturator, one. The unusually large proportion of femoral hernias is doubtless due to the difference in the distensibility of the two rings. The femoral might admit an appendix and keep out cecum or other intestine, while the internal abdominal ring would more easily dilate and admit them. Were cases of hernia of appendix with other viscera included in these lists, the proportion would be very different.

As to the question of strangulation or inflammation of the herniated appendix, undoubtedly three of Eccles's cases and probably 17 of Bajardi's were simply strangulated, as they were reduced and replaced in the abdomen with complete recovery, but to-day I imagine the rest would be classed as inflamed. In fact, just how much the condition of strangulation, meaning shutting off the circulation, is a cause of the inflammation is a matter to be considered in appendicitis within the abdominal cavity. Certainly the solitary terminal artery supplying the distal end of the tube, particularly when the mesentery extends only half-way out, is liable to compression either by a twist or sharp bend in the tube, by a large concretion within the tube moving to a narrower part during some great exertion, by the swelling of the tissues themselves as a result of some injury or bacterial infection, or by some narrow opening like the femoral or internal or external abdominal rings. When this single artery is blocked, we have every condition required for pus formation: warmth, moisture, bacteria and feebly-nourished cells for them to grow on.

The crises in these herniated appendices present precisely the same symptoms as those seen early in appendicitis within the abdominal cavity, but the tenderness is so sharply localized that it cannot be overlooked. In many cases there is the sudden onset, the nausea or vomiting, the constipation or diarrhea, and the great prostration; but the vomiting is never so severe or persistent or fecal as in intestinal obstruction and the constipation is rarely complete. After pus formation the symptoms and conditions are like those of appendicitis inside the abdomen, only modified by the different anatomical conditions. In Hall's case after three days the hernial sac and most of the abdomen were found full of pus, and the appendix gangrenous and perforated within the sac. This occurred in eight cases. In one of Eccles's cases a bone splinter came out through a fistulous opening in the groin. Dr. Fitz's article mentions a case of Dr. A. T. Cabot's with a fistulous opening into the appendix in the groin. Van Hook's case was a cystic appendix, ruptured into the abdominal cavity during taxis. Dr. Monks's case was supposed to be a scrotal abscess. They have been diagnosed as suppurating glands, as omental hernias, as hernias of the ovary, and as new growths. In fact, the correct diagnosis has never but once been made

before operation, and then a patient who had been cured of a supposed abscess of the testicle returned to the same clinic with a solid cord in his scrotum.

The length of time these appendices have been herniated with no special symptoms is also interesting as bearing on the question of tenderness of the normal appendix, but is not very easily found. Hall's case was seventeen years old, and the hernia had existed since childhood, with no truss worn or symptoms mentioned till the attack. Amandale's case existed twenty years, no truss worn, no symptoms mentioned. Monks's case was an infant with slowly growing tumor of two months. Rose's case had existed thirty-eight years, and had been accompanied by occasional vomiting and general dyspeptic symptoms, entirely relieved by operation. One of Eccles's cases had existed eleven years, and another eight months. The writer's case had been herniated six years, and was also accompanied by irregularity of the bowels, occasional attacks of indigestion and abdominal pain, all naturally referred to other causes, and all relieved since operation.

These appendices were all much more exposed to pressure than in the normal situation, and yet there is no record of constant tenderness. For some time I have made it a routine practice in examining patients to locate and palpate the appendix whenever possible, and have found what I thought to be appendix in some 60 cases. In only four of these was more tenderness than was shown to the same deep pressure on the other side. I do not believe that the normal appendix is ever more painful on pressure than any other part of the abdominal contents. But it is easily conceivable that a large concretion distending the tube, or a raw infected spot within the tube, or a kink or bend in the tube, might cause sufficient pressure on the nerve ends to produce tenderness and the lesser reflex symptoms of irritation of the mesenteric nerves. That there is a very active reflex of this sort is sufficiently proved by the grave symptoms which always follow strangulation of an omental hernia, and which cannot be accounted for in any other way.

Dr. Fitz in his original paper of 1886 remarked, after describing some cases where the appendix after death showed decided pathological changes, and where no severe abdominal symptoms had ever been recorded, "The severity of these lesions suggests the probability that apparently slight disturbances of digestion were overlooked. The diarrhea, constipation or abdominal pain, especially when occasionally recurrent, were regarded as characteristic of a feeble digestion."

More than that, I believe that the "acute indigestion," sometimes put down as the immediate cause of an attack of appendicitis, is often simply the first symptom of pressure on these sensitive nerve ends, and that with care the tenderness can be made out long before there is a tumor, and the case then be intelligently watched for interference at the opportune time. While, to-day, we are usually able to recognize a well-developed case, and do not often permit patients to recover or die with a wrong diagnosis, there are many who neither recover nor die, but live on uncomfortably, enduring some form of indigestion, never feeling perfectly well and with a constant danger ahead, who might be much more useful and pleasant members of society if the reflex symptoms and tenderness of an abnormal and irritating appendix were discovered and appreciated by their medical adviser.

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NITRATE OF SILVER IN HYPERCHLORHYDRIA.¹

BY M. P. SMITHWICK, M.D., BOSTON.

My experience with hyperchlorhydria has been in nervous temperaments, although not always nervous according to the popular acceptance of the term. In some cases, especially those with atony or gastrectasia, mucus has been present in considerable amount, but the burden of proof would rest heavily on one attempting to prove them other than neuroses. In particular, I recall a heavy drinker who presented the clinical picture of gastric catarrh, except that there was a history of burning pain coming on some time after meals but relieved by food. It was not very troublesome just at that time. The man had been treated for alcoholic gastritis in a hospital some months previously, but since then had been totally abstinent.

One hour after 30 grammes of bread and 300 c. c. of water had been given, free HCl was .18 per cent. and total acidity .25 per cent. The greenish contents contained much mucus. Twenty-five c. c. of filtrate required over five hours to dissolve .05 gramme of the white of hard-boiled egg at 40° C. Two days later an analysis gave the same results. Lavage sharpened the appetite, improved the catarrhal symptoms, and increased the burning. One week from the first analysis an examination under identical conditions gave 145 c. c. of contents, slightly greenish in color, with considerable mucus. Free HCl, .241 per cent.; total acidity, .31 per cent. Digestive test required three hours, the normal period. In other words, we were clearing up a gastric catarrh which obscured the usual condition, hyperchlorhydria.

The severity of subjective symptoms is not a reliable index of the degree of acidity in different cases nor in a given case at different times. It may be marked, and the acidity within normal limit. This points to hyperesthesia, which seems to be present in these cases. On the contrary, a great increase in the acidity is usually attended by a corresponding aggravation of symptoms.

In a given case, if the environment can be so controlled as to give the greatest nervous relaxation and avoid nervous tension, the prognosis is better. In short, to do the best for these sufferers, frequently one must treat them as neurasthenics. He must understand them, their history, their daily lives, so that he can assist them to live without unnecessary expenditure of nervous energy and encourage to healthy activities. How difficult this problem, where change of environment is impossible, is known to us all. On the whole, proteid diet has been most suitable, especially in bad cases. Raw eggs between meals have been very helpful in certain cases.

We have found medicinal treatment discouraging as regards cure. Of local remedies, alkalies, bismuth and nitrate of silver have been tried. Of remedies intended to act through the nervous system, nux vomica and bromide. Nux vomica has seemed to decrease the percentage of acid in certain cases and improve the motility, but has increased the discomfort, except in one case, and there the result was quite brilliant. I will refer to the case briefly:

A man thirty-one years of age, with an excellent family history and past history, has been engaged in exacting mental work for several years. He occupies a very responsible position and has acquired the pernicious habit of devoting his meal times to mental work and, at the same time, satisfying completely a never-failing appetite. For three years a history of digestive disturbances. About an hour after taking food, especially at noon, he experienced a burning sensation, distention and belching, and most annoying of all, a sensation of weight, as if the stomach did not empty itself. This would last almost or quite to the next meal. Occasionally it would be present all the forenoon and recently several times late in the forenoon he has vomited his breakfast. Acid things and pastry increased the burning. Bowels irregular. Frequently a restless night. Lost much weight. Recently a trembling of the hands had annoyed him.

Physical examination. — Expression troubled and careworn. Chest, negative; abdomen prominent. Right kidney easily palpated. Stomach in normal position. Distended with CO₂ its lower border was one and one-quarter inch below umbilicus. Filled with water its lower limit was two and one-quarter inches below umbilicus. When slightly distended with gas or containing a small amount of water the stomach was considerably smaller, being markedly atonic but only moderately dilated.

Nux vomica was given and the dose gradually raised from 10 drops three times daily to 20. Habits, exercise and diet were regulated. Improvement was prompt. Treatment commenced early in May, and by August, when he started for a bicycling trip on the Continent, the gastric symptoms had nearly disappeared. At that time the stomach was empty six hours after a mixed meal given in the morning, although the salol test gave negative result at two hours and positive at thirty and a half hours. The acidity was moderately reduced under treatment, as judged from five analyses, and motor power improved. Early in September my patient wrote that there were no digestive symptoms, and to-day I received the same report.

From a practical point of view, control of subjective symptoms is the chief object of treatment. In this connection I wish to give a limited experience with nitrate of silver. I have not attempted a review of the literature on the subject. Riegel² recommends its trial in severe cases. It is to be given by mouth, or the stomach washed out with a solution (1-1,000), and this in turn followed by thorough washing with water. Nitrate of silver has been tried in three of my cases. In two, one-quarter grain in one-half ounce of distilled water was given twenty minutes before breakfast. One case is doing well. The other reported some improvement after two weeks, but it seemed as likely due to diet, regular exercise, and a more rational mode of living. From the fasting stomach in the morning I then obtained 10 c. c.

¹ Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, October 13, 1899.

² Nothnagel's Sp. Path. und Ther., xvi.

of fluid with about .1 per cent. free HCl. The conversion of nitrate to chloride presumably caused the failure. Where there is continuous secretion of acid gastric juice thorough lavage should precede the administration of silver nitrate. This precaution is manifestly necessary, but I have not seen it mentioned. If lavage is impracticable we depend on bismuth and alkalies instead of silver nitrate. The neutralization of the acid instead of lavage will occur to everybody, but there is no means of judging the amount of alkali necessary. An excess of bicarbonate of soda, for instance, would convert the nitrate of silver into the oxide without local action, according to the equation: $AgNO_3 + Na_2CO_3 = Ag_2CO_3 + 2NaNO_3 = Ag_2O + CO_2 + 2NaNO_3$. Where the fasting stomach contains acid juice the equation, is, of course: $AgNO_3 + HCl = AgCl + HNO_3$, and in our experience the treatment fails.

Mrs. S., thirty-six years of age, consulted Dr. W. N. Bullard, December 6, 1898, and he kindly referred her to me.

F. H. Negative, except that three sisters have "weak stomachs."

P. H. In Massachusetts General Hospital nine years ago with pelvic abscess, and while there vomited blood during two days; was menstruating. Five years ago, Dr. H. O. Marcy removed the appendages for double pus tube. Recently Dr. Marcy kindly wrote me that he considered it a case of gastric ulcer. For a year after the operation she menstruated a little each month and then none for three years. In these nine years, and especially during the three when menstruation was absent, the patient vomited "coffee grounds" and bright blood frequently. The hematemesis occurred, so far as she could judge, when menstruation would naturally have occurred. Much of the past nine years has had heartburn and sour stomach. During an attack of hematemesis and the two or three preceding days, her stomach would feel as if it contained "live coals." For three or four years has drunk two cups of hot water morning and evening and vomited. It has given the greatest relief and she "couldn't get on without it." Food and tea relieve the burning pain. Very constipated. Eight weeks ago, menstruated one day, and for seven weeks the water vomited morning and evening contained "coffee grounds" and some bright blood. For a week, vomitus very acid, but not bloody. Burning continues. Not subject to epistaxis.

Physical examination. — Well developed, fairly nourished. Face, tongue and mucous membrane of mouth pale. Expression drawn. Pupillary and other reflexes normal. Repeated laryngoscopic examination failed to show any source of bleeding. Remainder of examination negative, except moderate epigastric tenderness with one very tender point in extreme left of epigastrium. This point had been tender whenever blood was raised. Lower border of stomach distended either with air or water reached a little below umbilicus. Position of stomach normal.

Analysis No. 1. — One and one-quarter hours after a test meal of bread 70 grammes, water 300 c. c., amount contents 150 c. c., containing a small amount of brown material assumed to be digested blood. No chemical test made and no blood corpuscles seen in microscopic examination. Free HCl, .15 per cent; total acidity, .27 per cent.

Patient was in bed three weeks on diet of peptonized milk and there was almost an absence of symptoms.

Milk was peptonized because otherwise it seemed to cause distress, and several times was vomited in thick curds. Also, it was hoped that more acid might be combined, as Professor Chittenden has shown to be the case with peptones. During the fourth week she commenced to sit up; burning pain with frequent headache returned; and, as formerly, she found temporary relief by drinking two cups of hot water morning and night and vomiting. During this week a thorough trial was given the "gastric sedative" mentioned in the article on this subject in the "American System of Practical Medicine," consisting of two parts, by weight, of cerium oxalate, four parts of bismuth subcarbonate, and eight parts of light carbonate of magnesium. The relief was so temporary that my patient pronounced its further administration useless and asked to be excused from bothering with it. The diet had been increased only by the whites of eggs.

January 7th. Tincture nux vomica was commenced in ten-drop doses and gradually increased.

January 8th. There commenced at noon an unusually severe attack, consisting of headache, gastric distress, a strangling sensation, vomiting, and occasional darting pains referred to the stomach. In the afternoon I siphoned out the remains of one-half glass of peptonized milk drunk two hours before, and then washed out the stomach thoroughly. There was no blood. The analysis was: Free HCl, .226 per cent.; total acidity, .387 per cent.

Until March 14th the headaches were frequent. The burning sensation was severe and persistent, being relieved temporarily by the hot water and by food. Raw eggs taken between meals gave temporary relief. By successive trials, the largest dose of nux vomica to be tolerated was determined. The maximum dose was reached gradually and maintained while practicable, as judged by the nervous symptoms. Then it was reduced gradually and gradually re-established after the unpleasant symptoms had disappeared. The gastric symptoms were not relieved by the nux vomica, while the patient was much more nervous than before its administration. The outlook seemed discouraging. The history of successive attacks of hematemesis during nine years, and the sharply localized point of tenderness, which had been the same in all attacks, pointed strongly to a recurrent ulcer. Vicarious menstruation could be excluded fairly after the seven weeks' duration of the last hematemesis. In view of the almost continuous suffering from acidity for nine years, I seriously considered the advisability of an exploratory operation with a view to excision of the ulcer scar.

In one of the medical journals. I noticed nitrate of silver recommended for gastric irritability with or without ulcer; one-fourth grain was to be administered in one-half ounce of distilled water twenty minutes before breakfast, or the stomach was to be washed out with a solution (1-1,000) and that followed by a thorough washing with water. (I regret that I am unable to give the reference. It was to some digestive work.) Already lavage had been substituted for drinking and vomiting hot water. After lavage each morning, with occasional omission of two or three days, one-fourth grain of silver nitrate in one-half ounce of distilled water was poured through the tube. At this time the gastric symptoms were overshadowed by a train of symptoms commencing some days before the administration of silver nitrate, namely, frequent desire to micturate and some pain. Twenty-four hours' amount

of urine was 18 ounces, and a few days later only 11 ounces. Later, what was apparently renal colic supervened. Patient was put to bed on milk diet. As the urine remained scanty in spite of diuretics, Dr. Ogden examined and reported no evidence of renal disease, confirming the result of my own analysis.

During the three weeks' confinement to bed lavage seemed impracticable, and as bromide was indicated for the patient's nervousness, it was pushed for a possible beneficial effect on the gastric symptoms. The latter were not improved, and April 15th lavage and silver were resumed, and, with an occasional precautionary omission, have been continued to date.

May 3d. Dr. Quackenboss ordered glasses for a moderate degree of hypermetropic astigmatism.

May 5th. One hour after bread, 35 grammes, water 300 c. c., the amount of stomach contents was 45 c. c. There was previous lavage. Free HCl, .248 per cent.; total acidity, .321 per cent.; 25 c. c. filtrate dissolved, .05 gramme of white of hard-boiled egg in three and one-sixth to three and one-half hours at 40° C.

At this time the symptoms were not very marked and steadily diminished, being absent during June, July, and until August 20th. For two months before the latter date all restrictions on diet were disregarded by the patient. She fairly revelled in fresh tomatoes with pepper, vinegar and salt, stewed tomatoes seasoned with pepper, pickles, sour apples and grapes. I never saw her so happy as one day after she had eaten, without symptoms, a boiled dinner and a sour apple. She gained in weight and spirits.

August 7th. The fasting stomach contained 30 c. c. of yellowish-green fluid, acid to litmus. Free HCl, absent; total acidity, .066 per cent. Bile absent. This was the usual amount of fluid removed in the morning before breakfast. A test meal of 30 grammes of bread and 300 c. c. of water was then given and in one and one-sixth hours 110 c. c. removed, not remarkable in appearance. Free HCl, .102 per cent.; total acidity, .219 per cent.; lactic acid, a trace; filtrate, erythro-dextrin; microscopic, yeast and nothing else to note; digestive test, four hours, twenty-seven minutes, at 39° to 40°. The stomach, filled with water, reached to within one and three-fourths inches of the umbilicus, being decidedly smaller than in December. Also, in order to empty the stomach completely, it was necessary to pass the tube a less distance.

August 20th. Headache, nervous, tender breasts, a sleepless night. No gastric distress.

August 21st. Ate tomato soup for supper, vomited in the night, and in the morning washed from her stomach some of the soup. June 13th, in the morning, the stomach had contained banana eaten the previous evening. These were the only times that macroscopic remains of food were present before breakfast.

August 29th. The fasting stomach this morning contained one ounce of yellowish-green fluid and some mucus. No macroscopic food remains. Free HCl, .113 per cent.; total acidity, .212 per cent.; filtrate, no reaction with IKI; digestion, three and two-thirds hours. Microscopically, no blood, few starch grains, as shown by their appearance and behavior to IKI. No muscle fibres. Much pavement epithelium, one small clump of columnar epithelium, with quite frequently a polynuclear leucocyte and occasionally a salivary corpuscle.

August 29th. One hour after bread, 30 grammes,

water, 300 c. c., amount contents, 72 c. c. Appearance and odor not remarkable. Free HCl, .212 per cent.; total acidity, .277 per cent.; lactic acid, absent; filtrate, erythro-dextrin; digestion, four hours. Microscopically, no blood, yeast not increased and nothing of importance.

September 16th. Patient reported that the acidity had been somewhat troublesome since August 20th, three weeks. Incidentally, she remarked that she felt some burning at that moment, and I allowed her to siphon out her stomach contents. Three hours previously she had eaten, among other things, fish chowder and stewed tomatoes. The amount was 88 c. c. Free HCl, .303 per cent.; total acidity, .526 per cent.; lactic acid, absent; digestion, four hours.

September 26th. Patient reported that the acidity was very troublesome from the 16th to the 22nd of September, but since then less troublesome. The dose of silver nitrate was increased from one-fourth grain to one-half grain September 20th. Marked amelioration of symptoms was noted by the 23rd, and three days later a return to one-fourth-grain dose seems justifiable. This morning two ounces of yellowish-green fluid was siphoned from the fasting stomach. Free HCl, .146 per cent.; total acidity, .248 per cent.; digestion, three and three-fourths hours; lavage at night.

September 27th. Same amount of fluid and of same appearance. Gastric symptoms still improving. Free HCl, .19 per cent.; total acidity, .26 per cent.; digestion, three and one-half hours; lavage to night.

September 28th. Comfortable yesterday and perfectly comfortable this morning. Fasting stomach contained two ounces of colorless fluid. Free HCl, .314 per cent.; total acidity, .380 per cent.; digestion, three hours, fifty-two minutes. After lavage, gave test meal of bread, 30 grammes; water, 300 c. c. Amount of contents in one hour, 48 c. c. Free HCl, .27 per cent.; total acidity, .34 per cent.; filtrate, erythro-dextrin; digestion, three and one-fourth hours; lavage at night omitted.

October 4th. Since last analysis not much discomfort. Yesterday patient ate roast lamb at 4 p. m. and lamb stew at 8.30 p. m. This morning, fasting stomach contained two ounces plus of yellowish-green fluid with more sediment than usual, but no macroscopic food remained. Free HCl, .242 per cent.; total acidity, .329 per cent. Microscopically, occasional striated muscle fibre and starch grain. No blood. Considerable pavement epithelium. Few yeast cells. Frequently a salivary corpuscle.

October 11th. Almost no discomfort since last analysis. Perfectly comfortable at present. Cold boiled ham and bread for supper yesterday. This morning, fasting stomach contained 10 c. c., acid to litmus, giving a faint brown with Congo-red paper; no reaction for free HCl. Total acidity, .095 per cent. Microscopically, no muscle fibre, rarely the remnant of a starch grain, as shown by IKI; frequently a polynuclear leucocyte, showing the entire cell, and a salivary corpuscle. Considerable pavement epithelium.

The case is apparently under control again, or quiescent.

The disadvantage of this form of treatment in the presence of continuous secretion is the necessity of using a stomach tube. In the case just reported lavage in the morning was done by the patient with

satisfaction. Also we must remember the possibility of argyria and omit occasionally.

Besides these three cases I have followed this treatment in a few cases in the practices of friends. So limited an experience is not convincing to me, but suggests the advisability of giving the treatment a thorough trial. Apparently it has markedly diminished the gastric sensitiveness in two of my cases, whether or no it has affected secretion of acid.

I trust that my experience may be supplemented by the favorable or unfavorable experience of others present, and may lead some to assist in determining the value of silver nitrate in hyperchlorhydria.

A SIMPLE METHOD FOR THE QUANTITATIVE ANALYSIS OF THE GASTRIC CONTENTS FOR USE IN CLINICAL WORK.

BY HENRY F. HEWES, M.D., BOSTON,

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IN my article upon the analysis of the gastric contents published two years ago in the JOURNAL, I suggested certain modifications of the Töpfer method of quantitative analysis of the contents, which was at that time the most practical method of analysis for use in clinical work.¹ These modifications were:

I. The addition of a second test for free hydrochloric acid which could be utilized at the same time as the dimethyl test of Töpfer and serve as a control test to ensure a more accurate record on this point.

II. The substitution of the Congo-red test for the alizarin test in the estimation of the total organic acids plus acid salts.² Experience had proven to me as well as to many others,³ that accurate readings with this dimethyl test and the alizarin test uncontrolled were in gastric contents often impossible and I sought by these modifications to remedy these weaknesses in the original Töpfer method. During the last two years I have succeeded by attending to these modifications in developing and approving by extended use a quantitative method of analysis, at the same time more accurate and more simple than the original method, or the method as first modified by me. The details of this new method are as follows:

I. *Total free HCl.*—Measure off five cubic centimetres of contents after shaking. To this five cubic centimetres of the unfiltered contents in a test tube add a few drops of Töpfer's reagent (a one-half-per-cent. alcoholic solution of dimethyl-amido-azo-benzol). If free hydrochloric acid is present, the mixture will assume a carmine-red color. As a rule, where the acid is present, one drop will give the clear red color. In some cases, however, the addition of three or four drops is necessary.

To this red mixture a decinormal solution of sodic hydrate is added by titration until the red color gives place to an orange or bright yellow color. The number of cubic centimetres of the soda solution necessary to bring about this result are then read off. By multiplying this number by .00365 gramme, the amount of free hydrochloric acid in the five cubic

centimetres of contents is obtained and from this record the grammes of free HCl per hundred (per cent.) or per thousand may be reckoned. As it is sometimes difficult to determine the exact point at which the red color disappears in this titration, it is well to control this test by another more delicate test for free HCl. When enough soda has been added to leave but a very faint red color in the mixture, a drop of the mixture should be mixed upon a white evaporating dish with a drop of a saturated alcoholic solution of 00 tropeolin, and the dish warmed (not heated intensely) over a flame. As long as such a mixture gives a purple color upon evaporation, the free hydrochloric acid in the contents is not yet neutralized. When the purple color fails the acid is neutralized. By thus depending upon the Töpfer test until near the end of the reaction and upon the tropeolin for the last steps, we obtain a very accurate quantitative estimation of the free hydrochloric acid.⁴ For rough work, for results within .01 per cent. of the accurate result, the Töpfer test suffices.

II. *Total free acids plus acid salts.*—To the same five-cubic-centimetre mixture of gastric contents in which the free hydrochloric acid has been neutralized continue to add the decinormal soda solution until a drop of the mixture fails to color Congo-red paper (paper prepared by dipping filter paper into a five-per-cent. aqueous solution of Congo red and drying). When the mixture fails to color the Congo paper, all the free acids, organic and mineral, also the acid salts (acid phosphates), are neutralized. By taking the record of the soda used up to this point the quantitative estimate of the total free acids plus acid salts in the contents can be obtained in the same manner as in the estimation of the total free HCl. If in performing this Congo test the reaction point is passed, the paper is turned a brighter red than its original color. It is thus easy to control the accuracy of this test.

III. *Total acidity.*—To the same five-cubic-centimetre mixture of contents in which the free hydrochloric acid and the other free acids and acid salts have in turn been neutralized add two drops of a one-per-cent. alcoholic solution of phenolphthalein. Continue to add the soda solution until a deep red color of maximum intensity is obtained. The appearance of the deep red color indicates the presence of an alkaline reaction, that is, that the neutralization of all the acid elements of the contents is accomplished. From the record of the soda solution used to accomplish this result we estimate the total acidity. Care must be observed in performing this last step of the estimation to develop the deepest red color which can be obtained. As long as the top of the mixture takes a deeper color after the addition of a drop of the soda than the rest of the mixture the end reaction has not been obtained.⁵

This analysis gives us a qualitative test for free hydrochloric acid, and a quantitative estimation of the total free hydrochloric acid, the total free acids plus acid salts, and the total acidity. By subtracting the total free HCl (I) from the total free acids plus salts (II) we obtain a quantitative estimate of the total organic acids plus acid salts (IV). By subtracting

¹ Boston Medical and Surgical Journal, November 25 and December 2, 1897.

² Töpfer: Zeitschr. f. physiolog. Chemie, 1894, Bd. xix, H. 1, S. 104.

³ Mohr: Loc. cit., H. 6, S. 67; Hari: Archiv f. Verdauungskrankheiten, Bd. ii, H. 203; Strauss: Deutsches Archiv f. klin. Med., Bd. lxxvi, H. 1; Hewes: Boston Medical and Surgical Journal, November 25, 1897, p. 540.

⁴ The tropeolin test is used as it gives no color reaction with the Töpfer reagent; phloroglucin vanillin gives a red color with this reagent even in the absence of free HCl.

⁵ Owing to mechanical obstruction some of the acid in the particles of contents is not at once neutralized by the acid, so that enough extra soda to give the deep red color—combine with all the phenolphthalein—is added to allow for this acid. Upon standing well stoppered, the mixture turns a fainter red as the hidden acid is liberated.

(II) the total free acids plus acid salts from (III) the total acidity, we obtain the total combined acids (the total combined HCl in cases where free HCl is present) (V). By adding this total combined HCl (V) to the total free HCl (I) we obtain the secreted hydrochloric acid (VI).⁶

This analysis can be accomplished in five to ten minutes. It necessitates for apparatus a burette, an evaporating dish, a lamp, a test tube and a glass rod. The necessary reagents are (1) A decinormal soda solution; (2) one-half-per-cent. alcoholic solution of dimethyl-amido-azo-benzol; (3) Congo-red paper—filter paper soaked in a five-per-cent. aqueous solution of Congo red; (3) a one-per-cent. alcoholic solution of phenolphthalein; (4) a saturated alcoholic solution of 00 tropeolin. The estimations should be made twice, and the records of the tests with the second mixture of contents taken as final. For this estimation is made with an approximate idea of the results to be obtained already in mind, so that there is less waste of material in the process. The simplicity of the method admits of the employment of this quantitative analysis of the gastric contents as a routine method of diagnosis in private practice and in out-patient hospital work without undue sacrifice of time or labor.

In cases in which free hydrochloric acid is present to the Töpfer test, this analysis includes, with the exception of the qualitative test for lactic acid,⁷ all the tests which are necessary in ordinary clinical work. Where the Töpfer test is absent or doubtful the qualitative test for free HCl must be tried with 00 tropeolin, Boas resorein reagent and phloroglucin vanillin. Where a trace is discovered by one of these tests which could not be determined by the Töpfer test, the amount present is recorded as a trace, it being too small to admit of a definite quantitative determination.

Methods of analysis in cases with no free HCl; qualitative test for combined HCl.—In cases in which no free hydrochloric acid is present by any of the qualitative tests the contents are first tested with Congo-red paper. A positive test shows the presence of free acids (in this case organic acid) or of acid salts or of both. Five cubic centimetres of the contents is then estimated with the soda solution against Congo red (II) and phenolphthalein (III) in turn, and the total free acids plus acid salts and the total acidity determined.

If no free acids plus salts are present the contents are first tested with blue litmus. If the test is positive the presence of combined acid of some kind, either mineral or organic, is proven. Five cubic centimetres of the contents is then estimated against phenolphthalein to determine the total acidity (III).

In cases in which no free hydrochloride acid is present and the contents are still acid, it is of much importance to determine whether or not the combined acid present or a part of it is combined hydrochloric acid. For by this determination we ascertain whether or not

any hydrochloric acid is secreted; that is, whether the acid-secreting cells of the stomach suffer from a total loss of function or a simple diminution of this function below normal. This fact may be ascertained in a simple manner by subjecting the contents to the qualitative test for chlorine, except that present in the form of inorganic chlorides, known as the Ewald-Sjoqvist test.

VII. *Test for combined hydrochloric acid in the absence of free hydrochloric acid.*—Ten cubic centimetres of the contents is mixed with a pinch (half a saltspoonful) of barium carbonate. This mixture is evaporated and the residue fused to a red heat in a platinum crucible (fused to a red heat only). The fused mixture is treated with boiling water. The mixture is filtered. The filtrate and wash-water together should amount to about 30 cubic centimetres. To this filtrate (cooled) from five to ten cubic centimetres of a saturated solution of sodium carbonate is added. If chlorine in the form of organic chlorine compounds (acid albumins, peptones) is present in the original mixture a white precipitate will form in this filtrate.

When this barium carbonate test is positive, then we know that some of our combined acid is combined hydrochloric acid and that the disturbance of the secretion of acid present is due to a diminution rather than a total loss of function of the secreting cells. This is a fact of considerable importance in our knowledge of the case. This Ewald-Sjoqvist test is very simple. It occupies about half an hour. It necessitates for apparatus a platinum crucible and a Bunsen lamp. The necessary reagents are, (1) barium carbonate CP; (2) saturated aqueous solution of sodium carbonate. All methods of quantitative estimation of the total combined hydrochloric acid in the absence of free hydrochloric acid, which are of sufficient accuracy to be of use, are too difficult of application for use in ordinary clinical work.

I have employed the above plan of analysis as a routine method in all cases of gastric affections in my out-patient clinics for two years. The results from the point of view of diagnosis and of therapeutics and of acquiring a more thorough understanding of the disorders of the stomach have amply repaid the labor.

Clinical Department.

THREE UNUSUAL CASES OF ANGIONEUROTIC EDEMA IN INFANCY.¹

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ALTHOUGH angioneurotic edema is occasionally met with in infancy it certainly cannot be regarded as of common occurrence. The usual seats are the lips and cheeks or the external genitals. The extremities are seldom involved. The location of the swelling and the apparent cause in two make the following cases of unusual interest:

CASE I. Constance M., twenty-three months, woke up on the morning of March 9, 1898, with her left arm moderately swollen. It was not painful and she

¹ Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, October 18, 1899.

⁶ This total hydrochloric-acid record is the index of the secretory force of the stomach, much more accurate than the record of total acidity or total free HCl.

⁷ To test for lactic acid two cubic centimetres of the filtered contents is added to five of a colorless solution of ferric chloride. If this test is negative lactic acid is absent. If the test is positive (if a lemon-yellow color appears in the ferric-chloride solution) the test must be confirmed by performing this ferric-chloride test with an ethereal extract of the contents. If this test is positive, lactic acid is present. If it is negative, the color in the preliminary test was due to some substance other than lactic acid.

used the arm freely. There had been no known injury or exposure. The swelling of the forearm increased during the day and the next morning the hand was also much swollen. She was otherwise perfectly well.

I first saw her at this time. The left forearm and hand were much swollen from the elbow to the second phalanges. The surface was somewhat reddish and a trifle hot. There was moderate pitting on pressure. There was no tenderness and she used the hand and arm freely. There was no lesion of the surface and no enlargement of the axillary glands. The pulse was normal. The arm was bandaged loosely, and on March 12th, four days from the onset, the swelling had entirely disappeared. There has been no recurrence.

CASE II. Ruth B. was seven months old November 5, 1897. One morning, about this time, her mother came in from a walk and gave her her morning bath. Being in a hurry she tested the temperature of the water with her hand. It was later found to have been much colder than usual. The child cried vigorously and when taken out was shivering and blue. She soon warmed up again, but about an hour later it was noted that both her forearms and hands were swollen, bluish and cold.

I saw her soon after. As stated above, both forearms and hands were much swollen and slightly cyanotic. The skin was shiny and there was no pitting. The surface was rather cool. There was no tenderness or pain and the arms were moved freely. There was no enlargement of the axillary glands and the radial pulse was normal. The heart and urine were both normal.

The swelling disappeared, without treatment, in two days. A few weeks later, however, it recurred, evidently as the result of sleeping in a cold room with the arms exposed. At this time it lasted about two weeks, disappearing gradually. All the rest of the winter and spring, until the return of warm weather, the swelling recurred on any exposure to cold. It rarely lasted more than a few hours or a day or two at a time, however. Thick mittens, worn out of doors and at night, decidedly diminished the frequency and severity of the attacks. There was no return of the swelling during the winter of 1898-99. In October, 1899, however, she came in rather late on a cool afternoon, not having worn mittens as the weather was warm when she went out, with her right hand and arm swollen as before. It went away in a few hours and has not returned since.

CASE III. Laura M. was brought to the Medical Out-patient Department of the Infants' Hospital, March 15, 1899. She was then four months old. She was born at full term, head presentation, about three-quarters of an hour before the arrival of the doctor. Any injury to the arms at birth would thus seem improbable. Since birth the right upper extremity has frequently become swollen and purplish. During these attacks the child has seemed unable to use the arm. After from two to six hours the natural appearance and function have returned. The attacks have recurred at any time of day or night and have apparently not been accompanied by pain. The mother was inclined to attribute them to a slight injury to her right arm which she received when she was about three months pregnant!!!

She was a large, fat baby in very good condition. The right arm was then of normal color but the stu-

dent who took the history stated that while he was taking it the arm was markedly purple. It was warm and did not pit on pressure. The circumference of the right forearm was one and one-half centimetres and that of the right arm one-half centimetre greater than that of the corresponding part on the left. There were no enlarged glands in the axilla and the pulse at the wrist was normal. The heart was normal. There was no tenderness and the child moved the arm freely.

She was seen again October 4, 1899. Her aunt stated that the attacks had continued, but had been much less marked during the warm weather. She thought that there was some connection between their occurrence and the external temperature. The swelling had been much more pronounced during the last few days of cool weather. She thought that the right arm was now always a little larger than the left.

The color of the arm was then normal but it seemed somewhat larger than the left and the forearm and hand looked edematous. There was no pitting on pressure, however. The circumference of the forearm was one and a half centimetres and that of the arm one centimetre larger than on the other side. The surface temperature was normal, there was no tenderness and the arm was moved freely. There was no enlargement of the axillary glands, the pulse was normal at the wrist and the heart was normal.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, November 6, 1899, Dr. R. H. FITZ in the chair.

ANATOMICAL SPECIMENS.

DR. BEACH: This photograph is from a child seven years old who was the subject of imperforate anus. The rectum ends within the vulva. The vagina is immediately above it and the meatus of the bladder immediately above that. This photograph has been taken to show the three passages, making a cloacal aperture of the vulva. She was referred to me with the idea that some surgical measure might be advisable, but the control of fecal movements was so good and there being no certainty of a sphincter to guard a new anus, I advised against interference. The child had no inconvenience from the unusual condition, which was discovered by the nurse at birth.

Dr. Beach stated in answer to a question by Dr. Vickery that the conformation of the parts was similar to what exists in the hen.

DR. WITHINGTON: Would Dr. Beach take that position as a rule with regard to all such cases, or was there in this particular case some reason why operative interference was not called for?

DR. BEACH: It was the first time I ever saw this arrangement of the parts. As the child had lived to be seven years old, had not suffered, and there was control of the movements, I felt that in this case we had better make no interference. I have operated a number of times in cases of imperforate anus and once advised a laparotomy soon after birth, where there

was no outlet for the fecal movements and no guide for a dissection.

DR. WITHINGTON: You would not take the general position of refusing an operation in all cases where there was perfect passage for the fecal matter?

DR. BEACH: No; I should be guided by the exigencies of the case.

DR. WITHINGTON: I ask the question because I have now a child, born about six months ago, in whom there is precisely the same deformity, the rectum ending inside the vagina and there being no anus at the proper place. I had assumed that it would be necessary by and by for the child to have something done in an operative way, at any rate before reaching a marriageable age. There is absolutely no obstruction to the passage of fecal matter and the child has no inconvenience in any way. The defect was discovered a day or two after birth, and I said nothing to the mother until she got through the puerperium, and then I told her that when the child got older I presumed surgical interference would be necessary. I am interested to know it is not considered necessarily indicated in case the passage is perfectly patent and well controlled, as it is in Dr. Beach's case and in the case I have in mind. The child certainly has no inconvenience and apparently is going to have perfect sphincteric control of the rectum.

DR. BEACH: If the end of the rectum is guarded by a sphincter at the vulva, and it is dissected away from that sphincter, displacing the rectum to the middle of the ischio-rectal space, where no sphincter is found to guard it, incontinence of feces may be expected, and, it seems to me, in that case it is better to bear the ills we have than to invite others.

DR. B. TENNEY read a paper on

APPENDICITIS IN A HERNIAL SAC.¹

DR. BEACH: I never have happened to see this complication in any case of hernia or appendix upon which I have operated, though I know it has occurred at the Massachusetts Hospital. The lesson to be drawn from the reader's paper is that all cases of hernia, or where hernia is supposed to exist, with the slightest obstructive symptoms should be very carefully investigated. My rule is contrary to past teaching, which directs, first, taxis, and, if unsuccessful, operation. Personal experiences justify me in urging exploration of the hernial sac whenever obstruction symptoms exist and being guided by the condition found. This course would surely disclose the complication described by Dr. Tenney and prevent the return of a gangrenous appendix or a gangrenous loop of the intestine to the peritoneal cavity. I am sure that this course would have saved cases that I lost in my early operations from not realizing how rapidly gangrene could occur after obstruction, and that intestine irremediably injured by a short period of constriction could easily be returned by taxis.

DR. F. C. COBB read a paper on

EPISTAXIS.²

DR. FARLOW: There are many mild cases of nose-bleed, which are usually considered of no consequence by the patient, but which are deserving of careful attention; the slight but recurring hemorrhages caused by blowing or picking the nose. This is usually a

sign of an erosion of the septum which may lead to an ulceration or perforation, and may be the starting point for an attack of facial erysipelas. I have in mind several such cases, where the question of cause and effect seemed very clear. It is always well to examine the nasal septum of sufferers from facial erysipelas and also inquire as to the existence of nose-bleed in the past. According to my experience, nose-bleed is less common when there is deformity of the septum than in the catarrhal, especially atrophic, forms of disease of the mucous membrane where the septum is usually but little irregular.

Nose-bleed in elderly people is usually considered to be difficult to check and to be of unfavorable significance. I have a French thesis written by Tautel, who had access to the Salpêtrière Hospital in Paris and tabulated a great many cases of nose-bleed in elderly people. He came to the conclusion that the gravity of the prognosis was much exaggerated and that the bleeding was nearly as easily stopped as in younger people. This tallies with my own experience.

With regard to how long a posterior plug can remain in place, I recall the case of an elderly lady who had suffered from a number of severe attacks of nose-bleed. One occurred the day before she was to sail for Europe, and her physician put in an anterior and a posterior plug. He went to the steamer with his patient and asked the ship's surgeon to remove the plugs on the following day. But the history of the past hemorrhages apparently made a deep impression on the surgeon's mind, for he decided not to remove the plugs until he got within sight of land, where he could have assistance if needed, and the unfortunate passenger carried her plugs from Boston to Queenstown, no evil consequences resulting, strangely enough.

It is a good plan to put vaseline on the nasal plug, or some oily substance, so that it shall not adhere to the bleeding point. Moist gauze answers the same purpose. I have found peroxide of hydrogen excellent for stopping epistaxis. In looking for the bleeding point, which is almost always on the anterior inferior cartilaginous septum, I have noticed that students are very likely to pass the speculum in such a way as to cover the bleeding point and it is thus easily overlooked. If the end of the nose is tilted up by the finger the front part of the septum can often be well seen without a speculum; and if the speculum is used it should be held in such a way as to point toward the septum, but its end should not touch the mucous membrane, otherwise it may provoke a bleeding.

I have been extremely pleased with the action of the suprarenal extract, and it seems as if I used it more than cocaine in everyday work. It is most excellent for constricting the blood-vessels and opening up the nose. Under its use I have done a great many bloodless operations in the nose, and I have not seen any unpleasant effects from it. Patients are very likely to wonder whether their nose-bleeds may not be due to polypi and mistake the inferior turbinate (which they can see in a mirror or feel with the finger) for a polypus. But hemorrhage from nasal polypi is not at all common.

The "grip" can be the cause of severe nose-bleeds, as in a series of cases reported by Dr. DeRoaldes, of New Orleans.

Nose-bleed in children may be a sign of adenoid disease, and it is always well when no erosion or bleeding point is found on the septum of a child after a

¹ See page 4 of the Journal.

² See page 2 of the Journal.

recent nose-bleed to see whether the blood may not have come through the nostrils from the post-nasal space.

Dr. DeBlots: As to some points in the causation of epistaxis, I would say that whereas Dr. Cobb speaks of the rarity with which the *presence* of foreign bodies in the nose was a cause of epistaxis, it has been my experience to find that almost invariably their *removal* is followed by epistaxis, particularly if the foreign body has remained in the cavities for some time. In almost all these cases the body remains in apposition to the septum and a certain amount of mucous membrane is, to say the least, thinned, perhaps removed. When that body is removed with forceps or hook, this bleeding point remains, or rather bleeding surface, because it is usually more than a point. I had a case at the hospital in which a shell had been retained in the nose fourteen years. The whole shell appeared to be filled with granulations. The hemorrhage was very profuse.

With regard to traumatic epistaxis, the epistaxis of the prize-fighter, it makes a great deal of difference where the nose is struck — a blow from below producing hemorrhage quicker than a straight blow on the bridge of the nose.

With regard to plugging the nose, I was rather non-plussed the other day while endeavoring to demonstrate the use of Bellocq's canula, to find I tried four different noses before I found one it would go through. It appears to be a very large instrument, and of course with a large instrument, if there is a slight deflection of the septum, the introduction of the canula is very difficult. Now of course the ordinary catheter is a pretty good thing, but the Eustachian catheter is better, and in using the Eustachian catheter the twine that is used should always be waxed, because otherwise, as soon as it touches the mucous surface, enough mucus exudes to be quickly taken up with the string and further introduction becomes impossible. Now, if just an ordinary Eustachian catheter is used, the string can be poked through and seized from the other side with a pair of forceps as soon as it appears below the velum. I have once or twice been called to remove a plug from the posterior nares where there appeared to be no way of getting at it; in other words, after tying the sponge cotton on to the cord they cut it off close and had drawn it up behind the velum assisted by the finger. The end of the twine should always be left out, and instead of making a knot around the twine, if you make a loop and draw it tight and push the cotton up in that way and knot the twine in front of the mouth, of course there will be a slight discomfort from having the twine in, but you can always pull it down again by the part which comes through the mouth.

Dr. Cobb spoke of the constriction to be brought on the superior coronary artery. There is a very simple old-fashioned remedy for nose-bleed which is exactly the same thing, and that is to take a piece of cotton or paper and put it under the lip, pushing it up against the nose and then drawing the muscles of the mouth tight, which produces this constriction in the same way.

Bleeding points are concealed in some cases. There are frequently folds, not on the septum, but just below it in the vault, where the mucous membrane and the skin may very frequently form a kind of fourchette which will conceal these bleeding points, and I have frequently had to open them in order to get the cautery down into them.

In speaking of caustics, I never have found any ad-

vantage in using chromic acid. I think the galvanocautery heated to red heat is invariably the best. I have seen cases in which it was not necessary at all for the patient to blow his nose in order to cause epistaxis; people with full habit and determination of blood to the head bowing the head down will be sufficient. I remember the case of an engraver in whom as soon as he commenced work and bowed his head down the blood rushed to the head and this epistaxis would commence. It was supposed he was being saved from apoplexy. He was sent to me with supposed bleeding in the back of the nose. I thought it was there myself, but I was so fortunate as to start one of these little scales in the front of the nose, and two cauterizations completely cured the case. Injections of astringents are very valuable. I saw a case at the dispensary in which the bleeding had continued twenty-four hours. The man was struck on the nose with a billet of wood in a fight on a schooner. The nose was plugged. I could not find any bleeding points. A few injections of tannin checked the hemorrhage and he was kept under surveillance twenty-four hours, but it never returned. I think injections of tannin, particularly iced tannin, are invaluable after operation also.

As regards the polypi I can only concur in what Dr. Farlow and Dr. Cobb have said, that except in advanced malignant disease you do not find hemorrhage accompanying polypoid growth.

Dr. Coolidge: Excepting such cases of epistaxis as are obviously caused by a neoplasm or some evident constitutional disease, the bleeding almost always comes from the cartilaginous septum. If this were universally understood a great many patients would be saved the discomfort of having their posterior nares plugged when it is unnecessary. This bleeding from the septum may be divided into two classes: (1) that which comes from some erosion due generally to picking the nose with the finger or handkerchief, leading to the formation and the tearing off of a crust; (2) perhaps the more important, that due to the breaking of an artery on the surface of the mucous membrane. On account of its anatomical position this artery cannot retract, and is not obliterated after its rupture, but may at any time bleed again, causing periodic epistaxis, which may recur for weeks or months. It seems to me to be of great importance to find the point from which the bleeding comes if possible; therefore, unless the blood is coming too fast, it is better to sponge and look with a good light to see where the blood comes from before packing. When the vessel which is the cause of the epistaxis is found, the proper treatment is to get rid of that vessel entirely, and the way to do it is to make an eschar including the vessel in it. That can be done with chromic acid, provided the nose is not bleeding at the time. A little chromic acid on a dry surface will make an eschar which will probably stop that vessel effectually. The differential diagnosis between this bleeding from one vessel and bleeding from an eroded surface ought very easily to be made simply from the presence of the eroded surface. An eroded surface should not be cauterized but covered with an ointment. If one vessel only is at fault the bleeding always comes from the same side and comes out in front if it can, unless the patient's head is thrown back. Occasionally a septum looks pretty smooth, and yet there is a weak point which is hard to see unless it is actually bleeding. This form of bleeding occurs frequently in children. A boy will often have two or three large vessels on the

septum and perhaps have nose-bleed every little while for years.

I should say, in my experience, that alcohol had a strong predisposing influence in advanced life, that the man who drinks every day is more likely to have bleeding from the septum than one who does not.

DR. CLARK: There are one or two points I want to speak of which I think have not been brought out by the other speakers, although Dr. Coolidge may have had this condition in mind when speaking of large vessels in the septum. I have seen a number of cases where the septum has presented the appearance such as one sees in *acne rosacea*, a congeries of large vessels on the septum, not necessarily in old people. I have seen several cases in young people. As Dr. Coolidge said, hemorrhage from these can be prevented by destroying the lumen of the vessels by application of the cautery. In regard to treatment, none of the speakers have mentioned nitrate of silver. Given a case of hemorrhage from the cartilaginous septum it is usually my custom to apply cocaine first and then a four-per-cent. solution of antipyrin, which I think is very useful in continuing the contraction caused by the cocaine. Now that we have suprarenal capsule, the value of the antipyrin solution is not so great. Then I apply nitrate of silver to the bleeding point, either fused on the end of a probe or the solid stick. I think the inflammatory reaction is less than from the galvanocautery and that the end result is fully as satisfactory.

I should like to emphasize what Dr. Cobb said about plugging the posterior nares. In my experience it is never necessary. I have never seen a case of hemorrhage from the nose where plugging of the posterior nares by means of the Bellocq sound or some similar instrument was indicated. I can imagine a case of hemorrhage from the nasopharynx where this might become necessary, but I have never seen one. Bleeding from the septum can always be controlled by packing the nose properly through the anterior nares.

DR. BEACH: There is one practical point I would like to speak of relative to the discomforts of packing a nostril, putting in the plug and taking it out afterwards, from which I have had more or less trouble. A number of years ago I looked about for something to take the place of plugging. What suggested ferric alum injections I cannot say, but they proved to be invaluable. We occasionally had cases of severe epistaxis apply for relief to the Massachusetts Hospital before the days of the throat department, and without a very careful diagnosis of the source of the hemorrhage they entered the surgical department and were classified as epistaxis, idiopathic or traumatic. I found that a saturated solution of ferric alum injected into the nostril from which the hemorrhage proceeded invariably stopped it. From that time I never had to plug the nose either in front or by the posterior nares. That was some fifteen or sixteen years ago or longer. I do not recall a case where I had to use it twice.

DR. GOODALE: In regard to the histological condition in many of these cases of nose-bleed, it has been shown that there is often a plexus of veins at the anterior part of the septum. Just why the plexus should occur at that point has not been explained. Its existence is brought into view very plainly, clinically, by the application of suprarenal extract, when with simple cocaine applications it may pass unobserved. The existence of this plexus is also shown in some cases by cauterizing one or two of the bleeding places and then

examining the case later, when it will be seen that other veins or vessels of this plexus have undergone enlargement. These later may become very prominent, and if the same injury is offered by the patient of picking with the finger nail, rupture of the vessel walls and epistaxis will result. I think in a good many cases it would be advisable to watch afterwards as to the condition of affairs, and in that way be ready to head off an epistaxis by cauterizing some of the newly enlarged vessels, which can be perfectly well done.

DR. COOLIDGE: It has been suggested that it is veins that bleed, but the common bleeding in these recurrent cases is obviously arterial. It is not uncommon to see a vessel spurting, sometimes a good-sized one. I should like to emphasize what has already been said, that the more skilful the man the less often will he have to plug the posterior nares. If the bleeding comes from the nasal cavity it generally can be reached from the front, and this is much more comfortable for the patient and better in every way.

DR. FARLOW: A number of microscopical examinations have been made with reference to the connection between erosion and hemorrhage of the septum and Jacobson's organ, which, though present in some animals, is entirely rudimentary in man.

With reference to the injection of ferric alum into the nose, if a solution of it on a pledget of cotton is pressed into the nose and held against the anterior part of the septum, which is the seat of hemorrhage in nearly ninety-nine out of one hundred non-traumatic cases, we shall get all the advantage of the astringent action of the alum without its irritating effect in the back of the nose or throat, where it is not needed.

DR. BEACH: I have never observed any disadvantage except a slight irritation at the time. An interesting case of epistaxis entered the hospital to-day from a wound by a pistol ball, 32 calibre, that entered the auricle on the anterior surface, glanced by the mastoid process of the temporal bone, passed directly downward and forward into the pharynx behind the soft palate, so that I could pass a probe directly through the outside wound forward and downward back of the soft palate, where it could be felt. How the jugular vein and carotid artery escaped injury it is difficult to understand.

DR. COBB: I am sorry that in the discussion one thing which I wished to emphasize particularly, the occurrence of nose-bleed as an early symptom of Bright's disease or some form of nephritis or arteriosclerosis, has not been alluded to. I should have been glad to hear whether any of the gentlemen had had any experience of that sort, that is, where epistaxis has been the first symptom and followed by death from nephritis of any sort. I hoped Dr. Vickery might have said something about this part of the subject.

DR. F. L. JACK: I should like to emphasize one point which Dr. Cobb, I think, mentioned in his paper—the danger to the ears from plugging. As we all know, plugs removed from the nose after twenty-four or forty-eight hours are very foul. This condition would be very apt to cause an irritation in the neighborhood of the Eustachian prominence, producing a middle-ear inflammation, with all the chances of serious trouble following. However, it has been my experience that plugging the posterior nares is seldom necessary. The ears are in danger from a similar cause by plugging through the nose, although the chances are very much less.

DR. VICKERY: I have been trying to recall a case in which that led to the diagnosis. I hardly remember such a case. I have seen nose-bleed prominent in connection with somewhat advanced cardiorenal disease. I have seen a case of epistaxis from the excessive use of alcohol. I have seen it in the form of vicarious menstruation; I have seen it with profound anemia, I think pernicious anemia, and I am sure leukemia. I think a case of leukemia in the wards of the Massachusetts General Hospital finally died with nose-bleed, that is, not that any particular nose-bleed could not be stopped, but that it kept recurring and the patient grew weaker all the time. My impression is that nose-bleed also occurs with heart trouble apart from renal disease. I cannot think of a case I have seen. It seems to me a very valuable suggestion that we ought to search farther than this little ulcerated spot on the septum when a case applies to us for nose-bleed.

DR. FITZ: The question Dr. Cobb raised in reference to the relation between nose-bleed and nephritis I think was alluded to by some of the gentlemen taking part in the discussion. It has repeatedly come to my knowledge that persons with a nephritis have suffered from nose-bleed in the earlier days of the disease, and it is my impression that this symptom is generally mentioned in the text-books in connection with the description of forms of nephritis, especially of the chronic interstitial variety.

There is one other point which none of the gentlemen have alluded to, and that is with reference to the etiology of these dilated vessels in the nasal mucous membrane. The thought which has always been in my mind is that they perhaps were more likely to occur in persons who suffered from chronic nasal catarrh. I should like to know whether Dr. Cobb has made any observations with reference to this point.

DR. COBB: I have not found any reference to nasal catarrh in the etiology of such dilated vessels. I suppose irritating mucous discharge passing over the nose might cause hyperemia.

DR. FITZ: There seems to be a very plausible explanation of the occurrence of nose-bleed in cardiac cases as mentioned by Dr. Vickery, namely, passive congestion of the mucous membrane and dilatation of the vessels, associated with increased secretion from the nasal fossae.

SUFFOLK DISTRICT MEDICAL SOCIETY.
SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, October 18, 1899,
DR. H. F. VICKERY in the chair.

DR. J. L. MORSE reported

SOME UNUSUAL CASES OF ANGIONEUROTIC EDEMA
IN INFANCY.¹

DR. HEWES: I should like to ask Dr. Morse whether there was any coldness of the part, as you often get in the parts in Raynaud's disease?

DR. MORSE: I should say that in the first case the surface temperature was somewhat increased, and in the other two, if anything, somewhat diminished. The changes were, however, very slight.

DR. VICKERY: I myself have never seen a case of

angioneurotic edema in infancy, but several cases in adults. There is now under my care a young unmarried woman who is neurotic. At present she has some febrile disturbance associated with rheumatism in the right hip-joint. Some year or two ago she had a general edema without any renal or cardiac trouble, and she was in a debilitated state. I think that she had amenorrhea at the time and she left the hospital not much relieved. She then came under the care of a doctor who was much interested in her case and, after trying one means and another of improving her condition, he found that decided improvement, with return of the menses, followed the ingestion of ovarian extract. She now has no edema. I remember another woman about thirty, also neurotic, who had edema which might well have been thought to be renal in its origin, but there was nothing wrong with the kidneys so far as we could make out on careful observation of the case, and it seemed impossible to call the edema anything but a neurotic affair. Both these cases were not so localized; they were more general. Of course there are a great many cases of localized edema of this kind. The possibility of mixed edema in both of these cases was considered, but it was possible to exclude it.

DR. M. P. SMITHWICK read a paper entitled

NITRATE OF SILVER IN HYPERCHLORHYDRIA.²

DR. HEWES: I have had some experience in the treatment of hyperchlorhydria with nitrate of silver and I have convinced myself that it has considerable use in the treatment of that condition. My method of treating the hyperchlorhydria has been a systematic one. I have always endeavored, after determining the existence of hyperchlorhydria by chemical analysis, to treat the case as much as possible by diet, that is, I start them on a proteid diet and try to offset the symptoms purely by the use of the diet. If the patient comes back after a week or ten days with the symptoms unmitigated I use alkalis in addition to the proteid diet. When that fails I use nitrate of silver—reserving it for the severe cases. Out of perhaps 100 cases of hyperchlorhydria that I have seen I should say, without having the figures here, that perhaps 20 have failed to show marked amelioration with the diet, or the diet plus the alkalis. In some of these cases which have failed to improve or to improve markedly under the proteid diet or under the proteid diet plus the alkalis, the nitrate of silver has had marked beneficial effects, in fact, practically curative effects. I can remember four cases in which the nitrate of silver treatment was begun in the third or fourth week and in all four cases the effect of a continuous treatment with nitrate of silver for one or two months has been, as far as I know, curative as regards the symptoms of the patient. Of course, as Dr. Smithwick's paper shows, he did not, and I imagine in my cases I did not, cure the hyperchlorhydria. The last analyses Dr. Smithwick gave were higher as a matter of fact than the first. In reality the hyperchlorhydria is quite as rampant as ever, but the treatment has diminished the patient's sensibility to it, which as a matter of fact, as far as I understand it, is in our clinical terminology all that hyperchlorhydria means. You frequently see patients with free hydrochloric acid of 2.4 grammes per thousand and even more without symptoms, and you frequently see patients with typical symptoms of hyper-

¹ See page 10 of the Journal.

² See page 6 of the Journal.

chlorhydria with free hydrochloric acid of .5 of a gramme per thousand.

In regard to what the specific action of nitrate of silver is in these cases I have no very clear idea. Of course it has an astringent action, but it is hard to see how one-fourth grain given every morning can have any permanent action upon the stomach. All we have is our clinical evidence that some cases that have resisted other treatment have improved with nitrate of silver. I have used one-third of a grain once and sometimes twice a day and kept it up a month and if necessary two months. The chief symptoms which the cases have ordinarily suffered from have been pain or distress and frequently a stasis of contents, with vomiting, and the two apparently disappear together. Many cases have no vomiting but heartburn and pyrosis. It is thought by writers on the subject of hyperacidity or hyperchlorhydria that the stasis which occurs is due to spasm of the pylorus induced by the acidity; and in relieving the one you relieve the other. I have had very good evidence in a number of cases that this was so. I remember one case, in which a girl had suffered attacks of pain in the stomach one half hour after food for two or three months and for the last month vomited large amounts every two or three days. It was quite evident there was an accumulation which relieved itself by vomiting. The attacks of pain would become more frequent up to the third day, when there would be pain almost all the time and finally vomiting. That case was entirely cured by the use of proteid diet, and large amounts of alkalies given whenever she had the pain. I practically kept the acidity neutralized as much as possible and from the time she began to take the alkalies p. r. n. she ceased to have the pain. There, apparently, the careful administration of alkalies controlled the hyperacidity in the sense that it controlled its effects.

DR. COOLIDGE: There are only three cases of hyperchlorhydria I can report, which have been treated by nitrate of silver. Two were not improved, while the third was very much improved. All had resisted other forms of treatment. Nux vomica and also alkalies and bismuth were given but without effect. The one which was benefited the most was the worst of all, the one that had the most pain. When this man came to the hospital he had a box of morphine pills which had been given by a physician, the pain at times being so great. He had been under treatment a long time, and when he came in, said he came in because his stomach was "too acid." There was no examination of his stomach contents made after fasting, but there was an increased amount of hydrochloric acid after the test meal. Within three days of the time he commenced taking one-fourth grain of nitrate of silver, he commenced to improve and the improvement continued. He took nitrate of silver regularly a few weeks and then only once in a while. The two cases that failed both had large amounts of hydrochloric acid in the fasting stomach. This gives rise to the question as to whether nitrate of silver put into a stomach when there is hydrochloric acid present is going to have any local effect or going to do any good. The same thing was quite true in these cases, as Dr. Hewes found, that there was no diminution in the amount of hydrochloric acid, but simply in the sensitiveness, so to speak, of the stomach.

DR. VICKERY: I should like to ask if Dr. Hewes administered the nitrate of silver in the same way Dr. Smithwick did.

DR. HEWES: In some; and in others I let the pa-

tient take it in one-half glass of water on getting up in the morning. When I gave it twice a day I gave it early in the morning and then at a period in the afternoon when the patient had fasted at least four hours after a simple meal. The patient took it out of a glass of water in that case.

DR. SMITHWICK: I would like to ask Dr. Hewes if he happens to recall how much acidity was found in the fasting stomach in the cases in which nitrate of silver failed.

DR. HEWES: I can recall one perfectly well. There was none. I remember another, in which the acid was about 1.5 grammes per thousand of free hydrochloric acid. That was a case with hypersecretion. Here I used lavage before administration. Of course, there are cases in which nitrate of silver fails, cases in which everything seems to fail.

DR. SMITHWICK: I should like to ask Dr. Ogden if, where it seems advisable to push nitrate of silver, there is a practical way of estimating whether elimination is sufficiently rapid before you begin to get evidences of argyria. Would the urine be a practical test?

DR. OGDEN: I am not aware that any definite information can be obtained from the urine under such circumstances.

DR. VICKERY: The neurologists have that question to consider and I think in some text-books it is stated how many grains it is safe for an individual to take. Up to a certain limit there is safety from argyria.

DR. HEWES: Einhorn gives this nitrate of silver as a spray with special apparatus and claims he gets better results in that way. He sprays a 1-1,000 solution in the stomach, using a movable end to the tube. In that way the action is more direct than the way we give it.

DR. VICKERY: I should think that some of these cases would react to any rather novel and striking means of treatment, even if it were perhaps not physiologically effective. I should like to ask Dr. Smithwick or Dr. Hewes if they have ever seen relief upon exclusive milk diet.

DR. SMITHWICK: Oh, very much. In the case I reported at greatest length on milk diet, the symptoms practically disappeared.

DR. VICKERY: I had a case that was refractory until that was done.

DR. SMITHWICK: It seems to me peptonized milk has worked better than ordinary milk. Some of these cases claim they cannot take milk; that they vomit it in thick curds.

DR. HEWES: I think as a rule you will not get as good results with a milk diet as with stronger proteids, except in cases where the hyperchlorhydria is due to the irritation of an ulcer. Meat or eggs are preferable from the point of view of utilizing the superfluous acid or even things like somatose and peptones, if the patient can bear them. Milk has a low hydrochloric-acid-combining power, practically speaking, in proportion to its bulk.

DR. VICKERY: I myself would like to speak of a case, if the gentlemen have the patience to hear about it, that has interested me. It is a striking case. It was a man seventy years old who suffered very much from pain in the epigastrium, had lost forty pounds' weight and had a distinct cachectic appearance, not mere pallor, but a yellowish pallor. His tongue, however, did not look as the tongue in a great many cases

of abdominal cancer does. It had the normal amount of epithelium upon it and was not very bright red and I noticed that fact and record was made of it. No lump could be felt by me. This man vomited coffee-ground material. He had a mere trace of hydrochloric acid in his stomach one hour after a test breakfast and a good deal of lactic and butyric and acetic acid. He also had a leucocytosis, and no increase of the white cells after digestion. He suddenly had a very severe pain, his pulse changed from 80 to 150, his abdomen became distended, rigid, and tender, and the diagnosis of a perforation was made; but in consultation Dr. J. C. Warren, Dr. Maurice H. Richardson and myself all agreed that he was not a fit subject for operation; his strength was not sufficient for it. His sufferings were mitigated with morphine and the autopsy showed a perforated ulcer of the duodenum without any sign of cancer whatever. It was on the posterior side, deep in, and could not have been got at by operation, the pathologist, Dr. Wright, thought. If there had been no autopsy I should have felt sure it was a case of carcinoma, and in going over the ground I cannot exactly see why he is excusable for not having a carcinoma instead of an ulcer. Perhaps you gentlemen who devote so much time to digestive disturbances may be able to make some instructive remarks upon my report of this case.

Recent Literature.

The Nervous System and its Diseases. By CHARLES K. MILLS, M.D. Pp. xxx, 1,056, with 459 illustrations. Philadelphia: J. B. Lippincott Co. 1898.

Although not definitely indicated on the title page, this is really the first volume of an exhaustive treatise on the diseases of the nervous system which is destined on its completion to take high rank among the larger works upon the subject. The present volume deals with the anatomy of the nervous system, the general pathology, etiology, methods of investigation and therapeutics, and the diseases of the brain and cranial nerves, with the exception of mental diseases. As all familiar with American neurology for the last twenty years might safely have predicted, the work is exhaustive and the fruit not only of wide study but of prolonged original investigation in clinical neurology. The section on Anatomy is well written and reasonably full, but we believe it would be more helpful to the student if the embryological development were made more prominent and the neurone theory brought more into the foreground, so that he might more readily obtain a few simple, fundamental conceptions upon which to group the mass of facts presented. Curiously enough no mention is made of the internal anatomy of the cell body of the neurone as made evident by Nissl's method. It was to be expected, but none the less to be regretted, that the writer should adopt the cacophonous jargon of Wilder, which is so well calculated to make cerebral anatomy unintelligible except to the adept, but he has furnished the reader with a key to these weird terms, so that the student's task is simply made a trifle more difficult yet not impossible. The chapter on General Therapeutics is full of helpful suggestions for the practitioner, the results of the wide experience of many years. The section on Methods of Examination is unfortunately too condensed.

The importance of careful training in clinical examination is so vital that we regret that the author has not given the student fuller details. Above all, the study of the mental symptoms, so often neglected and for which so little help is usually to be obtained from text-books, receives too little consideration, unless the author intends to dwell upon it more elaborately in the second volume—a task which we trust he will undertake.

The remaining chapters, upon the Diseases of the Brain and Cranial Nerves, are elaborate and complete. Upon certain points of controversy we might be disposed to differ with the author, but although his own views are positive he deals fully and fairly with the opposing views and presents the arguments on his own side without exaggeration. In the enormous wealth of material contained in these chapters it sometimes seems as if the fulness of detail almost obscured the broader general outlines, but this is inevitable in a work of such an encyclopedic character. Of especial originality and importance is the chapter on what are called residual encephalic lesions. The study of the later stages of hemiplegia contained in this chapter is admirable and is one of the fullest and most detailed contributions to the subject with which we are familiar. An unavoidable delay in the publication of this review enables us to bring stronger testimony to the value of the book as a work of reference from frequent use during the past year, which has shown its completeness and trustworthiness. It takes high rank among the larger treatises on neurology and adds new lustre to the American contributions to the subject.

A Manual of Diseases of the Nervous System. By SIR W. R. GOWERS, M.D., F.R.C.P., F.R.S. Third edition, revised and enlarged. Edited by SIR W. R. GOWERS and JAMES TAYLOR, M.D., F.R.C.P. Vol. I, Diseases of the Nerves and Spinal Cord. Pp. xvi, 692, with 192 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

The merits of Sir William Gowers's great work are so widely recognized and they have been so repeatedly praised in these columns that it seems but a work of supererogation to commend this new edition, which has grown to be one-half as large again as the original volume and considerably larger than that of the second edition. A new chapter has been added on the General Constitution of the Nervous System, setting forth briefly the neurone theory. Chapters have also been added on Cranial Neuritis, Neuromyositis, Acute Polymyositis, Herpetic Neuritis, the Family Form of Spastic Paraplegia, Sclerosis from Toxic Blood States and the Family Form of Spinal Muscular Atrophy in Children, and Dr. F. E. Batten has added an appendix on the Muscle Spindle. These, however, represent only a few of the additions, for the whole work has been thoroughly revised, and additions and changes may be found in every chapter, which bring the work up to date. It can therefore be said of this new edition, still more emphatically than we have said before, that it is the best large treatise on nervous diseases extant.

OFFICERS OF BROOKLYN SOCIETY FOR NEUROLOGY.—At the annual meeting of the Brooklyn Society for Neurology, Dr. Wm. Browning was elected President; Dr. R. C. F. Coombes, Vice-President, and Dr. W. H. Haynes, Secretary, for the ensuing year.

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OUR ATTITUDE TOWARD INVESTIGATION.

THERE can be little doubt that the new century, and particularly its early years, is likely to witness changes of importance in medical education and matters pertaining thereto. The reforms have, in fact, already begun, and in all progressive institutions we may see, if we look, the introduction of new methods, the extension of the curriculum in various lines, and the gradual complete recognition of the claims of medicine to rank as an integral part of a university education. All these matters we have repeatedly had occasion to allude to in these columns during the past year, but the subject is certainly one which claims our repeated consideration. Evidently many new problems must arise before the new régime may be crystallized into definite and permanent form, if, in fact, that is ever possible, and in the meantime it is desirable to encourage discussion of the situation from all points of view.

We are glad, therefore, to notice that at the recent meeting of the American Society of Naturalists and Affiliated Societies a discussion was held regarding the position universities should take regarding investigation, and that the question of investigation in medicine received its share of attention.

The discussion was opened by Prof. Thomas Dwight, whose remarks we publish in this issue. It will be seen that Dr. Dwight is conservative; that he does not look with undisguised satisfaction on the encroachments of what is ordinarily called original investigation. He feels that the medical student should be a follower rather than an originator during the early years of his education, and that if he is destined later to investigate in new fields, he will surely do so, whatever his early training may have been. There can be no doubt, Dr. Dwight argues, that whatever the future may have in store, the medical school must still make practitioners of medicine, in the practical sense of the term, and that the best schools must not refuse to make the best practitioners. With this we are certainly in complete agreement, only we would not too sharply separate the spirit of learning from the spirit

of investigating, as perhaps Dr. Dwight is inclined to do. We feel rather that the two attitudes are usually combined in good students everywhere, and that the great aim of the future, even in undergraduate medical education, must be to associate far more perfectly than we have yet done the claims of the spirit of investigation with those of the spirit of mere receptivity. This should be done in the student days and not after. What we need is a mean between the two extremes of originality and perfectly passive receptivity, and we are confident that a properly arranged course may be devised to bring out both of these attributes to the detriment of neither. To postpone all investigation to an indefinite future is, to our minds, as great an error as to urge its necessity on elementary students to the exclusion of fundamental knowledge at the very outset of their course. A compromise is most certainly both possible and desirable.

We can safely endorse what Dr. Dwight says about prizes and scholarships. As between prizes and scholarship, or fellowships, the latter, it seems to us, are likely to be the more useful. There is no way in which a university may more profitably bestow its bounty than by making provision for promising students. A scholarship is a simple means to a perfectly definite end. The indiscriminate bestowal of prizes, on the other hand, establishes an entirely false standard and does little toward stimulating research or cultivating the spirit of true scholarship, an opinion which we have recently expressed.

MEDICAL MEETINGS AND MEDICAL PAPERS.

SOME of us go to medical meetings; some of us write medical papers; a few of us do both, but a large proportion of us do neither. The reasons for these various attitudes of mind are no doubt very complex, and we have no desire to enter upon the task of analysis at this time. We should, however, like to call attention to a few palpable facts, which are constantly in danger of being ignored or forgotten. In the first place, papers which are admirable for publication are oftentimes most unsuitable to read at medical meetings. Medical meetings come usually in the evening; the audience is made up of men who have no doubt been busy during the day, and are hoping against hope that some slight recreation may attend their effort to be present at the meeting in question. They come possibly to learn something new, or to say something in discussion, but they do not come to be bored by detail or kept waiting for conclusions which might as easily be given at the end of fifteen minutes as at the end of an hour. Primarily, therefore, papers should be concise. If the attention of any considerable body of men is to be maintained, it is desirable that it be not taxed beyond half an hour. In this regard we have observed an improvement within the past few years; the tendency has grown at most of our societies to reduce the length of papers by special request to the writers, with a consequent gain in attendance.

Infinitely worse than mere length, however, is redundancy of detail. In certain frames of mind in which, unfortunately, a doctor is very apt to be at the end of a day, details are almost unbearable. They rouse an inward revolt, which bids fair to put the sufferer into the category of the habitual non-attendants. This is due to the fact that minute details are almost never in place at medical meetings, and yet how often we hear them to the absolute confusion of our mental faculties. What idea can it convey to be told the minutiae of the daily treatment of a patient, temperature in fractions of degrees, pulse, respiration, urine, with its albumin and sugar and urea, and all the shades of change which mark the progress of disease? This is all extremely important as a matter of record, and as the basis of future publication, but as a means of profitable entertainment at a medical meeting it fails most lamentably. To begin with, no one can follow such details; they make no mental impression on the auditors, and even if they did the results are all the audience wants to know. Let the reader state, if he wishes, how assiduously he has studied his case, but let him also prove the effects of his study by giving his matured conclusions on the occasion of his public appearance at the meeting. Such a habit should not be difficult of cultivation, and if universally practised, we have no question the medical meeting would quickly acquire an interest and influence which are now often conspicuously lacking. One other suggestion is the discussion. Why so many words? we frequently wonder. Why weary an already tired audience by an often irrelevant and frequently very long narration of personal experience, which might quite as easily be condensed into a few well-chosen sentences? From many sources a protest has gone up against this bane of the medical meetings. It is becoming more and more the custom to limit the discussion by each speaker to five minutes, with no detriment, we venture to think, to its effectiveness. We need good discussion, but let it be short and to the point. If we could shorten our papers, cut out extraneous detail, and insist on concise discussion, we should no longer be called upon to bewail the proverbially poor attendance at the social and professional gathering which we call a medical meeting.

MEDICAL NOTES.

THREE CENTENARIANS.—Mrs. Mary A. Harrington, of Newport, R. I., died recently at the reputed age of one hundred and three years. On New Year's Day George Washington Greene, a negro, celebrated his one hundred and fourteenth birthday at the almshouse, Hempstead, Long Island, New York, where he has been an inmate for the last forty years. He was born a slave in New Jersey, and the record of his age is said to be authentic. He boasts of having been married seven times and of having been the father of twenty-one children. George Blakeman, the oldest

man in Connecticut, died at his home in Derby, December 29th. He was one hundred years and two months of age. He ascribed his longevity to frugal living, and especially to abstinence from all medicine. At the age of twenty-one years he was sickly and completely disheartened after years of medical treatment. It was then that he resolved to eschew all medicine from that time forth. He did so, and his health became robust. He was married for the second time in his eighty-first year.

GOOD HOSPITAL SERVICE.—Sir William MacCormac, who was with the British troops at the recent engagement of the Tugela River, reports that excellent hospital work was done. Trains full of wounded men began leaving the field for Estcourt at two o'clock in the afternoon. Others quickly followed and the field was cleared of the wounded at five o'clock, the volunteer ambulances working splendidly. Eight hundred wounded passed through the Chieveley hospitals, from which all the patients were transferred to the base hospitals by the morning of December 17th, the battle being on the 15th.

SURGEONS FOR THE BOERS.—A report which appears to lack confirmation is to the effect that a hospital ship for the use of the Boers is to be fitted out in America. The plan has originated in Philadelphia, through the agency of the Ancient Order of Hibernians. It has been pertinently asked: What do the Boers want of a hospital ship, since they have no seaboard?

PLAGUE IN HAWAII.—Two cases of supposed plague have been reported from Honolulu. Surgeon-General Wyman, of the Marine-Hospital Service, has notified the authorities at the several Pacific ports, but said that beyond the exercise of extra vigilance no measures would be taken at present regarding the plague, as the situation is not considered critical.

FAMINE IN INDIA.—It is predicted on good authority that the present famine in Western India bids fair to be much more distressing than the famine two years ago. Severe drought has already begun in the Ahmednagar district. In many places it is hard to get sufficient water to drink and no rain may be expected until the middle of June.

ANOTHER CONSULTING SURGEON.—The British War Office has nominated Sir William Stokes as consulting surgeon to the South African forces. He will join the army in South Africa as soon as possible.

DR. THOMAS LAUDER BRUNTON KNIGHTED.—Dr. Thomas Lauder Brunton, physician to St. Bartholomew's Hospital, London, has been knighted.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, January 3, 1900, there were reported to the Board of Health of Boston the following numbers of cases of acute infectious diseases: diphtheria 83, scarlatina 64, measles 57, typhoid fever 6, small-pox 2.

DANGERS OF OVERTRAINING.—This topic has recently been discussed at a meeting, held in New Haven, of the Society of College Gymnasium Directors. Dr. D. A. Sargent, of Harvard, Dr. Edward Hitchcock, of Amherst, Dr. W. G. Anderson, of Yale, and many others spoke. Dr. Anderson, in answer to the query as to the best means of preventing students entering athletic contests when in a crippled condition, strongly favored a scheme such as will probably soon be put into effect at Yale, in appointing a man of wide athletic experience, a college graduate and one in touch with the students, to supervise athletics and to deal with all its questions. There are only two solutions for the question. One is to demand a careful medical examination of the athletes while in training and just before the contest is about to begin. Next there must be hearty co-operation between the medical experts at the gymnasium and the trainer himself. Both must exercise tolerance. This is the solution of the problem under present conditions, which are not ideal.

CONDITIONS IN BROOKLINE, MASS.—The Board of Health of Brookline reports no change in the diphtheria situation. There are still cases at the hospitals, but the outlook for a complete disappearance of the disease is encouraging. Another case of scarlet fever has been reported to the Board. There were three deaths during the month of December.

FREE VACCINATION CEASES IN EAST BOSTON.—Free vaccination in East Boston was discontinued last week, after one week's trial. The number vaccinated was about 500, considerably fewer than had been hoped would accept the opportunity. Two new cases of small-pox have appeared in the district.

ACQUITTAL OF PROFESSOR O. T. OSBORNE.—We are glad to record the acquittal of Dr. O. T. Osborne, of the Yale Medical Faculty, on a charge of performing an autopsy illegally. Charges made by the family of the patient were not sustained by the evidence adduced.

DEATHS FROM WOOD ALCOHOL.—Several deaths have recently occurred at Melrose from drinking wood alcohol; other patients are slowly recovering from its effect.

NEW YORK.

VITAL STATISTICS FOR 1899.—During the year 1899 there were reported in the city 65,218 deaths, 77,648 births, and 30,470 marriages. In 1898 there were 65,864 deaths, 78,696 births, and 28,800 marriages reported. There has been a decrease in the annual death-rate, which was 18.55 in 1898, and 18.37 in 1899; and the percentage of deaths under five years on the total mortality decreased from 38.4 to 36.4. In the Borough of Manhattan the annual death-rate in 1899 was 18.49, against 19.11 in 1898; in the Borough of the Bronx, 22.61, against 27.10; in the Borough of Brooklyn, 17.50, against 18.19; in the Borough of Queens, 18.67, against 19.92; and in the Borough of Richmond, 18.79, against 19.94. It will

thus be seen that while the mortality has been lower in Brooklyn than in any other of the boroughs, the greatest decrease in the death-rate has been in the Borough of the Bronx, where the number of large institutions always makes the number of deaths relatively greater than in the other boroughs. The following table, prepared by the Health Department, shows the number of deaths reported in the two years from some of the prominent causes:

<i>Cause of Death.</i>	1898	1899
Influenza	356	481
Measles	618	583
Scarlet fever	703	530
Diphtheria	1,461	1,600
Typhoid fever	670	547
Yellow fever	1	—
Malarial fever	251	161
Cerebrospinal meningitis	355	393
Diarrheal diseases	4,844	3,443
Heart disease	4,075	3,941
Bronchitis	1,896	1,994
Pneumonia	7,485	8,529
Phthisis	7,552	7,991
Bright's disease and nephritis	4,669	5,097
Sunstroke	548	441
Accidents	2,311	2,472
Suicides	693	629
Homicides	115	131
All other causes	26,162	25,826

BILL FOR UNIFICATION OF EDUCATIONAL SYSTEMS.—A bill for presentation to the Legislature has been framed by a special commission appointed by the Governor, which provides for the unification of the educational system of the State and the State Board of Regents. The membership of that body is reduced to fifteen, and the administration of the educational system is placed in the hands of a chancellor, who is to serve for eight years and receive an annual salary of \$10,000. At the last meeting of the Board of Regents, Dr. W. H. Watson, of Utica, one of its members, made an argument against the appointment of the chancellor by the Governor, stating that the medical, as well as the legal, profession would be greatly injured by an unworthy choice of the executive head of the proposed Department of Instruction. "The State of New York to-day," he said, "stands in the very vanguard of medical education, and I voice the opinion of all educated men in the medical profession when I state that it considers itself particularly fortunate in having a central educational and administrative body which is at the same time an impartial court (the exact analogue of which exists in no other State) to pass upon the preliminary requirements for medical education and to supervise and conduct the examinations for medical licenses to practise."

DEATH OF FATHER SYLVESTER MALONE.—Brooklyn has lost one of its most picturesque characters and public-spirited citizens in the death of the venerable parish priest, Father Sylvester Malone. His good deeds were not confined to those of his own communion, and when, in 1894, he celebrated his golden jubilee, the fiftieth anniversary of his connection with the Church of St. Peter and St. Paul, a feature of it was a notable reception given him at the Brooklyn Academy of Music, at which the mayor of the city presided and addresses were made by many prominent men,

among them being Rabbi Gottheil, Archbishop Ireland and Dr. Lyman Abbott, the former pastor of Plymouth Church. It is related of Father Malone that he successively contracted small-pox, cholera and ship fever in the performance of his sacred duties among the sick poor and among immigrants, and by his will the bulk of his little fortune of six or seven thousand dollars is left to two charitable institutions in which he was deeply interested.

TUBERCULOSIS IN NEW YORK STATE.—A special committee of the State Board of Charities has recently been considering the question of establishing State hospitals for the treatment of tuberculosis. The committee will recommend that every locality able to have a hospital for consumptives should have one, and that the State should erect and maintain one or more hospitals where localities unable to maintain local hospitals might send their patients and pay for their care and maintenance. It will also recommend that local boards of health should have more power in dealing with consumption; that it should be declared to be a contagious disease and that the boards of health should have power to establish rules and regulations to protect from contagion the public and members of families in which the disease exists.

A PUBLIC GARBAGE CREMATORY.—On December 20th Health Officer Doty had a conference with Governor Roosevelt with reference to the establishment of a public crematory for the disposal of the garbage of the city of New York, which is now managed under private contracts, and it is believed that at the coming session of the Legislature a measure providing for this will be passed. During his recent trip abroad Dr. Doty, acting under instructions from the Governor, inspected the crematories in use for this purpose in a number of the principal European cities, and he arrived at the conclusion that the system employed in Hamburg was the most effective and the best adapted to the needs of New York.

Miscellany.

SPECIAL MEDICINE CHEST FOR THE HOSPITAL SHIP "MAINE."

THE following description of a special medicine chest fitted with tabloid and solid products, for the American Ladies' Hospital Ship *Maine*, deserves such appreciative consideration by our readers as its merits require. This specially designed chest is equipped with medicines in accordance with the latest and most scientific methods.

The chest bears the following designs: On the top panel appear the Union Jack and Stars and Stripes entwined; portraits of George Washington, Queen Victoria and President McKinley; and representations of the American eagle and British lion. The front panel bears portraits of Lady Randolph Churchill (President), Mrs. Ronalds (Hon. Treasurer), and Mrs. Blow (Hon. Secretary of the American Ladies' Hospital Ship Committee); a picture of the hospital ship *Maine*; a scene representing the British lion wounded

by an arrow (which lies broken at his side), being administered to by Britannia and Columbia—Columbia pouring a healing balm upon the wound, whilst Britannia bandages the paw. A frieze is formed by a representation of American Indian wampum upon which are depicted Brother Jonathan and John Bull grasping hands. The panel at each end of the chest represents Britannia and Columbia supporting a banner bearing the Red Cross. These panels also contain representations of the national emblems—the English oak and American corn. The panel at the back of the chest depicts a charge of the British Regular and Colonial Lancers and a Highland Brigade. The Boers hold their ground, sheltered behind rocks and boulders. The young bugler boy who felled three Boers is noticeable in the scene. Prominently inscribed on the chest are Keble's line, "No distance breaks the tie of blood," and Ambassador Bayard's notable phrase, "Our kin across the sea." The chest is made of oak and covered with Carthaginian cowhide, upon which the designs are tooled by hand.

AMERICAN SOCIETY OF PHYSIOLOGISTS.

THE following scientific papers and demonstrations were presented at the recent meeting of the American Physiological Society at New Haven: T. E. Hough, "Certain Improvements in the Technique of Ergograph Work"; G. P. Clark, "A Model to Represent the Principal Railways of the Nervous System"; S. J. Meltzer, "The Intercerebral Injection of Potassium Chlorate"; C. C. Stewart, "Demonstration of a Method for Mammalian Smooth Muscle"; W. T. Porter, "Apparatus for Laboratory Work for Large Classes"; E. T. Reichert, "Some Forms of Apparatus Used in the Course of Practical Instruction of Physiology in the University of Pennsylvania," and "A Universal Artificial Respiration Device"; L. B. Mendel and H. C. Jackson, "Some Features of Nitrogenous Metabolism after Splenectomy"; P. A. Levene, "Some Basic Decomposition Products of Edestin"; W. J. Giles, "A Preliminary Study of the Coagulable Proteids of Connective Tissues"; L. B. Mendel, "The Excretion of Allantoin and Uric Acid in the Cat."

In the course of the meeting Prof. W. O. Atwater was roused to a defence of his position regarding alcohol, which has of late been the subject of so much superficial criticism. Among other things he said what should long since have been accepted as his view of the matter: "Because these experiments show that alcohol, taken at the rate of two and one-half ounces every twenty-four hours, may serve one of the purposes of food, it has been inferred that people in general may take that amount to advantage. This inference is entirely unwarranted, and the error in it is as great as the opposite one, which assumed that alcohol is in no sense a food, but always a poison. So far from regarding the results of these experiments as showing that the moderate use of alcoholic liquors is generally desirable, I would indorse the saying 'alcohol is an excellent thing for people in good health, and especially for young people, to let alone.'"

The following officers were elected: President, R. H. Chittenden, Yale; Secretary, F. S. Lee, Columbia; Council, R. H. Chittenden, F. S. Lee, H. P. Bowditch, of Harvard, W. H. Howell, of Johns Hopkins, W. P. Porter, of Harvard, W. P. Lombard, of Michigan.

DEATH OF SIR JAMES PAGET.

THE death is reported of Sir James Paget, F.R.C., LL.D., D.C.L., former President of the Royal College of Surgeons, England, in his eighty-sixth year. He was born in Yarmouth, Eng., January 11, 1814. He studied at St. Bartholomew's Hospital in London, and in 1836 became a member, and in 1843 a fellow, of the Royal College of Surgeons. He was then made successively assistant surgeon, surgeon and consulting surgeon at St. Bartholomew's, sergeant-surgeon to the Queen, surgeon to the Prince of Wales, vice-chancellor to the University of London, and president of the Royal College of Surgeons. He was made a baronet in 1871. In his earliest surgical studies he paid special attention to pathology, and for years his "Lectures on Surgical Pathology" was a text-book of importance.

Correspondence.

HOMEOPATHY AND THE PUBLIC.

CONCORD, N.H., December 29, 1899.

MR. EDITOR:—That the medical practice of to-day presents features greatly modified from those which characterized it in the recent past is frequently a subject of remark and a source of congratulation as well. These changes are manifest upon every side where one comes in contact with the healing art. One need not recall many years of the past to find medicine the victim of mischievous theories, burdened by gross materialism and barbarous in its methods of application. The consequences were a system of heroic treatment and a long-suffering public. Those fittest to survive were truly heroes—men with limb of iron and heart of oak. One of these modifications may be seen in the intellectual quality of those that now represent the medical profession. In medieval times the physician was generally a slave, whose only medical knowledge consisted in a belief in the supernatural influence of charms and amulets. In more recent times the student with meagre education was prepared for professional life by pursuing a course of instruction under the guidance of an older practitioner, which was supplemented by a few weeks' course at a medical college. The traditions of practice were passed along from preceptor to student, the orthodox spirit of the times forbidding any departure from established custom. To-day a satisfactory preliminary education of a scientific nature is required of the student for entrance to medical schools, which are being graded to the four years' course throughout the country. The present intellectual freedom of the members of the profession is leading to discoveries which are placing medicine upon a scientific foundation.

There are also apparent agreeable changes in the armamentarium of the art and methods of treating the sick. Enormous doses and complexity of mixtures have largely disappeared relieving humanity of much distress on their account. Saddle bags and medicine trunks have given way to the pocket medicine case containing vials of simple medicines.

The apothecary store has undergone a change, and is but the dispensary of what the pharmaceutical house prepares with skill and accuracy. At the present time the preparation of drugs in elegant and agreeable forms for administration has reached an art in itself.

Various influences have been active in the transformation of the external features of medicine and are found to have been operative both from without and from within. Medicine has been profoundly influenced by its environment. It has gradually felt the resistless force of the scientific spirit prevailing in other fields of research with which it is intimately associated. This has led to closer observation and

clearer comprehension of natural phenomena, with a more rational interpretation of pathological phenomena and treatment. Putting it another way, it may be said that the critical acumen that pervades all departments of thought has found much in medicine to relegate to effete and outgrown custom, regardless of ancient authority, thus clearing the path for progress towards a rational standard in therapeutics. The external form of past methods of alleviating the afflicted are open to criticism, but the object of the conscientious physician has ever been the serving of his patrons to the best of his knowledge. Medicine is to-day altruistic in principle, and as a result of increased knowledge and a keener sense of obligation to a higher standard its theories are more rational and its methods of treatment more humane.

This is now the place to mention another influence which at the beginning was as insignificant as a grain of mustard seed, but which has since produced a distinct modification in general medicine along a certain line. At the beginning of the present century there appeared within the field of medicine, but not accepted as a part of it by the members of the profession, the system of treatment known as homeopathy. The contrast between the new system and the established régime was the widest possible, not so much in its claim of having discovered the only law of cure of nature, for other systems of the times had such dominant theories, as in its methods of applying its theories in practice. Its administration of medicine involved so little material and was without such a simple method that the apothecaries and physicians, fearing for their livelihood, combined in vigorous opposition against the innovation that lessened the large consumption of drugs and correspondingly endangered their income.

Conservatism has always been the spirit of so-called traditional medicine. It has not mattered whether an innovation contained the truth or was mistaken in its claims, the attitude of the profession at first has been sure to be antagonistic. Those great discoveries of the past which illumine medicine to-day ran the gauntlet of prejudice and ignorance on the part of the profession and found their champions in the common people. The profession as a whole has been the last to esteem the value of its own findings. At least, this is what happened to homeopathy, for the new system won the public readily. There was something in this new method that the public wanted, and so persistently has the public clung to it that it has actually forced the old systems to change, so that to-day there is so little difference in the external appearances of things that one can scarcely distinguish between the different systems of treatment. This leavening of the whole mass has been due to something contained in the new system. We will endeavor to find the ferment that has been so potent.

From a philosophical standpoint the distinguishing characteristics of a system lie in its dogmas. The pivotal theory of homeopathy is its claim of having nature's law of cure as expressed in the symbol, *similia similibus curantur*, or, like cures like. This simply means that there exists naturally a therapeutic relation between the abnormal condition resulting from a morbid cause and the most similar abnormal condition that a drug is capable of producing, which is its characteristic physiological action. The drug disease takes the place of the natural disease, and in turn is easily overcome by the vital powers of the body. It is further claimed that this can best be accomplished by a very small dose. The question now arises as to whether it has been the force following a clear conception of this central dogma by the public that accounts for the establishment and influence of homeopathy.

The principle of homeopathy has failed of a general acceptance, as such, among scientific men. They have been unable to associate its claims of a natural law with other laws of nature. Two of the characteristics of a natural law are its infallibility and its universality. These were the claims of the early homeopaths, whose zeal led them into extravagance of belief. The present conception of the principle of "similia" as being of therapeutic value

in a certain proportion of cases may be the truth of the whole matter, but this allows the claim of "a law of nature" to pass into "innocuous desuetude," where it will forever remain.

From the so-called regular profession homeopathy has met the fiercest opposition. Raising the cry of "no sects, no dogma in medicine," the opposition has spitefully arrayed its ranks against the new system in all it contained. At no time in the past—the same is less true of the present—have those most vigorous in denunciation of the new system been those really able to define its law correctly and caring to investigate its claims impartially. It has not been its central theory that has made its enemies. As compared with the standard set by the fathers of homeopathy the present practitioners of this system are a "mongrel lot," inasmuch as they make use of the name homeopathy and all it implies, publicly, and privately confess that they find the claim of universality a fallacious doctrine. After a recent investigation by correspondence with a large number of homeopathic physicians, graduated within the past ten years, I find that the large majority consider homeopathy as one of many methods of cure, the idea of its being a "law of nature" not being taken seriously.

Homeopathy has found its moral and financial support in public sanction. The writer, having been a practitioner of this system for the first five years of his professional life, has given the subject in hand a large amount of thought and investigation, and has definitely come to the conclusion that the public possess no clear, if any, conception of the philosophy of the system they have patronized so generously. Confidence and faith are naturally the qualities displayed in such matters rather than an intelligent appreciation of a mystic dogma. It has not been its central theory that has made its friends. We must look to some other element in the system in order to account for its public reception and support.

The objective and most tangible feature of homeopathy is its dose. This is its outward expression. If the public failed to comprehend the theory, it found in the small and simple dose a more humane and agreeable method of treatment than that which employed enormous doses of complex mixtures. Wherever homeopathy is referred to, in journalism, pulpit or lecture, it is its infinitesimal dose that is mentioned. The definition of the public is that homeopathy is "a little medicine given often," and this is what they like about it. The small dose in years past has been the point ridiculed by the ignorant of the regular profession, but it is now being considered as rational and scientific to employ the small and simple dose. Thus with popular approval and with a scientific foundation the small dose of homeopathy has been an active agent in the field of therapeutics. This is but another example of the kernel of truth being hidden in the husk of error.

Homeopathy was the product of the eighteenth century. This was an age when men were striving after complete theoretical systems in medicine. Among the celebrities of this time may be mentioned Hoffman, Stahl, Cullen and Brown, each with a theoretical system. At the close of the century appeared Hahnemann with the system of homeopathy. His was to him the true system of all systems because of its universal law of cure, *similia similibus curantur*. But the true superiority was the employment of his idea of the small dose, which has been a positive contribution to therapeutics.

In conclusion, it is the contention of the writer that it has been the small dose rather than, and apart from, the homeopathic law that has appealed to the public; that the public has demanded of other methods the small dose which lies upon a rational foundation. It is further contended that the medicine of the future will rest upon scientific rather than upon theoretical grounds, as is the case with the homeopathic system. The public has chosen between the old and the new because of the agreeable dose apparent in the latter. When all schools of medicine shall have reached the point where the manner of administering medicine is the same, as far as the public can judge,

there will be nothing to choose. All doctors will be known as physicians; useless controversy about schools in the profession will cease, and homeopathy will, "like a dew drop glide into the shining sea." The dose will have leavened the lump.

Very truly yours,
ARTHUR F. SUMNER, M.D.

X-RAY EXAMINATIONS OF THE ABDOMEN.

BOSTON, December 30, 1899.

MR. EDITOR: In previous articles I have indicated the diseases of the chest in which x-ray examinations may assist physicians, in addition to the usual methods. The older ways of examining the abdomen may also be supplemented by x-ray examinations, as I have already shown, but I think it would be helpful to again remind practitioners of some of the principles involved in making examinations of this part of the body, which are as follows:

We may put something opaque to the rays into the hollow organs, such as the stomach and intestines, thus making dark areas on the fluorescent screen, or we may put into them something which offers practically no obstacle to the rays, namely, air or some other gas, thus making their position apparent; the parts so distended appear as light areas on the fluorescent screen. Or, further, we may use air or gas to displace the parts near some special organ which we wish to examine. Thus, if we desire to follow the outline of the spleen more fully, we can, by filling the stomach and large intestine with air, contrast the dark area of the spleen with the light area occupied by the gas, through which the rays readily pass.

When it is desired to examine the large intestine, air may be pumped into it, and its outline, such as the sigmoid flexure, and the descending colon, be easily followed. Not only does this enable us to follow the position occupied by the large intestine, but we may more readily detect abnormal conditions in neighboring parts of the abdominal cavity, as I have elsewhere suggested. For example, by distending the stomach, and in some cases the large intestine, we can more easily detect some pathological conditions in or about the pancreas.

Examinations of the abdomen should be made with the rays passing through the body from back to front and from side to side; and when fluid is present the examination should be made with the patient lying on his back and the tube on a level with the fluid, the rays from it passing through the abdomen horizontally. The dark line indicating the level of the fluid may be seen, and its change in position noted when the patient turns. Patients with so-called "phantom tumor" should of course always be examined by the x-rays.

It will thus be seen that the same conditions which obtain in the thorax, and which enable us to contrast the air in the lungs with the denser organs, may to some extent be produced artificially in the abdominal cavity.

In this connection it will be of interest to note the following observation, which suggests that food may be passed nearly the whole length of the intestines within a few hours. I gave six drachms of subnitrate of bismuth, mixed in bread and milk, and drew the outlines of the stomach as seen on the fluorescent screen at intervals during the process of digestion. X-ray photographs were also taken. Five and one-half hours after the bismuth had been given (on an empty stomach), it had collected on what I considered to be the position of the sigmoid flexure, as shown by a dark mass there which had not been present in the beginning; thus the bismuth had gone nearly the full length of the intestines in less than five and one-half hours.

Of course, it facilitates examinations of the abdomen if the bowels are moved well before the examination is made; and bismuth should be taken on an empty stomach and uniformly mixed with the food.

Very truly yours,
FRANCIS H. WILLIAMS, M.D.

METEOROLOGICAL RECORD

For the week ending December 23d. in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Baro- meter.		Ther- mometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.
	Daily mean.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S. 17	30.06	38	38	26	76	72	74	N.	S. E.	5	11	G.	O.
M. 18	30.40	41	41	38	96	83	90	S. W.	S. W.	6	9	O.	O.
T. 19	30.14	41	64	58	82	57	81	S. W.	W.	14	17	C.	R.
W. 20	30.05	38	41	32	75	64	64	S. W.	S. W.	12	6	F.	C.
F. 21	30.36	42	50	34	69	76	72	W.	S.	7	7	C.	C.
S. 22	30.08	4	4	10	81	82	82	S. W.	S. E.	7	6	O.	O.
S. 23	30.21	35	2	38	81	71	61	E.	S. E.	9	10	F.	C.

* O, cloudy; C, clear; F, fair; G, fog; H, haze; S, smoky; R, rain; T, threaten; N, snow; —, no effect traced; —, rainfall. — Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 23, 1899.

CITIES	Estimated popu- lation.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York	3,550,053	1256	421	9.92	20.32	.72	1.12	4.32	
Chicago	1,619,226	—	—	—	—	—	—	—	
Philadelphia	1,296,832	419	129	10.32	18.00	.72	.48	7.20	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	201	55	7.84	24.01	.49	.49	3.43	
Baltimore	596,389	168	50	11.80	15.34	1.77	1.77	8.26	
Cincinnati	495,000	—	—	—	—	—	—	—	
Cleveland	359,000	—	—	—	—	—	—	—	
Pittsburg	305,000	103	32	18.62	20.58	2.94	9.60	1.96	
Washington	277,000	104	23	5.22	19.40	.97	—	3.88	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	10	16	18.33	11.32	1.66	3.33	5.00	
Nashville	87,754	22	7	16.00	12.45	4.15	—	12.45	
Charleston	95,165	37	7	—	5.40	—	—	—	
Worcester	111,732	30	14	2.56	26.95	11.55	—	—	
Fall River	103,142	26	7	19.25	15.38	—	—	—	
Cambridge	92,820	31	4	6.46	19.38	—	—	6.46	
Lowell	90,114	20	11	—	35.66	—	—	—	
New Bedford	79,511	17	—	5.88	11.76	—	5.88	—	
Lynn	68,218	28	8	7.14	32.13	—	—	—	
Somerville	64,294	18	6	22.22	22.22	—	5.55	5.55	
Lawrence	59,972	20	9	15.00	10.00	5.00	—	5.00	
Springfield	58,266	14	3	11.28	7.14	—	—	11.28	
Holyoke	44,510	14	5	14.28	7.14	—	7.14	—	
Brockton	38,750	7	1	—	—	—	—	—	
Salem	37,723	7	—	14.28	—	14.28	—	—	
Malden	36,421	10	4	10.00	10.00	—	—	10.00	
Chelsea	34,235	12	2	8.33	—	—	—	—	
Haverhill	32,571	3	1	66.66	66.66	—	—	33.33	
Gloicester	31,426	9	2	—	—	—	—	—	
Fitchburg	30,523	3	1	—	33.33	—	—	—	
Newton	30,161	13	2	—	—	—	—	—	
Taunton	28,527	15	2	—	6.66	—	—	—	
Everett	28,102	9	4	—	22.22	—	—	—	
Quincy	24,578	12	3	8.33	—	8.33	—	—	
Pittsfield	23,141	—	—	—	—	—	—	—	
Waltham	22,791	10	3	10.00	50.00	—	—	10.00	
North Adams	21,583	10	3	—	20.00	—	—	—	
Chelsea	18,316	3	1	—	—	—	—	—	
Medford	17,190	5	1	60.00	—	—	40.00	20.00	
Newburyport	15,997	7	1	—	—	—	—	—	
Merrim	14,721	3	—	—	—	—	—	—	

Deaths reported 2,762; under five years of age 842; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 277, acute lung diseases 516, consumption 314, diphtheria and croup 130, typhoid fever 37, diarrheal diseases 29, scarlet fever 25, measles 22, whooping-cough 12, erysipelas 11, cerebrospinal meningitis 11.

From scarlet fever New York 10, Boston 6, Philadelphia 5, Pittsburg, Providence, Fall River and Haverhill 1 each. From measles New York 15, Providence 3, Pittsburg 2, Philadelphia and Fall River 1 each. From whooping-cough New York 8,

Washington, Providence, Lynn and Chelsea 1 each. From erysipelas New York 8, Boston, Pittsburg and Holyoke 1 each. From cerebrospinal meningitis New York 6, Philadelphia 2, Worcester, Lynn and Lawrence 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 9th, the death-rate was 20.8. Deaths reported 4,551: acute diseases of the respiratory organs (London) 548, measles 135, diphtheria 113, fever 75, whooping-cough 70, scarlet fever 38, diarrheal 38, small-pox (Hull) 11.

The death-rates ranged from 13.1 in Croydon to 26.4 in Plymouth; Birmingham 16.9, Bradford 19.9, Cardiff 14.3, Gateshead 21.5, Hull 23.4, Leeds 18.2, Leicester 21.0, Liverpool 25.9, London 22.4, Manchester 20.8, Newcastle-on-Tyne 11.0, Nottingham 14.4, Salford 21.7, Swansea 20.1, West Ham 16.5.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 16th, the death-rate was 22.0. Deaths reported 4,820; acute diseases of the respiratory organs (London) 646, measles 143, diphtheria 124, whooping-cough 86, fever 49, diarrheal 48, scarlet fever 38, small-pox (Hull 12, London 1) 14.

The death-rates ranged from 9.6 in Huddersfield to 30.3 in Portsmouth; Birmingham 22.6, Bradford 20.5, Cardiff 19.9, Gateshead 16.1, Hull 22.3, Leeds 20.4, Leicester 22.7, Liverpool 26.5, London 23.8, Manchester 18.8, Newcastle-on-Tyne 19.4, Nottingham 19.4, Salford 23.4, Sheffield 21.4, Swansea 24.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING DECEMBER 30, 1899.

H. E. AMES, surgeon, order of December 20th modified; ordered to duty in connection with fitting out the "Kearsarge," Newport News, Va.

E. J. GROW, assistant surgeon, detached from the "Massachusetts" and ordered to the "Dixie."

M. H. SIMONS, medical inspector, ordered to Cleveland, O., for recruiting duty.

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The annual meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, January 8th, at 8 o'clock.

Subject: "Treatment of Perforation of the Intestines in Typhoid Fever." The discussion will be opened by Dr. Geo. B. Shattuck, to be followed by reports of cases.

Election of officers.
ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

RECENT DEATHS.

SIR JAMES PAGET, M.M.S.S., Hon., died in London, Eng., December 30, 1899, aged eighty-five years.

GUSTAVUS STORRS WINSTON, M.D., of New York, died on December 29th, of apoplexy. He was born in New York City, November 15, 1833, and was graduated from the College of Physicians and Surgeons, Medical Department of Columbia University, in 1863. He was a surgeon in the army during the Civil War and, being captured, was confined for a time in Libby Prison. At the time of his death Dr. Winston was medical director of the Mutual Life Insurance Company, of which his father, the late Frederick S. Winston, was formerly president.

THOMAS O'CALLAGHAN, M.D., one of the oldest and best-known practitioners of Jersey City, N. J., died suddenly of apoplexy on December 27th. He was born in Ireland in 1831, and was graduated from the College of Physicians and Surgeons, New York, in 1860.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Surgeon-General, U. S. Navy. Washington. 1899.

Love and its Affinities. By George F. Butler, M.D. Chicago: G. P. Engelhard & Co. 1899.

Lovelessness. A story by Elizabeth Stuart Phelps. Boston and New York: Houghton, Mifflin & Co. 1899.

Transactions of the American Gynecological Society, Volume XXIV, for the year 1899. Philadelphia: Wm. J. Dornan. 1899.

Cocæ and its Therapeutic Application. By Angelo Mariani. With illustrations. Third edition. New York: J. N. Jaros. 1896.

The Medical Digest, or Busy Practitioners' Vade-mecum. Appendix, including the years 1891 to March, 1899. By Richard Neale, M.D. (London). London: John Bale, Sons & Danielson, Ltd. 1899.

Notes on the Modern Treatment of Fractures. By John B. Roberts, A.M., M.D., Professor of Surgery in the Philadelphia Polytechnic, etc. With 39 illustrations. New York: D. Appleton & Co. 1899.

Original Articles.

A CASE OF PERFORATING GASTRIC ULCER; OPERATION; RECOVERY; WITH REMARKS ON THE SURGERY OF GASTRIC ULCER.¹

BY F. B. LUND, M.D., BOSTON.

W. L., thirty years old, married, a laborer by occupation, was sent to the Boston City Hospital by Dr. J. H. Gavin, of Roxbury, on the evening of June 20, 1899, for operation for general peritonitis. He was admitted to the service of Dr. Abner Post, in whose absence the writer saw the case. His history was as follows: For a year or more he had suffered from indigestion, manifested chiefly by flatulency, eructations, and a dull heavy pain in the epigastrium, the sensation resembling that of a "load on the stomach," as he expressed it. There had been vomiting on rare occasions. For the last two months he had been taking care of one of his children, who had died of some thoracic trouble two days ago, and he had become exhausted. Last evening he had taken one glass of whiskey and one of beer, and had vomited, but his acute symptoms had not begun till 8 A. M. on the day of entrance, when he was seized with agonizing pain in the epigastrium, and vomited several times. The pain had continued without abatement all day, but there had been no more vomiting. He had taken no food during the day.

He was seen by the writer at 12 P. M., or sixteen hours after the attack of pain which undoubtedly signaled the perforation. At that time he looked pale and anxious. His tongue was dry and coated dark brown. He had tenderness and muscular spasm all over the abdomen, especially marked in the epigastrium. The pulse was 100 and strong, and the temperature normal. There was no abdominal distention, in fact the abdomen was retracted, but universal tympanites. The diagnosis was made of general peritonitis, probably originating in the epigastric region, perforating gastric or duodenal ulcer and acute pancreatitis being thought of, as well as appendicitis.

Under ether, after the usual preparations, an incision was made into the abdomen in the middle line above the umbilicus. On opening the peritoneum there was immediate escape of gas and light green-colored stomach contents. The incision was immediately prolonged till it extended from the ensiform cartilage to below the umbilicus. The anterior surface of the stomach and the small intestine were covered with a thin layer of fibrin, and as the flow of gastric fluid seemed to come from the pyloric region, a short cross incision was made and the wound retracted forcibly to the right, exposing a clean-cut ulcer about three-eighths of an inch in diameter on the anterior surface of the stomach, three-fourths of an inch to the left of the pylorus. The stomach above the ulcer was held by the thumb and forefinger of an assistant to prevent further escape of gastric contents, and by strong retraction of the wound toward the right sufficient space was gained to fold the ulcer in, the fold being arranged at right angles to the axis of the stomach, in order to prevent cicatricial contraction, and held by three rows of Lembert sutures of fine silk. As the first row could not be placed close to the ulcer on account of the friability of the infiltrated stomach wall,

it was necessary really to fold the pyloric portion of the stomach over onto the first portion of the duodenum. Before suture the field of operation was washed with sterile salt solution and wiped dry, and the rest of the abdomen walled off with gauze.

After completion of the suture, another incision one inch long was made half-way between the umbilicus and symphysis pubis to drain the pelvis. The abdomen was washed out with hot sterile salt solution. There was a general peritonitis, the peritoneal covering of small intestines being inflamed and flakes of fibrin attached. Pus and fibrin flakes were found in pelvis and both lumbar regions. After thoroughly washing with salt solution, the pelvis was drained with three gauze strips and a glass tube. Through the upper wound a gauze drain was passed to the line of sutures and into the right and left lumbar regions. The wound was partially closed by sutures around the strips. Two ounces of Epsom salts were injected into the jejunum through a hollow needle, and the puncture closed by a suture. The patient bore the operation well and did not vomit on recovery from ether. In fact, he never vomited after the operation.

The treatment consisted of enemata of salt solution with brandy and strychnine during the first twelve hours, and after that, of nutrient enemata of peptonized milk, egg and brandy.

The bowels moved on the morning following the operation, but the man's condition was serious, as he was restless and weak, with rapid (130) and intermittent pulse. A little tincture of digitalis was added to the enemata, and the restlessness was markedly improved by morphine. The next day the pulse fell to 90, and from that time on his improvement was rapid and continuous. He was given hot water by mouth on the third day, and the gauze packing removed on the fourth day. Beef juice, beef tea and milk and lime-water by mouth were begun on the eighth day, and were well borne.

Sixteen days after the operation the rectal feeding was discontinued. Solid food was begun one month after the operation. The patient gained rapidly in weight and strength, and left the hospital on August 14th in excellent condition, with a small sinus discharging very slightly. This sinus, the persistence of which was the reason for keeping the patient in the hospital so long, healed within two weeks of his leaving, and he is now entirely well, and weighs more than he did when he left the hospital. He is entirely free from digestive disturbance. A culture taken at the time of the operation showed the presence of the streptococcus pyogenes and the bacillus coli communis in the peritoneal fluid.

The fortunate recovery in this case, although the operation was performed sixteen hours after the perforation, which, in my opinion, took place immediately with the onset of pain and vomiting at eight o'clock in the morning, may have been partially due to the fact that at the time the perforation took place there were no solid contents present in the stomach, as the patient had taken no food that morning, and the stomach had been presumably emptied by the vomiting which took place the evening before.

The location of the ulcer on the anterior surface was favorable to suture. The procedure adopted of folding in the ulcer, instead of attempting to excise the edges, seems to me distinctly the most satisfactory method in these cases. Excision would mean addi-

¹ Read before the Surgical Section of the Suffolk District Medical Society, November 1, 1899.

tional operative manipulation, management of hemorrhage, etc., which should certainly be avoided on account of the danger of spreading sepsis, in the presence of extravasated gastric contents, peritoneal exudate and pus. The patient's condition in general in these cases contraindicates indulgence in any technique which is more elaborate than essential. In placing the sutures it is well, when possible, to begin farther from the edge of the ulcer than one thinks is necessary, for the tissues are infiltrated to a wide extent, and the sutures will not hold unless passed through healthy tissues. Fine silk is the best suture material.

In regard to the importance of thorough irrigation and drainage of the peritoneum, I need add nothing to the views already expressed in my paper on general peritonitis a year ago.² The injection of saturated solution of Epsom salts into the bowel has in my hands had the happiest results, in producing an early movement of the bowels, and in those cases which have not immediately died of shock and sepsis the convalescence has seemed to me distinctly smoother and more comfortable than in the cases where it has to be omitted. Although not essential to success, as is the case with irrigation and drainage, it seems to me a distinct advance in treatment, and one which in a doubtful case may turn the scale in the patient's favor. It is especially important in cases which have gone on till the bowels are distended with flatus, although, unfortunately, cases of general peritonitis which have gone on till marked distention of the bowels has resulted are less apt to yield to treatment. In this case, although the presence of seropus and fibrin flakes universally over the small intestine showed that the peritonitis was indubitably general, the bowels had not become distended with gas and were empty and flat. Nor had the septic intoxication sent the pulse up to an alarming extent or greatly depressed the patient's general condition, all of which factors were favorable to his recovery. These facts emphasize the necessity of *early* diagnosis and immediate operation.

In looking up the subject of operation for perforating gastric ulcer, I have been surprised and gratified at the favorable showing made by recent statistics.

Statistics on such a subject as this without doubt give a more favorable showing than is actually the case, owing to the fact that there is little doubt that more fatal than successful cases go unreported. None the less, the improvement in results in recent years, due doubtless both to early diagnosis and improved technique, is extremely encouraging. Richardson, in Dennis's "System of Surgery," in 1894, collected 43 operations for perforating gastric ulcer, with 10 recoveries, or 23 per cent. Dr. Farrar Cobb has kindly placed at my disposal a table of cases subsequent to Dennis's table and carrying the time up to the spring of 1897. This table includes 98 cases, with 50 recoveries, or 51 per cent. Adding these two lists together gives 141 cases, with 60 recoveries, or 42 per cent. Now of these 141 cases, 45 were operated within twelve hours, with 35 recoveries, or 78 per cent., and 70 within 24 hours, with 44 recoveries, or 63 per cent.

I have since myself collected 40 additional cases, with 28 recoveries, or 70 per cent. Of these, 14 were operated within twelve hours, with 12 recoveries, or

86 per cent., and 26 within twenty-four hours, with 19 recoveries, or 73 per cent. Now, adding all the cases, we have the following result:

	Cases.	Recoveries.
Dennis (to 1894)	43	10 = 23 per cent.
Cobb (to 1897)	98	50 = 51 per cent.
Author (1897 to date)	40	28 = 70 per cent.
Total	181	88 = 45 per cent.

The improvement in these statistics with time, the progression from 1894 to 1899 being 23, 51, 70 per cent., is remarkable. Now, adding together those operated within twelve hours, we have:

	Cases.	Recoveries.
Dennis and Cobb	45	35 = 78 per cent.
Author	14	12 = 86 per cent.
Total	59	47 = 79 per cent.

Operated within 24 hours we have:

	Cases.	Recoveries.
Dennis and Cobb	70	49 = 63 per cent.
Author	26	19 = 73 per cent.
Total	96	63 = 65 per cent.

The results of published operations, therefore, show a surprisingly high recovery rate.

On examining the records of cases operated on days and weeks after perforation, we find an occasional recovery. This is due to the fact that perforation, whether the ulcer is on the anterior or posterior surface of the stomach, takes place not infrequently into a cavity walled off by adhesions, so that localized abscesses, subphrenic, perisplenic, etc., result, which are finally opened and drained, with an occasional recovery.

The history of these cases, however, is one of continued suppuration, exhaustion and emaciation, and not infrequently death, even after operation for drainage of the abscess with perhaps suture of the stomach. These abscesses have occasionally perforated the diaphragm and produced empyema, or even ruptured into a bronchus.

In cases where perforation takes place into the general peritoneal cavity immediate operation is essential to save life. In cases where the spread of pus is limited by adhesions operation at the earliest possible moment is indicated to prevent the gradual extension of the suppurative process, exhaustion and sepsis. Of 187 cases of gastric ulcer (Elliot and Joslin) treated at the Massachusetts General Hospital between 1888 and 1898 perforation took place in six, or 3.2 per cent., and was fatal immediately or ultimately in every case.

Since collecting the above statistics I have found a monograph by M. B. Tinker, now assistant to Dr. Keen, of Philadelphia, entitled "Die perforierende Magengeschwüre und ihre chirurgische Behandlung," being his Inaugural Dissertation for the Doctorate in Medicine and Surgery presented at the University of Berlin in July, 1899.

This paper is based upon an analysis of 213 cases, which have been collected from literature, and covers the subject thoroughly up to the present time. It is certainly the most thorough and complete presentation of the subject which I have seen, and it is gratifying to note that the results of his tabulation correspond closely with my own.

He tabulates 78 cases collected by Weir and Foote,³ 78 cases tabulated by Keen, Cartwright Lectures,⁴

³ New York Medical News, 1896, xviii, 49.

⁴ Philadelphia Medical Journal, May 7, 1898.

and 57 cases collected by him from literature since that time, a total of 213 cases. The average mortality was 48.81 per cent. The mortality of Weir and Foote, 78 cases (previous to 1896), was 71, 51 per cent., while the mortality of the cases since 1896, 112 in number, was only 35 per cent. In the last three years, since 1896, of the cases operated within twelve hours, 16 in number, only three died, a recovery percentage of 82.36, which agrees closely with my own tabulation. For the analysis as to age, sex, situation of the ulcer and other important and interesting divisions of the subject, the reader is referred to the original paper. An interesting geographical table must be mentioned here, however, which shows that of the 213 cases, 142 were operated in England and her colonies. Germany contributed 26, the United States, 18, and France, 17. The first operation was performed by Mikulicz in 1880, and the first successful operation by Kriege in 1892.

While there can be no question of the absolute necessity of operating upon cases of perforating gastric ulcer at the earliest possible moment, there has lately been a somewhat remarkable accumulation of evidence to show that surgical aid should not be withheld from certain other cases of gastric ulcer which have heretofore been largely regarded as amenable only to medical treatment. The operations of pyloroplasty in cases of contraction of the pylorus from the contraction of the scars resulting from benign ulcer, of gastro-enterostomy or excision in cases of repeated and dangerous hemorrhage, or of continued vomiting unaffected by treatment, should, I believe, in the light of the perfection of modern technique, and of the unfavorable showing of recent statistics relating to the medical treatment of these cases, be oftener performed than they are at present.

The mortality of gastric ulcer has been estimated at from two to eight per cent. and the percentage of complete cures is given at from 85 per cent. by Welch, based on the result of autopsies, to 75 per cent., Ewald and Leube, and 50 per cent., Debove and Remond. But the figures given as the result of clinical investigation do not give a fair estimate of the number of cases, for the reason that no account is taken of the relapses which follow after the patients have passed from under observation.

Of especial interest in this connection are the results of the extremely valuable investigations of Greenough and Joslin,⁶ into the condition of 114 cases of gastric ulcer at an average period of five years after their discharge from the Massachusetts General Hospital. The difficulty of following up hospital patients is so great that investigations such as this are rarely carried out, and the information derived from them is especially important. Of 187 patients treated at that hospital between 1888 and 1898, reports of the condition of 114 of these were obtained at an average time of five years after their discharge.

To quote from this paper, of 114 patients, 80 per cent. were discharged cured or relieved, but at the end of an average period of five years only 40 per cent. remained well. The mortality at the same time was 20 per cent. The mortality of eight per cent. and the failure of medical treatment to effect a lasting cure in 60 per cent. of the patients indicate the need

of surgical intervention in other than emergency cases.

Surgical intervention in cases of hemorrhage has been objected to on the ground that the operation had a high mortality, about 61 per cent., while the majority of cases in which hemorrhage occurs are not fatal, as in fact hemorrhage is a symptom in about 80 per cent. of all cases. The mortality of operations for hemorrhage has been necessarily high because the operation has been performed as a last resort after grave anemia had been produced, and, in fact, often on moribund patients.

Although the majority of cases of hemorrhage from gastric ulcer do not require surgical intervention, we have every reason to believe that in cases of small and frequently repeated hemorrhage inducing grave anemia, or in severe and copious hemorrhage, lives might be saved if surgical aid were invoked before grave anemia threatened imminent death. Surgical aid in gastric hemorrhage, as in other abdominal emergencies, must be summoned early, in order to be effective in saving life. Into the various operative procedures applicable in hemorrhage it is not the purpose of this paper to enter in detail. Suffice it to say that excision of the ulcer, cauterization and gastro-enterostomy may be practised; the choice of operation must be made at the time, according to circumstances, situation of ulcer, size and position of artery, condition of patient, etc.

Another class of cases which should, in my opinion, be more often given the benefit of surgical treatment are those in which severe pain and vomiting continue unaffected by medical treatment, and in which progressive emaciation results. In these cases the more extensive and indurated ulcers, frequently attended with contraction of the pylorus and gastric dilatation, will have to be dealt with. Pyloroplasty, excision of the ulcer and gastro-enterostomy will here be the operations to be considered.

The mortality of gastro-enterostomy has diminished considerably within the last few years. Cutler and Elliot have estimated it at 30 per cent., and Mikulicz at 16 per cent. Bidwell⁶ has collected 63 cases operated upon in the last two years, with a mortality of 64 per cent., which is certainly a remarkable reduction. With earlier resort to operation and greater familiarity with the technique on the part of surgeons, there is no reason why the mortality of operations for gastric ulcer should not diminish as remarkably as has that for appendicitis.

In operations for non-perforating ulcer we are not dealing with infected peritoneum, and modern technique and the use of gauze packing have enabled those skilled in abdominal surgery to perform extensive intestinal resections and the like with little fear of general peritoneal infection.

Operations on the stomach are not intrinsically more difficult than those upon the intestine: the greater part of the posterior wall of the stomach even can be brought outside the abdomen and operated upon extraperitoneally. The thick walls of the stomach afford better holding ground for sutures than the walls of the intestine.

If the operations for perforated gastric ulcer which are done within twelve hours of perforation show so surprisingly low a mortality, even in the presence of infected peritoneum, may we not hope to attain highly

⁶ Gastric Ulcer at the Massachusetts General Hospital, 1888-1898. *American Journal of the Medical Sciences*, 1899.

⁶ Bidwell: *American Journal of Medical Sciences*, September, 1899.

TABLE I.

No.	Operator.	Reference.	Sex.	Age.	Site of Perforation.	Time of Operation after Perforation.	Result.	Remarks.
1	Kirkpatrick.	London Practitioner, 1897, lix, 157.	F.	20	Anterior wall near lesser curvature.	4 hours.	R.	Suture and drainage.
2	McCosh.	New York Medical News, 1896, lxxvii, 459.	"	30	Lesser curvature.	36 hours.	D.	Quoted by Kirkpatrick.
3	Curtis.	New York Medical News, 1896, lxxviii, 455.	"	34	Anterior wall near lesser curvature.	Days.	D.	" " "
4	Atherton.	New York Medical Record, 1895, I, 2.	"	20	Anterior wall near lesser curvature.	15 hours.	R.	" " "
5	Kirkpatrick.	Montreal Medical Journal, 1895, xxiii, 670.	"	24	Anterior wall near lesser curvature.	81 hours.	R.	" " "
6	Weir.	New York Medical News, 1896, lxxviii, 452.	M.	44	Anterior wall near pylorus.	48 hours.	D.	Quoted by Kirkpatrick.
7	Armstrong.	Montreal Medical Journal, 1896, xxiv, 505.	F.	20	Anterior wall.	18 hours.	R.	Quoted by Kirkpatrick.
8	McCosh.	New York Medical News, 1897, lxx, 80.	"	35	Lesser curvature.	21 days.	R.	Encapsulated abscess.
9	Weir.	" " " " lxxviii, 449.	"	17	Anterior wall.	11½ hours.	R.	" " "
10	Curtis.	" " " " 455.	"	35	Anterior wall near lesser curvature.	26 hours.	D.	" " "
11	Bell.	Montreal Medical Journal, 1897, xxv, 915.	"	"	"	"	R.	Quoted by Kirkpatrick.
12	Bell.	Montreal Medical Journal, 1897, xxv, 915.	"	"	"	"	R.	" " "
13	McCosh.	New York Medical News, 1896, lxxviii, 459.	M.	40	Lesser curvature.	21 hours.	D.	" " "
14	Stimson.	International Medical Magazine, February, 1892.	F.	57	Anterior wall near lesser curvature.	100 hours.	D.	" " "
15	Toogood.	London Lancet, 1894, 158.	"	21	Anterior wall.	Few hours.	R.	Advanced peritonitis.
16	Renton.	British Medical Journal, 1897, ii, 453.	"	"	Anterior wall.	3 hours ±	R.	Reported by Adamson. Suture, irrigation and drainage.
17	Renton.	British Medical Journal, 1897, ii, 453.	"	"	Posterior wall.	4 days.	D.	Suture, irrigation and drainage. Ulcer not found at operation.
18	Anderson.	London Lancet, 1897, ii, 1,109.	"	16	Anterior wall.	21 hours.	D.	Five weeks later from bronchopneumonia.
19	Anderson.	London Lancet, 1897, ii, 1,109.	"	19	Anterior wall (?).	32 hours.	R.	" " "
20	Michaux.	Soc. de Chir. de Paris, 1896, xxii, 222, 232.	M.	26	Anterior wall near cardia.	3 days +	R.	Peritonitis. Drainage.
21	Anson.	London Lancet, 1893, I, 4; iii, 469.	F.	20	Anterior wall near lesser curvature.	24 hours.	D.	Cited by Pariser.
22	Morris.	British Medical Journal, 1894, ii, 861.	F.	24	Anterior wall near pylorus.	4½ hours.	R.	Allg. med. Cent. Ztg., 1896, Ix, 1,033 et seq.
23	Morrison.	British Medical Journal, 1894, ii, 864.	"	"	Posterior wall.	2 hours.	D.	Ibid.
24	Gilford.	London Lancet, 1894, ii, 1,369.	F.	29	Anterior wall near middle.	8½ hours.	R.	Ibid.
25	Curtis.	" " " " "	"	34	Anterior wall near lesser curvature.	Days.	D.	Cited by Weir.
26	Eve.	London Lancet, 1894, ii, 1,091.	"	22	Anterior wall near cardia.	61 hours.	D.	Cited by Pariser. Peritonitis.
27	Eve.	London Lancet, 1894, ii, 1,091.	"	18	Anterior wall near lesser curvature.	80 hours.	D.	Cited by Pariser.
28	Franks.	British Medical Journal, 1894, ii, 865.	"	28	Lesser curvature.	"	D.	" " "
29	Ait-hinson.	British Medical Journal, 1894, ii, 864.	"	"	Posterior wall.	2 hours.	D.	" " "
30	Silcock.	London Lancet, 1895, i, 1,252; British Medical Journal, 1895, i, 1,093.	F.	"	Anterior wall.	2 hours.	D.	" " "
31	Dunn-Pitt.	London Lancet, 1895, i, 1,252; British Medical Journal, 1895, i, 1,093.	F.	15	Anterior wall near lesser curvature.	56 hours.	R.	" " "
32	Weir.	1895. See Weir and Foote.	M.	44	Smaller curvature.	44 hours.	R.	" " "
33	Paul.	British Medical Journal, 1895, 759.	F.	31	Anterior wall.	9 hours.	D.	" " "
34	Horsley.	" " " " ii, 78.	"	20	Anterior wall near cardia.	26 hours.	D.	" " "
35	Silcock.	" " " " 1,093.	"	24	Anterior wall near middle.	Hours.	R.	" " "
36	Laudie.	" " " " i, 198.	"	"	Anterior wall.	10 hours.	R.	" " "
37	Jowers.	London Lancet, 1895, 544.	"	24	Posterior wall near lesser curvature.	6 hours.	R.	" " "
38	Bowby.	Weir and Foote.	M.	44	"	48 hours.	D.	" " "
39	Stable.]	St. Thomas Hospital Report, xxvi, 156.	M.	44	Posterior wall near lesser curvature.	9 hours.	D.	" " "
40	Watson-Cheyne.	London Lancet, 1895, 1,253; Boston Medical and Surgical Journal, 1895, 1,693.	F.	17	Anterior wall.	48 hours.	D.	" " "
41	Horrochs.	London Lancet, 1895, i, 413.	F.	"	Anterior wall near cardia.	12-15 hrs.	D.	" " "
42	Lamphear.	American Journal of Surgery and Gynecology, 1895.	M.	48	Posterior wall near pylorus.	48 hours.	D.	" " "
43	Maurice.	London Lancet, 1895, ii, 980.	F.	19	Anterior wall near cardia.	9 hours.	R.	" " "
44	Maurice.	London Lancet, 1895, ii, 980.	F.	30	Anterior wall near lesser curvature.	19½ hours.	D.	" " "
45	Hartmann.	Mercredi méd., 1895, 163.	M.	"	Posterior wall near lesser curvature.	"	R.	" " "
46	Quénu.	Mercredi méd., 1895, 163.	M.	40	Near pylorus.	"	D.	" " "
47	Follard.	British Medical Journal, 1895, ii, 14.	F.	18	Anterior wall near cardia.	7½ hours.	R.	" " "
48	Parker.	Annals of Surgery, 1896, xxiii, 733.	"	25	Anterior wall.	?	R.	" " "
49	Gilb-Sonrdille	Bull. de la Soc. Anat., 1895, 301.	"	49	Anterior wall near lesser curvature.	"	D.	Cited by Pariser.
50	Heusner.	Verhandlung d. 24 Congresses, 1895, 39.	"	"	Greater curvature.	"	D.	" " "
51	Heusner.	Verhandlung d. 24 Congresses, 1895, 39.	"	"	"	"	D.	" " "
52	Borellus.	Arch. f. Verdauungskraft, 1, 218.	F.	33	Anterior wall near lesser curvature.	12 hours.	D.	" " "
53	Pasten-Morris.	London Lancet, 1895, ii, 1,573.	"	24	Anterior wall near greater curvature.	4 hours.	R.	" " "
54	Selky.	" " " " 1,348.	"	17	Anterior wall near lesser curvature.	24 hours +	D.	" " "
55	Steele.	" " " " 261.	"	21	Anterior wall.	19 hours.	D.	" " "
56	Thomsen.	British Medical Journal, 1896, 1,329.	"	"	Lesser curvature.	"	R.	" " "
57	Dent.	London Lancet, 1896, I, 1,718.	F.	26	Posterior wall near lesser curvature.	7 hours.	R.	" " "
58	Page.	" " " " II, 1,427.	"	28	Anterior wall near lesser curvature.	6 hours.	R.	" " "
59	Jowers.	" " " " II, 1,719.	"	19	Anterior wall near cardia.	3½ hours.	R.	" " "

TABLE I (Continued).

No.	Operator.	Reference.	Sex.	Age.	Site of Perforation.	Time of Operation after Perforation.	Result.	Remarks.
60	Morgan	British Medical Journal, 1896, 1, 443.	F.	22	Anterior wall.	36 hours ±	R.	Cited by Pariser.
61	Driart and Apert, Strauch.	Bull. de la Soc. anat. de Paris, 1896, x, 295.			Two ulcers.		D.	
62		Deut. med. Woch., 1896, 551.	F.	18	Anterior wall near cardia.	8 hours.	R.	Cited by Pariser.
63	Thomson.	London Lancet, 1896, 11, 11.	M.	45	Anterior pylorus.	6 hours.	R.	Death from pneumonia 17th day.
64	Bennett.	" " " 310.	M.	32	Two inches from pylorus on lesser curvature.	5 hours.	R.	Closed by omental plug.
65	Littlewood.	" " " 1,444.	F.	18	Anterior wall near pylorus.	7 hours.	R.	
66	Littlewood.	" " " 1,445.	"	18	Anterior wall nearer lesser curvature and pylorus.	6 hours.	R.	
67	Barker.	" " " 1,583.	"	20	Anterior wall near lesser curvature.	1½ hours.	R.	
68	"	" " " 1,583.	"	24	Anterior wall near pylorus.	12 hours.	R.	
69	"	" " " 1,584.	"	27	Lesser curvature near cardia.	7½ hours.	R.	
70	"	" " " 1,585.	"	23	Anterior wall near cardia.	32 hours.	D.	Subphrenic abscess found post mortem.
71	"	" " " " "	"	23	Anterior wall near middle.	28 hours.	D.	
72	"	" " " " "	"	17	Anterior wall near lesser curvature.	12-17 hrs.?	D.	
73	"	" " " 1,586.	"	20	Near lesser curvature toward left.	3½ hours.	D.	
74	Morse.	British Medical and Chirurgical Journal, 1894, 1, 576.	"	20	Anterior wall near cardia.	5 hours.	R.	
75	"	British Medical and Chirurgical Journal, 1897, 1, 389.	"	21	Anterior wall near cardia.	4½ hours.	R.	
76	"	British Medical and Chirurgical Journal, 1-97, 1, 390.	"	22	Anterior wall near cardia.	24 hours.	D.	
77	Hawkins and Wallace.	British Medical and Chirurgical Journal, 1897, 1, 914.	"	21	Anterior wall near cardia.	2 days +	R.	
78	Makins.	Ibid.	"	17	Anterior wall near cardia.	24 hours.	R.	
79	Clarke.	London Lancet, 1897, 1, 806.	"	19	Anterior wall near cardia.	6 hours.	R.	
80	Silcock.	London Lancet, 1897, 1, 1,147.	"	25	Anterior wall near cardia.	24 hours.	R.	
81	Morely.	Bull. Soc. Anat. de Paris, 1897, lxii, 904.	"	23	Anterior wall.	Days.	D.	Peritonitis.
82	Dalziel.	Glasgow Medical Journal, 1896, xiv, 302.	"	26	Anterior wall near pylorus.	5½ hours.	R.	
83	Finlay-Ogston	International Clinic, Philadelphia, 1896, iii, 73.	"	24	Anterior wall, lesser curvature near pylorus.	12 hours.	D.	End of 20 days.
84	Lundie.	Edinburgh Hospital Report, 1896, iv, 485.	"	24	Anterior wall near middle.	10 hours.	R.	
85	Wilcocks. (Morgan).	Clinical Journal, London, 1897-98, xi, 192.	"	27	Anterior wall near lesser curvature.	3 hours ±	R.	
86	Strauch.	Deut. med. Woch., 1896, xxii, 551.	"	18	Anterior wall near cardia.	8½ hours.	R.	
87	Horsley.	British Medical Journal, 1895, ii, 78.	"	20	Anterior wall near cardia.	26 hours.	D.	
88	Walters.	London Lancet, 1895, i, 484.	"	20	Anterior wall near lesser curvature.	13½ hours.	R.	
89	Helferich.	Deut. med. Woch., 1895, 451.	"	20	Anterior wall near cardia.	60 hours.	D.	
90	Comte.	La Sem. Méd., 1895, 406.	"	y'g	Anterior wall near pylorus.	30 hours.	D.	
91	Pollard.	British Medical Journal, 1895, ii, 14.	"	18	Anterior wall near cardia.	7½ hours.	R.	
92	Sourdille.	Bull. Soc. Anat., 1895, 301.	"	49	Anterior wall near lesser curvature.	?	D.	
93	Taylor.	Birmingham Medical Review, 1888, xxiii.	"	16	Anterior wall.	24 hours.	R.	[All earlier cases cited by Pariser and not quoted in or used in Dennis.]
94	Walter.	J. Chapt: Thèse de Paris, 1895.	"	17	Anterior wall 3 cm. from lesser curvature.	72 hours.	D.	
95	Pocet.	Ibid.	M.	36	Anterior wall near lesser curvature.	36 hours.	D.	
96	Le Dentu.	Ibid.	M.	42	Posterior wall near pylorus.		D.	
97	Parsons.	Dublin Journal of Medical Sciences, 1892, 27.	F.	21	Anterior wall.	60 hours.	D.	
98	Parsons.	Ibid.	F.		Anterior wall, smaller curvature near cardia.		D.	

satisfactory results in the non-emergency operations for ulcers of the stomach which threaten life from hemorrhage or resist medical treatment.

TABULATION OF CASES.

For first 43 cases see table in Dennis's System of Surgery, Vol. IV, p. 259.

Table of 98 cases collected by Dr. Farrar Cobb (Table I).

Table of 40 cases collected by author (Table II).

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TABLE II.

No.	Reference.	Operator.	Sex and Age of Patient and Situation of Ulcer.	Time.	Result.	Remarks.
1	Lancet, 1898, ii, 1761.	Furner.	F., 29. Anterior surface near pylorus.	6½ hours.	R.	Suture. Irrigation and drainage by second opening above pubes.
2	Boston Medical and Surgical Journal, 189, exl, 183.	Sherman.	F., 24. Not found.	17½ hours.	R.	Irrigation. Localized cavity. General cavity not involved.
3	Medical Press and Circular, 1899, xvii, 63.	Jones.	F., 19. Anterior aspect near pylorus.	3 hours.	R.	No peritonitis. No irrigation or drainage.
4	Ibid.	Jones.	F., 21. Anterior surface near cardia.	14 hours.	D.	Irrigation and drainage not stated. Death 14 days later from peri-splenic abscess.
5	New York Medical Record, 1899, xv, 202.	Hartley.	F., 24. Posterior surface.	14½ hours.	R.	Irrigation and drainage.
6	Australasian Medical Gazette, June 20, 1898.	Clubbe.	F., 21. Anterior surface.	5 hours.	R.	Suture. Irrigation and drainage. (Quoted by Sherman.)
7	Ibid.	"	F. Posterior surface.	11 hours.	D.	Perforation found at autopsy. (Quoted by Sherman.)
8	"	"	F., 19. Anterior surface.	30 hours.	R.	Irrigation and drainage. (Quoted by Sherman.)
9	"	"	F.	4 hours.	R.	No details given. (Quoted by Sherman.)
10	Lancet, 1899, i, 372.	Morgan.	F., 27. Anterior surface near cardia.	8 hours.	R.	Suture. Irrigation. Drainage.
11	Ibid.	Morgan.	F., 27. Anterior surface near cardia.	24 hours, +	D.	Irrigation. Drainage not mentioned. Death in 24 hours from general peritonitis.
12	Australasian Medical Gazette, 1898, xvii, 477.	Bowker.	F., 38. Posterior surface near lesser curvature.	Within 12 hours.	R.	Suture. Irrigation and drainage by counter opening in right lumbar region.
13	Lyon Medicale, 1898, lxxxix, 43.	Rioblanco.	M. young. Anterior surface.	Not stated.	D, within 6 hours.	Suture. Irrigation and drainage.
14	Medical Press and Circular, 1898, lxvi, 561.	Wallis.	F., 20. Posterior wall near cardia.	10½ hours.	D, 31st day, hemorrhage.	No irrigation or drainage. Abdomen wiped out with sponges.
15	Lancet, 1898, ii, 1761.	Furner.	F., 37.	5 hours.	D.	Abscess had ruptured causing general peritonitis. Irrigation and drainage.
16	Ibid.	Furner.	F., 22. Anterior surface near cardia.	24 hours.	R.	Suture. Irrigation and drainage.
17	Boston Medical and Surgical Journal, 189, cxxxix, 135.	Cabot.	F., 30. Lesser curvature.	24 hours.	R.	Suture. Drainage. No general peritonitis. Escape of gas, but no fluid.
18	British Medical Journal, 1898, ii, 1407.	Bush.	F., 26. Posterior surface near middle of lesser curvature.	26 hours.	R.	Suture. Irrigation of Jesser sac. Death from syncope one month later.
19	Ibid.	Bush.	F., 24. Anterior surface near cardia.	18 hours.	R.	Suture and drainage. No irrigation.
20	Medical Press and Circular, 1898, lxv, 646.	Campbell.	F., 35. Lesser curvature near pylorus.	14½ hours.	R.	Suture. Drainage. No irrigation.
21	Lancet, 1898, i, 1323.	Anderson.	F. Anterior surface near cardia.	2½ hours.	R.	Suture. Irrigation and no drainage.
22	Lancet, 1899, i, 832.	Silcock.	F., 20. Anterior surface.	34 hours.	R.	Suture and drainage. Subsequent counter opening.
23	Glasgow Medical Journal, ii, 200.	Rutherford.	F., 26. Posterior wall near lesser curvature.	8 hours.	D.	Irrigation and drainage. Glass tube in pelvis.
24	Münchener med. Woch., September 13, 1898.	Garré.			R.	Perforation into rectus muscle.
25	Ibid.	Garré.			R.	Perforation into transverse colon. (Quoted by Sherman.)
26	British Medical Journal, 1898, ii, 84.	E. W. Roughton.	F., 20. Anterior surface near cardia.	13 hours.	D.	Suture with inversion. General peritonitis 7½ days. Abdominal cavity not irrigated. Drainage.
27	Medical Press and Circular, 1898, lxv, 576.	Bidwell.	F., 40. Anterior surface near pylorus.	20 hours.	R.	Inversion and suture. Irrigation of abdominal cavity. Drainage.
28	Lancet, 1898, i, 1,322.	Sharkey.	F., 33. Anterior surface near lesser curvature and pylorus.	4½ hours.	R.	Inversion and suture. Irrigation and sponging of abdomen and drainage.
29	Lancet, 1898, i, 565.	Bennett.	F., 16. Anterior surface.	2 weeks.	R.	Subphrenic abscess. Suture of perforation. Drainage of abscess.
30	Ibid.	"	F., 26. Anterior surface near cardia.	72 hours.	R.	Suture and drainage.
31	Ibid.	"	F., 30. Anterior surface near cardia.	48 hours.	R.	Suture and drainage.
32	Present Paper.	Lund.	M. Anterior wall near pylorus.	16 hours.	R.	Suture. Irrigation and drainage.
33	Medical and Surgical Reports of Presbyterian Hospital, 1897.	McCosh.	F., 21. Lesser curvature at middle.	11 days.	D.	Death six weeks or more later from pneumonia and pericarditis.
34	Canadian Practitioner, 1896, xxi, 194.	Ross.	F., 26. Posterior wall near cardia.	8½ hours.	R.	Suture. Irrigation and drainage.
35	Australasian Medical Gazette, 1897, xvi, 128.	Marten.	F., 20. Anterior surface near cardia.	6 hours.	R.	Suture. Irrigation and drainage.
36	British Medical Journal, 1898, i, 814.	Shaw.	F., 20. Anterior wall near pylorus.	12 hours.	R.	Suture. Omental graft. Irrigation and drainage. Second incision below umbilicus.
37	Personal communication.	Warren.	M. Near pylorus.	16 hours.	R.	
38	Medical and Surgical Reports of Boston City Hospital, 1899, 210.	Munro.	F., 21. Pylorus near lesser curvature.	24 hours.	D.	Irrigation and drainage. Died 4 days later from general peritonitis.
39	Ibid.	Munro.	F., 21. Cardiac portion.	4 days.	D.	Suture. Irrigation and drainage.
40	Mt. Sinai Hospital Report, 1899, 178.	Gerster.	F., 33.	7 weeks.	D.	Subdiaphragmatic abscess.

Keen. *Philadelphia Medical Journal*, May 7, 1898.
 Greenough and Joslin. *American Journal of the Medical Sciences*, 1899.
 Bidwell. *American Journal of the Medical Sciences*, September, 1899, cxviii, No. 3.
 Lund. *Boston Medical and Surgical Journal*, 1898, cxxxix, No. 10.

THE CASE METHOD OF TEACHING SYSTEMATIC MEDICINE.

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THE articles on methods of medical instruction recently published and the widespread interest aroused by the papers are the surface showings of an agitation at present deeply affecting the best medical schools throughout the country. Among many instructors there is manifest dissatisfaction with the traditional means of training physicians, a dissatisfaction rising apparently from the belief that the teaching of medicine has not been keeping pace with improvements in the teaching of other subjects. Discussion of old methods and earnest searching after new and more effective methods of preparing young men to be practitioners are consequently rife amongst us. The medical student catches the spirit of this agitation and notices features of his education which seem to him capable of improvement. From a student's point of view, therefore, the present paper on the teaching of systematic medicine is offered.

That clinical instruction alone is too haphazard and uncertain to form a basis for a complete and orderly course in medicine is recognized in most medical schools. The well-rounded preparation for practice which the student must receive demands, therefore, aside from the clinics, an organized course of study. With this conclusion, that more systematic instruction is needed than clinical material can afford, this paper is in agreement; the method by which such systematic instruction is given, however, it proposes to discuss.

Two general methods of teaching systematic medicine have hitherto prevailed, namely, by the didactic lecture, and by recitations on stated topics. Strong objections can be raised both to didactic lectures and to recitations as used in teaching medicine; but the methods have, as well, certain valuable features demanding respect. Manifestly, any alternative for these methods which will avoid their defects and include their merits will be doubly valuable. That the case method of instruction offers such an alternative for the prevalent teaching, it is the purpose of this paper to show.

Before the didactic lecture and the recitation system are considered more in detail, it will be well to have clearly in mind the nature of medical practice and the consequent requisites of medical training. Medical practice is an art, an application of accumulated knowledge and skill to a particular case. It has two aspects: that of observation, and that of interpretation and relief. The first aspect—that of observation—requires of the physician sharp insight in questioning his patient, skill in making a thorough physical examination, and shrewdness in judging human nature. The preparation for this side of the physician's work is pre-eminently clinical; the best training for the examination of the sick is actual practice in such examination by the student under the supervision of an instructor. Observation gives data. Now these data must be ex-

plained and in accordance with this explanation the patient must be rightly treated. In this second attitude as interpreter and helper, the physician brings to bear on the patient the heritage of the past of medicine in so far as this heritage explains the nature of the sickness, as a disturbance of normal structure and function, and provides principles for diagnosis, prognosis and rational treatment. In short, a doctor's work consists in examining disordered individuals, and in applying to them the judgment of a trained mind and a careful knowledge of previous art. If these trite statements need apology it is found in the desire for perfect clearness in the argument which follows. In this argument only the preparation for the second of the attitudes of the physician will be considered, namely, the education of his reason as an interpreter, and the provision of his knowledge as a helper. And first of all the question arises: Is the didactic lecture the most satisfactory and effectual method of drilling the mind to careful thought in diagnosis and prognosis, and of securing to the student definite and ready knowledge of accepted practice?

Among the objections to didactic lectures as a means of instructing the student of medicine, perhaps the least important is the contention that attendance on such lectures is not an economical use of the student's time. This objection, however, is more important in these days of the crowded curriculum than formerly, and is sure to become still more important as, with the advance of medicine, the demand on the student's time increases. The chief support of the objection lies in the fact that lectures on medical subjects present, in the main, only what can be found in the newest textbook. Now, in case the student does not take notes he sits as a passive listener. It is well within the bounds of certainty to affirm that the many points made every week in ten or fifteen lectures on different subjects cannot be fixed permanently in memory by hearing them stated only once. If this student makes up his deficiency, however, by reading his authorities, he is doing precisely what he might quite as well have done without spending time listening to lectures. But suppose the student takes notes of what he hears. Then, according to common testimony, he is so busy writing he learns at the time very little of the matter presented by the lecturer. The student, therefore, is merely accumulating reading matter, and of this he already has as much as he can well manage. Furthermore, he not unfrequently finds that his own inability or the lecturer's obscurity has resulted in notes not good enough to trust. In this instance, likewise, he must depend upon his books. The conclusion seems justified, therefore, that the student, driven to the textbook in spite of didactic lectures, will make better use of his hours by learning systematic medicine directly from the printed sources.

A more serious criticism can be brought against the lecture system in that it allows a slighting of study during a large part of the year and favors cramming for examinations at the end. Some instructors, indeed, seem to regard this condition as essential, and leave time in May for preparation for June examinations. And the students, as well, count on this cramming, for many of them stop attending clinical exercises in May, in order to study their accumulated notes for satisfactory grades. The ephemeral nature of knowledge gained under such circumstances is too well known to need emphasis. It does not become an organized and

convenient part of the physician's equipment: and in so far as the lecture system respects the examination paper, rather than the permanent and handy store of information, the grave charge of inadequacy can be brought against it.

By far the most important and most weighty objection to the lecture system, however, is its real inefficiency as a means of mental training for medical work. Since medicine is an art, the doctor's relation to his patient, as every one knows, is an *active* relation. It requires therefore not only a ready fund of information and also a disciplined power of careful observation and thoughtful analysis. Now, the ability to practice an art well requires, as every one knows also, preliminary training in that very practice. Manual dexterity is not learned by hearing about it, nor does skill in debate come from reading descriptions. Why, then, should medical students be expected to reason clearly in medical matters, weigh conflicting evidence or draw just conclusions, when their chief practice is taking lecture notes? The passive attitude of listening does not demand of the students intelligent thought; it does not demand careful judgment; the sole requirement of the system is that they shall memorize sufficient facts to pass the examination. The effect of such a system can be shown by asking for a written discussion of a given case. In a recent trial of this sort the attempts of the students to explain the signs and symptoms described brought forth all manner of preposterous statements, illogical reasoning, and baseless conclusions. A systolic murmur was evidence of an uncompensated heart lesion, a liver large with amyloid degeneration was explained as passive congestion, and a tubercular peritonitis was interpreted as cardiac dropsy; and these results appeared at the end of a year of lectures on the subject and after careful clinical instruction in gathering data. The mere accumulation of knowledge does not imply the power of using that knowledge when occasion demands it, any more than the ability to read a foreign language implies the ability to speak it. This neglect to recognize the difference between the active and the passive attitude, and the necessary failure of the lecture system to drill the student to deal thoughtfully with the complicated conditions of real cases, expose the system most freely to objection, and the objection is of fundamental seriousness.

The merits of the lecture system, however, cannot be overlooked. It certainly permits a more systematic treatment of medicine than is possible with clinical cases as a basis. But also it has the greater virtue of giving the instructor opportunity to present his personal experience; to detail the practical points of treatment—the home devices for the care of the sick—not found in books; to illustrate the common failures and mistakes of young physicians; to describe his own ways of meeting emergencies which may make lasting impressions on the students. The skillful lecturer, moreover, can so emphasize the essential points and can illustrate them so effectively that they stand out prominent as the important and memorable facts around which later others may be gathered; and, finally, the spirit of the instructor, his personal influence, can be conveyed to the students more forcibly perhaps in discourse than in any other way. But how rare is such a lecturer! Instead of practical advice the students hear descriptions from the books, instead of illustrated essentials they get abstract details,

instead of enthusiasm in the lectures they too often see the indifference born of frequent repetition.

The faults and difficulties of the lecture system have seemed so predominant that in some medical schools instructors have substituted for the lectures in their courses recitations on stated topics. Recitations share nearly all the merits of the lecture system; they allow systematic study, they offer occasion for the personal testimony of the instructor and for the introduction of practical details. But they possess, besides, positive advantages over the lecture system, worthy of note. In the first place, the student must learn from week to week during the year his topics for the recitations. This requirement alone has many important results, chief among which is the continual storing of the student's mind instead of the continual accumulation of his reading matter. This gradual acquisition of knowledge reacts in two ways: first, it makes clinical material more valuable, because the student brings to the clinics a more alert and intelligent attention; and secondly, the repetition of subjects and the association of facts gained thus by repetition tend to make the facts permanent possessions for the student, so that he is less likely to crowd his mind with evanescent information for examinations only. The study for recitations has the further advantage of making the student thoroughly acquainted with his authorities, and the value of these books for later reference is by this very intimacy greatly increased.

The recitations in themselves are also of noteworthy importance. They not only give the student opportunity to correct false impressions, they likewise serve to fix especially in his memory the more essential points of the topic studied. Moreover, the student coming to a recitation is in a proper state of mind to receive new information, or to hear the personal experience of the instructor, or to understand the reasons for emphasis on certain symptoms; for he comes with a mind already prepared with some knowledge of the subject—he has laid by his own efforts a foundation to build upon.

Although the recitation system has striking advantages, it has, as well, important disadvantages which must be considered. Diseases in text-books, like diseases in lectures, are abstractions; they are descriptions of averages or types with no body to give them reality. Now, without a concrete case in view, maintaining a lively attention and keeping the powers of the mind keen and active while reading a book so abstract as most treatises on practice is well-nigh impossible. And to memorize symptoms or points of differential diagnosis directly, without reference to natural relationships, is for most students a very artificial process. Indeed, in lieu of reason as a bond, rhyme or some elusive mnemonic is a common makeshift. Facts learned in this way are not linked in their sequence, they are not associated with the student's previous knowledge; only after much repetition, therefore, do they become a lasting portion of his mental equipment. Moreover, the same serious criticism lodged against didactic lectures for not training the mind to think carefully on medical questions or to deal wisely with the difficulties of a given case may be brought with equal force against the recitation system. It does not demand of the student what practice will demand of him as a physician; it is not, therefore, a satisfactory means of instruction.

The discussion thus far has shown that neither di-

daic lectures nor recitations are wholly to be condemned or wholly to be commended. Serious faults and decided advantages can be found in either method. These faults surely can be avoided and these advantages retained by the use of proper means. The direct observation and study and treatment of sick people offers undoubtedly the most proper method of learning medicine; it is impossible, however, for students to have a series of real cases following in orderly sequence and existing merely for their instruction. But will not the most immediate substitute for such experience prove a satisfactory manner of teaching the logic of medicine and its necessary facts? Will not the use of a case method of instruction solve the difficulties?

How then can systematic medical training be secured by a study of cases? The answer to this question is at hand. Cases of all the types, variations and complications of almost every disease are to be found in hospital records or in records of the private practice of instructors. These records include a history of family tendencies, notes of previous illness, an account of the onset of the attack, the results of physical examination at the hospital, the story of the ups and downs in the course of the disease, the treatment with its modifications as the symptoms changed, and, in case of death, possibly the findings at autopsy.

Now, the intent of the proposed case system is, in short, to give the students printed data from actual histories. These data are then to be studied and analyzed by the students, who shall be required to consider in every detail the differential diagnosis, the principles of prognosis in the case, and the rational treatment. The students, after having studied the case, shall come to a conference with the instructor, in which all the points in a particular problem shall be discussed. Such in outline is the scheme of study.

A more explicit account of the proposed method will make its workings clearer. And in describing these details the three divisions — presentation, study and discussion of the cases — will be separately treated.

In presenting to the students the printed history and results of examination of a patient, the instructor can take care that only so much is stated as will stimulate the students to more careful thought and discrimination in their study. The treatment of the patient may be withheld and the students be made to prescribe treatment according to their diagnosis. If the illness ended fatally and autopsy was performed, the findings of the pathologist should be retained to correct inferences drawn from clinical data. In the study of a particular disease cases showing typical variations (as, for example, the different forms of typhoid fever), or cases illustrating the disease in various stages, or cases in which the real nature of the illness is obscured by complications, may be given out at the same time for purposes of comparison; or other diseases with similar symptoms (as meningitis and miliary tuberculosis in the study of typhoid fever) may be introduced to make a more searching demand on the discriminating powers of the student. Likewise cases showing signal instances of common errors and oversights, or bringing out little matters of practical treatment and domestic expedients, would be of great value. The presenting of cases is thus capable of the most elastic adaptation to the needs of the students, according to the judgment of the instructor.

With records of patients in their hands the students

now begin their active investigation. It is supposed that their only preparation is a previous study of the scientific groundwork — anatomy, physiology, pathology and therapeutics — and that they have heard no lectures on the practice of medicine. That the students will have difficulties at the start, even with simple cases, is certain, but that work done for themselves is far superior, as training, to the acceptance of stated results from another is also certain. That mistakes in judgment and reasoning will surely be made is not regretted, for mistakes are often the most impressive teachers. First the student reads the history, then analyzes the relations of the symptoms, selects what seem to him the primary disturbances, and sets to work to make his diagnosis. He goes to the textbook for reference; he must study all the diseases which his case might represent in order to establish his opinion. If cases of different diseases, with similar symptoms, have been given him, he must compare them and discriminate between them, or learn the further examination necessary to settle the decision. He must be ready not only to detail the therapeutic indications in the case as it stands, but also to treat such complications of the course of illness as the instructor may suggest. The opportunity for individual study and support of special treatment, such as hydrotherapy, in relation to the patient under consideration, here presents itself. Meanwhile the student is incidentally picking up the etiology and special pathology of the affection. All this work which he does for himself on the data of an actual hospital case, his diagnosis, his opinions, his treatment, are subject to review in the classroom and will be criticised not only by his fellow students, who have studied the same case, but also by the instructor. This fact alone, wholly apart from the future value to him as a practitioner, is a strong incentive to careful preparation and sound thinking in advance of the conference.

The conference consists of a discussion of all the aspects of a given case or set of cases, under the direction of an instructor, who makes suggestions or expresses his own opinions as they seem necessary. The conference is a real conference, because all participants come to it with considerable knowledge of the subject already secured. The instructor first calls upon one of the students to state the case, on another to analyze the symptoms and venture a diagnosis, on another to present the differential points, on still another to suggest treatment. Meanwhile other students are asked for their opinions of statements made, or may voluntarily offer their criticisms. The various sources which the students have consulted are naturally brought together in the discussion, and a most valuable opportunity is thereby offered for comparing criteria of diagnosis and modes of treatment of different authorities. A second case brings material for noting similarities and differences, and with each additional instance the possibilities of comparison and generalization increase. Throughout the conference the instructor acts as moderator, guiding the discussion along profitable lines, correcting false statements, exposing the weakness of unsupported opinions, or suggesting hypothetical changes or modifying conditions in the case, which will compel the students to think quickly and accurately. The instructor must also be ready to answer from his own large experience many questions; this phase of the system is particularly valuable not only in keeping the instructor alert and keen,

but also in giving him an insight into student difficulties and shortcomings. Thus the student advances with his study; he learns to express himself clearly, he learns to judge precisely and definitely the data of medical cases, and in standing by his judgment in the conference he is strengthening the inestimable habit of intellectual self-reliance. And while his ability to reason closely and judge thoughtfully is thus being developed, and while he is gaining skill in analysis and synthesis, he is also gaining the other object of medical study, a practical working knowledge of the facts of medicine.

A comparison of the general characteristics of the case system already mentioned, with the merits and defects of the common methods of teaching, will bring out more distinctly certain special characteristics of the proposed scheme. The case system, in the first place, avoids the objectionable features of didactic lectures. The student does not spend his time duplicating his reading matter by lecture notes to be set aside for later study; he is learning his facts gradually throughout the year by actually applying them in his work. Instead of depending on his uncertain records of lectures, he is training himself by practical experience to use his books just as later he may have to use them in reference to his own patients. Not only does the system avoid these objections to didactic lectures, it has as well the positive advantages of both the lectures and the recitations. It shares with them the virtue of presenting the subject of medicine in an orderly and systematic manner, inasmuch as the cases are arranged to develop step by step the particular disease in all its various phases and relationship. It also, like the other methods, offers abundant opportunity for the instructor to emphasize essentials and to give his own observations, but with greatly increased value to the students, because the instructor's words go to minds already prepared by knowledge of illustrative cases. Finally, the spirit of the instructor, the element of personal contact, in shaping student ideals is surely revealed as a much stronger and more real factor in the free intercourse of the conference than in a formal lecture or recitation.

Every one of the merits claimed as peculiar to the recitation system, the case method will duplicate. In it, just as by reciting, the student is continually learning instead of taking notes and getting ready to learn. He has the same chance in the conference to correct false impressions that he has in the recitation. In supplying knowledge which will increase the value of clinics the study of cases is even superior to the study of text-books alone, since concrete instances make more definite and permanent impressions than disembodied descriptions. The student, with actual cases and their symptom groups in mind, is quick to detect the absence of a usual sign, or the presence of a rare condition, and these now become a part of his already acquired experience. And as for the pernicious method of learning medicine by cramming for examinations, the very nature of the study of cases forbids it.

The case system not only avoids the defects and includes the merits of didactic lecture and the recitation, the system also has qualities and possibilities which surpass in value the best features of either of the common methods.

The first of the distinct and peculiar characteristics of the study of cases is its power to rouse enthusiasm. Nothing is more significant than the attitude of stu-

dents towards a medical problem on which a number are working together. For example, the following single case was by chance given to a class of students for discussion: A boy of seven years had no noteworthy illness until, at five years of age, he had scarlet fever, with acute nephritis in complication. He was seen six months before the present illness, when he had grippe, with acute middle ear. The urine at this time showed no evidence of nephritis. His general condition has been fairly good since.

The present illness began with vomiting and high temperature, 104°. He was seen by a consultant two days later. During these two days he had grown worse. The temperature had remained above 104°. The vomiting had continued at intervals, but was not so severe or frequent as at first. He had become apathetic, but complained of pain when handled. The bowels were constipated. The tongue was coated.

At the examination on the third day of the illness he was found fairly developed and nourished. Though somnolent, he could be roused and he cried out when handled. There was no retraction or rigidity of the head. The pupils were equal and reacted normally. The face was flushed. The breathing was rapid and superficial. The pulse was strong and rapid. Nothing was detected in the lungs except diminished vesicular respiration in both backs below the scapulae. The cardiac impulse was felt in the fourth space just inside the *right* mammary line. It was somewhat increased in strength, the heart sounds were distinct, there was no murmur, the second sound was not accentuated, there was no impulse felt to the left of the sternum or in the epigastrium. The abdominal muscles were so tense that palpation was impossible, not from any localized tenderness but apparently from tenderness all over the abdomen. Rectal examination was negative. Urine was negative.

Opiates were required to relieve pain. There had been no vomiting for twelve hours. A large movement of the bowels followed the administration of calomel on the previous day.

Such interest as resulted, such debating among themselves as this problem of diagnosis alone aroused among the students would be absolutely impossible with the usual methods of teaching. Impressions made under such conditions, when the attention is naturally eager and keen, are deep and lasting. It is the particular patient, the concrete instance, that gives body and form to text-book abstractions, holds the attention, and stimulates the reasoning power. Neither the lecture nor the recitation stirs enthusiasm; the case system, however, is on record as having accomplished this result most successfully.¹

The correlation of the scientific and clinical aspects of medicine is a second important possibility which the study of cases may claim. At the present time in most schools two years are spent on anatomy, physiology, pathology and therapeutics with their various branches. Rarely, however, is any connection between these subjects and their clinical bearings made clear. The subjects are studied and then pigeon-holed as finished work, while the student proceeds to learn symptoms and treatment anew, not in any relation to what he has already learned, but as something apart and unrelated. With a good leader, however, and the habit of careful thought established among the students, the underlying pathophysiological condition, the disturbed physiology,

¹ Vide infra.

the therapeutic action of the drugs employed, could constantly be brought forth to give the cases a rational explanation and to teach the students the deeper insight which vision through general principles affords.

By far the most important aspect of the case system, however, is its great value in drilling the mind of the student to meet intelligently the difficulties of practice. With present methods of instruction, skill in logical thinking, which makes a knowledge a power, is not infrequently sacrificed or impaired by the strained effort at accumulating the very knowledge to be used. How many students will exercise independent judgment or do critical reading while preparing for a recitation of a dozen pages of any standard work on practice? To be sure, such preparation in some instances develops an extraordinary ability to memorize; but the mind is thereby only burdened with an unwieldy multitude of facts, while there is not the slightest necessity for any effort at real intellectual construction. Instead let the students have a number of cases with similar symptoms, but with peculiarities and complications, and can any student fail to puzzle over them and study them? And having studied them will not the conference at which his diagnosis and treatment are either confirmed or questioned mean more to him and produce a more lasting impression than any lecture? To deal with cases, to draw correct inductions, as an interpreter, from his data, as an observer; to apply proper treatment—these make the work of a doctor. The clinics train the medical student in observation; nothing at present requires him to look carefully on all sides of many cases, to think clearly and accurately, or to have reasons for his conclusions. Are not these powers among the most indispensable qualities of a physician? If so, the method bringing these faculties into constant use and discipline, and at the same time demanding the most thorough and precise knowledge, is certainly best adapted for the study of medicine.

Criticisms undoubtedly can be brought against the method of teaching above described. Some may assert that devotion to a printed record is, in itself, an unpractical way to learn to practise medicine. Although it is conceded that such preparation is not so effectual as real care of the sick, yet the objection may be met in part by the greater system and completeness assured by the case method of instruction than is probable in an experience with a shifting throng in the hospital wards; but more particularly is the objection answered by the fact that, with the hospital experience necessarily excluded from the undergraduate years, the study of actual cases is certainly more practical than the present lecture system or the recitations. Indeed, under prevailing methods, it is a wonder that the dangerous tendency of inexperienced minds to vague and fantastic theorizing is not more prevalent. To such a tendency an effective check is certainly present in the discussion of the cases, for one student's weakness meets another student's strength and the instructor is a practical man. Moreover the case method is not meant to replace clinical instruction. At the clinics the students are drilled by their corrected efforts to secure, by thorough and discriminating observation, reliable clinical data; with the cases they are drilled by their corrected efforts to judge with care exactly this same sort of data. The two methods thus go hand in hand with mutual benefit: the clinics keeping the student in touch with human life and training him to note its variations; the cases pointing out what to watch for, showing the

importance of complete examination, and teaching how to interpret observations as they are made.

A second objection that may be urged is, that the case system requires more time than the strictly text-book systems. So far as the consideration of a certain number of topics is concerned, this objection is admitted to be valid, but that the proposed system requires a longer time to discipline the mind for the successful practice of medicine is flatly denied. First, the particular points learned while studying one narrow subject are a small part of the total acquisition. Many diseases not directly connected with the disease under consideration may be involved or suggested, and these the student can exclude, or accept as possible conditions, only after careful research. The points thus incidentally learned are fixed in the mind as they never could be by disconnected reading or by lectures, for instead of being presented as independent facts they occur as an integral part of a living problem. More important, however, than this casual acquisition of knowledge is the fundamental training which the method assures the student exactly along the lines which his future labors as a physician will follow. To meet the criticism of his classmates in the conference he must be careful to analyze his data, discriminate shrewdly, and judge fairly; he is led to use every means to fortify himself either for his own instruction or to answer his critic, be it professor or fellow-student. Thus before graduation he is acquiring that ready store of information, that facility for quick and accurate thought, that abundance of resource, which mark the best physicians; while the student of the text-book methods only begins to realize the value of these talents after he has ceased to be a student and has become a practitioner.

The question of the practicability of the whole scheme here outlined has probably arisen many times long ere now. Is not the plan all theoretical? Is there any instance of the use of the system to justify the claims made for it? The fact of presenting cases in medicine for purposes of conference cannot be gainsaid. Every district medical society uses records in precisely the manner of the proposed system whenever a member reads a paper describing an experience in his own practice. The only difference here lies in the nature of the discussion which follows; the students must speak from a common study of the same hospital reports, the doctors have their own past experience to draw upon. Moreover, the value of a discussion of cases in showing the practical powers of the physician is also recognized. In certain courses full accounts of patients are set on examination papers, with a requirement that the candidate shall analyze the symptoms, make a differential diagnosis and give the prognosis and treatment. Now if such a method is employed to test a man's ability to think clearly and apply his knowledge accurately in medical practice, is there any reason why it is not just as applicable in training him for exactly the same work? Indeed the case system, as here described, is already used in part in medical education. The few instances of this partial use of the plan, while only indicating its possible importance, are particularly significant. The obstetrical conferences in the course in obstetrics in the Harvard Medical School offer a striking example of the conference phase of the case system. At these conferences students read their hospital records of their own experience in obstetrical cases. These records are selected by the instructor so as to develop

the subject and to bring out its complications and difficulties in a perfectly orderly and systematic fashion. Each report of a case includes a full description of the conditions present and a detailed account of the handling of the situation. If the listening students in the conference knew but little of the subject, the reading of a report would not be unlike the reading of a lecture. But the listening students themselves have had similar experiences, and, instead of sitting with minds dulled in receptivity, they are alert and actively following the account in order to question the reader on his methods, his opinions, his results. And when the students fail to bring out all of the important points in the case, the instructor, a practical man, indicates the significance of the unnoted features. Such is the recognized value of this discussion of the actual conditions of practice that any question of the possibility of successfully applying the case method in medical instruction is here completely answered.

Undoubtedly the most brilliant example thus far of the use of cases in education is seen in the study of law.² The change from the text-book to the case system wrought out in the Harvard Law School has been called America's greatest contribution to educational reform. The newer method has roused an ardor and a keenness of interest among the students such as was never known before. They learn their law not by dreary grubbing at text-books or lecture notes, but by vigorously "threshing out a case" with one another. And for its methods and for its results the Harvard Law School is regarded by competent observers³ as perhaps the foremost centre of legal education in the English-speaking world.

The case method is simply another application of the inductive method to teaching. The inductive method holds its strong position in education to-day because it requires of the student accurate judgment, close reasoning, precise expression and wise employment of his knowledge. It is a method which demands for a long period a student's best endeavors in the full use of all his faculties, but it rewards him with a strength and self-reliance unattainable in any other way. He learns, on the one hand, to avoid smartness and claptrap diagnosis, and on the other, the routine thoughtlessness of the "practical" physician. The method is practical; it will turn out practical men in the best meaning of that term.

Clinical Department.

A CASE OF RELAPSING FEVER.

BY GEORGE O. WARD, M.D.,

Visiting Physician to the City Hospital and Memorial Hospital, Worcester, Mass.

RELAPSING fever has not been epidemic in this country since 1869, when it appeared in force in Philadelphia. The statistics and data of this epidemic, as investigated and reported by Parry, appear in standard medical literature. Sporadic cases are so rare as to be of exceeding interest. For this reason the author has chosen to report this case to the JOURNAL. I wish to say at the outset that this uncommon

diagnosis was not made because of any partiality therefor on the part of myself or my house officer, for we were forced to our conclusion in differential diagnosis by rigid exclusion of other possible causes for the initial rise of temperature, and only convinced by the punctual appearance of the relapse.

The patient, a young Armenian immigrant, eighteen years old, had just arrived, on August 9, 1899, with his mother, direct from Turkey-in-Asia, via England. They had been five weeks on the journey, thirteen days of which were taken in the passage from some English port to New York. Neither he nor his mother could speak a word of English. Hence all data had to be obtained through the interpreter. Both were very sick on board ship, whether from *mal-de-mer* or an initial paroxysm of this fever I have not been able to decide. But both mother and son were taken sick on the same day after arrival in Worcester, with like symptoms. The former remained with friends for four days, when she entered the Memorial Hospital; the latter entered the City Hospital at once.

The crisis of the mother's fever occurred simultaneously with that of her son. She did not have relapse; but, in view of the evident intimate connection of the two cases, I think it fairly probable that the illness of both previous to landing may have been the initial run of the fever.

August 10th. The son, on his entrance into the City Hospital, showed physiognomy characteristic of his race. His previous medical history was negative. His habits were good, and he denied venereal disease. Yesterday he had very severe headache and slight diarrhea. Later he had severe chill, high fever, with much muscular pain. Later still, in the evening, he had profuse epistaxis, to control which both nostrils had to be plugged. At his entrance, his temperature was 104°, his pulse 100, his respiration 22. His expression was dull and apathetic. His skin was moist and very dark, suggesting jaundice. No eruption of any kind was to be seen on his body. His pupils were normal. His nostrils were plugged, and epistaxis followed any attempt to remove plugs. His tongue was dry, with brown coat. Sordes were on teeth, lips and gums. Heart and lungs were negative. There was no tenderness of abdomen, but both liver and spleen were easily palpable. Reflexes were sluggish. There was no edema. The urine was negative, the diazo reaction being absent. The patient was put on diet of liquids and ordered to have baths when temperature is above 102.5°. Ice cap was applied to head. Strychnia, one-sixtieth grain every four hours. The temperature was ordered to be taken and charted every four hours, as is our routine.

August 11th. The Widal reaction is negative, and the diazo also. Plasmodium malaria was looked for but was not found. Leucocytosis, 6,200. Plugs were removed from nostrils. No epistaxis followed. Temperature was still high, and patient was very apathetic but not delirious.

August 12th. Temperature was still above 105°, and baths had little effect; pulse was not of good character. Spiritus frumenti, two drachms ordered every four hours. Slight epistaxis. Patient looked bad.

August 13th. Between eleven last night and three this morning, patient's temperature fell from 104.8° to 97.2° (nearly 8° in less than four hours), and his

² See Keener: American Law Review, xxviii, for an excellent account of the workings of the method in law. The writer is indebted to this article for suggestions.

³ Nation, June 8, 1899.

pulse simultaneously fell from 110 to 68. There were no signs of collapse, and pulse was of good character. Sweating was *very* profuse. Examination of chest was negative, as also was a second serum examination. Leucocytosis, 500. Patient brightened up during the

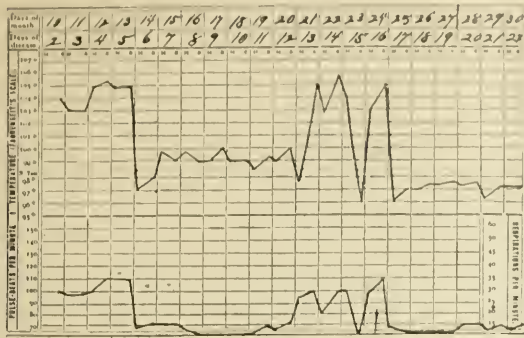


Chart of this case.

day and at night was feeling fairly comfortable. Constipation.

August 16th. Temperature soon rose to between 99° and 100° and has continued so. Pulse has continued at about 70. Stimulants were omitted. Patient seems comfortable and takes interest in surroundings. Shows signs of hunger. Denies subjective symptoms.

August 21st. Patient has been feeling pretty comfortable since date of last note. Has been on diet of semi-solids, and has been allowed to sit up a little in bed. His skin appears to have cleared as though he had been previously jaundiced. This afternoon his temperature shot up again from 97.8° to 105.5° (rising nearly 8° in less than eight hours), but without marked subjective symptoms. Leucocytosis, 12,000.

August 23d. Temperature has remained persistently high since last note, until 11 A. M. to-day, when it fell by crisis from 105.5° to 96° (falling 9.5° in less than eight hours). He perspired very profusely and showed more evidence of collapse than in previous crises, so that some stimulant was given. He complained of no symptoms, but during all this relapse he has been very apathetic. The blood has, during this relapse, been examined daily for the spirillum Obermeier and plasmodium malariae but without success.

August 24th. Between three and eleven this forenoon temperature rose again from 97° to 105.6°, and,

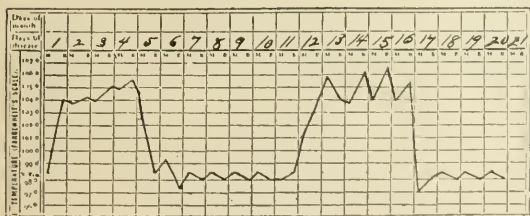


Chart of Murchison.

after continuing high for four hours, fell again to 95.6° (a drop of 9° in less than eight hours). This crisis, like the others, was accompanied by profuse sweating. Patient is very apathetic, with fair pulse at 60.

August 25th. During last night the patient's tem-

perature fell to 95.2°, but this forenoon it is 97°. The patient looks brighter and has no symptoms.

September 1st. For the six days after the last note, patient carried subnormal temperature, averaging about 97°, as recorded on four-hour charts. Yesterday and to-day the temperature has ranged in vicinity of 101°, without symptoms. Patient has improved much in general condition. Complains much of hunger, and is to-day allowed to get up and eat house diet. Leucocyte count normal.

September 9th. Convalescence was steady from last date and patient was this day discharged well.

The above notes present a clinical picture fairly typical of relapsing fever. The temperature chart, as depicted in the authorities, is so striking and so utterly unlike that of any other disease, that I wish to exhibit one from Murchison in comparison with that of the case above described. The "abrupt crisis, characterized by prodigious and sudden fall of temperature unequalled in any other condition of disease" (Murchison), is still more graphically shown by our four-hour chart, from which record I have verbally quoted in the notes. But if the chart of the case just reviewed be properly superimposed on the chart of Murchison they will be found to agree so strikingly that one can hardly suggest that they can arise from cases dissimilar in nature.

The failure to detect the spirillum of Obermeier is not remarkable, as it was not looked for until the relapse, and it may not have been present. If the spirillum had been found, I think it would have been only regarded as evidence confirmatory of a diagnosis otherwise well established by clinical phenomena and a typical temperature record.

I wish to hereby acknowledge my indebtedness to my house physician, Dr. George A. Dix, for his faithful study of this case and for his careful clinical notes taken thereon.

ON THE TREATMENT OF PAIN IN TABES DORSALIS; REPORT OF A CASE.

BY ALFRED H. LINDSTRÖM, M.D., BOSTON.

THE temporary amelioration and suppression of pain occurring during the crises of tabes dorsalis by the use of appropriate chemicals and drugs is, no doubt, readily accomplished. But the repeated and frequent use of analgesic chemicals, especially coal-tar derivatives, is unquestionably deleterious to the general health of the patient, and since the successful management of a tabetic patient demands the most careful attention to his general health and his constitutional resistive powers, it is obvious that such medication should be avoided as much as possible. Methods of diminishing and alleviating the intensely distressing pains of tabes, not involving injury to the general health, would therefore seem to merit attention. A number of mechanical procedures have been suggested, and used with more or less success, such as surgical and postural stretching of the sciatic nerves, suspension, various forms of counterirritation, including the use of static sparks, other forms of electricity, direct pressure on the sciatic nerve, the use of friction with ice, ice in other forms, hot baths, cold douches and sprays to the spine, etc. Because of the marked success resulting from postural or mechanical stretching in the following case, its publication would seem justifiable.

The patient, a business man, is forty years old. About ten years ago he began to have pains in the legs, chiefly below the knee, occurring in irregularly recurring periods of increasing severity. They were thought to be of rheumatic origin, since damp weather seemed to cause them. Antirheumatic treatment was, however, of no avail, and the attacks grew more painful, and although a considerable interval of comparative comfort would supervene occasionally after a bad attack, the frequency of recurrence seemed to increase. This state of affairs lasted about nine years, during which time the cause of the pains remained a puzzle to the patient and his numerous medical advisers. The patient exhibited a remarkable degree of endurance throughout this period, generally refusing the use of any remedies suggested for the relief of his acute suffering, fearing that he might contract some drug habit, or that his general health would be affected by their use. As the intensity of his suffering increased, however, and reached beyond his limit of endurance, he finally resorted to the free use of whiskey, drinking large quantities during the attacks. No other symptoms appeared until about a year ago, when after three weeks of unusually severe mental and physical exertion, due to business enterprise, he noticed unsteadiness of walking in the dark. This he accounted for by the very free indulgence in whiskey, induced by the unprecedented intensity of the pain about this time. Other symptoms now developed in rapid succession; a distinct girdle sensation, or feeling of constriction about the waist, puzzled him greatly, and slight urinary defects were noticed. His gait was impaired, and walking without help became difficult.

After this rather rapid advance of the disease the patient had to abandon his business and, determined on a stubborn fight against his physical decay, he gave his entire attention to the care of his health.

About six months later the patient came under my observation. Physical examination showed absence of both knee-jerks, even on re-enforcement, lack of pupillary reaction to light, and marked typical ataxia of the legs. Sensation was affected in toes and feet but otherwise normal. The patient could not maintain his equilibrium with closed eyes, even when standing with feet apart. There was no impairment of vision, no trophic changes, and the muscular strength of the legs remained normal. Sexual function not affected. The patient was nervous and easily startled; but barring the presence of traces of acute suffering in his face, he presented a clearly cut and well-proportioned physical makeup. He never had chancre or gonorrhoea; married ten years ago, and has a healthy boy eight years of age. The initial pain began before marriage. Had a fall from a height of about four feet, striking on his back, about thirteen years ago; suffered from pain in the back some time afterwards, but recovered entirely from immediate effects of this fall in a comparatively short time.

The most urgent need of the patient at this time was immediate relief from his suffering. The pains were so severe as to entirely prevent sleep; for more than ten days sleep had been badly interrupted, and during the last two nights the patient was utterly unable to secure a moment's rest. His wife feared that he would commit suicide, or become insane, his actions were so strange. He would scramble from one room to another, busying himself with anything he could

forget his pain; he would clutch his legs, shake his fists, and go through weird physical contortions; shortly speaking, he was actually frantic with pain, and tried to escape his torments, but could not; he described the pains as instantaneous streaks of intense heat tearing through his legs, making him wince and cry. In spite of all this, he stubbornly refused to accept any opiate, or any other analgesic remedy; he had now been cautioned against the use of alcohol, also, and was at his wits' end. Lack of sleep and the repeated shock from the pain had produced an imprint of suffering and distress on the patient's face which told his story better than words could do. The case offered an exceptional opportunity to test the efficacy of some mechanical procedure. (It is my impression that various attempts had been made to procure relief by counterirritation and the use of liniments, but without success, prior to my connection with the case.) I resolved to try stretching of the sciatic by posture, namely, by flexion of the thigh and extension of the leg and foot.

On the 17th of October, 1898, I applied the first extension or stretching; I kept each sciatic nerve in a state of tension during two minutes. At the expiration of this time the patient complained of numbness of the feet and slight distress, due to tension, in the popliteal space. The patient remained in bed quietly about half an hour after the operation, chatting pleasantly, and entirely free from pain, but the numbness of the feet persisted. On attempting to walk it was noticed that the ataxia of the legs had increased considerably, so much so that the patient feared to attempt it alone. This was probably due to the anesthesia (numbness) of the feet, since the gait improved with the disappearance of this symptom the following day. During the night the patient had several hours of sound sleep, but woke up early in the morning with acute pain, although not as severe as the previous night. In the afternoon another stretching was performed, the procedure lasting about three minutes to each leg. The immediate results were the same as on the previous day, with, possibly, a trifle more pronounced numbness and uncertainty of movement of the legs when attempting to walk. The absence of pain was more complete, and seemed almost phenomenal. The patient slept well throughout the night, and received me in a state of high glee when I made my visit on the afternoon of the following day. A third application of the method was made, two minutes to each leg being thought sufficient. It was agreed that if severe pains should recur, I was to be informed, and another operation performed the following day, otherwise it was thought best to defer further treatment until at least two days had elapsed. The condition of the patient remained satisfactory, however, and the next stretching was done on the afternoon of the second day after the previous visit; the fifth and last operation was performed after the lapse of another forty-eight hours, during which time the patient had been practically free from pain.

The subsequent history of this patient has been very satisfactory. He has had a few light attacks of pain during this summer, usually caused by too much walking, climbing of hills, getting upstairs—too many times a day, or, generally speaking, by injudicious physical exertion.

The general treatment of this case consisted of large, increasing doses of iodide of potash, administered

periodically, free use of artificial Marienbad water, cod-liver oil, systematic co-ordination exercises, open-air life as much as possible, and careful hygiene, including daily sponging with diluted alcohol, followed by brisk friction and slapping of the skin. He was also directed to abstain from coffee, tea, alcohol, tobacco and sexual intercourse, until material improvement had occurred. He was a very conscientious patient and lived up to the rules faithfully. The iodide was not given as a specific remedy, since there was absolutely no evidence of specific disease, either in the history or in the physical examination. It was given empirically for whatever effect it might have toward combating the progress of the malady through its eliminative action, and for its action upon the glandular system; the indication for its use was based upon the assumption that in this case the pathological changes of structure evidently going on were possibly due to the effects of autotoxicity, dependent upon disturbed nutritive functions. The Marienbad water was given for the same reason, namely, its eliminative and corrective effect. There was absolutely no tuberculous tendency in this case, but the cod-liver oil was suggested largely as an article of diet, to bring nutrition to as high a degree as possible; the oil was taken without objection and there was no digestive obstacle.

The exercises were so devised as to involve movements related to and associated with walking and balancing, and were practised on a slowly progressive scale. I mean by that, that one set of exercises was adhered to until they were done with nearly perfect co-ordination.

The patient was last seen by me on the 30th of September, and he presented a very satisfactory appearance. He had gained seven pounds in weight; his walking was fairly good, and the pains were of only trifling degree. He could turn about quickly without fear of falling, and walked across a busy street in my company without any assistance, except a cane, which was useful to him, no doubt, but not absolutely necessary.

The almost phenomenal cessation of pain immediately after the stretching may, of course, possibly be explained by assuming the two events as a mere coincidence. If so, it was a very happy one for the patient. To attempt a satisfactory, rational explanation is perhaps a difficult or impossible task. Whether due to physical changes in the peripheral part of the nerve fibres, such as elongation, for instance, diminishing their conductivity, or local compression in the region of the pelvic exit, or to both, or to other changes; or whether due to changes in the more centripetal part of the nerve, or in the cord itself, such as alteration of the ordinary anatomical relationship of nerve fibres and nerve cells, or of nerve cells and their processes, impairing their power of conductivity and transference of nerve impulse, is obviously impossible to decide. But if it is accepted that the pains are due to the presence of irritating toxins, producing an inflammatory or degenerative process in the nerve elements, then it would seem plausible to ascribe the cessation of pain to lessened conductivity of the sensory neuron, resulting from probable alteration, presumably temporary, in its structure, since it is evident that putting the nerve in a state of tension could not in any way influence the primary cause of the pains, but would affect the structure of the tissues in a mechanical way.

A fact worth noting in connection with tabes, and

to which Dr. James J. Putnam has called attention, is the extreme flexibility of the hip-joint at an early stage of the disease. In this case, although in a comparatively early stage of development (conclusive tabetic symptoms having been present only a few months), the degree of flexion obtained was amazing, and greatly surprised the patient. Having flexed the thigh close to the abdomen, I succeeded in bringing the patient's leg and foot on a level with his face, which position was maintained during two and three minutes, respectively, as stated above. In doing this, great care was taken not to use undue force, or any sudden pressure. I mention this because in text-books, where this treatment has been spoken of, the stretching has been described as being accomplished by a sudden extension of the leg upon the thigh, after flexion of the latter. Such a sudden manœuvre would be dangerous in a tabetic patient, whose bones are apt to be fragile and liable to fracture. Also, the danger of subluxation at the hip-joint during such extreme flexion should be borne in mind and guarded against. I have recorded this case at some length, because of the successful results obtained, because of the complete absence of any medication for pain, and, also, because of the opportunity for continued observation for a considerable period after treatment afforded by it.

Perhaps it is unnecessary to state that it is not my intention to challenge the usefulness of the many very effective analgesic remedies *in toto*; I merely wish to present the facts in this case for what they may be worth in connection with the treatment of pain due to tabes and kindred affections.

A PISTOL WOUND OF THE ABDOMEN.

BY C. A. ATWOOD, M.D., TAUNTON, MASS.

J. McM., age twenty-eight years, single, occupation, painter, was suddenly awakened from sleep at 1.45 A. M., Tuesday, November 21, 1899, by the presence of his brother-in-law, who had obtained entrance to the house by means of ladder and window. The brother-in-law immediately discharged a revolver, the shot taking effect in McM's abdomen. He was removed to Morton Hospital between 3 and 4 A. M.

Physical examination.—Pulse very weak, 150; skin ashy; cold perspiration. Left side of abdomen in mammary line below costal cartilages showed a powder burned area about two inches in diameter surrounding an opening, size of pistol ball. Diagnosis: Pistol wound in abdomen. I saw the patient about 4 A. M., and advised an immediate laparotomy. The patient was etherized and an incision made in the median line between ensiform cartilage and umbilicus. The stomach was pulled into the wound, near greater curvature at pyloric end on the anterior surface; a perforation was found and closed by suture. Incision carried half-way between umbilicus and pubes. The small intestines were found perforated seven times, and the holes closed by Czerny-Lembert sutures. The intestines were thoroughly looked over on a hot sterile towel and no more perforations found. An opening was then made in the peritoneum between the transverse colon and greater curvature of the stomach; a perforation on posterior wall of stomach found and sutured. There was some hemorrhage and moderate amount of blood in abdominal cavity from injured mesenteric vessels; these were secured. The abdominal cavity was flushed

with boiled water and filled with salt solution. The wound closed tight; antiseptic gauze dressing applied.

Patient died at 10 p. m., after all means to rally him from the shock had been tried and failed.

Autopsy by medical examiner.—Death from shock. All perforations closed. The pistol ball had perforated the iliacus muscle and was found resting against the ilium.

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 1, 1899, Dr. J. W. ELLIOT in the chair.

Dr. J. C. WARREN demonstrated on the cadaver

ALLIS'S METHOD OF REDUCING A DISLOCATION OF THE HIP.

He explained also Allis's theory of the production of dislocations of the hip-joint. According to this author, the head of the femur is forced out of the acetabulum on to the dorsum by flexion, adduction, and rotation inwards and not by thrust, as was assumed by Bigelow. Foreible extreme abduction produces dislocation forwards.

Allis's rule for reducing dislocations on to dorsum, or, as he calls them, "outward dislocations," is: "Flex; turn leg out; lift; turn leg in; extend." Dr. Warren stated that he had tried this method on one occasion with satisfactory results. The rule for reduction of the thyroid dislocation, or dislocation forwards, is to flex and abduct the femur in order to bring the head into the position it occupied when it first left the socket. Traction outwards in the long axis of the femur brings the head over the socket, when it is pushed in by the thumbs of an assistant.

Dr. Warren also showed

A DISSECTION OF THE SHOULDER, EXPLAINING THE ACTION OF KOCHER'S METHOD.

On turning up the deltoid and separating the pectoralis major from its humeral attachment the head of the bone is seen lying under the coracobrachialis and biceps tendons. The supraspinatus and infraspinatus and teres minor are stretched across the glenoid cavity. As the humerus is strongly everted the head begins to roll out from the coracoid tendons and the spinatus group of muscles is relaxed. As the elbow is carried towards the median line the head of the humerus became more prominent and pushes the folds of the capsule before it. When finally the arm is inverted, the head of the bone takes in the slack of the capsule and rolls beneath it into the socket.

Dr. CHEEVER: My experience with the thigh has not been very great, but those cases that I have had I have reduced by the Bigelow method, and never had the experience of having the capsule or anything intervene which prevented perfect reduction, in the recent case. Not so, however, with the shoulder, because all the dislocations of the shoulder that I have reduced have been done before the introduction of Kocher's method by one of two ways, as follows: The patient was etherized, laid on the floor or bed, the arm was pulled downwards, and with aid of the

foot in the axilla the bone was pried into place. The other method was to lay the patient on the floor and put the foot on the patient's shoulder, holding the scapula down, and draw the arm directly up, and the head was lifted up into the socket. By those methods it has several times happened to me to have afterwards what Dr. Warren has termed subluxation, that is to say, a perfect reduction at the moment, but not staying, and we used to ascribe it to a fracture of the glenoid cavity or to some laceration of the ligaments. I can conceive it was probably due to the rude method of reduction which failed to unfold and eliminate all the fibres of the capsule which lay between the head of the bone and the socket. I do remember reduction by pulleys when ether was first coming in. I saw one of those cases done at the Massachusetts General Hospital in which the femur was drawn into place without ether, and I remember very well how anxious the surgeons and attendants were that the force should be applied very gradually, and that no sudden jar should take place in the performance for fear of breaking the neck of the bone, which occasionally did occur in spite of the best efforts. Subsequently I assisted Dr. Bigelow in some of his dissections, and remember very well what a great step in advance it was when he explained the anatomy of the hip dislocations; and all such dislocations that I have had to reduce I have been able to reduce by his method except one sent to us at the City Hospital a good many years ago, where a strong young sailor had been taken care of by natural bone setters, and the dislocation of the femur, if it had ever been recognized, had never been reduced. He was brought to the hospital after some weeks, and repeated efforts made at reduction with ether with manipulation, and by the aid of a triangle rigged with pulleys, etc., but they all failed.

I have nothing more to add except one case that perhaps may be a little in controversion of what Dr. Allis says of the femur not being put out of place by a thrust. It has been my rather rare fortune to have one case of compound dislocation of the femur with the bone unbroken. Those cases are very rare, and I think something less than fifteen or twenty are on record as having been observed. In this case the femur was driven out of the socket up on to the pubes and emerged between the muscles and skin in front of the thigh, and the head of the femur looked directly upwards and was unbroken—a compound dislocation of the femur. It took place in this way. The man was one of those persons employed in unloading heavy boxes of goods in the wholesale district. He was trying to pull a loaded box off the wagon by the aid of cotton hooks and braced himself back, and the box came down and struck against his knee, while the steps of the store were against the back of the pelvis, and the bone was driven directly out, without the possibility of rotation. Of course that would be an extremely rare accident, but illustrates the fact that if the force is applied in the right way the femur can not only be driven out of the socket, but through the soft parts.

I had a woman brought in once who had the femur dislocated by a falling sign, and it struck directly on the back of the trochanter in the way that used to be thought the usual way of producing dislocation, and the bone was knocked out of place and down into the thyroid foramen. That was reduced. In that case she may have bent her body and had the motion of

rotation and abduction which assisted in throwing it out; but in the compound dislocation it seems as if it must have been the impinging of direct force; and confirmation of that is that, the patient dying at the end of two or three days, further injuries were found, inasmuch as there were partial fracture of the lumbar vertebrae and laceration of the aorta just where it goes over the edge of the pelvis and is ready to bifurcate into the iliaes.

I have read Dr. Allis's book, which he was kind enough to send me, and it is extremely ingenious. I have been confused by the multitude of its diagrams. I have found it impossible, not having practical cases to use it on frequently, to carry his method firmly in my mind. I think that this demonstration would enable me to do it better. I think the part assigned to the sciatic nerve is very interesting, but of course I should like to see it verified by an absolute case, and I do not understand that Dr. Allis has had an absolute case that proves that it has occurred.

DR. LUND: I would like to say with reference to Allis's theories of production of these dislocations by twist rather than by thrust, that in the experiments he made on the cadaver he was unable to produce the dislocation by direct thrust except where the injury was so severe as to fracture the pelvis or break the ligaments. I do not think he would deny that dislocation could be produced in such a case as Dr. Cheever has described, in which I believe there was concomitant fracture of the pelvis.

DR. CHEEVER: No.

DR. LUND: Allis found that the only way he could produce a dorsal dislocation on the cadaver was by firm twisting, flexion of the leg and twisting it inward, carrying the knee inward and the foot outward, the opposite of the manœuvre which he proposes for reduction; this carries the head of the femur firmly against the posterior part of the capsule and bursts it. I have done this in one instance on the cadaver.

In regard to the inward dislocation, Allis has shown that that inward dislocation can be produced by direct leverage; that is, if the leg is taken and carried out from the body until the heel almost touches the ear, the great trochanter comes against the brim of the pelvis, and using the acetabulum as a bony lever the head of the bone is pried out. This Dr. Warren and myself have also verified on the cadaver.

DR. HARRINGTON: We do not get dislocations of the hip very often. I have had two, both in muscular subjects, both forward dislocations, very easily reduced by the Bigelow method. Does Dr. Allis claim that his method will be more uniformly successful than the Bigelow method? I would like to ask Dr. Warren how he would determine in what portion of the capsule the tear was when it was torn off as a cap.

DR. WARREN: I should think that would depend on the difficulties you had in reduction; if you pried the head of the bone from the dorsum towards the acetabulum and it would not stay, then you would have to work on that theory. I do not advocate this method of Allis as superior to Dr. Bigelow's. At the same time it was a very interesting study of the subject, and Allis has shown great ingenuity and mechanical knowledge in working out this problem, and I thought possibly if the surgeons were familiar with that they might have an opportunity to try it on a case, and then they could judge whether it was better or not. I should think it was well worth a trial.

DR. F. B. LUND read a paper on

A CASE OF PERFORATING GASTRIC ULCER; OPERATION; RECOVERY.¹

DR. H. F. HEWES: I remember one case of gastric ulcer operated upon for perforation which illustrated a point in the diagnosis of the position of the ulcer of considerable interest, and I should think importance, to surgeons in considering the question of operation for removal of the ulcer. When, by a change of the position of the body, the ulcer is brought above the level of the gastric contents, the pain, which is a prominent symptom, vanishes. A patient, for instance, who has pain when lying down and not when standing up probably has an ulcer on the lesser curvature or in the region of the cardia. One in whom pain disappears on the right side and comes back on the left probably has ulcer in the region of the cardia, etc. This case had a very constant history of relief of pain when she stood up, and when she lay on the right side; at other times the pain was pretty constant. The ulcer was in an unusual position, but one borne out by the symptoms; it was in the fundus of the stomach, posterior wall, very close to the cardia, a most unusual place for an ulcer, but it bore out this point in the diagnosis very perfectly. I have not been able to test this point in diagnosis in other cases in which I have made notes, because the cases have not come to operation or autopsy.

DR. MUXRO: I think the incision low down is important. I recall one case which came to operation on the third day, in which the ulcer could not be closed nor even stitched to the abdominal wall. It was walled off with gauze and tubes, etc. The patient lived three or four days comfortably, and then suddenly developed sepsis and died in twenty-four hours. Autopsy showed that the pelvis had not been thoroughly washed out at time of operation. Secondary sepsis developed from that focus, everything else in the abdomen and about the ulcer being sweet and clean. I feel sure if I had made Dr. Lund's second incision and thoroughly washed out the pelvis, she would have gotten well.

DR. ELLIOT: I have had the good fortune to have the closed ulcer heal in all my cases. The patients have died from something else usually, confirming Dr. Lund's point that if you simply had the problem of sewing up the hole in the stomach or intestine, and nothing else to deal with, it probably would be a pretty successful thing, but infection and various other causes have come in to make my cases fatal.

My first case was a case of recurring hemorrhage of the stomach lasting for weeks and months, and finally I operated in profound anemia: that patient died from anemia, without any leak of stomach contents, although part of the stomach was resected.

In another case of perforation of the duodenum the incision was made from the ensiform cartilage to the symphysis pubis and the ulcer was stitched with a great deal of difficulty behind the duodenum. In that case we sewed up the abdominal wound very rapidly, as the patient was in a collapse, and the patient died of hemorrhage from one of the vessels in this long incision, the house officer not recognizing the trouble in time to secure the vessel. The ulcer was found to be perfectly closed.

Another case of ulcer of the duodenum was rather

¹ See page 25 of the Journal.

interesting from its symptoms. It occurred in a neurasthenic man whom no one would believe when he claimed to have pain. On the fifth day I was called to see him and operated. In this case the interesting symptom was present of entire absence of liver dullness, the gas having pumped itself out of the duodenum. The ulcer had formed a valve-like joint, so that the gas had leaked through, but no feces, as far as I could see. The ulcer was stitched, but the man died on the third or fourth day. At the autopsy it was found that although the ulcer had united well, there was a fine line of infection leading down beside the spine into the pelvis; the infection had undoubtedly taken place before the operation and drainage of the pelvis might have saved the patient. I usually drain the pelvis in such cases, but this case seemed to be without infection.

I am rather inclined to think that Dr. Lund's statistics and all the statistics on this subject are too favorable, since men report favorable cases more often than unfavorable. Still I think it is very encouraging to note the improvement shown year by year, and his case is certainly a very brilliant one.

DR. LUND: In regard to the diagnosis in these cases. In this case I stated that we made a diagnosis of probable perforation, but it was only a probable diagnosis. I was certain of general peritonitis, and was in doubt whether to incise over the appendix or epigastrium and was guided to the epigastrium by the greater tenderness there. Whether the perforation is to the right or to the left, Tinker has found in examining 213 cases that the tenderness is in the epigastrium and left hypochondrium. That was the case in this man although the perforation was to the right.

As to perforations on the posterior wall, these take place into the lesser peritoneal cavity necessarily, and it is therefore necessary to wash out the lesser peritoneal cavity. Several cases have been reported where that has been successfully done. In this case I could see through the lesser omentum that everything was clean, and there was no reason why anything should have got in there.

In regard to the cases where the patient has afterwards died of hemorrhage or perforation of another ulcer, it is important, where you have time, to look over the stomach and see whether there are other ulcers present, because not a few cases of this sort have been reported. In a good many cases it is inadvisable to do any more than to attend to the one you know to be the cause of perforation.

I think it is important to treat a man after you operate on him as you treat for gastric ulcer, and keep him on liquid diet a long time. It is somewhat remarkable that this man has had no dyspeptic symptoms since he left, and the completeness of the cure in his case may be partially due to his careful diet during his long stay in the hospital.

PATHOLOGICAL SPECIMEN.

DR. WARREN showed an ovarian tumor removed from a girl of sixteen. The tumor had been growing about six months. She had had no catamenia. At first it was thought to be a case of imperforate hymen, but examination under ether showed that that was not the case, but there was no cervix at all, no os apparently except a little dimple high above the pubes on the left-hand side. After the tumor was removed there was found to be an undeveloped uterus.

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THE CASE METHOD OF TEACHING MEDICINE.

WE commend to the attention of those of our readers who are interested in medical education the communication by W. B. Cannon, printed in another part of this issue. It presents, to our mind, a perfectly feasible method of adding to the efficiency of clinical teaching, to the benefit not only of the student but also of the instructor. Mr. Cannon's paper is clearly the result of a very careful consideration of the merits and deficiencies of existing methods from the standpoint of a man who has himself had considerable experience in teaching as well as in being taught. We find little in the paper from which to dissent, and much which appeals to us as a distinct advance. Unlike many proposed reforms, it is not iconoclastic, but rather supplementary to what we already have, and what experience has shown to be on the whole serviceable. Recitations and even the much-abused didactic lecture are given a place, and the existing clinical lecture retains its position in the curriculum undisturbed. What Mr. Cannon would add to all this is a nearer personal contact with cases than is at present possible to the medical student under ordinary conditions. Since patients are unavailable for large classes in sufficient number, he thinks the same end may be at least partially attained by the study of cases as they have actually occurred and as they are transcribed in hospital or private record books. Let all the students of a class study the histories of actual cases and report upon them at stated conferences, using for purposes of study the various text-books at their command, and they will, in his opinion, come nearer to the practical problems of medicine than by the use of text-books without cases, or by the recitation method alone. The theory is, that a man who is capable of studying medicine at all is capable of facing the intricacies of clinical diagnosis at first hand, and not primarily through the medium of his instructor. He must be taught to be independent at the outset of his practical work, and this, it is urged, may be attained, in a measure at least, by the personal study of actual cases.

Cannon finds a strong argument for his idea in the success of a precisely similar system, now being used in connection with the study of law. This "case method" as it has been named, has led to the high position which the Harvard Law School holds in the teaching of law, and we quite agree with Cannon that there seems no reason why it should not apply with equal force to the study of clinical medicine. We at least feel sure that a careful reading of his paper will convince the most conservative of the reasonableness of his contention, which, as we understand it, is essentially that a student of medicine, like a student of any other branch of knowledge, needs above all things to be trained how to use his own mind, rather than to be overburdened merely with the results of others' learning. The case method as discussed in this paper seems to us to offer a possible solution of this problem, which with the growth of special knowledge is certainly assuming each year greater and greater significance.

SIR JAMES PAGET.

THE death of Sir James Paget recalls a period of English surgery when it occupied a position as high, if not higher, than that of surgery in any other country. Sir James's career began early in the century and he was already in his prime when Virchow was still a young man and enunciating his new ideas of cellular pathology, and Lister was practising surgery in Glasgow and still unknown to fame.

Paget's reputation both as a surgeon and a scientific man was based upon his lectures on "Surgical Pathology." This book, the first edition of which appeared in 1853, opened to the Anglo Saxon student a treasure house of surgical knowledge which gave inspiration to many a young surgeon to look beyond the mere mechanical side of his profession, and not to be satisfied with the crude description of disease which passed current in the text-books of the day. The technique of the microscopy of that time was still very crude and the knowledge which it yielded was known to but few. What Hyrtl afterwards called the kid glove work of the laboratory was then unknown, and to the student of to-day, accustomed as he is to instruments of precision like the modern microtome, to the intricacies of aniline stains and other refinements of the modern laboratory, Paget's workshop would have seemed a poor and humble source to have produced such far-reaching influences. Those, however, whose privilege it has been to know the man would not be surprised at the results he was able to obtain. An acute observer and a painstaking student, he possessed in an unusual degree the ability to express his thoughts in easy and elegant language, and it was at his lectures at St. Bartholomew's Hospital that the results of his investigations in pathology first took shape. He was as ready with his pen as with his tongue, and his colleagues to this day bear testimony

to the facility with which, while surrounded by his family, he could quietly write out chapters which have since given him fame.

Those who have been brought up under the influence of the modern German school should not forget the scientific work of the English-speaking teachers of that time. They should realize that some of the impetus which is now being felt on the scientific side of medicine came from England, and that the work of Paget was presently followed by that of Lister.

Paget has also left his mark as clinician in his clinical lectures and essays. Although they were written before the antiseptic era had been firmly established they are replete with valuable information. Many of his expressions, such as the "nervous mimicry of disease," the "stammering of the bladder," "quiet necrosis," and other well-known phrases, are destined to hold their place in literature. His lecture on the "Calamities of Surgery" is one which every beginner should not fail to read. The name of Paget has not been as familiar to the student of the last decade of the century as it was before. The distinguished author had outlived most of his generation, and of late years had so far yielded to the pressure of the hand of time as to be unable to contribute to current literature or to continue to occupy a conspicuous position among his professional brethren. The International Medical Congress in London held in 1881 was probably one of his last public appearances before the medical world. For many years he had lived in the retirement which his brilliant work as a surgeon and a teacher had entitled him to enjoy.

MEDICAL NOTES.

THE PLAGUE SITUATION. — Bubonic plague is reported from the city and neighborhood of Sao Paulo, Brazil. In Honolulu, after a respite of thirteen days, several new cases have appeared, with three deaths. There is a tendency to evade the law with regard to death certificates and the authorities are thereby given considerable annoyance. One difficulty has been that the bodies of plague victims have in every case been cremated, which, through superstition, has led natives and Chinese to conceal their sick. Colonel Greenleaf cables from Manila that bubonic plague has appeared in and about Manila, in the Philippines. It is said that the disease carries off its victims within forty-eight hours from its attack, and in the country towns medical aid or supplies are not to be had readily, and then only in a limited way. Not only this, but burial of the corpses of those who have died from this disease is carelessly conducted, and absolutely no precautions are taken. The United States Government has taken prompt measures to prevent the possibility of the introduction of the disease into America. The quarantine of the Philippines will be in charge of the Marine-Hospital Service and special officers to manage the work will be detailed. Passed Assistant

Surgeon J. C. Perry, of the Marine-Hospital Service, has been appointed to have charge temporarily of the quarantine service at Manila. He has been at Hong Kong for six months, is familiar with other Asiatic ports and is regarded as an experienced and capable officer.

YELLOW FEVER IN CUBA.—The yellow-fever statistics for 1899 from Havana show that yellow fever is still to be reckoned with in Cuba. The report for December shows: New cases 70, deaths 22, recovered 30, under treatment 25. Of the patients, 23 were Americans and 50 Spaniards. Six of the former died and 10 of the latter. Experts hold that the difference in the ratio of deaths was due to the use of alcohol. Comparison of the whole year with the ten preceding years is favorable, but the last three months of 1899 were unfavorable. The December record of deaths from 1890 to 1899 is 11, 17, 32, 10, 24, 19, 225, 17, 13, 22. The yearly totals for the same period are 327, 363, 362, 512, 418, 560, 1,540, 1,056, 162, 103. It is of interest that the records show that, in spite of favorable weather since September 1st, the situation has been worse than during the corresponding period of the Spanish occupation. The explanation offered is the great influx of Spanish immigrants who were not acclimated and who were huddled in the lower quarters of the city. They were badly nourished and were unable to resist the disease. One prominent fact is the failure of house disinfection to kill the germs of the disease. Every house in the city has been disinfected several times. Those familiar with the conditions are not surprised at these facts. The introduction of proper methods of sanitation will no doubt gradually overcome the disease.

COMPETITION FOR THE AMERICAN MEDICAL ASSOCIATION MEDAL.—At the meeting of the American Medical Association held June 4, 1897, it was resolved to restore the former policy of the Association in favor of offering annually a gold medal for meritorious scientific work. The committee for this year consists of Drs. George M. Gould, of Philadelphia; E. Fletcher Ingals, of Chicago, and T. W. Huntington, of Sacramento, Cal. The competing essays shall be typewritten or printed and shall bear no mark revealing their authorship; but instead of the name of the author, there shall appear on each essay a motto, and accompanying each essay shall be a sealed envelope containing the name of the author and bearing on its outer surface the motto of identification. The committee shall have authority to reject and return all essays in case none have been found worthy of the Association medal. Competing essays must be in the hands of the committee not later than March 1, 1900. For further information address any member thereof.

DR. SCHENCK AND THE UNIVERSITY OF VIENNA.—It is reported that Dr. Schenck, who has of late come into particular prominence because of his theories regarding the determination of sex, has been removed from his position at the University, because of his radi-

cal views. He has had charge of the Institute for Embryology for the past twenty-six years.

WILLIAM A. HAMMOND, M.D.—Dr. William A. Hammond, former Surgeon-General of the U. S. Army, died in Washington, January 5th. He had conducted a sanitarium in Washington for some years immediately preceding his death.

PROFESSOR RÖNTGEN ACCEPTS CALL TO MUNICH.—Professor Röntgen, after considerable hesitation, has accepted a call to the University of Munich.

HOSPITALS FOR TUBERCULOSIS IN SPAIN.—It is said that two hospitals for the treatment of tuberculosis are about to be established in Spain.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, January 10, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 79, scarlatina 37, measles 73, typhoid fever 6.

SYSTEMATIC STUDY OF CANCER.—The fund of \$100,000, less \$8,000 legacy duty, left by Mrs. Caroline Brewer Croft has been turned over in part to Harvard University to be used for the purpose announced in the will. The money will be under the immediate jurisdiction of the Department of Surgery of the Harvard Medical School, which already has a small fund for purposes of research. Steps have been taken to begin the study for which the money was left. The principal appointee thus far is Dr. E. H. Nichols, who will sail for Europe early in February, to be gone two months, for the purpose of investigating the work heretofore done and at present being carried out in English and Continental laboratories. On his return the work will be vigorously prosecuted in those directions which promise hope of results.

AN EXORBITANT VERDICT SET ASIDE.—A verdict of \$30,000 for a plaintiff in an accident suit against a railroad rendered some time ago has recently been set aside by Judge Bishop, of the Superior Court, and a new trial ordered unless a compromise can be reached. Excessive verdicts seem, on the whole, to be increasing in number; it is altogether to be commended that the judges at times take occasion to assert their authority in over-ruling unjust jury verdicts in these cases.

INCREASE IN CREMATIONS.—The sixth annual meeting of the Massachusetts Cremation Society has recently been held. The report showed that the increase in the number of cremations from year to year has been very pronounced. There were 230 in 1899 as compared with 167 the year before. The total number of cremations since the crematory was opened is 869. Officers were elected as follows: Clerk, John Homans, 2d; Treasurer, John Ritchie; Directors, James R. Chadwick, John O. Marble, Augustus Hemmenway, Babson S. Ladd, Robert H. Richards, John

Ritchie, John Homans, 2d, John A. Higginson and Richard W. Hale.

NO PLAGUE IN BOSTON HARBOR. — The steamer *Fitz Clarence*, from Antwerp, was last week detained by the quarantine authorities for several days because of a suspicious case, which it was thought might be plague. Further investigation has shown that this is not the fact and the vessel with her cargo has been discharged from quarantine. The patient, who was a stowaway, will be returned to Antwerp, as the law demands.

TWO CENTENARIANS. — Mrs. Cynthia Conant, reported to be one hundred and one years old, died last week in Springfield, Mass. Lucy Boston, of Webster, Mass., said to have been one hundred and five years old, and the last survivor of the Nikmaunk tribe of Indians, was burned to death in her house, January 6th, the fire probably being the work of incendiaries.

THE WILL OF R. B. BRIGHAM. — The late Robert Brock Brigham, after bequeathing small sums to various charities, leaves the greater part of his estate to found a hospital in Boston for chronic disease, to be known as the Robert B. Brigham Hospital for Incurables. The estate is a large one.

BEQUESTS TO HOSPITALS. — The late Daniel Sharp Ford has left by will the following bequests to hospitals: Boston City Hospital, \$6,000; Massachusetts General Hospital, \$7,000; Children's Hospital, Boston, \$5,000.

LECTURES ON THE EVOLUTION OF SEX. — Prof. Patrick Geddes, of Edinburgh, is giving a course of lectures on the evolution of sex under the auspices of the Twentieth Century Club.

A HOSPITAL FOR JAMAICA PLAIN. — Mrs. Abby L. A. Faulker has bequeathed her entire estate to be used ultimately for the establishment of a hospital in Jamaica Plain.

NEW YORK.

TENEMENT HOUSES: STATE COMMISSION IN LUNACY. — In his second annual message to the Legislature, Governor Roosevelt urges that special attention be given to the need of reform in the laws governing tenement houses. The Tenement-House Commission of 1894, he says, declared that, in its opinion, the tenement-house laws needed to be revised every five years, and he believes that the improvements in building materials and construction of tenements and the advance in sanitary legislation all demand further modification of existing laws. To this end he suggests the appointment of a commission to present a revised code of tenement-house laws. He expresses his hearty sympathy with the objects sought in the drug clerks' bill presented last year, which owing to certain defects he was unable to sign, and trusts that a satisfactory bill may be found during the present session. In speaking of the work of the State Commission in Lunacy, he states that progressive improvement shows that the State care system was wisely founded and

must remain the permanent policy of the State. Not only has the care of the insane been bettered, but the cost has been lessened. The accommodations have been increased and improved, and the annual increment of permanent cases, the ultimate cost of the State of each of which is computed at \$5,000, has been diminished. While the reduction of cost of maintenance the past year from the per capita of \$185.20 in 1898 to \$178.42, in the face of a general advance in prices, and contrasted with \$216 before the State Care Act, is satisfactory, it is of far more importance that the annual increase of patients in hospitals is steadily decreasing. In 1897 it was 733, in 1898, 634, and in 1899, 529. These figures allow but one conclusion — better care of the insane; and that conclusion is supported by the fact that 1,009 patients have been discharged fully recovered, while 921 others have been sufficiently improved to allow their return to their homes.

ACADEMY OF MEDICINE FREE FROM DEBT. — At a meeting of the New York Academy of Medicine held January 4th, Dr. Reginald H. Sayre, the Treasurer of the Board of Trustees, reported that the remaining indebtedness of the Academy, amounting to \$2,000, for the erection of its present commodious building, had been paid, and that it would start in on the new year entirely free from debt. The building cost about \$240,000, but with the increased valuation of the land since its purchase the property is worth very much more than that at the present time.

DEATH FROM CARBOLIC ACID. — A fatal accident of unusual character occurred at the City Hospital on Blackwell's Island on January 5th. A patient who was in a very unclean condition was being given a bath, and the male nurse who had charge of him poured over his head and body about eight ounces of a strong solution of carbolic acid, which he supposed to be tincture of larkspur. The poor man suffered intense agony and in spite of prompt treatment died within an hour from the result of the burns caused by the acid.

THE BABIES' HOSPITAL. — The eleventh annual meeting of the managers of the Babies' Hospital, connected with the Post-Graduate Medical School, was held on January 4th. The institution has for some time been located in the fine building on Lexington Avenue, erected for a private hospital by Dr. T. Gailard Thomas, and during the past year 394 patients were treated. Thirty-five beds are at present in use, and 24 nurses have been graduated from the training school connected with the hospital.

OFFICERS OF NEW YORK NEUROLOGICAL SOCIETY. — At the annual meeting of the New York Neurological Society held January 2, 1900, the following officers were elected for the coming year: President, Frederick Peterson, M.D.; 1st Vice-President, Joseph Collins, M. D.; 2d Vice-President, L. Strieglitz, M.D.; Recording Secretary, Pearce Bailey, M.D.; Corresponding Secretary, Lewis A. Conner, M.D.; Treasurer, Graeme

M. Hammond, M.D.; Councillors, C. L. Dana, M.D., M. A. Starr, M.D., B. Sachs, M.D., E. D. Fisher, M. D., J. Arthur Booth, M.D.

SOCIETY FOR THE RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—This Society, instituted in 1842, has recently issued its fifty-eighth annual statement. During the time of its existence it has assisted a large number of widows and orphans. In the last year it has aided eighteen widows and six children of deceased members. The members of the Society now number one hundred and thirty-seven.

A NEW STORAGE RESERVOIR.—A proposition for the construction of a new storage reservoir in Westchester County, in connection with the Croton system, of the capacity of 9,000,000,000 gallons, which was made some time ago by Commissioner Dalton, of the Department of Water Supply, has now been adopted by the Board of Public Improvements.

REQUESTS BY E. F. HOLDEN, M.D.—Erastus F. Holden, who died recently at Syracuse, N. Y., bequeathed \$25,000 to Syracuse University and \$5,000 to the Syracuse Women and Children's Hospital.

CENTENARIAN.—Mrs. Sarah Allen, who is a native of Ireland, celebrated her one hundredth birthday on January 1st, at Union Hill, near Hoboken.

ARMY NOTES.

UNITED STATES REPRESENTATIVES TO INTERNATIONAL MEDICAL CONGRESS.—The President has designated the following officials to represent the United States Government at the International Medical Congress, which meets in Paris on August 2d, next, and at the Congress of Hygiene and Demography, which assembles at the same place on August 10th: For the army, Surgeon-General Sternberg and Major LaGarde; for the navy, Surgeon-General Van Reyden; for the Marine-Hospital Service, Surgeon-General Wyman and Passed Assistant Surgeon Roseman. Major LaGarde has been invited to read a paper on gunshot wounds, the discussion to be opened by the Surgeon-General of the Austro-Hungarian Army.

MEDICAL ASSISTANCE TO THE ISLAND OF GUAM.—Flattering reports have reached this country concerning the efficient services rendered on the Island of Guam by Surgeons Leech, Stone and Grunwell, U. S. Navy. On occupation by United States forces this island was found to be entirely without medical assistance, the Spanish physicians having all taken their departure. In addition to the performance of their duties on board the naval vessels at the Guam station the gentlemen above named have been indefatigable in their work of caring for the sick, establishing hospitals and endeavoring to disseminate a knowledge of elementary hygiene among the people at large; their work being greatly appreciated by the natives.

ASSOCIATION OF SPANISH WAR VETERANS.—Major Victor C. Vaughan, U. S. V., has been recently

appointed Surgeon-General of the Association of Spanish War Veterans. Major Vaughan is well-known to the profession as professor of hygiene at the University of Michigan, to which position he returned some months ago. Major Vaughan was commissioned as surgeon of the 33d Michigan Volunteers and accompanied that regiment to Cuba, being present during the operations against Santiago. He was subsequently made a chief surgeon of division, and for many months was a member of the board appointed to investigate the typhoid epidemics in the army camp.

A BED FIELD HOSPITAL FOR SOUTH AFRICA.—It is understood that the organization and equipment of a three-hundred-bed field hospital, for service with the British forces in South Africa, is being projected by the same organization of American women in England by which the hospital ship *Maine* was fitted out. As it is contemplated that this hospital shall be complete in its organization, personnel and equipment, even to possessing its own transportation and commissariat, it is evident that the problem presented is much more difficult of solution than the organization of a hospital ship.

SMALL-POX CAMP, ANGEL ISLAND.—The small-pox camp established on Angel Island, in San Francisco Bay, which has been maintained during the past two months on account of an outbreak of this disease in a negro volunteer regiment, has been recently broken up, twenty-three patients being returned to duty.

SAILING OF THE "MISSOURI."—The hospital ship *Missouri* has recently sailed from Manila for San Francisco with 286 sick and wounded on board.

Miscellany.

LUTHER D. WOODBRIDGE, M.D.

At a meeting of the Berkshire District Section of the Massachusetts Medical Society, held in Pittsfield, December 28, 1898, it was unanimously ordered that the following notice as a memorial of Dr. Luther Dana Woodbridge be placed upon the records of the Society; that a copy be sent to the family, and that copies be furnished to the *Boston Medical and Surgical Journal* and to the North Adams and Pittsfield papers, for publication:

Dr. Luther D. Woodbridge, of Williamstown, died suddenly from heart disease on November 3, 1899. In his death the Berkshire District Medical Society has suffered a severe loss, for he was one of the most esteemed and gifted of our members.

Dr. Woodbridge was born at Perth Amboy, N. J., December 27, 1850; was graduated at Williams College in 1872, and the College of Physicians and Surgeons, New York, in 1877. Before entering upon his medical studies he was a tutor at Roberts College, Constantinople, and afterwards instructor in gymnastics at Williams College. After receiving his medical degree, he served as interne at Roosevelt Hospital and as Clinical Assistant at Chambers Street Hospital, New York, after which he spent a year in the hospitals of Vienna and London. In 1881 he began

practice in New York and received an appointment as assistant surgeon of the Manhattan Eye and Ear Hospital. In 1884 he was chosen professor of anatomy, physiology and hygiene at Williams College, which position he has ever since filled with marked ability and success, at the same time practising medicine in Williamstown. He became a member of the Massachusetts Medical Society in 1888, was president of the Berkshire District Medical Society in 1893, and of the North Berkshire Medical Society in 1889; he was a member of the American Medical Association and of the American Academy of Medicine, and in 1894 was appointed lecturer on diseases of the nervous system in the College of Physicians and Surgeons, Boston.

He was a regular attendant at the meetings of the Berkshire District Medical Society, and added greatly to their interest by his instructive addresses and his thorough and scientific methods of study. Always courteous and dignified in manner, he had yet great independence of thought and utterance, and his fellow members could not fail to be impressed with his ability, his sincerity and his elevated standards, both intellectual and moral. As a medical practitioner he was deservedly successful, and he was greatly beloved and respected, as he is now deeply mourned, by the whole of the highly cultured community in which he lived. Having begun life with missionary work, he never abandoned that vocation, but always labored zealously and effectively for the spiritual as well as the physical welfare of his fellow-men.

The Fellows of this Society tender to his bereaved family their sincere sympathy in their great affliction.

W. W. SCOFIELD, *President*; L. C. SWIFT, *Secretary*, of the Berkshire District Medical Society.

WAR NOTES FROM SOUTH AFRICA.

A CORRESPONDENT of the *British Medical Journal* speaks of the Mauser and Lee-Metford bullets, in use in the South African War, as follows:

"A wounded Boer referred to the Lee-Metford as a 'gentlemanly bullet,' and this remark is equally applicable to the Mauser. The wounds made by them are small, clean, and little disposed to suppurate, and the tendency to suppuration is no doubt decreased by the excellent physical condition of the patients and the healthiness of the district. Shock as a sign has been conspicuous by its absence even in the most serious cases, and gives little or no aid in the diagnosis of visceral injury. Retained bullets are comparatively uncommon, no doubt on account of the fact that most of the men have been wounded in rapid advances. The bullets met with have been little deformed, unless they have struck stones before entering, and I have seen no single instance which would suggest the use of either flattened or so-called explosive bullets among the wounded here. The only large exit wounds have been one or two opposite comminuted fractures."

It is worthy of remark, as in our own recent war, that the number of operations is relatively few. Speaking of this, the correspondent, G. H. Makins, F. R. C. S., says:

"Operations at the field hospitals have been very few in number; I think, at the most, six amputations have gone down to Wynberg, and there can be little doubt that such operations will be comparatively infrequent in this series of cases. The cases, as a whole, started remarkably well. There has been no serious wound infection up to the present — a great tribute to the care with which the dressings have been applied in the hospitals and on the field by the hard worked officers of the R. A. M. C. In this camp, during the last

week, on several occasions the officers were up all night, or went to bed at 12, to rise at 4 a. m. The heat during the day has been very great, 108° to 115° F. in the bell tents in the afternoons of the last few days."

Correspondence.

THE BEST DIET FOR THE TROPICS — THE ARMY RATION.

SAN JUAN, PUERTO RICO, December 27, 1899.

MR. EDITOR:—As a supplement to the article of my scientific friend, Colonel Smart, on the "Army Ration," let me add a few practical observations gathered in Puerto Rico.

Duty has taken me at one time or another since the first days of the American invasion into almost every town from Ysabela on the northwest coast to Humacao on the east coast, and then up the military road to this capital. In the district of Guayama and Southern Humacao it was part of my business to investigate the cause of deaths among the natives.

Everywhere I found the main causes assigned to be anemia and phthisis. Everywhere I went I was struck by this ever-prevalent anemia. The pale, yellowish, waxy skin, bloodless lips and swollen, puffy features formed a picture never seen by me out of tropical Puerto Rico. Yet I soon found that these people had been living on rice, beans, maize, dried codfish and fruits. Meat very rarely entered into their diet. They and their fathers before them had lived exclusively on the diet urged by the public press as suitable for tropical climates, and the result filled the hospitals with such ghastly cases of anemia that no one who has once seen the picture can ever forget the impression. On the other hand, I soon discovered that the people who lived in the towns and could afford it ate two hearty meals daily. These people, I believe, used more meat than we used in American cities, and there is no doubt in my mind but that I have used more meat and felt more need for it since I have been here than I ever used in the same time in the United States. Yet I am one of the few that have not had to go home for ill health; while the natives that eat in the hotels with me, and as freely as I do, are perfectly healthy individuals who showed not the least trace of anemia.

Only a few days since a native informed me with much gusto that one of the best things that Puerto Rico afforded was *chuleta de cerdo* — pork chops — surely one of the most unsuitable articles of diet for a tropic climate, as our physiological friends will tell us, and yet the absence of which, in my opinion, made that native anemia to a noticeable degree.

These observations are so common in this climate, and have been so forcibly impressed on me, that I feel more and more the wisdom of going very, very slowly in urging alterations in the ration.

Very respectfully,

P. R. EGAN, M. D.,
Assistant Surgeon, U. S. Army.

"TAKE NO THOUGHT."

BALTIMORE, MD, January 6, 1900.

MR. EDITOR:—The following extract from Murley's "Oliver Cromwell," *Century* for December, page 277, seems applicable to your criticism of Dr. Osler's McGill University Address: "In other words, Cromwell fixed his eyes upon the need of the hour, used all his energy and devotion in meeting it and let that suffice. In men of action there are few better marks of a superior mind."

Very truly yours,

EUGENE F. CORDELL, M. D.

METEOROLOGICAL RECORD

For the week ending December 30th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'thr.		Rainfall in inches.
	Daily mean.	Daily minimum.	Daily maximum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S. 24	29.52	40	46	34	71	8	S.E.	S.E.	7	12	O.	R.	.24
M. 25	29.49	38	45	30	70	56	S.W.	S.W.	10	14	C.	O.	.02
T. 26	29.79	25	32	18	61	61	W.	W.	14	10	F.	C.	
W. 27	30.13	25	32	18	57	75	W.	S.W.	12	12	C.	C.	
T. 28	30.10	25	30	20	66	68	W.	N.W.	8	10	O.	C.	
F. 29	29.79	25	28	15	67	65	N.W.	W.	13	14	C.	C.	
S. 30	29.64	15	12	8	64	58	W.	W.	9	15	C.	C.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T., threatening; N., snow. † Ind. gives trace of rainfall. ‡ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 30, 1899.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Scarlet fever.
New York	3,550,053	1248	414	11.04	22.95	1.04	4.24	1.36
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	232	75	10.59	21.42	1.26	4.62	2.52
Baltimore	506,389	173	48	10.83	14.25	2.28	6.27	—
Cincinnati	405,000	111	—	6.30	9.00	—	1.00	—
Cleveland	359,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	110	28	17.9	13.65	8.19	3.61	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	81	34	14.76	—	—	1.23	—
Nashville	87,754	32	10	—	20.00	—	—	—
Charleston	65,165	24	11	—	3.45	—	—	—
Worcester	111,732	24	10	21.42	14.70	—	10.71	—
Fall River	103,142	34	10	11.76	14.70	—	5.88	—
Cambridge	92,520	42	10	21.42	—	—	14.28	4.76
Lowell	90,114	49	9	—	22.04	—	—	—
New Bedford	70,511	18	8	11.11	18.46	5.55	5.55	—
Lynn	68,218	17	8	—	17.64	—	—	—
Somerville	64,394	16	2	25.00	25.00	6.27	—	18.75
Lawrence	58,972	17	8	11.76	17.61	—	—	5.88
Springfield	58,266	18	8	16.66	5.55	5.55	—	—
Holyoke	44,519	12	5	53.33	16.66	—	16.66	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	12	6	8.33	16.66	—	8.33	—
Malden	36,421	8	1	12.50	—	—	12.50	—
Chelsea	34,235	13	4	23.07	23.07	—	23.07	—
Haverhill	32,651	11	1	18.18	—	—	18.18	—
Gloucester	31,426	8	1	12.50	—	—	—	—
Fitchburg	30,523	5	2	20.00	—	—	20.00	—
Newton	30,461	9	2	22.22	—	—	11.11	—
Taunton	28,227	13	3	—	23.07	—	—	—
Everett	28,102	8	4	—	—	—	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	3	2	—	—	—	—	—
Waltham	22,791	9	1	11.11	22.22	—	11.11	—
North Adams	21,583	6	1	—	—	—	—	—
Chicopee	18,316	5	—	—	40.00	—	—	—
Medford	17,190	3	—	—	—	—	—	—
Newburyport	15,936	6	—	—	—	—	—	—
Melrose	14,721	6	—	—	—	—	—	—

Deaths reported 2,496; under five years of age 744; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 261, acute lung diseases 459, consumption 352, diphtheria and croup 106, typhoid fever 32, measles 31, scarlet fever 29, diarrheal diseases 22, whooping-cough 18, cerebrospinal meningitis 12, erysipelas 11.

From measles New York 20, Providence 7, Washington 2, Boston and Springfield 1 each. From diarrheal diseases New York 10, Cincinnati 3, Baltimore, Providence and Fall River 2 each, Nashville, Worcester and Holyoke 1 each. From whooping-cough New York 12, Baltimore 2, Boston and Cambridge 1

each. From cerebrospinal meningitis New York 5, Boston and Worcester 2 each, Lawrence, Gloucester and Newton 1 each. From erysipelas New York 8, Cincinnati 2, Holyoke 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 23d, the death-rate was 27.5. Deaths reported 6,051: acute diseases of the respiratory organs (London) 968, measles 168, diphtheria 122, whooping-cough 111, fever 80, diarrhea 45, scarlet fever 44, small-pox (Hull) 8.

The death-rates ranged from 17.6 in Huddersfield to 42.4 in Portsmouth: Bradford 21.0, Cardiff 24.4, Gateshead 21.0, Hull 23.1, Leeds 18.9, Liverpool 33.9, London 29.9, Manchester 23.8, Newcastle-on-Tyne 21.9, Nottingham 25.3, Plymouth 38.9, Salford 26.8, Sheffield 23.0, Sunderland 29.4, West Ham 20.7.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 6, 1900

A. W. DUNBAR, passed assistant surgeon, ordered to duty on the "Monongahela" immediately.

R. K. SMITH, passed assistant surgeon, detached from the Naval Hospital, Mare Island, Cal., on reporting of relief and ordered to duty on the "Pensacola."

J. H. PAYNE, assistant surgeon, detached from the "Indiana" and ordered to duty at the Naval Hospital, Mare Island, Cal.

A. F. PRICE, medical director, promoted to medical director from April 9, 1899.

G. M. PICKRELL, surgeon, promoted to surgeon from September 19, 1899.

R. SPEAR, assistant surgeon, ordered to duty in connection with the Naval Recruiting Rendezvous, Philadelphia, Pa., January 9th.

I. N. HURD, pharmacist, ordered to duty at the Key West Naval Station, January 11th.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDING JANUARY 4, 1900

SAWTELLE, H. W., surgeon. Granted leave of absence for thirty days. December 28, 1899.

MCINTOSH, W. P., surgeon. Granted leave of absence for five days. December 27, 1899.

PERRY, J. C., passed assistant surgeon. To proceed to Amoy, China, for special temporary duty. December 27, 1899.

ROSENAU, M. J., passed assistant surgeon. To proceed to Baltimore, Md., for special temporary duty. December 23, 1899.

THOMAS A. R., passed assistant surgeon. To proceed to New York, N. Y. and report to Surgeon L. L. WILLIAMS (Immigration Depot) for special temporary duty. December 22, 1899. To proceed to Rotterdam, Netherlands, for duty. December 22, 1899.

COFER, L. E., assistant surgeon. Granted leave of absence for one month. December 23, 1899.

TABB, S. R., assistant surgeon. Granted leave of absence for fifteen days. December 27, 1899.

DUFFY, FRANCIS, acting assistant surgeon. Granted leave of absence for seven days. December 28, 1899.

MCINTOSH, W. P., surgeon. To proceed to Columbia, Tenn., for special temporary duty. January 2, 1900.

PERRY, J. C., passed assistant surgeon. To proceed to Manila, Philippine Islands, for temporary duty. January 4, 1900.

FRICKS, L. D., assistant surgeon. Assigned to duty as assistant to the director of the Hygienic Laboratory, Washington, D. C. January 4, 1900.

MOORE, DUNLOP, assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to Portland, Ore., and assume command of the Service. December 29, 1899.

CURRIE, D. H., assistant surgeon. Relieved from duty at Louisville, Ky., and directed to proceed to Washington, D. C., and report to the director of the Hygienic Laboratory for temporary duty. December 29, 1899.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, January 17, 1900, at 8 P. M.

At 8 o'clock: Dr. E. W. Taylor will report "An Unusual Complication of Epilepsy."

At 8.15 o'clock: Dr. H. F. Hewes will read a paper entitled "Some Observations upon Diseases of the Stomach." Discussion by Drs. E. G. Cutler and E. P. Joslin.

J. BERGEN OGDEN, M.D., Secretary, Harvard Medical School, Boston.

RECENT DEATH.

CHARLES KINGSLEY, M.D., M.M.S.S., died in Marlboro, December 29, 1899, aged thirty years.

Original Articles.

A RHODE ISLAND PHILOSOPHER (ELISHA BARTLETT).¹

BY WILLIAM OSLER, M.D.,
Professor of Medicine, Johns Hopkins University, Baltimore, Md.

RHODE ISLAND can boast of one great philosopher, one to whose flights in the empyrean neither Roger Williams nor any of her sons could soar, but the immortal Berkeley was only a transient guest in this State, waiting quietly and happily for the realization of his Utopian schemes. Still he lived long enough in Rhode Island to make his name part of her history; long enough in America to make her the inspiration of his celebrated lines on the course of empire. Elisha Bartlett, teacher, philosopher, author, of whom I am about to speak, whom you may claim as the most distinguished physician of this State, has left no deep impress on your local history or institutions. Here he was born and educated and to this his home he returned to die, but his busy life was spent in other fields, where to-day his memory is cherished more warmly than in the land of his birth.

I.

Born at Smithfield in 1804, Bartlett was singularly fortunate in his parents, who were members of the Society of Friends, strong, earnest souls, well endowed with graces of the head and of the heart. The gentle life, the zeal for practical righteousness and the simplicity of the faith of the followers of Fox, put a hallmark on the sensitive youth which the rough usage of the world never obliterated. No account of Bartlett's early life and school-days exists — an index that they were happy and peaceful. We may read in his poem called "An Allegory" certain autobiographical details, transferring the

"Meadow and field, and forest, dale and hill;
Orchards, green hedgerows, gardens, stately trees,"

from the old England which he describes to the banks of Narragansett Bay. Paraphrasing other parts of the poem we may say that auspicious stars shone over his cradle with the kindest light and promise, and amid the genial air of a New England home, goodness, truth and beauty were his portion. He tells of the wonder and delight stirred in his young soul by the thousand tales of "fairies and genii, giants, dwarfs and that redoubtable and valiant Jack who slew the giants." Then as the days lengthened he came under the spell of "The Arabian Nights" and of "Robinson Crusoe." Looking back in after years he compared this hearty, wholesome life to some bounteous spring that wells up from the deep heart of the earth. Addison, Goldsmith and Washington Irving filled his soul with freshness like the dawn,

"And led by love and kindness, ran the hours
Their merry round till boyhood passed away."

In the ruder discipline and strife of school and college he grew to manhood with (as he expressed it) "a fine free healthfulness," and with faculties self-poised and balanced.

At Smithfield, at Uxbridge, and at a well-known Friends' institution in New York, Bartlett obtained a very thorough preliminary education. Details of his medical course are not at hand, but after studying with

¹ An address delivered before the Rhode Island State Medical Society, December 7, 1899.

Dr. Willard, of Uxbridge, Drs. Greene and Heywood, of Worcester, and Dr. Levi Wheaton, of Providence, and attending medical lectures at Boston and at Providence, he took his doctor's degree at Brown University in 1826, a year before the untimely end of the medical department.²

In June, 1826, Bartlett sailed for Europe, and the letters to his sisters, which, with other Bartlett papers, have been kindly sent me by his nephew, the Hon. Judge Bartlett, of the New York Court of Appeals, give a delightful account of his year as a student abroad. He remained in Paris until December; then, in company with his fellow-student, Dr. Southwick, he visited the chief cities of Italy, returning to Paris early in March. The month of May, 1827, was spent in London, and he sailed from Liverpool June 8th. Unfortunately the letters to his sisters contain very few references to his medical studies, but I have extracted a few memoranda from them.

Writing August 24, 1826, he says: "The celebrated Laennec died at his country residence on the 13th of the present month. The publication in 1819 of a new method of ascertaining diseases of the chest forms an era in the history of medicine. M. Laennec fell a victim to one of those diseases the investigation of which by himself has enriched the field of science, contributed to the alleviation of human suffering, and given his own name a high rank among the great and the good men of his age." He asked that this memorandum should appear in the Providence papers.

Writing September 4th, he speaks of attending every day at the Jardin des Plantes to hear the lectures of Cloquet and Cuvier.

One of the professors at the medical school, he says, looked more like a jolly stage driver or a good-natured, blustering butcher than anything else. "He lectures sometimes standing, and sometimes leaning against a post, or straddling over a high stool, flourishing a lancet in one hand and a snuff-box in the other, on the contents of which he is continually laying the most inordinate contributions. He wears during the time an old rusty looking black cap. The familiarity of the distinguished surgeons and physicians with their students struck me at first sight very forcibly, being in such perfect contrast to the proud port and haughty carriage of some of our New England professors. I wish they might step into the Hôtel Dieu and La Charité and take a lesson or two of Boyer and Dupuytren, barons of the Empire, and two of the most distinguished surgeons in the world."

In the letter of October 10th he says, "The public lectures opened this week, and we are continually engaged from half-past six in the morning till bedtime. Visits are made at all the hospitals by candle-light, and a lecture delivered at most of them immediately after the visit."

He speaks of attending the lectures of Geoffroy St. Hilaire, who, he says, "lectures very badly; his ges-

² Parsons closes his *Historical Tract on the Brown University Medical School* with the sentence, "Whether this city, the second in New England, shall become the seat of such a school (that is, a revived department of medicine) must depend very much on the zeal, persistence and ability of its physicians." May I be permitted to remark, Mr. President, that the existing conditions are singularly favorable for a small first-class school. Here are college laboratories of physics, chemistry and biology, and here is a modern hospital with one hundred and fifty beds. What is lacking? Neither zeal, persistence nor ability on the part of the physicians, but a generous donation to the University of a million of dollars with which to equip and endow laboratories of anatomy, physiology, pathology and hygiene. These alone are lacking; the preliminary scientific school is here; the clinical school is at your doors; the money should be the least difficult thing to get in this plutocratic town. The day has come for small medical schools in university towns with good clinical facilities.

tures, though he is a Frenchman, are exceedingly awkward, and he has a sing-song tone like that which one often hears in a Methodist or Quaker preacher."

Bartlett probably acquired in Paris the three principles which Oliver Wendell Holmes said that he had learned: "Not to take authority when I can have facts; not to guess when I can know; not to think a man must take physic because he is sick."³

Strangely enough I find no reference in these Paris letters to the man of all others who influenced Bartlett most deeply. In Louis, even more than in Laennec, the young American students of that day found light and leading. The numerical method, based on a painstaking study of all the phenomena of disease in the wards and in the dead-house, appealed with peculiar force to their practical minds, and Louis's brilliant observations on phthisis and on fevers constituted, as Bartlett remarked, a new and great era in the history of medical science. I cannot find any definite statement of Bartlett's relations with Louis in 1826-27, at which period the latter was still working quietly at La Charité. His monograph on phthisis had been published in 1825, and had at once given him a reputation as one of the great lights of the French school. He was at this time very busy collecting material for his still more important work on typhoid fever, and it is scarcely possible that Bartlett could have frequented La Charité without meeting the grave, unobtrusive student, who, with note-book in hand, literally lived in the wards and in the dead-house. Secluded from the world, living as a voluntary assistant to Chomel in this quiet haven of observation, apart from the turbid seas of speculation which surged outside, Louis for seven years pursued his remarkable career. Whether or not Bartlett came into personal contact with him at this time cannot be decided. However this may be, subsequently the great French clinician became his model and his master, and to him he dedicated his first edition of the "Fevers," and his "Essay on the Philosophy of Medical Science."

For a young man of twenty-two, these letters—written offhand—show an unusually good literary style, and many incidental references indicate that he had received a general education much above the average. The strong Christian spirit which he felt all through life is already manifest, as may be gleaned from one or two expressions in the letters. Writing September 4, 1826, to his sisters, he refers to the death of a dear friend and her little sister. "There is a cheering consolation in the reflection that 'of such is the kingdom of heaven,' and that their spirits have gone in perfect and sinless purity to their home of bliss, and we may believe that they in their turn have become guardian angels to those who cherished and protected them here:

"They were their guardian angels here,
They guardian angels now to them."

In 1827, shortly after completing his twenty-third year, Bartlett settled at Lowell, then a town of only 3,500 inhabitants, but growing rapidly, owing to the establishment of numerous mills. This was his home for nearly twenty years, and to it, and later to Woonsocket, he returned in the intervals between his college work in different sections of the country. As Dr. D. C. Patterson remarks, "He became at once the universal favorite, and began to take a deep interest in the physical welfare of the townsmen." In 1828

he delivered lectures before the Lowell Lyceum on contagious diseases, and he gave frequent popular lectures on sanitation and hygiene. In 1828 he was the orator on the Fourth of July. In 1836 he delivered a course of popular lectures on physiology.

Evidently Bartlett had the "grace of favor" in a remarkable degree. Bishop Clark pictures him in those days in the following words: "Some twenty-five years ago, I used to meet a young man in the town of Lowell, whose presence carried sunshine wherever he went; whose tenderness and skill relieved the darkness of many a chamber of sickness, and whom all the community were fast learning to love and honor. Life lay before him, full of promise; the delicate temper of his soul fitting him to the most exquisite enjoyment of all the pure delights of nature, and his cheerful temperament giving a genial and generous glow to the refined circles of which he was one of the chiefest ornaments."

When only thirty-two, before he had been in Lowell ten years, he was elected by a respectable majority as the first mayor of the city, and he was re-elected the following year. A letter from the Hon. Caleb Cushing, dated April 20, 1841, gives us an idea of the estimate which a clear-headed layman placed upon him. "Dr. Bartlett enjoys in the city of Lowell the unqualified respect of that community, and its affectionate esteem,—respect and esteem due alike to his public relations to that city, as formerly its popular and useful chief magistrate, and at all times one of its most patriotic and valued citizens; to his unblemished integrity of character and amenity of deportment; to his eminence in his profession; to the endearments of private friendship; and in general to his talents, accomplishments, manners and principles."

To two interesting episodes in his life at Lowell I may refer at greater length. The rapid growth of the industries in Lowell had brought in from the surrounding country a very large number of young girls as operatives in the mills, and their physical and moral condition had been seriously impugned by writers in certain leading Boston papers. These charges were investigated in a most thorough way by Bartlett, who published in the *Lowell Courier* in 1839, and republished in pamphlet form (1841) his well-known "Vindication of the Character and Condition of the Females Employed in the Lowell Mills." This is a very strong paper, based on careful personal investigations, and really proved to be what the title indicated. It did not, however, escape without adverse criticism, and among the Bartlett papers there is a review of the "Vindication" by a citizen of Lowell in 1842, which presents the other side of a picture, by no means a pleasant one, of the prolonged hours of the operatives and their wretched life in boarding houses.

One of the most interesting incidents of his life at this period was the reception to Dickens, whose visit to Lowell occurred during Dr. Bartlett's mayoralty. In the "American Notes" Dickens speaks of the girls as "healthy in appearance, many of them remarkably so, and had the manners and deportment of young women, not of degraded brutes of burden." Oliver Wendell Holmes says, referring to this occasion: "I have been told a distinguished foreign visitor (Charles Dickens), who went through the whole length and breadth of the land, said that of all the many welcomes he received from statesmen renowned as orators, from men whose profession is eloquence, not one was so

³ Morse's Life, vol. i, p. 109.

impressive and felicitous as that which was spoken by Dr. Bartlett, then mayor of Lowell, our brother in the silent profession, which he graced with these un-
wonted accomplishments."

In 1810 he was elected to the Legislature of the State of Massachusetts and served two terms. In 1815 he was nominated by the Governor a member of the Board of Education of the State in the place of Jared Sparks. Holmes, who was familiar with Bartlett at this period of his career, has left on record the following charming description: "It is easy to recall his ever-welcome and gracious presence. On his expanded forehead no one could fail to trace the impress of a large and calm intelligence. In his most open and beaming smile none could help feeling the warmth of a heart which was the seat of all generous and kindly affections. When he spoke his tones were of singular softness, his thoughts came in chosen words, scholar-like, yet unpretending, often playful, always full of lively expressions, giving the idea of one that could be dangerously keen in his judgments, had he not kept his fastidiousness to himself, and his charity to sheathe the weakness of others. In familiar intercourse—and the writer of these paragraphs was once under the same roof with him for some months—no one could be more companionable and winning in all his ways. The little trials of life he took kindly and cheerily, turning into pleasantries the petty inconveniences which a less thoroughly good-natured man would have fretted over."

II.

For many years there was in this country a group of peripatetic teachers who, like the Sophists of Greece, went from town to town, staying a year or two in each, or they divided their time between a winter session in a large city school and a summer term in a small country one. Among them Daniel Drake takes the precedence, as he made eleven moves in the course of his stirring and eventful life. Bartlett comes an easy second, as he taught in nine schools. Dunlison, T. R. Beck, Willard Parker, Alonzo Clark, the elder Gross, Austin Flint, Frank H. Hamilton and many others whom I could name, belonged to this group of wandering professors. The medical education of the day was almost exclusively theoretical; the teachers lectured for a short four months' session; there was a little dissection, a few major operations were witnessed, the fees were paid, examinations were held, and all was over. No wonder, under such conditions, that many of the most flourishing schools were found amid the sylvan groves of small country towns. In New England there were five schools in small towns, and in the State of New York the well-known country schools at Fairfield and Geneva. As there was not enough practice in the small places to go round, the teachers for the most part stayed only for the session, at the end of which it was not unusual for the major part of the faculty, with the students, to migrate to another institution, where the lectures were repeated and the class graduated. T. R. Beck's introductory lecture, in 1824, at Fairfield, "On the Utility of Country Medical Institutions," pictures in glowing terms their advantages. One sentence brought to my mind the picture of a fine old doctor, on the Niagara peninsula, a graduate of Fairfield, who possibly may have listened to the very address. Dr. Beck asks: "What

is the clinical instruction of the country student? It is this—after attending a course of lectures on the several branches of medicine and becoming acquainted with their general bearing, he during the summer repairs to the office of a practitioner; attends him in his visits to his patients; views the diseases peculiar to the different districts; observes the treatment that situation or habits of life indicate and from day to day verifies the lessons he has received. Here, then, is a direct preparation for the life he intends to pursue." And I may say that it was just this training that made of my old friend one of the best general practitioners it has ever been my pleasure to know.

In the letters we can follow Bartlett's wanderings during the next twenty years, from the time of his appointment to one of the smallest of the schools to his final position as one of the chief ornaments of the leading school of New York. In 1832 he held his first teaching position, that of professor of pathological anatomy and of materia medica in the Berkshire Medical Institute, at Pittsfield. The following is an extract from a letter to Dr. John Orne Green, dated Pittsfield, November 25, 1833: "The character of the class is said to be superior even to that of last year. We have a large number of excellent students. Parker is as popular as ever, and Professor Childs has the credit of having improved very much in his manner of teaching. The members of the class are attentive to their studies, eager for knowledge, and regular in their attendance on the lectures. I have lectures, most of the time, twice a day, at 10 A. M. and at 2 P. M. I shall finish my course on materia medica by the middle of this week, and the remainder of my time will be occupied with lectures of medical jurisprudence and pathological anatomy. The commencement will be on Wednesday of week after next."

He held the chair at Pittsfield for eight sessions. Among his colleagues were Childs, Dewey and Willard Parker, who was a very special friend. In a letter of October 2, 1836, he says: "Parker, with his sunny face and his hearty welcome, was in a few minutes after my arrival. It does one good to meet such men."

In 1839 he was appointed to the chair of practice in Dartmouth College, Hanover, N. H., the school founded by Nathan Smith in 1798. In a letter to his friend, Green, dated September 8th, he gives brief sketches of some of his colleagues, among them a delightful account of Oliver Wendell Holmes, then a young man of thirty. "Dr. Holmes you know something of. As a teacher there is no doubt of his success, although he will not show himself during his first course. He has his anatomy—some of it at least—to study as he goes on, and he has not yet got the whole hang of the lecture-room—he does not give himself his whole swing. His attainments in medical science are extensive and accurate, and his intellectual endowments are extraordinary. His mind is quick as lightning and sharp as a razor. His conversational powers are absolutely wonderful. His most striking mental peculiarities consist in a power of comprehensive and philosophical generalization on all subjects, and in a fecundity of illustration that is inexhaustible. His talk at table is all spontaneous, unpremeditated, and he pours himself forth—words and thoughts—in a perfect torrent. His wit and hu-

mor are quite lost in the prodigal exuberance of his thoughts and language." In this same letter is the following characteristic memorandum, illustrating his desire to see the schoolhouses beautified and adorned. "One word about the High School House. Pray, don't forget in the planning of the rooms my plan for some embellishments. Even if we should get some busts I do not know that niches would be any better than suitable stands or shelves. I hope we shall raise, by a fair, from five hundred to one thousand dollars for pictures, etc., for ornaments to the two principal rooms." It is quite possible that Bartlett lectured both at Woodstock and at Pittsfield, as the terms were purposely arranged so as not to clash, and in the catalogue of the Vermont Medical College, 1844, there is an advertisement of the Berkshire school. The names of Bartlett and Holmes occur only in the 1839-40 and 1840-41 announcements.

In 1841 he accepted the chair of the theory and practice of medicine in the Transylvania University, Lexington, at that time the strongest and best-equipped school in the West.⁴ On his way to Lexington he visited New York, Philadelphia, Washington and Baltimore, and in a letter to Green, of September 7, 1841, he gives an interesting account of the men he met in these cities. One item is of interest to Baltimoreans: "Day before yesterday I spent with Dr. Nathan R. Smith, at Baltimore, on my return from Washington. I found him very attentive and hospitable. He took me into his gig and went to see some of his patients. He has a pretty large surgical practice, and is, I should think, a man of excellent sound sense, industrious, and devoted to his profession — not so *great* a man as his father, but a very capital good fellow. He speaks well of Lexington and the school — says it is the best appointed school in the country."

In his letters there are interesting descriptions of his life in Lexington, some of which are worth quoting: "In the school we are getting on very well. The class is of a good size, rather larger than last year, worth a little over \$2,000, intelligent, attentive, well behaved. I have given fifty-eight lectures, and we have just six weeks more. My own success has been good enough, I think. So far as I have means of judging, my instruction is entirely satisfactory, to say the least. My colleagues — Dudley, you know, is the great man here. He has many peculiarities. He is very much pleased with me. He teaches singular doctrines, and follows, in many things, a practice very peculiar to himself. The other day he tied the common carotid before the class in an anastomosing aneurism in the orbit; patient from St. Louis. Day before yesterday he cut for the stone; patient, a lad from Mississippi. He has two more cases of stone here for operation. He is exceedingly cautious; sends many patients, of all sorts, away without operation. Uses the bandage for everything almost in surgery — tart. ant. and starvation, or low diet, in most diseases. He had a pretty large property, 'a garden' as he calls it, of 150 acres or so, a mile from the city. Richardson, in obstetrics, boards with me, a plain, common-sense man, who fought a duel in early life with Dudley; has made a pretty large fortune here in practice, and now lives in the country eight miles or so from here, on a farm of 500 acres. The style of lecturing here is quite different from what it is

⁴ History of the Medical Department of Transylvania University and its Faculty, by William J. Calvert, Johns Hopkins Hospital Bulletin, August, September, 1899.

in the East — more emphatic, more vehement. It is quite necessary to fall somewhat into the popular style. We stand, in the lecture-room, on an open platform with only a little movable desk or table, on which to lay our notes. On the whole I like it better than being seated in a desk, as they are in Boston." (December 21, 1841.)

In March, 1843, he writes to Green that his receipts for the session have been more than \$2,000. "There are a few good families who send for me, and I get occasionally a consultation. We never make a charge less than a dollar; and consultation visits in ordinary cases — the first visit — are \$5.00. These few enable me, situated as I am, to make even a small and easy business somewhat profitable. I have made one visit, twenty-five miles distant, for which the fee was \$25; and I saw a second patient, at the same time, incidentally, for \$5.00 more. You see from all this, that my place gives me rather more money than I could earn in Lowell, for a much smaller amount of responsibility and labor. I have hardly, indeed, been called out of bed during the winter. In a business point of view I feel quite content with my situation."

From an interesting account of a consultation in the country we can gather how the planters of those days did their own doctoring: "Col. Anderson belongs to a class of men, pretty large, I think, in this State, — rather rough, with a limited school education, but intelligent, shrewd, clear-headed, and enterprising. He has a farm, entirely away from any travelled road, of 500 acres; but his principal business is that of bagging and soap manufacturing, his farm serving only to feed his family. This consists of about one hundred, eighty or more of which are his negroes. He has no physician, whom he is willing to trust, nearer than Lexington; and in nearly all common acute diseases treats the patient himself. His daughter, Mrs. Breck, was seized with acute pleurisy, soon after miscarriage, and her father had bled her twice, pretty freely, and given calomel and antimony, before any physician had seen her. He had followed the same course a year ago in the case of his wife." (February 18, 1844.)

In the same letter he says: "Typhoid fever has been very widely prevalent in many parts of Kentucky for the past year. There were, it is said, 200 deaths in an adjacent county last summer and fall. It is evidently the common fever of this country, with all the features so familiar to us at the East."

In the autumn of 1844 he accepted the chair of the theory and practice of medicine at the University of Maryland. Among the letters I find but one from Baltimore, and that is to Oliver Wendell Holmes about a review of his book, "The Philosophy of Medical Science," which had appeared that year.

In 1844 he accepted the chair of materia medica and obstetrics in the Vermont Medical College, the session of which began in March and continued for thirteen weeks. Among his colleagues were Alonzo Clark, Palmer and Edward M. Moore and later John C. Dalton. Bartlett's name occurs in the catalogues of the school until 1854, the year before his death. In May, 1845, he and Mrs. Bartlett sailed for Europe. In a letter to Green, July 12th, there is an interesting reference to Louis and to James Jackson, Jr. "I have seen a good deal of Louis, who has been very civil and attentive. I dined with him soon after my arrival, and met there, amongst others, Leuset and Grisolle, two of his most intimate medical friends. I never see him

that he does not speak of young Jackson — *ce pauvre Jackson*, as he calls him. He told me, with a great deal of feeling, that Jackson, the last night that he spent in Paris, wrote him a letter from his hotel, which was moistened with his tears, and that he thought Jackson was almost as much attached to him as to his father."

In another letter he speaks, too, of his very cordial reception by Louis. They spent the winter on the Continent, travelling about, chiefly in Italy, and in the spring went to London. In a letter dated June 17, 1846, there is an interesting sketch of a magnetic séance at the house of Professor Elliotson, of University College, who subsequently came to such a grief over hypnotism. "And then he ran full tilt off upon his hobby, 'animal magnetism,' calling it one of the most sacred and holy of all subjects, one of the greatest truths, and so on. Dr. Forbes, the editor, he spoke of as 'a wretch,' all because the doctor has shown up some of Elliotson's magnetic operations. Dr. E. afterwards invited me to see some magnetic phenomena at his house. I went about three o'clock in the afternoon, and found his spacious and elegant drawing-room quite filled with well-dressed gentlemen and ladies, assembled for the same purpose. The doctor had two subjects, one a young, delicate looking girl, and the other a damsel of a certain age, upon whom he performed the standard and stereotyped experiments — putting them into the magnetic sleep, stiffening their limbs, leading them round the room with a common magnet, exciting their phrenological organs, and so on. I can only say that I was not specially delighted with Elliotson's manner, and that if I was to choose a man by whom I should swear, without using my own eyes, certainly it would not be him."

In the same letter he speaks of having seen a great deal of Forbes, editor of the *Medico-Chirurgical Review*; of Marshall Hall, of Walshe, "a young man and a good fellow"; of Sir Henry Holland, and of that interesting American physician, who lived so long in England, Dr. Boott, and of Dr. Southwood Smith, at the Fever Hospital.

On his return from Europe we find him during the session of 1846-47 in his old chair at Lexington, whence he writes on March 18, 1847, to his friend Green, from which a paragraph relating to the second edition of his book on "Fever" may be quoted: "I have been drudging away all winter at my second edition. I do not feel any great interest in it, though I hope and intend to make a good book of it. The first edition, for a monograph, has sold very well, mostly at the South and West; so well at least that Lea & Blanchard propose publishing the second edition and paying also something for the right to do so."

The next sessions of 1847-48-49 were also at the Transylvania University. In the spring of 1848 there is a letter from Pliny Earle, dated April 16th, saying that he had received a catalogue of the Medical Department of Transylvania University, from which he had received his first intimation of Bartlett's resignation of the professorship. He asks Bartlett's advice as to the propriety of applying for the position.

On March 13, 1849, he received the appointment as professor of the theory and practice of medicine in the University of Louisville. At this time, in a letter from Dr. J. Cobb, we have the first intimation in the letters of ill health, as there is the sentence: "Accept my best wishes for your complete restoration to health."

The University of Louisville had drawn heavily upon the classes of the other Western schools, chiefly at the expense of Lexington, and the Faculty when Bartlett joined it was very strong, comprising such well-known men as the elder Gross, the elder Yandell, Rogers, Benjamin Silliman, Jr., and Palmer.

The condition of medical politics at that time in the town of Louisville was not satisfactory, and a new school had been started in opposition to the University, and among the Bartlett letters are a number from the elder Yandell which show a state of very high tension. Bartlett spent but one session in Louisville. He and Gross accepted chairs in the University of New York. The appointment of the former to the chair of the institutes and practice of medicine is dated September 19, 1850. From some remarks in a letter from Yandell it is evident that Bartlett did not find the position in New York very congenial. Gross found his still less so, and returned to Louisville the following year. J. W. Draper, the strong man of the University School, had secured Bartlett and in a letter dated August 12, 1850, he promised him a salary of at least \$3,500. The same letter shows how thoroughly private were the medical schools of that day: "It perhaps may be proper to repeat what is the condition of the real estate. The college building is owned equally by the six professors. Its estimated value when Dr. Dickson left us in the spring was \$78,600, and there is a mortgage upon it of \$48,000, bearing interest at six per cent. Excluding this mortgage the share of each professor is therefore \$5,000, and a mutual covenant exists among us that on the retirement or decease of one of the Faculty his investment shall be restored to him or his heirs — the new-comer starting in all respects in the position he occupied."

During these years Bartlett seems to have been very busy at work at the microscope, and there is a letter from Alonzo Clark, dated June 15, 1848, descriptive of a fine new Oberhauser (the Zeiss of that day), and in 1851 there is an interesting letter from Jeffries Wyman, giving a list of the most important works on invertebrate zoölogy.

Among his colleagues in the University were Draper, Martyn, Paine and Patterson. Things do not seem to have worked very smoothly. In the spring of 1851 overtures were made to him from the College of Physicians and Surgeons of New York, in which Faculty were his warm friends, Alonzo Clark and Willard Parker, and he was elected to the chair of materia medica and medical jurisprudence in the following year, in 1852. Here he lectured during the next two sessions until compelled by ill health to retire.

I may fittingly conclude this section of my address with a sentence from a sketch of his life by his friend Elisha Huntington: "Never was the professor's chair more gracefully filled than by Dr Bartlett. His urbane and courteous manners, his native and simple eloquence, his remarkable power of illustration, the singular beauty and sweetness of his style, all combined to render him one of the most popular and attractive of lecturers. The driest and most barren subject, under his touch, became instinct with life and interest, and the path, in which the traveller looked to meet with briars and weeds only, he was surprised and delighted to find strewn with flowers, beautiful and fragrant. There was a magic about the man you could not withstand; a fascination you could not resist."

(To be continued.)

THE VALUE OF X-RAY EXAMINATIONS IN THE LESS FREQUENT DISEASES OF THE CHEST ILLUSTRATED BY THEIR USE IN THOSE CASES WHERE ANEURISM IS PRESENT OR SUSPECTED.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

It is now recognized that x-ray examinations are of special value in diseases of the organs within the chest. In the hands of those trained in their use they point out very early departures from the normal in pulmonary tuberculosis; assist in the early diagnosis of other diseases of the lungs and pleura, and enable the physician to determine the size of the heart and displacements of that organ more accurately than has hitherto been done. They are also valuable in the less frequent diseases that have their site in the chest, behind the sternum, and I will illustrate their aid in this direction by presenting several cases of aneurism. The diagnosis of these cases is often difficult and sometimes impossible by the ordinary methods. Aneurisms are not infrequently overlooked in their early stages, the time when there is the best opportunity for prolonging life; or, if recognized, their extent is not appreciated; or their presence is suspected when they do not exist. Therefore, in order to get as accurate a knowledge as possible of the condition of the thoracic cavity, the chest should be examined by means of the fluorescent screen, both in front and behind. An x-ray photograph may also be taken, and should be taken if there is a question of a new growth. This x-ray examination of the chest may show, for example, that the outlines seen on the fluorescent screen, on one or both sides of the sternum, differ from those that present themselves in health. Whether or not this variation from the normal is due to a new growth or to an aneurism cannot always, of course, be determined by the x-rays alone. They furnish only one way, though a very valuable way, of studying this region.

But if any departure from the normal outlines in this portion of the thorax is found, the physician should determine whether or not there is pulsation and whether the abnormal outline is nearer the front or the back of the chest. This latter fact can be ascertained by making two examinations of the patient; that is, first with the fluorescent screen placed on his chest, and second, on his back. To accomplish this end the patient may be turned, or the Crookes tube may be moved. The spinal column should be examined to see if there is any displacement of the vertebrae which might push the aorta to one side; for if through disease in the vertebrae or some neighboring part the descending aorta is pushed a little to the left, this condition might be confounded with an aneurism, if the knowledge of this possibility were not in mind and this region carefully examined. If there is disease of the spine, producing displacement of the aorta, a careful x-ray examination of the line of the vertebrae would reveal the cause of its unusual position.

Moreover, in some healthy individuals the aorta is more prominent than in others. I have examined some persons in whom there was no trace of aneurismal dilatation, but in whom the outline and even the pulsation of the descending aorta could be followed.

Further, care must be taken to distinguish between

new growths in the thorax and an aneurism. For this purpose a careful determination of the position of the outlines, not only laterally but anteroposteriorly, is important. If, for example, when examining the chest, a small shadow is seen on the fluorescent screen in the neighborhood of the descending aorta on the left of the sternum, the physician must determine whether it is cast by something situated in the front or back of the chest. For if a small shadow on the left of the sternum is produced by something in the front of the chest, the diagnosis of aneurism may be excluded. The position of the object producing the shadow as regards its relation to the back and front of the chest of the patient may be readily determined by a method I devised for locating foreign bodies.¹ As a rule, an aneurism of the ascending portion of the aorta will be found nearer the front of the chest than the back; whereas aneurisms of the descending aorta in the early stages would be found nearer the posterior portion of the chest than the anterior. If pulsation of the outline is seen, we probably have to do with an aneurism, though it is possible that a movement might be given to a new growth situated over the aorta.

Let me diverge a moment here from the immediate subject to say that new growths in the chest may be often recognized better by x-ray examination in the early than the later stages, because when the disease has progressed so far as to fill up the thoracic cavity it is difficult to know whether the appearances seen on the screen are due to the presence of a new growth or to some conditions which make the lungs and pleura denser than normal. Furthermore, if a new growth is present and if surgical interference is necessary, it is of the first importance that a diagnosis be made at the earliest moment.

In aneurisms of much size the heart is often displaced or greatly enlarged. In making a diagnosis of a given case, the outline of the shadow seen on the screen should be carefully drawn upon the skin with a suitable pencil, both on the front and back of the chest, and, as already stated, the physician should determine whether the object causing the shadow is nearer the front than the back of the chest. The history of the case should also be carefully considered, the patient's age and the duration of the symptoms; for while in some cases the diagnosis of an aneurism is a very simple matter with the aid of the x-rays, it may in others be difficult to recognize the cause of the abnormal outline found by means of the fluoroscope.

In general, it may be said that aneurisms of the thoracic aorta may be seen by the x-rays before there are physical signs; that where it is desirable to be sure that no thoracic aneurism exists the x-ray examination can render much service. There are cases which produce troublesome symptoms, such as dyspnea, pain in the chest, and dulness to percussion over an area which might easily be the site of an aneurism; these symptoms may give the physician much anxiety if he is led to consider that they are due to this cause. In these cases it is a satisfaction to the patient and to the physician to be able to exclude the presence of an aortic aneurism, and while by means of an x-ray examination we cannot always be sure that the appearances seen are caused by an aneurism, we may be quite sure that no aneurism is present if the x-rays give

¹ See Medical and Surgical Reports, Boston City Hospital, January, 1897.

normal outlines in the thoracic cavity when careful examination of the patient in various positions has been made. Herein lies one of the advantages of this method of examination. It may give us greater assurance of the absence of an aneurism of the aorta in suspected cases than any other evidence that we can have. Other causes may produce outlines on the fluorescent screen which simulate those given by aneurisms, but the history, want of pulsation, position, etc., will assist us to recognize the true cause of the appearances.

Cases of aneurism may give physical signs suggestive of tuberculosis, neuralgia, or esophageal stricture. The cases given below illustrate some of these points.

I have examined with the x-ray 34 cases where aneurism was suspected, and one case to determine the size of the heart, when an unsuspected aneurism was discovered; 35 cases in all. Of these cases, 15 had typical aneurisms; six had more or less dilatation of some portion of the aortic arch; one showed an outline suggestive of aneurism of the aortic arch, but there was no pulsation. This abnormal appearance was proved by an autopsy to be due to a mass of glands. The remainder gave normal outlines in the region where an aneurism had been suspected.

The number of cases, 15, is not sufficient to justify an elaborate analysis, but some detail and the accompanying charts will, I think, be of interest. In 13 of the 15 cases the aortic arch was the seat of the aneurism; in one of these there was a second aneurism in the innominate artery also; in the fourteenth case there were two aneurisms, one in the innominate and another in the subclavian artery; in the fifteenth case the aneurism was in the subclavian artery. Eleven of these cases were males and four females; 11 were between thirty-eight and forty-five years of age; two were thirty-three; one was forty-nine and one fifty-nine and one twenty-nine. A syphilitic history was obtained in four cases. Pain was present in 12 cases, and alteration of voice in 11. Laryngoscopic examination was made in seven of these last cases, which showed paralysis of the vocal cord. The physical examination of 12 out of 14 of the cases of aortic aneurism was given in the hospital records; in five cases there were no physical signs of aneurism; in eight cases the heart was enlarged, and in five of these there were murmurs indicative of valvular defects, four of which were aortic and one mitral. Arteriosclerosis was found in the three cases in which an autopsy was made. No nephritis was found in any case.

I desire to thank Dr. M. P. Smithwick for assisting me in getting together the notes of these cases.

ANEURISM SUGGESTING PULMONARY TUBERCULOSIS.

CASE I.² M. J., a man aged fifty-nine years, referred to me October, 1896, by Dr. M. P. Smithwick, illustrates the increased accuracy in diagnosis that an x-ray examination may afford. The great size of the sac seen on the fluorescent screen suggested early rupture, and therefore a frank statement of the case was made to the patient and gratefully received by him, as he was thus given an opportunity for a much-needed arrangement of business affairs.

Family history.—Father died of consumption at seventy-two years of age. It was usual for the males of the paternal branch of the family to develop that

disease after fifty-nine years. Mother died of apoplexy. The patient, his family, and his physician did not doubt that he was following the family tradition and developing tuberculosis. It was not at all surprising that the mistake should be made when we compare the clinical picture of hemoptysis and cough with the physical examination, which gave râles at the left apex. The husky voice led one to suspect laryngeal tuberculosis.

Previous history.—Always "short-winded." About four years ago he suddenly became unconscious for about a minute. There was no warning, and recovery was immediate. About June 15, 1896, he began to be hoarse and grew rapidly worse, and had some cough. About this time, while running after some colts, he had marked dyspnea. This symptom has increased, although he can walk a distance if careful. On July 15th he first raised a little blood, rather dark in color, and this has occurred from time to time since, especially after talking. Four or five times since October 1st he has had short and sharp attacks of pain that start in the "pit of the stomach" and radiate to



FIG. 1. Case I.

left shoulder and down left arm to elbow. There is numbness of the left arm associated with this pain.

Physical examination.—The voice is shrill and husky. Examination of the larynx by Dr. Leland shows the left cord paralyzed and fixed in median line. The arteries are quite resistant and nodular, and somewhat tortuous. The heart area is decidedly diminished, action is regular and fairly strong. Apex beat in sixth interspace apparently outside of the nipple. The aortic first sound is rough; second sound is ringing and valvular. Lungs: resonance somewhat exaggerated. Over upper left chest, resonance, respiratory murmur, vocal fremitus and voice sounds somewhat exaggerated, especially in front. At left apex and to second rib in front are numerous fine moist râles. A faint pulsation is to be felt by pressing the chest between the two hands. It seems most marked at the junction of the second rib with the sternum.

X-ray examination made October, 1896, showed that the patient had a large thoracic aneurism, as indicated in Fig. 1.³ Some weeks later, after returning from a drive, death occurred suddenly. There

² This case was published by me in the Medical and Surgical Reports of the Boston City Hospital, 1897.

³ The cuts are reproductions of the tracings made by means of the fluorescent screen; I have not attempted to give reproductions of x-ray photographs as these reproductions are so often unsatisfactory.

was profuse arterial hemorrhage from the mouth. Failure to observe necessary precautions may have hastened the end.

ANEURISM OF AORTA, WITH PERFORATION INTO ESOPHAGUS: AUTOPSY.

Such cases remind us that aneurism should be excluded before we dilate a supposed esophageal stricture.

CASE II. E. H. was admitted to the service of Dr. George G. Sears at the Boston City Hospital, June 13, 1898, and was referred to me for x-ray examination June 17th. The following history was given: Family history was negative. Past history: neither syphilis nor rheumatism; alcohol in moderation.

Present illness.—Slight pain began in cardiac region five months ago; a month later it was felt in front of right chest; and two weeks later just to right of spinal column at level of lower angle of scapula; it was a dull ache and has persisted and increased in these three places; cough increases the pain but full

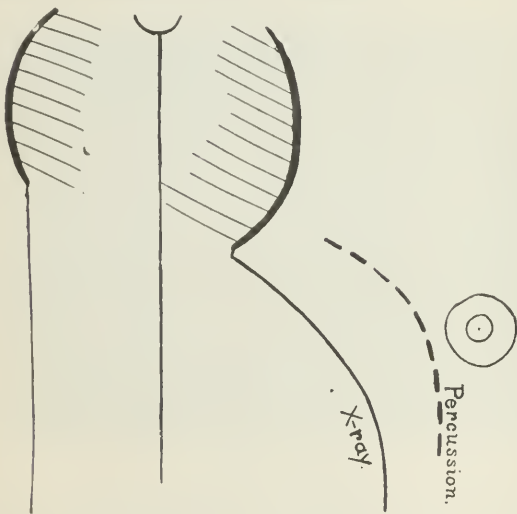


FIG. 2. Case II. One-third original size.

inspiration does not; on swallowing, pain begins at level of thyroid and extends along the spine to lower dorsal region; solids are regurgitated occasionally; meat causes severe pain unless finely minced; no cough nor palpitation; dyspnea and hoarseness three weeks.

Physical examination.—Left vocal cord partially paralyzed; pulmonary resonance good, being slightly exaggerated over right front; respiration harsh and wheezy; on full inspiration sounds much prolonged on right side; cardiac area extends from mid-sternum to nipple line; sounds normal; apex in fifth interspace; pulsations seen over greater part of sternum; radial pulse regular, good strength and volume; no edema of extremities; urine normal. Diagnosis of aneurism of aorta.

X-ray examination.—Figure 2 gives the outline of the aneurism seen on the fluorescent screen, as well as the left border of the heart, which border was much nearer the median line than Dr. Sears and I had placed it by percussion.

To go back, three weeks after admission patient raised a pint of dark blood. Two days later felt un-

able to swallow solids or liquids, and after two more days the stools were tarry. Died. A post-mortem examination was made by Dr. Mallory, and I quote a part of the record. "Intestines contain dark material. In posterior wall of transverse arch of aorta, three millimetres below beginning of left subclavian artery, is an opening 12 x 18 millimetres. This opening is directly connected with a reddish-gray clot projecting through anterior wall of esophagus by an opening 4 x 5 centimetres with thin, retracted, dark greenish edges. Lower border of esophageal perforation is on level with bifurcation of trachea. Intima of aorta everywhere thickened. Many elevated yellowish plaques. No areas of softening nor calcification. Weight of heart 270 grammes. Valves and cavities normal. Some fatty degeneration of muscle microscopically. Lungs very edematous.

Anatomical diagnosis.—General arteriosclerosis. Aneurism of aorta with perforation into esophagus."

SUBCLAVIAN ANEURISM; X-RAY EXAMINATION BEFORE OPERATION TO EXCLUDE EXTENSION BELOW CLAVICLE.

Before ligating the subclavian, carotid, or innominate arteries for aneurism, it is manifestly desirable to know the extent of the aneurism, and whether or not there is also an aneurism of the aorta. In the following case the innominate artery was ligated by Dr. George W. Gay, and the case was reported in the *Boston Medical and Surgical Journal*, July 22, 1897.

CASE III. A. McC., widow, thirty-nine years of age, was admitted to my service at the Boston City Hospital, February, 1895.

Family history.—Mother died of pulmonary tuberculosis.

Past history.—No history of syphilis or rheumatism. Some months ago raised blood several times during two days. Five days before admission commenced to be restless and nervous, with palpitation and dyspnea. Weak and dizzy until the afternoon of the fifth day, when she raised blood for some hours before and after being brought to the hospital. Neither in this attack nor previously had there been nausea or cough. On exertion her "heart beat in her throat." Three times during that month she raised a small amount of blood, apparently when excited.

Physical examination.—Radial arteries not resistant, their pulsations equal, regular, poor volume and strength. Cardiac area normal; apex beat in fourth interspace, just inside mammary line; action regular and fairly strong; at apex a very low-pitched systolic murmur not transmitted toward axilla; similar murmurs heard over the base. Along both sides of vertebral column from occiput to last dorsal vertebra is a rather low-pitched systolic murmur, most distinct at first dorsal vertebra and diminishing in intensity up and down. In supraclavicular notch and above right clavicle is an unusually marked pulsation. Pulmonary resonance and respiration good. Abdomen negative except for a very movable right kidney.

From this time until October, 1896, when patient was admitted to Dr. Gay's service for operation, she returned to the hospital at intervals, for examination by Dr. Smithwick. Soon dysphagia commenced; dyspnea was accompanied by some paroxysms of coughing, and the throbbing in the neck was attended by dull pain extending to the right axilla and back. Exertion and excitement increased these symptoms.

Hoarseness developed. During the six months before operation the symptoms were all worse, and her condition wretched. With the exception that the pulsation was more marked, the physical examination had not changed since February, 1895. Aneurism was suspected then, but was now certainly present.

To determine the lower boundary of the aneurism, and to ascertain if the aortic arch were involved, Dr. Gay referred the case to me for x-ray examination, with diagnosis of fusiform aneurism of the innominate, subclavian and carotid arteries. The x-ray examination showed the outline of the portion of the aneurism above the clavicle, and demonstrated that there was no extension of the aneurism below the clavicle and that the lungs were normal. The x-ray examination was confirmed by the autopsy.

DIAGNOSIS OF ANEURISM CONFIRMED BY X-RAY EXAMINATION.

CASE IV. C. S., a house painter, thirty-six years old, had a well-defined aneurism of the aorta, but no history of dyspnea.

History.—Syphilis eighteen years ago; well until

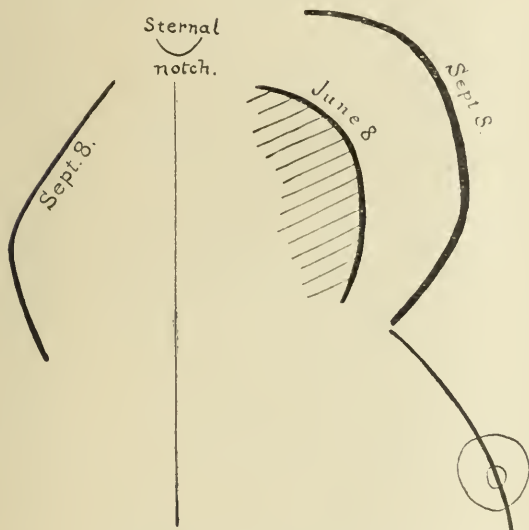


FIG. 3. Case V. One-third original size.

eight months ago, when dull pain with occasional paroxysms of sharp pain began in front of chest, in left arm to the elbow, and later shot up left side of back of neck and head. The pain has been constant from the beginning, and nine weeks ago became so excruciating that he was compelled to cease working. No weakness or tenderness of the arm; hoarse five or six weeks; no dyspnea; constipated; appetite poor.

Physical examination.—Well developed and nourished; voice high-pitched; pupils equal and reactions normal; no paralysis of ocular muscles; neither wrist nor toe drop; grasp normal; lead line present. Tracheal tug; radial pulses alike; cardiac area and sounds normal except in second interspace to left of sternum, where first sound is prolonged and second sound slightly accentuated; at apex of left lung in front, to third rib, and behind to spine of scapula, vocal resonance and fremitus are diminished; no râles; on full inspiration right side of the chest is the more expansive. Laryngoscopic examination by Dr. Leland showed right vocal cord normal, left paralyzed.

X-ray examination showed a well-defined dark area in upper left chest, extending out from the aorta and expanding with every heart-beat. The excursion of the diaphragm on the left side was much diminished as compared with the right.

ANEURISM SUGGESTING INTERCOSTAL NEURALGIA; SUSPECTED ANEURISM CONFIRMED BY X-RAY EXAMINATION. THESE EXAMINATIONS ENABLE US TO DETERMINE WHETHER AN ANEURISM IS OR IS NOT INCREASING.

CASE V. E. M., thirty-three years of age, referred to me by Dr. J. J. Putnam, for x-ray examination with reference to aneurism. Patient had suffered with what appeared to be severe intercostal neuralgia. The pain was in his left arm, left side, and below the ribs. It had been severe for two months, sometimes by day, but especially at night. There was a specific history.

X-ray examination made June 8, 1897, showed a small aneurism of the descending portion of the aortic arch, which is indicated in the diagram (Fig. 3) by the shaded lines of the inner outline marked June 8th. A second x-ray examination made September 8, 1897, gave the outline marked in the diagram September 8th, which demonstrated that the aneurism was increasing. Later the physical signs of aneurism became well marked, the pulsation being easily palpable.

(To be continued.)

REMARKS UPON THE GUNSHOT WOUNDS OF THE REDUCED-CALIBRE RIFLES IN THE SANTIAGO CAMPAIGN.¹

BY MAJOR LOUIS A. LA GARDE, Surgeon, United States Army, Commanding Base Hospital, Fifth Army Corps, Siboney, Cuba.

Our knowledge of the rifles of reduced calibre propelling armored projectiles dates from the publication of Professor Hebler's pamphlet in 1882. In his original monograph Hebler claimed certain advantages for the reduced-calibre rifle and among these were the following: (1) lighter ammunition; (2) flatter trajectory and greater dangerous space; (3) less deviation by wind; (4) less recoil; (5) greater penetration; (6) greater accuracy; (7) the wound produced, while being sufficient to disable, is much more humane.

Some of these advantages were so apparent that they could not be refuted, while the others required the proof by experiments, or the test by actual conditions in the field.

That the ammunition is lighter there is no doubt, since a soldier who carries 100 rounds of the older ammunition can carry for the same weight about 180 of the new ammunition. That the trajectory of the new rifle is flatter, and that the dangerous space is consequently greater, is also apparent, since those versed in ballistics have shown us that the point-blank range of the older gun of the Springfield pattern is 300 yards whilst that of the Krag-Jorgensen rifle, our present service gun, is 570 yards about.

The advantage of less recoil is perfectly apparent to any one who will shoot the two last-named weapons one after the other. The remaining advantages claimed by Hebler were not so readily determined. Greater

¹ Read before the Association of Military Surgeons, September 28, 1899, at Kansas City, Mo.

accuracy and less deviation by wind had to be determined by comparison at target. Although the small-bore guns and ammunition have been perfected very much of late it is yet a fact that, in the remote ranges, the smaller and lighter projectile is more influenced by wind than the heavier and larger leaden bullet and that for these ranges it is not so accurate.

Greater penetration was another important advantage claimed by Hebler which was sustained by experiment. In unseasoned oak, firing across the grain three feet from the muzzle, the old leaden 45-calibre bullet from the Springfield rifle penetrates but 5-6 inches, whilst the steel-jacketed bullet of our present service rifle at the same distance will penetrate 19-20 inches.

The last of the advantages claimed by Hebler and the one of greatest interest to mankind was that *the wound produced, though sufficient to disable, is much more humane.* This claim could only be determined by experiments on cadavers, lower animals, and the actual conditions in battle. Experimenters set to work in all the countries from 1886 to the present time to ascertain the character of the wounds, first, on lower animals, second, on dead human bodies. The Surgeon-General of the Austrian Army, Johann Habart, Chauvel and Nimier, of the French Army, Bruns, of Germany, and many others have furnished us important data upon the effects of the new arm. In this country it was my good fortune to be able to test the rifle for the War Department in 1893.

Although there was some difference in the mechanism of the guns used by the different experimenters the projectiles which they propelled differed but little as to calibre and destructive effects. The most of the experiments were conducted at simulated ranges, whilst some few were conducted at the actual ranges. That is to say, taking our work at Frankford Arsenal as example, all of the firing was done at 53 feet. When we desired to obtain the effects of a bullet at a certain range, the charge of powder was reduced in quantity enough to give to the bullet the remaining velocity for that range. The results thus obtained were generally unanimous, and, as far as the experimenters were concerned, sufficiently conclusive.

On the other hand, there were many writers who doubted the propriety of adopting these results as similar to those which must eventually obtain on the living subject at actual ranges in battle. Inasmuch as we are now in possession of the accumulated experience of a few wars it would seem pertinent at this time to study the results of the experimenters and the conditions seen in battle side by side.

I will now review in detail the conclusions summed up at the end of our experimental work at Frankford Arsenal and compare them with what I observed in the Santiago campaign:

(1) The experimental evidence showed "the shock impressed upon a member increases with the velocity whether a bone is traversed or not. It is always greater with the leaden projectile." This diminution in shock has been one of the serious objections advanced against the adoption of the small bullet by military men. They feared that one wound would not suffice to throw a man *hors du combat*, and that he might be able to go on fighting regardless of the fact that he had been hit a number of times. Whether this is true of savage tribes, or horses in a cavalry charge, it is not true of our American soldiers. Upon inquiry among

line officers in the Santiago campaign I find that as a rule to which there were very few exceptions men when hit fell back to the rear at once; and I can testify to the fact that scores of them walked back to the hospital at Siboney with wounds that were most trifling in their nature.

(2) "The explosive effects at very short range are about the same for the two projectiles. They continue however up to 350 yards with the smaller bullet and cease at about 200 yards with the leaden bullet." I only saw one case which approached anything like explosive effects in Cuba. That was the case of a captain of the Rough Riders shot in the lower third of the tibia. The wound of entrance was about the calibre of the Mauser bullet that had inflicted it, and the wound of exit was irregularly round, a half-inch in diameter. There were two smaller wounds near the wound of exit, which were undoubtedly made by spicules of bone which had been driven forth acting as secondary missiles. The area of fracture was about four inches above the ankle; it was marked by a cavity in which many loose fragments of bone lay, none of them measuring more than a half-inch. The wall of the cavity showed bony sand driven into the soft parts. The infrequency of explosive effects should in my opinion be attributed, (a) to the fact that the vast majority of the wounds were inflicted beyond the zone of explosive effects, and (b) since explosive effects are chiefly to be noted in the vital parts contained in rigid walls, like the brain, or in those organs containing much fluid, like the heart, liver, spleen, the alimentary tract, these wounds with explosive effects, so destructive to tissue, were numbered among the dead—a class which, unfortunately, the surgeon has no time to study on the battle field.

(3) The experimenters found that "the smaller frontage of the jacketed bullets causes them to inflict injuries resembling subcutaneous wounds when the soft parts alone are traversed, and that the small wounds of entrance and exit and the narrow track of the missiles were favorable circumstances to rapid healing." The truth of this statement is borne out by the experience of all surgeons in the Santiago campaign. Flesh wounds healed very kindly and rapidly.

(4) This conclusion of the experimenters refers to hemorrhage. Johann Habart, of the Austrian Army, who paid special attention to this subject, states "that the blood-vessels are seldom torn by the small jacketed bullet, and that when wounded they are not closed so easily by coagulation as those severed by leaden projectiles."

Some writers have deduced from this statement that alarming or fatal hemorrhage would be more frequent in future battles. The experiences of the surgeons with the line before Santiago do not confirm these apprehensions. Of the 1,400 wounded, as far as I can learn, not one died of external hemorrhage. The brachial and femoral were tied a few times in the base hospital for diffuse aneurism. One case of wound of the subclavian was operated upon in New York and died after the operation. There were five cases of gangrene from injury to blood-vessels which required amputation.

(5) "Injuries inflicted outside the zone of explosive effects upon the shafts of the long bones always show less comminution with the small bullet of hard exterior. The fissures are often subperiosteal and the fragments are larger." This was true of the Mauser bullet wounds in Cuba. It was seldom necessary to

open up the wounds for the purpose of taking out loose fragments of bone. In a number of instances there was distinct guttering of the compact substance of long bones without fracture. The mobility in some instances was so slight that it was difficult to make out a complete fracture when from the location of the wounds it was certain that the bone had been traversed.

(6) "Beyond the zone of explosive effects the projectiles of hard exterior almost invariably perforate or gutter the joint ends of bones, and the lesions of the articulations are never so grave." This conclusion tallies exactly with what we saw in Cuba. I do not recall a formal excision of a joint for the mechanical effects of the Mauser bullet. Joints were opened to turn out blood clots, and in one instance of the knee I particularly remember, to locate a lodged ball, but never for the purpose of performing an excision. There were at least 20 cases of gunshot injury of the knee-joint alone. These were immobilized and shipped North; and as far as I have been able to ascertain they have done well. These results are a great contrast to those inflicted by the larger leaden bullet, which by its highly destructive effects must have caused a number of resections and amputations.

(7) "The projectiles of hard exterior lodge less frequently in the tissues than the old leaden bullet." The experience at Santiago among the wounded of both sides has shown a surprisingly large number of lodged balls. Although I am not prepared to state that the small-calibre bullet lodges as often as the old discarded leaden bullet, the frequency with which it did lodge was remarked upon by military surgeons generally. Dr. W. E. Parker, of New Orleans, an acting assistant surgeon in the base hospital, visited the Spanish hospitals in Santiago after the surrender, and in conversation with the Spanish surgeons he learned that our Krag-Jorgensen bullet had not lodged in their wounded as often as their Mauser bullet had lodged in our men. The explanation for this would seem simple enough. It should be remembered that we were on the aggressive in a region that was practically unknown to our troops, whilst the Spaniards were perfectly familiar with every foot of ground over which we must make the advance. As trained soldiers their officers had carefully studied the range at every point. With this valuable information in their favor they were in a position to commence an effective fire at remote ranges, say at 2,000 yards and more. We could not locate them as soon as they located us, and when we did locate them we had to study the range before we could commence an effective fire. It was while we were locating them and studying the range and gradually advancing that they placed so many balls into our soldiers. When we did commence an effective fire we had reached a point where the remaining velocity of our bullet on impact was sufficient to carry it through the body. There is another explanation which may be gathered from the difference in the energy of the two bullets at remote ranges. Our bullet being larger and heavier than the Mauser has greater energy at 2,000 yards and it will penetrate farther in the remote ranges than theirs. Again, ricochet shots, from the thick underbrush and broken ground, undoubtedly favored a certain percentage of lodgment. Many of the officers attributed the lodgment of projectiles to the use of defective ammunition used by the enemy. This point was so susceptible of proof that I instituted experiments to show the

relative penetration of the Mauser and Krag-Jorgensen rifles. The tests were made in large blocks of well-seasoned yellow pine fired into, across the grain, three feet from the muzzle. The penetration of the Krag-Jorgensen ammunition was 24 inches plus, whilst that of the Mauser ammunition exceeded ours by nearly 10 inches, a demonstration which at once set at rest the idea of lodgment from the defective ammunition of the enemy.

(8) "The old leaden bullet more often leaves fragments of lead in the foyer of fracture." This is so true that it needs no contradiction. The leaden bullet was so soft that it often separated into a number of fragments upon striking resistant bone, whilst the steel-jacketed bullet seldom encounters resistance enough in the human body to disintegrate it.

(9) "As the projectiles of smaller calibre are less apt to lodge or to carry foreign substances into the wounds we will expect to find fewer cases of suffering due to the remote effects of unextracted foreign bodies." This is true of the smaller bullet, as shown in Cuba. There were but few instances where clothing or part of the equipment was carried into the wound.

(10) "The frontage of the jacketed bullet being much less and the fact that it does not lodge as often as the larger leaden bullet will contribute to increase the percentage of recoveries in gunshot wounds of the lungs." That was especially true of the wounded in Cuba. As a rule the wounds of the lungs were apparently so trivial that it was difficult to restrain the men in a recumbent posture.

(11) "Owing to diminished frontage the new bullet will cause less disfigurements in wounds of the face." That is especially true of three officers who received painful wounds of the face. Two of them had never been accused of being possessed of good looks, and strange to say, since their mishap they are much better looking than they were before. On cosmetic grounds the new bullet has some recommendations.

(12) "The projectiles of hard exterior are more humane than the old, resections and amputations will not be so often required hereafter, soldiers will be more often restored to the State useful members of the community instead of cripples and pensioners, and in point of economy, the new projectile confers a great advantage." This last conclusion is also in accordance with the experience in Cuba. There were but three primary amputations and not one of them was done for injury by the small bullet. They were all the result of shell injuries. From the foregoing I believe we should conclude that the work of the experimenters agrees with the conditions found in war, and that their work was not done in vain.

OTITIS MEDIA IN ALL GRAVE DISEASES OF INFANCY.¹

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I HAVE been forcibly impressed with the statement so frequently made in journals and addresses of late that pediatrics is the specialty of the general practitioner. Probably the overwhelming majority of calls to attend to children will be on account of gastro-

¹ Read at the fifth annual meeting of the Upper Peninsula Medical Society, held at Calumet, Mich., July 6, 1899.

enteric disturbances; but only secondarily at this time is it my intention to bring gastro-enteritis to the attention of this meeting. My idea is that most of the diseases of infancy are more positively, more comprehensibly, more demonstrably infectious from definite bacterial infection than we can easily prove in adults, or if toxemia from bacterial growth, also more definite; and that the pharyngeal postnasal chamber is the more easily comprehensible distributing point for infection to the middle ear, the brain, the lung, the stomach, the intestines; and the middle ear an incubator and generator promoting general toxic disturbance in very many cases of localized infectious diseases.

PONFICK'S TABLE OF ONE HUNDRED CONSECUTIVE AUTOPSIES OF INFANTS, THE FIGURES REFERRING TO OTITIS MEDIA.

	Normal.	Unilateral.	Bilateral.	Normal.	Unilateral.	Bilateral.
NON-INFECTIOUS PROCESSES.						
1. Congenital heart disease	1		1			
2. Extensive burns			1			
3. Non-infectious dermatitis		1	2	1	1	4
INFECTIOUS PROCESSES.						
<i>A. Acute.</i>						
1. Infectious dermatitis	1		3	1		3
2. Diphtheria	3	1	2			
3. Scarletina			1	3	1	3
4. Pneumonia	1		10			
5. Meningitis (with or without pneumonia)	1		8	1		18
6. Gastro-enteritis, acute	1	2	5			
7. Gastro-enteritis, chronic (with or without pneumonia).	1	5	21	2	7	26
8. Otitis media only		2	6			
9. Otitis media with acute bronchitis			2		2	8
<i>B. Chronic.</i>						
10. Chronic tuberculosis only		1	3			
Chronic tuberculosis with acute generalization (acute miliary tuberculosis)	1	1	10	1	2	13
11. Congenital syphilis			3			3
	9	13	78	9	13	78

There have been a great many contributions to the subject of otology in young children during the past two or three years especially. Probably the one writer whose contributions have attracted the greatest attention and discussion is Ponfick, of Breslau. His principal article on this subject is entitled "The General Pathological Significance of Middle-Ear Diseases in Infancy." It was an address delivered at the Silesian Congress for Natural Culture in June, 1897, and published in the *Berliner klinische Wochenschrift* during the months of September and October following. Ponfick's attention to the subject was drawn by his personal observation of his own children, who had been dangerously ill with gastro-enteritis. The symptoms became alarming in spite of the most careful attention of himself and colleagues and increasingly so until the sudden amelioration, which was simultaneous with a discharge from the ear. The improvement in the gastro-enteric condition continued until there was a cessation of the discharge from the ear, then came a relapse of the gastro-enteric symptoms, very gradual and apparently in connection with some change or faulty preparation of the food. The change for the worse was so gradual and so naturally ascribed to the

faulty food that the discharge from the ear was well-nigh forgotten, until it recurred and with it again a pronounced and sudden amelioration of the gastro-enteric symptoms. This happened not only with one child but with two or three in the same family. It impressed Ponfick so much that he, with his associates, observed carefully the condition of the ear in the first subsequent 100 autopsies of children under three years of age. The results of these post-mortems are embodied in what will now be designated Ponfick's table, which contains some most astonishing presentations of facts concerning not only gastro-enteritis but many other conditions in infantile mortality.

These 100 autopsies he has divided under two heads: Non-infectious diseases, and those from infectious processes, and subdividing these into groups according to the disease. In most of these cases the actual condition, or rather the condition of the middle ear, preceding death was not suspected, and the cause of death is given by the attending physician who had charge of the case at the time of the child's death. In only a few of these cases is the history of the case during life obtained. Among the non-infectious group is found a heterogeneous collection, two of congenital heart disease, one of extensive burns, and three of non-infectious dermatitis. Of these only one was found free of otitis. This was a five-and-one-half-months-old infant with a congenital heart disease. Although this would appear to have the least possible connection with otitis, yet the only other case of congenital heart disease in this group was a one-year-old child showing otitis media in both ears and both drums filled with pus.

In Rotel's "Pediatrics" we read that von Tröltzsch found on examining 47 petrous bones taken from unselected children that the middle ear was normal in only 18. The other 29 ears showed in varying degrees purulent and sometimes mucous catarrh. Of 15 children with exudation in the middle ear, the youngest was three days and the oldest one year old; five were in their first month, two each in their second and fourth, and the others in their third, seventh, eighth and twelfth month. In every five examinations of the ears of new-born children Schwartze found the tympanum filled with pus in two. Wreden found in 80 ears of children a normal middle ear in only 14. I refer to this here as showing the necessity of examining the ear in all cases of grave disease in very young infants and not confining our attention to an examination in the exanthemata. Referring again to Ponfick's table, we find that the other three dying from non-infectious or traumatic skin disease, and during life wholly without suspicion of otitis, were found to be all cases of otitis and, with one exception, bilateral.

The second group or category, those of infectious processes, embraces 94 per cent. of all the cases collected; and this list is subdivided into (a) acute and (b) chronic; sub-group (a) including all excepting the 16 cases of chronic tuberculosis and the three of congenital syphilis.

In Sub-group 1, of infectious dermatitis, such as erysipelas and furunculosis, there was not one free of otitis, and three of the four were otitis media purulenta bilateralis. In this connection Dr. Edward H. Clarke's statement, which has been largely quoted by other writers on otology, must be referred to. His statement is that the physician who neglects the examination of the ear in the course of the exanthemata of

children should be denominated an unscrupulous practitioner.

In Group 2 of our table are six cases of diphtheria with three absolutely free of otitis. This must be considered either accidental or very astonishing, as diphtheria has been and naturally would be held from its nature and the localization of its symptoms as directly conducive to otitis. To me, however, this showing is comprehensible when we remember the acuteness with which diphtheria manifests its localized symptoms in the throat. I mean by this that the local inflammation is so early and so intense near the pharyngeal end of the Eustachian tube that the Eustachian orifice is closed in many cases before the germs gain entrance into the tympanic cavity.

In Group 3 the one case of scarlatina gave otitis media on both sides. In Group 4, among the 11 cases of uncomplicated pneumonia there was only one, a six-months-old child, in which otitis was absent. In the other 10 cases, ranging in age from two to fifteen months, all showed otitis and in every case purulent and bilateral.

Groups 6 and 7: In these groups there was the greatest difficulty of classification, on account of the tendency to designate differently among different physicians the cause of death in cases where there is a complication of pulmonic and enteric disease. In these two groups as designated, however, we find the great proportion of 35 per cent. of all cases tabulated in this paper. All cases of gastro-enteritis are designated as acute up to the fourteenth day; all in which the duration is beyond that time, as chronic. In the eight cases of acute gastro-enteritis only one was found free of otitis, two were unilateral and five bilateral.

In the chronic enteritis (where the symptoms had persisted more than fourteen days), complicated or not with pneumonia or severe respiratory disease, there were 26 cases and only one of these proved to be free of otitis. Another interesting feature connected with the autopsies of this group was that where the complicating pneumonia was considered most positively the cause of death, the autopsies showed an unexpectedly severe condition of the gastro-intestinal inflammation or a surprisingly slight disease of the lungs, but with one exception all showed otitis media and 21 of the 26 showed this otitis to be bilateral and purulent. In the eight cases where the cause of death was given as uncomplicated otitis media the diagnosis was confirmed by the autopsy. The same was the case in those complicated with acute bronchitis. In only one of the 16 cases of tuberculosis, a ten-months-old boy, was otitis absent. In the other 15 cases there was otitis, some purely mucous and some purulent. In two cases, a two-months-old boy and a boy three and one-half years of age, the otitis was upon one side only. In the other 13, ranging in age from four months to three years, it was upon both sides.

The two subdivisions of Group 10 include chronic pulmonary tuberculosis, four cases, and 12 cases of chronic tuberculosis with acute generalization (acute miliary tuberculosis). The three cases of congenital syphilis were all under four months of age, and the cause of death in each case was considered to be a low constitutional vitality without any special symptomatology beyond this; but in all three of these the otitis was upon both sides and purulent.

In the face of these facts it seems to me we cannot conscientiously attend any grave disease in children

without the most careful examination as to the condition of the ear. This is troublesome under the circumstances of light and diet, and ignorance and carelessness, and well-known faultiness of food. It is troublesome to make these examinations, and except as a preparation for better work in the future, it will be for us useless to make them if we do not know enough to recognize disease of the ear drum when the membrane is unruptured; but by conscientious exercise of the technique, one with eyes to see can become expert. In the light of the information presented in this table of Ponfick's, otitis media exists in such an astounding proportion of children's diseases that it is our duty to learn to make these examinations. It is as much our duty to examine the drum membrane as it is our duty to examine a rash upon the skin. Physicians from the time of Hippocrates have looked at people's tongues and learned next to nothing by doing so; and we can certainly learn to look at the tympanic membrane when we have ground for such a hope of saving great numbers of lives.

And now in accepting the responsibility, the unpleasantness, and the discomfort of habitual examinations of the infantile ear in almost every infantile disease, we do not have to be guided by whim or blind empiricism, for we can easily bring to our support substantial, sound, scientific theory, if not absolute conviction. The middle ear is a chamber of most delicate construction, with numerous recesses, processes and angles, lined with the most delicate and absorbent of tissues, its walls rich in a network of nerves, blood-vessels and lymph channels, more intimately connected with the central nervous system than any other extracranial portion of the body, and in easily comprehensible connection with the gastro-intestinal and respiratory systems. It is easy for us to understand how this chamber can become infected through the Eustachian tube, easy to understand how, once infected, an inflammation can be excited which will close this Eustachian tube. The infection once established, this chamber is readily turned into an incubator for bacterial growth and a generator for the production of bacterial toxins. The natural process of infant feeding, especially the most natural, the mother's breast feeding, the sucking, causes the greatest possible tendency to the paroxysmal opening of the Eustachian tube, through which bacteria may be expelled into the postnasopharyngeal space and with the next breath to be taken into the lungs or with the next swallow to be taken into the stomach. The middle ear being affected and the exit being prohibited or impeded, we have the production of bacterial toxins in a place where they can be readily absorbed into the general circulation, a general toxemia be produced, influencing any concurrent or accidental ailment in any other portion of the infant's body. This all seems to me so reasonable, so absolutely incontrovertible, and so substantiated by actual facts, that I insist it is our duty as general practitioners, as specialists in pediatrics, to give this matter our daily and most conscientious attention. I will cite but a few cases to show the varied conditions in which we in Calumet have found these observations to be worthy of the trouble of making, but I would assure you that in no case have we regretted the time or the trouble given to them.

These cases are selected on account of the varying conditions. The number can doubtless be multiplied in the practice of any busy general practitioner.

CASE I. A. K., male, age five months. First day: Temperature, 99.8°; pulse, 100. Frequent vomiting; watery diarrhea which had been gradually increasing for past two weeks. Baby bottle-fed from six weeks of age. Condition apparently not grave and ascribed to faulty preparation of food and irregular feeding. Treatment principally correction of diet. Second day: Condition unchanged. No apparent tenderness about the ears, but careful examination of the tympana not made. Further effort made to correct errors in diet. Colon irrigated with water at 70°; bismuth every hour. Third day: Convulsions and death. During life no examination of the tympana of this child was made and the general appearance of the child had not been such as to excite any grave apprehensions. After death, with my associate, Dr. A. B. Mills, I examined the ears. The left tympanum was found tense, and on puncturing clear fluid was liberated. The right tympanum was tense and bulging, and on puncture thick pus poured out. The impression this post-mortem examination made upon my mind was that if these ears had been punctured a day earlier the child would have recovered promptly.

CASE II. G. M., male, age nine weeks, was brought to the Calumet Hospital with history of having been crying continually for fifteen days excepting only when drugged with gin or soothing syrup. Temperature normal, pulse almost imperceptible, bowels constipated. The ears were examined by five physicians, including myself, and we were unable to discover any abnormality in color of the drum membrane, and a bulging in the left tympanum was so slight as to leave doubt of the tympanum being distended with any fluid. Puncture, however, was made, three or four drops of pus liberated, and a solution of cocaine ordered to be dropped into the ear. Before the cocaine solution, however, could be brought from an adjacent room the little patient fell into a peaceful sleep. His mother said it was the only natural appearing sleep he had had in fifteen days; that during these past fifteen days when he slept it was with his eyes and mouth open and his features so pinched and drawn that he looked worse than when he was crying. This sleep lasted over two hours, when he awoke, took the breast heartily, and then went to sleep again and did not awake for eight hours, and from that moment has been in perfect health.

CASE III. R. D., female, age seven weeks. Continuous vomiting for three days. Temperature 105°. Coughing and crying frequently, the cough always exciting crying. No tenderness on pressing the palm of the hand against the external ear. Owing to the smallness of the external auditory canal, examination exceedingly difficult. Puncture was made, however, and scarcely more than a drop of pus liberated from each tympanum. Twenty-four hours later the mother described the child as absolutely well, nursing and sleeping naturally. Temperature 98°.

CASE IV. In the service of my associate, Dr. W. K. West. L. T., male, age eighteen months. Bronchopneumonia with diarrhea for two weeks. This is the fourth attack this child has had. Had been weak and sickly most of the time since birth. There were no ear symptoms, but puncture of both membranes was made on account of the physical signs being not extensive enough to account for the evident gravity of the child's condition. Profuse discharge of pus resulted from one ear, a very slight discharge from the other. There was immediate relief to the restlessness and pain of the

child, within twenty-four hours complete convalescence was distinctly established, the cure was perfect, and there has been no outward symptom in the child's rapid development since that time, although this was nearly a year and half ago.

CASE V. M. H., female, age five weeks. Nursing. Apparently no pain, but profuse watery diarrhea and rapid emaciation from only three days' illness. Puncture of right tympanum liberated two or three drops of pus and immediate amelioration of the diarrhea followed, although no medicine whatever was given, and no change in diet.

It should be remembered that our earlier teaching has led us to neglect the ear except in cases presenting ear symptoms. Ponfick's presentation of the subject has demonstrated the absolute unreliability of this policy of waiting. While in his 100 cases it was shown that the ear drum had previously ruptured in eight cases, that is, eight ears, 91 per cent. of all the cases examined had shown middle-ear inflammation, and in only 14 of these was the inflammation limited to one ear, and in 77 cases the inflammation was bilateral, representing 154 tympana, making, in addition to the 14 others, 168; that is, spontaneous rupture had occurred in less than nine per cent. of all the cases of otitis. Presumably also nearly all of these cases excepting those in Groups 8 and 9 were without any symptoms of ear disease.

In regard to the technique of this examination, all I can say is that the utmost endeavor should be made to get the best possible light (an artificial light), with the head mirror and an assorted nest of specula, and that the ear of the infant, being different from that of the adult in the shape of the external auditory canal, should be drawn downward and outward instead of backward and upward, and if the external canal be obstructed by dirt, cerumen, or anything else, it should be carefully washed and the effort at examination resumed. Nothing but long-continued practice will suffice to give one a definite idea of the appearance of the tympanic membrane either in health or in disease, but the practice should be persisted in, for there is nothing about it to prevent any practitioner with eyes becoming as expert in this examination as the most cultured aurist. The fact should be reiterated again and again that in very many cases there is no abnormal appearance to the exterior of the tympanic membrane, and yet the middle ear may contain pus and be the source of a toxemia threatening the life of the patient. It is important also to remember that an incision made carefully in the lower posterior quadrant of the tympanic membrane is wholly free of danger and will frequently reveal a case of grave disease and at the same time be the means of almost instant relief. Thorough cleansing of the ear and douching it with sublimate solution should be done before the puncturing, and ether or chloroform anesthesia induced for a thorough examination.

Since reading this paper at the annual meeting of the Upper Peninsula Medical Society, I have read with much interest a valuable article in the *Philadelphia Medical Journal* of August 5, 1899, by Dr. J. S. Meltzer, of New York. It but adds to my conviction, which is more and more confirmed by my increasing experience in practice, that the proper application and appreciation of this contribution of Ponfick's will result in the saving of great numbers of lives and the amelioration of much suffering.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D., BOSTON.

ANOMALIES OF THE RENAL BLOOD-VESSELS.

M. E. MICHELEAU¹ describes the following anomalies of the renal blood-vessels, which occurred in 16 individuals examined post mortem.

(1) Three renal arteries to the right kidney, the middle one — the largest — entering on a level with the hilus; the others at either end of the kidney directly into the parenchyma. The artery on the left side and the veins of both sides were normal.

(2) The hilus of the left kidney was situated on its anterior aspect. On this side there were two renal arteries, both springing separately from the aorta. One entered the kidney on a level with the hilus, the other, the parenchyma, at the lower pole of the kidney. On the same side there was also a second renal vein, which emptied into the upper part of the iliac vein of that side. The renal artery of the right kidney was normal, but there were two renal veins, one in front and one behind the artery.

(3) One kidney's blood supply normal. The other was supplied by three arteries, springing separately from the aorta. Before reaching the hilus each of the vessels gave off two branches; in the case of the lower one of the arteries these branches passed behind instead of in front of the renal vein.

(4) The right kidney was supplied by two separate arteries. The lower of these two entered the kidney on the level of the hilus; the other, which was given off separately from the aorta, entered the parenchyma at the upper end of the kidney, and did not send off any branches before doing so. Other kidney's arterial supply and the veins of both organs were normal.

(5) A similar condition to the last case, except that the second or supernumerary artery was below instead of above the principal vessel.

(6) On the left side there is a normal renal artery, but from its stem at a short distance from its origin in the aorta a small branch was given off, which passed to the anterior surface of the kidney and entered its parenchyma there. On the right side a similar condition was found, except that the small artery after passing through a portion of the mesentery finally entered by several branches the suprarenal capsule. The veins of both kidneys were normal.

(7) On the right side a single renal artery springs from the aorta opposite the third lumbar vertebra, and divides into two branches before reaching the kidney at the hilus. Two renal veins at the upper end of the hilus, in front a large vein which passes in front of the upper branch of the renal artery and enters into the vena cava just above the point of origin of the renal artery in the aorta. At the lower end of the hilus there are two small venous branches, one from the front of the hilus and one from behind it, which unite in one vein. The vein formed by this union passes at first behind then in front of the renal artery, and enters the vena cava a little below the point of origin in the aorta of the renal artery. On the left side is an artery which springs from the aorta four centimetres below the point of origin of the right renal artery. This vessel

divides into two branches before reaching the kidney. At half a centimetre from the point of origin of the main branch in the aorta, a second supernumerary artery is given off from the aorta also. The vessel is small and passes directly to the upper pole of the kidney, where it enters the kidney parenchyma. There is a single renal vein which is formed by two branches which spring from the hilus between the two arterial stems, and after having formed a plexus with the spermatic, it enters by a single trunk the inferior part of the vena cava.

(8) Each kidney is supplied by two arterial trunks, which are given off from the aorta in separate branches, one pair a little above the other. On the right side the upper of the two branches divides before reaching the kidney into two sets of branches, one passing in front of the upper part of the hilus and one behind it, to enter the kidney; between these sets of branches, passes a branch of the renal vein. The lower of the two main vessels passes nearly to the hilus without branching, then divides into three short branches, which enter directly the parenchyma of the kidney at the lower end of the hilus. The single vein is formed by three branches uniting just within the hilus. On the right side the upper of the two main arteries divides near the hilus into three branches; one passes behind, one above and one in front. The lower of the two main vessels divides into two branches, which approach the lower extremity of the hilus; one passes backward and one forward. The single renal vein is formed from a complex venous plexus of small branches of the renal vein and the left spermatic vein placed in front of the arterial branches.

(9) A single renal artery is on the right side and three renal arteries on the left. On the right side the artery is normal, but the vein is peculiar in that it is formed of two sets of branches, one originating from the posterior and one from the anterior aspect of the hilus. These two sets of branches remain distinct nearly to the vena cava; there they unite into one trunk. The left kidney is supplied by three arteries. Of these, the upper two emerge from the aorta by a common trunk, but separate into two branches immediately; the upper, a small one, passes directly to the renal parenchyma of the upper end of the organ. The second, or lower of the two, passes to the parenchyma of the upper half of the kidney, entering it at the anterior aspect of the hilus; it has three collateral branches. The third artery terminates by four branches near the posterior aspect of the lower end of the hilus, one of the four branches passing to the lower extremity of the organ. The vein is normal.

(10) There are three renal arteries on the right side.

RUPTURE OF BLADDER IN A PATIENT WITH STRICTURE.

Michel and Grosse² report this case. The patient was fifty-three years old. Gonorrhœa, twenty years previously, not treated. For the past two years marked difficulty of urination; ten days previous to entering the hospital complete retention; partial retention for the five following days, small quantities of bloody urine being passed. He then had a sudden pain in the lower part of the abdomen; vomiting followed; symptoms of peritonitis soon occurred. On examination an impas-

¹ *Annales des Maladies des Organes Genito-urinaires*, August, 1899, p. 879.

² *Annales des Maladies des Organes Genito-urinaires*, September, 1899, p. 970.

sible urethral stricture was found. On the tenth day edema of the lower part of the abdominal wall. Suprapubic cystostomy and drainage. The patient died a few hours later.

Autopsy shows general peritonitis, and a large quantity of bloody urine in the pelvis. On the left lateral aspect of the bladder, below the peritoneal reflection, there was a complete rent of the bladder of the size of a quarter of a dollar. The adjacent peritoneum had been perforated secondarily by the pressure of the gradually increasing quantity of the fluid. The rarity of this accident occurring in connection with stricture is its most interesting feature.

OBSERVATIONS ON THE DETECTION OF SMALL RENAL CALCULI BY THE RÖNTGEN RAYS.

Robert Abbe³ has collected 27 cases, including two of his own, in which operation verified the presence of stone detected previously by the radiograph.

The term small, used to describe the calculi in the title, is hardly warranted, as will be seen by the following, quoted from another part of the article: "It will be seen from the reports that stones of various sizes down to one-half inch in the largest measurement have been unmistakably shown."

The writer notes the importance of certain points in the technique of the radiographic work as follows: "As essential to success are delicate and fresh sensitive plates. The fluoroscope is useless. Rubber tissue should be interposed between patient and the plate to prevent perspiration damping the paper. The photographic plate must be placed well up against the patient's back, including the last four ribs."

With regard to the machine and the tubes, whatever will make a good bone shadow quickly will make a shadow of the calculus. In the radiograph of the normal loin there should be no shadow of the kidney substance, muscles, fascia, intestines, which should resemble in any way the shadow of a renal calculus. Both experimentally and clinically it was shown that shorter exposures than ten minutes or less gave better results than longer exposures. The impression of easily penetrable stones, such as urates, was stronger with very short exposure. A plate while wet may show nothing, but when dry and held in a proper light shows good results. A thin plate showing nothing when looked at in broad daylight may give a good picture when held in front of a brightly illuminated sheet of clean paper. A thin plate will often display shadows when moved rapidly from side to side under proper illumination, though it has shown nothing when held still. A dense plate that seems impenetrable will sometimes show perfect results when illuminated correctly, either by direct or reflected sunlight with a proper screening of the observer's eye. A properly closed box, like a fluoroscope, adapted to the size of the picture, allows a more correct interpretation of shadows. The negative itself will give more information than the photograph.

ANASTOMOSIS BETWEEN BLADDER AND URETER.

Sokoloff,⁴ of Moscow, reports 28 cases with one of his own, and describes his procedure most clearly. Two illustrations show method of incision and manner of joining the ureter and bladder. The operation is advocated in cases of ureteral fistula.

³ *Annals of Surgery*, August, 1899, p. 178.

⁴ *Deutsche Zeitschrift für Chirurgie*, June, 1899, p. 185.

OPERATION FOR ECTOPIA VESICÆ.

Sonnenburg⁵ recommends the removal of the bladder and the insertion of the ends of the ureters into penis. He describes his operation, and reports seven cases, with no death. Sonnenburg thinks that plastic operations are well-nigh useless, for, although they can readily be performed, the resulting bladder has no retaining power, and also predisposes to the formation of incrustations which carry pain and danger with them. He advocates (and has done so since 1882) the insertion of ureters into penis, as putting them into the bowels makes a pyelonephritis quite probable.

EXPERIMENTAL STUDIES IN LIGATURE OF RENAL VESSELS.

Alessandri,⁶ of Rome, has published a long and carefully prepared article in which he reviews the beginnings of renal surgery, reports many cases and much literature bearing upon his subject, and finally describes with much detail his own experiments upon dogs and cats. His conclusions are briefly as follows:

(1) That ligation of the renal veins is not incompatible with the life and activity of the kidney, but that it offers serious *immediate* danger to life of the animal. If animal lives, a collateral circulation develops sufficiently to re-establish the renal function.

(2) That ligation of the renal artery in the cat does not allow the same restoration of function as in the case of the dog. In the latter there results a good collateral circulation which suffices for the health and proper activity of the organ. In man the presence of many possibly collateral arteries offers a good chance for a similar collateral circulation, in the author's opinion.

(3) That the ligation of all vessels (veins and arteries) is incompatible with life and functions of the organ, but that there is enough collateral circulation in this case to prevent any form of rapid necrosis, and there results a gradual cirrhosis instead.

ARTERIAL CIRCULATION OF THE KIDNEYS; ITS IMPORTANCE IN SURGERY.

Zondek⁷ contributes a careful study based upon maceration preparations of 15 kidneys, illustrations of which accompany the article.

RESECTION OF NERVES FOR NEURALGIAS.

M. Rochet⁸ reports three cases at the French Association of Urology, where the perineal nerve (perineal branch of internal pudic nerve) was successfully resected for painful urethrocystitis. Relief of patient. Internal pudic nerve was cut down upon where it passes out through small sacrosacral notch.

Donath and H. Hüttl⁹ report a case where six to seven centimetres of the "lumbo-inguinal" and "external spermatic" nerves were removed for neuralgia of testis, which followed an attack of gonorrhoeal epididymitis. Relief for four months; then recurrence of pain. The nerve was approached through an incision like the one for exploring the ureter.

⁵ *Deutsche med. Wochenschrift*, 1889, No. 14.

⁶ *Revue de Chirurgie*, August and September, 1899.

⁷ *Das arterielle Gefässsystem der Niere und seine Bedeutung für die Pathologie und Chirurgie der Niere. Archiv für klin. Chirurgie*, Band lix, Heft 3.

⁸ *Lancet*, October 20, 1899.

⁹ *Ungarische med. Presse*, 1899, No. 11.

CAUSE OF NEPHROLITHIASIS.

Ikawitz¹⁰ discusses six cases of lithiasis, which he says is really a secondary process. He thinks the trouble begins as an "endonephritis" which term he gives to the inflammation of the epithelial lining of glomeruli, tubules, and pelvis of the kidney. He thinks the lithiasis is directly secondary to this "endonephritis."

TORSION OF THE SPERMATIC CORD.

Sasse¹¹ reports another interesting case, illustrating the results of interrupted circulation in the testicle. A purely clinical article and an interesting one.

ANURIA OF LONG DURATION.

Dunn¹² and Doebbelin¹³ report cases of long continuing anuria, the former one of ninety-six hours' and the latter one of eight days' duration. Both were due to calculi. In the former case the patient recovered without operation, while in the latter case the stone was found in the ureter and was pushed down into the bladder, from which it was expelled by the patient during convalescence.

GONORRHEAL PERITONITIS IN CHILD.

There are many recorded cases in children where an ophthalmia due to the gonococcus has been followed by joint involvement. Braquehay¹⁴ reports a case of gonorrhoeal peritonitis followed by an arthritis in both ankles.

PROSTATE — CLINICAL NOTES.

Two clinical papers worthy of attention are the following:

(1) Fenwick,¹⁵ "Clinical Notes upon the Rectal Contour and Consistence of a Thousand Prostate Glands."

(2) Wolff,¹⁶ "Ueber die bösartigen Geschwülste der Prostata insbesondere über die Carcinome derselben."

The former tabulates the author's large individual experience with such examinations, and the latter deals in a most careful and complete way with the whole subject and literature of cancer of the prostate.

Reports of Societies.

FIFTH DISTRICT BRANCH OF THE NEW YORK STATE MEDICAL ASSOCIATION.

FIFTEENTH ANNUAL MEETING, HELD IN BROOKLYN, N. Y.

MALIGNANT DISEASE.

THE discussion was opened by the President, DR. JOSEPH D. BRYANT, who spoke first of the exceptional amount of attention which this subject was now receiving from the profession. To a large extent, he said,

¹⁰ Zur Frage von der Aetiologie, Diagnose und Therapie der Nephrolithiasis. Transactions of the Association of Russian Physicians, Moscow, 1899.

¹¹ Ein Beitrag zur Kenntniss der Torsion des Samenstranges. Archiv für klin. Chirurgie, Band lix, Heft 3.

¹² St. Paul Medical Journal, December, 1899.

¹³ Deutsche Zeitschrift für Chirurgie, July, 1899.

¹⁴ Péritonité blennorrhagique chez une fillette de quatre ans et demi; laparotomie; guérison. Bull. et Mem. Soc. de Chirurgie de Paris, Tome xxiv, p. 730.

¹⁵ British Medical Journal, February 18, 1899.

¹⁶ Deutsche Zeitschrift für Chirurgie, September, 1899.

it had taken the place of tuberculosis as a topic of discussion. In the latter affection a solution of the problem had been reached, but this unfortunately was not the case as regards malignant disease. The subject was still surrounded with gloom and direct apprehension, and he felt convinced that one of the principal causes of this was the hesitancy on the part of the physician as well as the patient and the friends of the latter to recognize the extreme importance of the most prompt operative interference. Whatever light scientific investigation might in the future throw upon the matter of treatment, there could be no doubt that at the present time our only chance of success lay in an early operation in every case possible. The necessity for this was evident when the undoubted rapid increase of malignant disease was taken into consideration.

Dr. Bryant quoted Dr. Park's ominous prophecy that in ten years from now cancer would cause more deaths in New York than pulmonary tuberculosis, small-pox and typhoid fever combined, and said that while this might be considered an extreme view, there could be no question of the increase of this form of disease not only in the United States but throughout the civilized world. He then proceeded to recount the latest available statistics from New York, Boston, Chicago, Philadelphia, San Francisco, Baltimore, New Orleans, London, Paris, Berlin, Vienna, Munich and Hamburg. Having mentioned the conclusion of Newsholme that the increase was not a real but an apparent one, due to more careful diagnosis and more frequent autopsies in recent years, he said that whether this was the case or not there could be no doubt that cancer was one of the most formidable diseases with which we had to contend. The latest statistics showed that it caused 5.06 per cent. of all deaths in persons over forty-five years of age.

What, then, could be done to arrest its progress? The other great scourges of the human family were either now well held in hand or on the eve of coming under control. Billings had directed attention to the fact that in the course of years the parts of the body most frequently attacked by cancer had materially changed. Thus, the digestive organs were now much oftener the seat of the disease than formerly. In males the mouth and throat were very frequently attacked, but this was not so generally the case in females. Inasmuch as in the middle period of life, from the age of forty-five to that of fifty-five, the cases of cancer were more numerous than in all other periods combined, it seemed reasonable to assume that malignant disease did not derive its origin from preceding causes; for surely the first forty-five years of life was the time of greatest activity and exposure. It might, perhaps, be claimed that the inception of the disease occurred in earlier life, and that it only became fully developed in the later; but it was impossible for any one who was familiar with the persistent, progressive and aggressive character of cancer to accept the proposition that it could remain latent in the system for any length of time. The age at which the disease commonly occurs would, therefore, seem to present a strong argument against its parasitic origin.

As to the treatment, there could be no question that a prompt and thorough operation was called for in every possible case and it was of the utmost importance that the lymphatic connections of the tumor should be completely removed, whether they were known to be implicated or not. It was, in fact, often

impossible to state whether the neighboring glands were or were not involved. Manipulation was misleading and unreliable, and it should constantly be borne in mind that these glands always became to some extent affected before they were appreciably enlarged. The surgeon who failed to empty the axilla when excising a cancerous breast was grossly neglectful of his patient's welfare. Gross had found that when the axillary glands were affected, the suprascapular glands were also implicated in over six per cent. of cases. The point which he wished to emphasize was, that the discovery of the existence of a tumor in any part of the human system demanded that the character of the growth should be determined at the earliest possible moment, and that just as soon as the presence of malignant disease was established it should be removed in the most thorough manner. Unfortunately, however, it was too often the case that hesitation and delay characterized everything but the growth of the tumor. Still, great progress had been made since 1870, when Sir William Paget declared that, as far as he was able to ascertain, no permanent recoveries had ever resulted after operation; and already in 1880 Gross had shown that with improved surgical technique the percentage of cures was 9.05. In conclusion, Dr. Bryant quoted the much better results collected by Bull in 1894, and the still more favorable figures given more recently by Halsted and Watson Cheyne. The mortality from the actual operation was now but from two to three per cent.

DR. EDWARD K. DUNHAM read a paper on

THE NATURE OF MALIGNANCY IN NEOPLASMS.

Formerly, he said, hematoma, retention cyst and granuloma had been regarded as neoplasms, and while the essential character of a neoplasm had now been more definitely determined, there was even yet some difference of opinion in regard to the matter. In order to understand the subject clearly it was necessary to study the formation of the various tissues in the development of a new individual. We had (1) cells, and (2) intercellular substances. Cellular activities were of three varieties: (1) nutritive; (2) reproductive, and (3) formative, resulting in differentiation into various tissues. At this point two very important characteristics were developed: (1) specialization, and (2) allegiance to hereditary control. He then proceeded to apply these elements to morbid processes. Inflammation, he said, was one of the results of damage to tissues. The effects of the damage were of four kinds: (1) total destruction; (2) necrosis; (3) degeneration, and (4) irritation. One of the results of irritation was a revival of the processes met with in the normal development of tissues, and a definite purpose was accomplished. As illustrations he mentioned (1) multiplication due to persistence of the damage, as seen in tuberculosis; and (2) deviation resulting from the existing conditions. In the true neoplasms the tissues did not develop to meet any definite purpose having direct relation to the formation of special tissues. The cells retained their nutritive and formative properties, but not the reproductive, and clinically the growths were known as benign.

In the most malignant tumors, such as sarcoma, we had reproductive activity and nutritive activity, but the normal activity of the tissue cells was almost, if not totally, lost. Rapidity of growth and metabolic activity were characteristic of such tumors. There was a tendency to implicate surrounding tissues. Infiltration

and a liability to metastasis were met with. Intermediate between sarcoma and benign tumors there was a considerable number of various kinds of growths. The malignancy they displayed was proportionate to the loss of formative activity in their cells. The view here set forth, Dr. Dunham said, was by no means universally accepted. He then referred to Sanfelice's contention in favor of blastomycetes, and stated that while not prepared to deny that the presence of parasites might possibly divert the cells from their normal allegiance, his own observations led him to doubt that such was the case. He was furthermore convinced that it was impossible to draw a definite line between benign and malignant growths.

DR. L. GRANT BALDWIN read a paper on

MALIGNANCY IN THE FEMALE GENITO-URINARY SYSTEM.

He said that out of 3,787 gynecological cases of which he had records, there were 60 showing some form of malignant disease. There were two cases of cancer of the bladder and urethra, three of cancer of the ovaries (in one of which only a single ovary was affected), and 55 cases of cancer of the uterus. In 17 of the latter hysterectomy was performed, and four of the patients were in good health to-day. Fifty-six of the 60 women were married, and with but a single exception all had been pregnant one or more times. Procreation would, therefore, seem to be a powerful predisposing cause of malignant disease. Out of the 50 women suffering from cancer of the uterus, only one had never been married or pregnant. Laceration of the cervix was beyond dispute a very frequent factor in the causation.

In his experience the prognosis was very bad. The fault was largely that of the family physician and the patients themselves. In nearly all his cases when the patient was first brought to him the disease had already existed from six months to two years; while in such an affection as this, our only hope lay in early and complete removal. There was, unfortunately, a widespread misapprehension in regard to the subject on the part, not only of the public, but of medical practitioners. It had long been a prevalent idea that profuse and prolonged uterine hemorrhage was a natural circumstance at the time of the menopause. The occurrence of hemorrhage, however, whether at the menopause or any other time, was the one thing of all others which should call for a prompt and thorough physical examination. The fact of the absence of pain was misleading; for in cancer of the uterus pain was by no means an important sign. As to loss of flesh, this, like the pain, was apt not to occur until late in the disease, after metastatic changes and systemic infection had taken place. The presence or absence of odor was also an unreliable sign, and the cancerous cachexia, on which so much stress had been laid, came at a period when it was generally too late for the surgeon to be of any material service to the patient. A thin watery discharge from the vagina sometimes preceded the occurrence of hemorrhage, and the appearance of this should always excite suspicion. The continuance of menstruation, even if the flow was not profuse, beyond the normal time for the menopause should also arouse suspicion.

In regard to the subject of treatment he would only say that in uterine cancer an early and complete removal, preferably by vaginal hysterectomy, was by all

means advisable. As to the matter of technique, if we could do away entirely with sutures and ligatures it would be a great step in advance, and the use of clamps or forceps was therefore to be preferred. The author especially commended Dr. J. S. White's instrument, and also spoke favorably of Skene's electric hemostatic forceps.

DR. JONATHAN WRIGHT read a paper on

MALIGNANT DISEASE OF THE NOSE AND THROAT.

He said that as regards the nose there appeared to be a few exceptional cases in which the patient recovered without the removal of the growth by operation. Whether these were only apparent exceptions, and due to errors in microscopic examination, he was unable to say. The conditions met with in the nose presented a very different clinical picture from those of the larynx. There were very few cases of pure adenoma in the nose, adenoma being more often combined with carcinoma or epithelioma, and sometimes with sarcoma. These neoplasms were usually of slow growth, and would seem to be favorable for operation, but, so far as his experience went, they were apt to occur in very old persons, and the difficulties of operation were often very great. Clinically there was very little difference between adenosarcoma and adenocarcinoma. Sometimes the granulomata of syphilis strikingly resembled round-cell sarcoma, the most malignant of tumors. In doubtful cases it was always well to bear in mind the possibility of syphilis, and to subject the patient to a course of iodide of potassium by way of test. As to "clinical sense," so much relied upon by some, the greatest watchfulness should be maintained lest it should lead the observer into error.

In malignant disease of the fauces there were fewer cases in which the diagnosis was for any length of time attended with doubt, although it was sometimes difficult or impossible to secure a fragment of the growth for microscopical examination. Sarcoma of the tonsil was not a very rare form of trouble, and sometimes it was quite difficult to make the diagnosis between this and simple or syphilitic hypertrophy, although the latter was rare. The consideration of malignant disease of the larynx had to be omitted on account of lack of time.

DR. MAX EINHORN read a paper on

THE EARLY RECOGNITION AND MANAGEMENT OF MALIGNANT DISEASE IN THE DIGESTIVE SYSTEM.

The achievements of modern surgery, he said, showed that cancer is primarily a localized, and not a systemic, disease. Judging from analogy, malignant tumors, if discovered early enough, were just as successfully removed from the digestive tract as elsewhere, and it should therefore be the aim of the clinician to perfect his diagnostic ability with regard to this form of disease. The stomach tube in conjunction with the chemical analysis of the gastric contents had marked a decided advance in this direction, and transillumination of the stomach might also, in favorable instances, be of some service; but still our methods were as yet comparatively crude, and as a rule afforded a recognition of the malignant affection only at a stage when it had already progressed to a considerable extent. In speaking on the subject of etiology he said that one factor which, although it was not directly concerned in the origin of cancerous tumors, created a decided predisposition for their development was repeated irri-

tation. Hence, those parts along the digestive tract which were subjected to the most marked mechanical irritations were also most often the seats of malignant disease. Thus, the stomach, receiving the food in a comparatively coarse state, was the organ most frequently attacked, and here, again, the cardia, and especially the pylorus, were chiefly involved. The small intestine, through which the chyme passed in its greater part in liquid form, was very seldom attacked with cancerous disease, while the larger intestine, in which the fecal matter assumed a more solid consistency, showed a comparatively large percentage of cases of this kind.

Dr. Einhorn described the conditions under which the diagnosis of cancer of the different parts of the digestive apparatus was justifiable, as follows:

I. *Esophagus and cardia*.—Gradually developing dysphagia and the presence of a stricture in the esophagus, especially if a particle of tumor showing the characteristics of cancer has been brought up with the tube, or the presence of the above symptoms in connection with frequent small hemorrhages.

II. *Stomach and pylorus*.—A positive diagnosis of cancer may be made if the following conditions are noted: (1) If particles of tumor are found (in the wash-water or tube) which show the microscopic characteristics of a malignant growth; (2) the presence of a more or less large tumor with an uneven surface, belonging to the stomach and associated with dyspeptic symptoms; (3) the presence of a tumor associated with frequent hematemesis; (4) constant pains, frequent vomiting, ischochymia, emaciation—all these symptoms being constant and not extending over too long a period (six months to one year); (5) tumor and ischochymia; (6) emaciation, ischochymia, presence of lactic acid; (7) constant anorexia and pains, not yielding to treatment, accompanied by frequent small hemorrhages (of coffee-ground color).

III. *Large and small intestines*.—(1) The detection by abdominal or rectal palpation of a tumor in the large or small bowel, together with symptoms of cachexia and disturbances of defecation; (2) the presence of a tumor, as described, and the discovery in the stools of small particles of a neoplasm with cancerous characteristics; (3) gradually increasing disturbances for a few months in a previously healthy person, accompanied by cachexia and symptoms of a commencing or already developed stricture of the bowels, and the presence in the stool of small particles of growth, giving the microscopic appearances of cancer.

It was a thorough examination of the physical state of the patient, strict attention being paid to all the methods applicable to such cases, and a full knowledge of the history, which enabled us to discover the existence of malignant disease at a comparatively early period. Continued observation and repeated examinations were often of service in arriving at the diagnosis, and sometimes examination under narcosis was desirable. In rare cases in which a probable diagnosis of cancer could be made an exploratory laparotomy, with a view to establishing the diagnosis and performing a radical or palliative operation, would be required.

In the treatment the following points were to be observed: (1) Whenever the tumor is accessible for operation, and there is the slightest hope of curing the patient, a complete extirpation of the growth should be made; (2) if the tumor is not accessible for operation, or the entire removal of the malignant disease

practically impossible, palliative operations which serve to alleviate suffering and prolong life should be undertaken in suitable cases; (3) cases operated upon, as those left without operation, require for their management a skilful physician, who can lessen suffering and nearly always prolong life even under the most trying conditions. The conclusion of the paper was devoted to the special management of malignant disease in the different portions of the digestive tract.

DR. J. W. S. GOULEY made some remarks on

MALIGNANT DISEASE IN THE MALE GENITO-URINARY SYSTEM.

DR. WM. B. COLEY read a paper on

THE TREATMENT OF INOPERABLE MALIGNANT TUMORS.

He differed from the others taking part in the discussion as to the etiology of malignant growths, regarding them as of parasitic origin. The links in the chain of evidence to support this view, he said, were being slowly forged, and but few were now lacking to complete it. Some of the most striking proofs were afforded by Sanfelice's recent experiments on dogs, an account of which he gave. Having stated that seventy-five per cent. of malignant growths were at some time or other beyond the reach of the knife, he referred to Mander's recent work on the ferment treatment. Among the features of the treatment was the lessening of the amount of animal food taken by the patient, butcher's meat being altogether excluded, and the injection of pure ferments. The results from the use of yeast cells were yet too recent to be of value as to the permanent value of the method. The treatment by injection of thyroid extract and the removal of the ovaries had a logical warrant, as the action of the extract was analogous to that of the pure ferments in breaking up glycogen, and he here referred to cases recently reported by Frederick Pye, Watson Cheyne and others.

He spoke briefly of the use of celandine, of electricity, and of the parenchymatous injection of alcohol in the treatment of cancer, and then took up the treatment by means of the mixed toxins of erysipelas and bacillus prodigiosus. The results obtained from this method during the first four years of its employment he had given in a paper before the New York State Medical Association, published in the *Transactions* of the society for 1895. As stated then, the variety of malignant disease that showed the greatest improvement under its use was the spindle-celled sarcoma. After recounting a number of special cases, he said that the cases now amounted in all to 159. Of 87 cases of round-cell sarcoma 39 showed more or less improvement, and in one instance the patient remained entirely well at the expiration of five years. Twenty-two of the cases were of the spindle-celled variety of sarcoma. Of these, eight remained well at the expiration of from three to seven years, and 11 at the expiration of from one to three years. He had already called attention to the very great difficulty both of obtaining suitable cultures and of keeping them sufficiently virulent. These toxins were very powerful bacteriological products, and it was necessary to use them with the greatest caution in order to avoid dangerous risks. Among the conclusions at which he had arrived were the following: That mixed toxins exert an inhibitory action on malignant growths; that these are less efficient in

their action on carcinoma than on sarcoma; that in a larger proportion of cases of inoperable sarcoma the patients survived for more than three years after the treatment; that the action of the toxins in no wise resembles that of a local escharotic.

In summing up the discussion, the President, DR. BRYANT, said that (1) there was no question as to the wide prevalence and formidable character of malignant growths; (2) opinion was at present divided as to the exact nature of such growths, whether they were of microbic origin or the result of perverted cell action; and (3) there was no disagreement as to the desirability of an early diagnosis and, when this was made, as to the necessity for prompt operative action in all possible cases.

Recent Literature.

The Nervous System and its Constituent Neurones.

By LEWELLYS F. BARKER, M.B. Pp. xxxii, 1,122, with two colored plates and 676 illustrations in the text. New York: D. Appleton & Co. 1899.

When the publishers' announcement calls a book "the most scientific and complete work on the subject ever published, and one of inestimable value to the practitioner and student of medicine," we usually accept the statement with the same amount of credence that we give to the praises of the administration by the pious editor who wants an office, but the announcement of the present volume from which we have just quoted is true. A small portion of the work was published in the *New York Medical Journal* in 1897, but, although it showed that the book would probably be of value, it gave no adequate idea of its real merit. We have had occasion before to regret the lack of English works on the anatomy of the nervous system which could be compared with such works in foreign tongues as those of Dejerine, Van Gehuchten, Ramón y Cajal, Kölliker, Bechterew, Efinger, and others, but that reproach has been done away by the magnificent volume before us. When we read the author's statement in the preface that there has been no attempt to exhaust the bibliography and that only the more important references consulted have been cited, and compare that statement with the number of references actually cited in the foot-notes, the enormous amount of labor involved in the mere study of the literature may be faintly appreciated; but the book is no mere compilation of other men's work. The work of the independent investigator is apparent throughout, and the statements of others are checked and controlled by the judgment of the observer who is familiar with the subject from practical experience.

Not only may the work be put upon an equality with the treatises we have referred to above from its exhaustive and independent character, but it deals with the subject in a wholly new fashion, widening our conceptions of the anatomy of the nervous system, while at the same time it simplifies the intricacies of the subject in a way that no other work with which we are familiar does. We believe it no exaggeration to say that, since Golgi first introduced us to the new conception of the neurone, no work has yet appeared of such importance. Let there be no mistake, however, in the character of the work. It is not a treatise on the gross anatomy of the nervous system. The

student who wishes information as to the position of the ventricles or the variations in the cerebral fissures and sulci, or even the shape and size of the spinal cord, must seek elsewhere. This volume deals with the finer structure of the nervous system, as made up of its constituent neurones, and with their anatomical relations with one another.

The first section deals with the history of the development of the neurone concept, including a careful study of the arguments brought against it by Apáthy and Bethe. The next two sections deal with the external and internal morphology of neurones, especially as manifested by the staining methods of Golgi and Nissl. The fourth section shows the histogenetic relations of the neurones, with a suggestive chapter summing up our present knowledge of the human body as a segmented organism. The fifth section, on the neurone as the unit in physiological and pathological processes, is of absorbing interest and it merits the closest study of every physician as a most suggestive and enlightening presentation of the processes of nervous and mental physiology as interpreted in the light of the neurone theory. These sections, however, occupy only about three hundred pages. The last section, which forms the bulk of the work, is a study of the grouping and chaining together of neurones in a complex nervous system like that of man and higher animals, or, in other words, of the fine anatomy of the nervous system as exhibited in the anatomical relations of the various chains of neurones having a definite physiological function. This study begins with the consideration of the neurones connecting the sense organs of the body with the central nervous system, then of the neurones within the central nervous system connecting the end stations of these first neurones with other portions of the nervous system, then of the motor neurones connecting the central nervous system with the muscles, the neurones connecting with those which throw them under the influence of other centres, and finally the projection, commissural and association neurones of the telencephalon. The adoption of this method of presenting the facts of nervous anatomy and making it the foundation of classification is the most valuable and most original feature of the book. It was of course indicated in the works of Flechsig and Bechterew, and partially adopted by Van Gehuchten, which renders his treatise on anatomy so valuable to the student, but Barker is the first to make this grouping of the neurones the primary and fundamental element in the study of the anatomy of the nervous system. That there are still enormous gaps in our knowledge and that the exact physiological relations of myriads of neurones are still unknown are patent facts, but we believe that this method, defective as it is and must be for years to come, is the simplest, clearest and most rational way to present the facts of nervous anatomy and physiology to the student, and the way in which he can most easily grasp them and retain them as a connected whole. From what has been already said it is perhaps needless to add that, having adopted this admirable method, the presentation of the facts themselves is equally admirable, showing careful research, sound judgment, and a marvellously accurate study of the literature which seems to have overlooked nothing of importance and little that is unimportant. It would be a task even for the Dean of St. Patrick's, who could write entertainingly of a broomstick, to be particu-

larly diverting in dealing with the various tracts of fibres in the nervous system, but, with all the other merits of this work, it would be unfair to make no mention of the charm and clearness of its literary style, which, wherever the material will permit, becomes actually entertaining and delightful — even in dealing with the anatomy of the nervous system! The generous collaboration of the publishers, too, must not be overlooked, for the illustrations, profuse in number and often colored, form a valuable and important feature of the work, and the execution of them, as well as the careful typography, deserves the highest praise.

Cyclopedia of the Diseases of Children; Medical and Surgical. The Articles Written especially for the Work by American, British and Canadian Authors. Volume V. Supplement edited by WILLIAM A. EDWARDS, M.D. Illustrated. Pp. xvi, 1,332. Philadelphia: J. B. Lippincott Co. 1899.

This work is not a general text-book, covering the whole subject in a series of complete classified chapters, but a supplement to the well-known cyclopedia of Keating, the last volume of which appeared ten years ago, and is written with the object of rounding out the information obtained in the earlier volumes, and bringing it up to date.

The book is a collection of independent articles, medical, surgical, clinical and pathological, without attempt at classification, covering the important topics in pediatrics, and including many of general scope and interest. It is a product of eighty-seven contributors, eighty of which have written one article each and no one more than three. The list includes a large number of the best English and American writers.

The result is a book of somewhat peculiar quality. The articles are mostly written with the special design of showing the advances that have been made in pediatrics in the last ten years, and recent additions to our knowledge are made very prominent. Many of the writers adhere rigidly to this scheme, and their success shows what might have been done by all. Some chapters have been reprinted from the original with little or no change. Some have been revised by the original contributors, others are by new authors upon subjects treated in the original work. Some chapters are of great excellence, many are only mediocre and add nothing to existing knowledge. The recent bibliography of the subject is given in many instances. We wish to especially mention the following very excellent articles: Ballantyne on Congenital Disorders and Diseases of the New-born; Rotch on Feeding in Infancy; Hare on Advances in Therapeutics; Peffer on Diseases of the Stomach; Barlow on Scurvy; Oslor on Cretinism; Musser on Diseases of the Liver; Howard A. Kelly on Diseases of the Ovaries and Tubes; Sachs on Amaurotic Family Idiocy; Snell on Hygiene of the Eye; Cheadle on Rheumatism; Sherman on Tuberculosis of Joints.

We believe that certain articles could well have been omitted as belonging to books dealing with clinical methods or general text-books of surgery. On the other hand, in considering the advances in knowledge of the infectious diseases, we are surprised to find meningitis omitted. Pediatrics is of course closely allied to general medicine, but we cannot help feeling that a few of the articles were written too much from experience with adults.

The illustrations are numerous and well executed. We must draw special attention to those in the articles on Feeding, Bicycling, Cretinism, Hernia, Appendicitis and the X-rays. The book is well printed and bound and the index is clear and complete. All in all, the book is a valuable one, containing much that is new, and no owner of the original cyclopedias will now consider it complete without the addition of the present volume.

A Text-Book of Mental Diseases, with Special Reference to the Pathological Aspects of Insanity. By W. BEVAN LEWIS, L.R.C.P. (Lond.), M.R.C.S. (Eng.). Medical Director, West Riding Asylum, Wakefield. Second edition. Pp. xxvi, 609. Philadelphia: P. Blakiston's Son & Co. 1899.

It is particularly disappointing that such an able and original observer, investigator and writer as Dr. Lewis, who throws so much light on a number of points which his predilections lead him to treat at length, should not go farther and cover the whole ground of mental disease in a sufficiently full, advanced and symmetrical treatise on the whole subject. As it is, in spite of the much-needed additions and changes in the second edition of his text-book, which make it a decided improvement over the first, there is enough lack of system, proportion and completeness remaining to render it unsatisfactory in many particulars. The chapters on Alcoholism, Epileptic Insanity, Progressive Systematized Insanity, and much of that on General Paralysis, for example, are valuable contributions to our knowledge, but a work on insanity which gives in varying amount of detail the etiology of a few varieties and entirely omits it in other and important ones; in which there is no allusion to the rôle of syphilis in general paralysis, or any other form, for that matter; which contains no reference to classification, diagnosis, the method of examining patients, feigned insanity, or confusional insanity, cannot reasonably be expected to properly meet the needs of students, instructors, or practising alienists.

The chapters on Minute Anatomy and on Pathology show, as might be expected, genuine scientific research of the highest order, and before one can safely criticise the author for clinging to his views as to the existence and office of the "scavenger cell" in the face of more recent opinion, he must be sure that other investigators are his equals in close and accurate observation and in sound deductions therefrom.

With all its faults as a text-book, it is nevertheless a highly interesting work, and if in making search for the author's valued views on some special question we are occasionally unsuccessful, we are sure to be beguiled into following some new presentation of another subject, and to profit by his teaching.

The Trained Nurses' Directory. Composed of Names carefully selected by Prominent Physicians and Surgeons of New York and Vicinity from their Private Lists. Compiled and edited by M. LOUISE LONGEWAY, Graduate of the New York Training School, Bellevue Hospital. Sixth edition. 1899.

This small volume of one hundred and thirty pages is designed to furnish a list of nurses who have had an adequate training and are recommended by reputable physicians. After each name is given the line of nursing in which the nurse especially excels, with his or her address. The directory should be of great value to physicians as well as to patients.

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THE PHYSICIAN AND THE SURGICAL CONSULTANT.

ASEPSIS and the numerous recent refinements in operative technique have, as is well recognized, vastly broadened the field of surgery, and of legitimate surgery, to the great benefit of humanity. For this extension of the scope of surgical art, we have reason to be and are, no doubt, profoundly grateful, yet on careful review of the situation certain facts are observed which indicate that this expansion has brought with it a certain amount of harm as well as good. It is occasionally desirable and salutary to cease congratulating ourselves on the grandeur of modern progress in our art and to contemplate, for our better guidance and the possible benefit of our patients, some of the pitfalls into which the unwary surgeon and consultant may be led.

In the days when all surgical operations were attended with greater danger and suffering to the patient than they are at the present time, the surgeon was in every act and deed of his profession always under grave responsibility. He was justified in operative interference only under definite and serious indications and after a most thorough and careful diagnosis and consideration of all the conditions surrounding the case. Under such circumstances the men who by force of personality and training were fitted to succeed in the profession of surgery were fewer in number than at present, and the question is worthy of consideration whether they were not, on the whole, men of better judgment.

In these days operative interference is so easy, that mistakes as a rule cost less. A legitimate advantage may be taken of this fact to take greater chances for a possibility of relief in serious conditions, and this advantage is taken daily by conscientious surgeons. There is, however, abundant evidence that this principle is carried too far, and that operations, particularly exploratory laparotomies, are undertaken with more prospect of settling a diagnosis than benefiting the patient, and often before more legitimate means of diag-

nosis, including especially those requiring careful observation of the patient over long periods of time, have been exhausted. "Exploratory laparotomy will settle the question so easily and quickly," says the enthusiastic surgeon, "and may afford a means of cure." It certainly may, but there are so many doubtful abdominal conditions which are benefited by exploratory laparotomy neither in regard to diagnosis nor treatment, that no conscientious surgeon will perform it till every other means of diagnosis has been exhausted. Exploratory laparotomy has its legitimate field, but should be limited to cases in which other methods of diagnosis have been tried, and in which some prospect, however slight, of subsequent advantage is presented.

Another occasional cause of unnecessary surgery is found in a wrong attitude of the surgical consultant toward the family physician. The latter is too apt to call a surgeon to see a case, not to take charge of it, but to operate, he having himself assumed the responsibility of deciding upon operation, and told the patient and his friends that an operation ought to be performed. The surgeon sometimes, it is to be feared, in his anxiety to agree with the physician who called him in consultation, may, even if in his own judgment the case is one in which a waiting policy would be better, delude himself into thinking that the physician has had better opportunities to observe the case, and operate against his own better judgment, with results not always for the best interests of the patient. Certain physicians, it is to be feared, would call a surgeon again in consultation who had done an unnecessary operation to the detriment of their patient rather than one who quietly but firmly refused to operate in contravention of their opinion previously expressed to the patient's friends.

If the profession can only remember that surgery is a specialty and that questions not merely of operative technique but of diagnosis and treatment can be settled rightly only by men of experience in surgery, if they would call a consultant to decide upon operation, instead of taking themselves the responsibility of deciding questions the magnitude of which they do not realize, they would get results better for their patients and themselves, and not encourage the growth of a class of surgeons who are willing to act on the physician's opinion even at the expense of his patient, and incidentally to secure a grip on his consultation practice. This state of things is bad for the welfare of the patient, the art of surgery and the morals of every one concerned, and could be easily put an end to by the consultant's leaving to the surgeon the decision.

"Very true," says the physician, "but I don't want to subject my patient to the expense of a consultation unless the surgeon is going to do something. I can't call a surgeon every time there is merely a question of operation — I must decide myself." To such the answer must be made, that if he leaves the matter to his own judgment he will call the surgeon often too late to do any good in cases where his assistance has been ur-

gently needed, as well as summon him at times to operate on cases which would better be let alone. It surely should strengthen the position of a physician in an enlightened community to be beforehand in calling assistance in the settlement of difficult surgical questions, rather than to settle them himself and then call a surgeon who will support him in his mistakes if necessary. Absolute honesty toward his patient's interest is all that is required on the part of the physician and the consulting surgeon.

The taking of responsibilities by members of the profession for which they are not fitted by training and experience is the bane of honest medical and surgical practice, and reacts in harm to the community and the medical profession.

Let responsibility be honestly placed and not wrongfully assumed in the relation of the physician and the consulting surgeon, and good surgery will be promoted at the expense of rash and careless work.

ORIGINAL RESEARCH: A MEANS OR AN END.

It is becoming clear that the medical school of the future, which will most completely fulfil its function as a centre of liberal scientific education, must be associated with a university. This is desirable from many points of view, but particularly because we need in medicine the broadening influence which comes from close contact with other branches of learning. It is to be hoped that as time goes on the bonds between the parent university and its dependent schools may continually become closer, in order that research, so important an element in higher education, may the better be subserved.

In his recent address as President of the American Society of Naturalists, Prof. W. G. Farlow, of Harvard University, has drawn attention to certain facts in the government of our American universities and in their attitude toward research which deserve comment. He finds a decided difference, in the first place, between the government of American universities as compared with that of Germany, and notes the fact that in spite of the circumstance that we are living in a republic, the tendency in our institutions is toward a more autocratic form of government, whereas in Germany it is of a more democratic character. With us the president and various governing boards are the guardians of the policy of the university, while in Germany the members of the instructing body have a far more definite voice in matters of policy and appointment.

The American system has led, indirectly perhaps, but none the less surely, to the subordination of original research to practical ends, rather than to its cultivation for its own sake, a situation which we must accept, however much we may wish for a broader scientific spirit.

Professor Farlow speaks rather feelingly on this matter, as follows: "Fashion and the natural ten-

deney to imitate others has, however, done very much for us in recent years in aid of investigation, for, while it may be next to impossible to induce the governing board of a university to spend money on investigation for its own sake, it is a comparatively easy matter to convince them that they must make provision for original work because some other institution has done so and is thereby attracting public attention. If original research can be used as a means for advertising a university, there is no doubt that it will be encouraged, and, fortunately, as it turns out, it is a very good advertisement, even better than victories in athletics. The really successful American universities are those in which the most original work is done. The trouble is that if one looks upon research mainly as an advertising medium, one is apt to demand quantity rather than quality, and to regard the number of papers published annually as the standard of scientific activity."

Research is unfortunately often expensive, and inasmuch as those from whom the necessary money is to come are apt to consider that research is valuable only in so far as it is "practical," we are apt in this country to meet with discouragement in the prosecution of theoretical lines of work of any considerable magnitude. Professor Farlow is speaking of the university in general, but this all applies with peculiar force to medicine and medical research. Admitting the desirability and necessity of original investigation as a means of progress, it is clear that efforts in that direction should not be hampered by a constant appeal to the practical: immediate results are often not to be expected, should not be demanded, and are of little or less than no value when obtained. We grow weary, at times, of the frequently heard remark that this or that piece of work is useless because its immediate practical utility is not apparent. If we were more thoughtful than we often are, we should realize that it is out of these theoretical investigations, undertaken in a scientific spirit, that practical results of the greatest magnitude finally grow. We are entirely in agreement with Professor Farlow in his opinion that: "The great charm of the German university hitherto has been what has been described as the intellectual atmosphere, the prevailing desire of pursuing learning and investigation for their own sake, which, however, does not unfit the Germans for the successful application of science in industrial and practical fields. We miss in our own universities this universal desire for investigation, which is with us confined to a certain number of persons who are very enthusiastic, to be sure, but are in most cases obliged to justify themselves in the eyes of those who do not understand the value of investigation."

There are abundant signs, however, that we are at least approaching the realization of the attitude which has for many years been characteristic of the German university. This will undoubtedly mark a decided step in advance, and is unquestionably an essential of productive investigation.

MEDICAL NOTES.

FAMINE STATISTICS IN INDIA.—The present generation has seen four famines in India, namely, in 1865–66, when, according to the famine commission, a population of 47,500,000 was affected; in 1868–69, when the area involved a population of 44,500,000; 1876–78, when it affected directly and indirectly 58,000,000 souls, and 1896–97, when fully 81,000,000 were touched by the ravages.

THE STUDY OF TROPICAL DISEASES IN GERMANY.—In the Budget of the German Empire for 1900, according to the *British Medical Journal*, there appears for the first time a subsidy for the Institute of Tropical Hygiene which it is proposed to establish in Hamburg. The empire will contribute £1,025 yearly to the maintenance of the Institute, which is to be opened on October 1, 1900.

PLAGUE UBIQUITOUS.—Several cases of undoubted bubonic plague are reported as having occurred in Manila. The population is, in parts of the city, very dense, and the system of sewerage defective; there is, as yet, however, no evidence of a widespread epidemic. Two cases have also occurred at Adelaide, South Australia.

A TOY HOSPITAL.—There exists at Ealing, a suburb of London, as the caprice of a rich man, a toy hospital, to which broken toys may be sent for treatment, and whence they are later distributed to the children of the poor.

INFLUENZA IN BERLIN.—An epidemic of influenza has broken out in Berlin, with a considerable mortality already reported.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, January 17, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 72, scarlatina 38, measles 92, typhoid fever 10, small-pox 1.

DEATHS IN BOSTON IN 1899.—There were 11,167 deaths in Boston last year, as against 10,886 during the year 1898, but the population increased during the same period from 541,827 to 555,057, so that the annual death-rate is practically the same as for 1898, or 20.12 per 1,000 inhabitants. The total number of deaths from zymotic diseases is 1,444, as against 1,470 in 1899. There was a decrease in the number of deaths from cholera infantum, cerebrospinal meningitis, rheumatism, typhoid fever, cancer, consumption and from old age; there was an increase in the number of deaths from alcoholism, croup, diphtheria, influenza, measles, scarlatina, small-pox, whooping-cough, Bright's disease, bronchitis, heart disease, pneumonia and violence. At the present time there is some little diphtheria and scarlet fever in Boston. The number of deaths reported to the Board of Health for last week is 240, as against 272 the corresponding

week last year, making the death-rate for the week 22.5. In Cambridge and Newton diphtheria has not diminished. In Cambridge last week there were about 35 cases. On one day 11 new cases were reported. In Weston schools have been closed on account of this disease.

SMALL-POX IN A SCHOONER. — A schooner, arriving last week from Brunswick, Ga., brought a case of small-pox in the person of the steward. The members of the crew have been vaccinated and the patient isolated. The case is regarded as a severe one.

SCARLET FEVER IN AUGUSTA, ME. — There have of late been a number of cases of scarlet fever in Augusta, which has led to the enforcement of precautionary measures, with good results.

NO SMALL-POX IN LYNN. — A case of suspected small-pox recently reported from Lynn, Mass., has proved to be chicken-pox.

BEQUEST TO A HOSPITAL. — By the will of the late Miss Lydia M. Palmer, the Cambridge Hospital receives \$2,000.

NEW YORK.

TANKERD, THE WIFE MURDERER. — In view of a preliminary report from Drs. Charles L. Dana and C. H. C. Steinsieck, who were appointed to examine into the man's sanity, Governor Roosevelt has granted a respite until July 16th next to Tankerd, the convicted wife murderer. The physicians' report states that while Tankerd was undoubtedly sane at the time of his crime and the verdict was just, he is now demented, and ought not, in their opinion, to be sent to the chair. They believe that in six months' time he will be either permanently and hopelessly demented or restored to about his ordinary health, more likely the former.

VALUE OF THE LIFE OF A CHILD. — Abraham Graham, of Jersey City, on January 9th obtained a verdict of \$2,000 for the death of his four-year-old boy, who was killed by a trolley car in 1896. This was the fourth trial of the case. In each of the three previous trials the jury gave the father \$5,000, but the Court of Errors and Appeals set the judgment aside as excessive. Justice Gammere, who read the opinion when the verdict was set aside the second time, caused a considerable amount of comment by the statement that the life of a child from a legal or money point of view was not worth a dollar.

COLUMBIA UNIVERSITY. — At the first monthly meeting in the new year of the Board of Trustees of Columbia University, held January 8th, Dr. Ellsworth Eliot, Jr., was appointed clinical lecturer on surgery, and Dr. H. E. Hale, assistant demonstrator of anatomy in the Medical Department. At the meeting the announcement was made that John D. Rockefeller had presented \$100,000 to the University for the endowment of a chair of psychology.

MEDICAL ASSOCIATION, CITY OF NEW YORK. — At the annual meeting of the Medical Association of

the Greater City of New York, held January 8th, the following officers were elected: President, Dr. R. F. Weir; Vice-President, Dr. William McCollom; Recording Secretary, Dr. P. B. Porter; Corresponding and Statistical Secretary, Dr. F. C. Raynor; Treasurer, Dr. A. D. Ruggles. At this meeting Dr. L. Grant Baldwin, of Brooklyn, read the report of a very rare case of properitoneal (interstitial) hernia in a female.

BEQUEST. — The late Dorman B. Eaton, in addition to bequeathing \$100,000 each to Harvard and Columbia Universities, left a large amount to societies and charitable institutions. Among the latter bequests were \$10,000 to the New York Skin and Cancer Hospital, and \$1,000 to the Burnham Industrial Farm.

APPOINTMENTS. — The Governor has appointed Dr. George Elmer Gorham, of Albany, a manager of the Craig Colony for Epileptics, and Dr. Ernest H. Schwindt, of White Plains, a manager of the New York State Reformatory for Women at Bedford.

ST. JOHN'S HOSPITAL. — The new St. John's Hospital in Long Island City, Borough of Queens, was opened January 7th. The building, which cost about \$130,000, is four stories high and will accommodate 200 patients.

PHILADELPHIA.

PREVENTION OF TUBERCULOSIS — On January 10th the Philadelphia County Medical Society and the Pennsylvania Society for the Prevention of Tuberculosis held a joint meeting. Dr. S. Solis-Cohen presided, and introduced the following speakers: Dr. L. F. Flick, "Plans of the Pennsylvania Society for the Prevention of Tuberculosis"; Dr. J. C. Wilson, "The Necessity of Hospital Care of the Consumptive Poor"; Hon. W. N. Ashman, "Work at Present being done through Private Charity in the Treatment of Consumption"; Dr. Howard S. Anders, "The Necessity for State Aid in the Treatment of Consumption among the Poor"; Rev. Chas. A. Dickey, "The Cost of Maintenance and Management of Hospitals and Sanitaria for Treatment of Consumption"; Dr. Guy Hinsdale, "Localities Suitable for the Treatment of Consumption in Sanitaria throughout Pennsylvania"; Dr. E. O. Otis (of Boston), "The Necessity for City Hospitals for the Treatment of Advanced Cases of Consumption among the Poor." After the reading of these papers the subject was discussed by members of the Societies and guests. Dr. J. M. Da Costa in opening the discussion showed that the State must take the matter up if anything is to be accomplished. All that individuals can do is, after all, but a drop of relief in an ocean of woe. The discoveries of Koch have, as a matter of fact, added to the hardship of the individual consumptive. Proved to be a source of danger it becomes the duty of the community to come to his relief and the medical profession should urge this upon the State. Addresses were made by Mayor Wm. H. Lambert, formerly President of the Philadelphia Hospital; Dr. J. Edward Stubbart,

of the Loomis Sanitarium at Liberty, N. Y., and Mr. Wm. B. Hackenberg, of the Jewish Hospital in Philadelphia. Dr. S. Solis-Cohen showed that consumption is to be ranked among the preventable diseases; that the means to prevent it are in the improvement of vital resistance by open air, sunlight, good food, proper alternation of rest and exercise, also by the avoidance of infection by proper care of sputum and by certain measures of disinfection of a public nature. Education of the community regarding these methods is necessary. Massachusetts has taken the lead in the erection of a State hospital for tuberculous patients and it is confidently hoped that other States will soon follow her example.

COLLEGE OF PHYSICIANS.—At the last meeting of the College of Physicians of Philadelphia, Dr. W. W. Keen was elected president, and Dr. Horatio C. Wood, vice-president. Dr. Keen has announced his gift of \$5,000 toward the endowment of the library of the College. Mr. Chas. C. Harrison, Provost of the University of Pennsylvania, has subscribed \$1,000, and the subscriptions to this fund have reached \$30,000. It is generally believed that it was Mr. Harrison who made the Christmas gift to the University of the sum of \$250,000 towards the endowment of that institution. The donor's name has not officially been made public. This is the second gift of similar amount received by the University within a few weeks.

THE MEDICAL CLUB.—The Medical Club of Philadelphia has elected the following officers for 1900: President, Dr. James M. Anders; Vice-Presidents, Dr. H. Augustus Wilson and Dr. William L. Rodman; Secretary, Dr. Guy Hinsdale; Treasurer, Dr. F. Savary Pearce. The Club has 290 members.

Miscellaneous.

STATE CONTROL OF THE INSANE.

THE State Board of Insanity has made a special report to the Legislature recommending State care for the insane of Massachusetts. The text of the recommendations is as follows:

(1) Such legislation as will provide that all insane persons who are now or who may hereafter become public charges shall be supported at the expense of the Commonwealth on and after January 1, 1904. This would involve the transfer from city and town account to that of the State of the cost of maintenance at the same rate of some 5,607 persons.

(2) That all such insane poor shall be committed according to the laws for the commitment of the insane to the custody and control of the authorities of the Commonwealth as soon after January 1, 1904, and in such manner, as may be deemed advisable by the State Board of Insanity.

(3) That all such insane poor shall be cared for in buildings which shall be owned or controlled by the Commonwealth. This would require additional provision. (a) For about 500 patients who are inmates of the Boston Insane Hospital; (b) for about 900 insane persons who are now cared for in city and town almshouses and private families in care of overseers of the poor.

(4) Such legislation as may be necessary to acquire from

the State the land, buildings and equipment in use by the Boston Insane Hospital.

(5) That a colony for the chronic insane should be established according to the general plan outlined in this report.

(6) That the Legislature appropriate a sum not exceeding \$25,000, to be expended under the direction of the State Board of Insanity, for the purchase of not less than 2,000 acres of land for such colony.

(7) That the Legislature appropriate a sum not exceeding \$50,000, to be expended under the direction of a board of trustees, for the proper organization of such a colony, and toward the construction of buildings and the procuring of other equipment necessary for that purpose.

The propositions submitted to us have been considered in relation to a general plan of progressive development, which, in our judgment, better solves the problem than the erection of new hospitals for the specific purposes suggested.

The system recommended is comprehensive and would take some time and the gradual expenditure of money to complete; and, if perfected, will result in a thorough separation of acute from chronic cases, and, we believe, in the best care of both.

The report is signed by George F. Jelly, Herbert R. Howard, Charles R. Codman, Edward S. Bradford and Francis B. Gardner.

EXAMINATION FOR ASSISTANT SURGEONS IN THE UNITED STATES MARINE-HOSPITAL SERVICE.

A BOARD of officers will be convened at the Service Building, 378 Washington Street, New York City, Wednesday, February 7, 1900, for the purpose of examining candidates for admission to the grade of assistant surgeon in the United States Marine-Hospital Service. Candidates must be between twenty-one and thirty years of age, graduates of a respectable medical college, and must furnish testimonials from respectable persons as to character. The following is the usual order of the examination: (1) Physical; (2) written; (3) oral; (4) clinical. In addition to the physical examination, candidates are required to certify that they believe themselves to be free from any ailment which would disqualify them for service in any climate. The examinations are chiefly in writing, and they begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene. The oral examination includes subjects of preliminary education, history, literature and natural sciences. The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order, as vacancies occur. After five years' service, assistant surgeons are entitled to examinations for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority, and after due examination, as vacancies occur in that grade.

Assistant surgeons receive sixteen hundred dollars, passed assistant surgeons two thousand dollars, and surgeons twenty-five hundred dollars a year. When quarters are not provided, commutation at the rate of thirty, forty or fifty dollars a month, according to

grade, is allowed. All grades above that of assistant surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years' service up to forty per centum after twenty years' service. The tenure of office is permanent. Officers travelling under orders are allowed actual expenses. For further information, or for invitation to appear before the Board of Examiners, address Supervising Surgeon-General, United States Marine-Hospital Service, Washington, D. C.

COMPULSORY VACCINATION IN JAPAN.

While in England and America, according to the *Indian Lancet*, the utility of vaccination is still doubted, and the right of public enforcement of it disputed by numerous fanatics, we find that in little Japan, the youngest of civilized nations, not only is vaccination compulsory, but revaccination at stated periods is rigidly enforced. By an act of parliament passed in 1896, and at once signed by the Mikado, revaccination at periods of five years was made compulsory upon every Japanese, whatever his or her station in life. Vaccination is done with lymph from calves only, which is procured from vaccine establishments owned and controlled by the government, and which is distributed gratis. Any attempt to evade revaccination at the stated periods is made a serious offence, and is treated as a grave dereliction against public health. The result is that small-pox, once the curse of the islands constituting the realm of Japan, is now all but unknown. Similar results are reported from every country where vaccination is made compulsory and rigidly enforced. Fortunately for Japan, the era of pseudo-science has not yet reached its shores; we fear however that the time may come when the same endless and useless discussions will prevail there that at present mark so much of our own and especially England's legislation in matters of public health. We trust that day may be long deferred.

INFLUENZA IN LONDON.

There has, according to the *British Medical Journal*, been a great increase in the number of cases of influenza in London during the last few weeks, and practitioners in many quarters of the town are extremely busily engaged. The returns of the registrar-general for last week reflect this prevalence of the disease by a serious increase in the number of deaths from influenza in London. The deaths directly attributed to this disease, which had been 38 and 69 in the two preceding weeks, further rose to 193 during the week ending Saturday last, December 30, 1899. Of these 193 fatal cases only 24 were of persons under forty years of age, while 63 were of persons aged between forty and sixty, and 96 were of persons aged above sixty years, of which 30 were of persons aged upwards of eighty years. The deaths referred to diseases of the respiratory organs also showed a marked further increase, and numbered no fewer than 1,172, being more than double the average. The information at disposal is not sufficient to show to what extent influenza is prevailing in other parts of the country, but we hear of wide prevalence, apparently in a rather mild form, in East Anglia.

METEOROLOGICAL RECORD

For the week ending January 6th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...31	29.87	12	19	5	61	37	49	S.W.	S.	12	9	C.	F.	.96
M...1	29.50	22	27	16	94	67	80	N.E.	W.	15	15	P.	N.	
T...2	29.63	22	30	13	70	56	63	S.W.	S.W.	16	12	C.	C.	
W...3	30.12	16	21	10	82	56	69	W.	W.	8	12	C.	C.	
Th...4	30.52	18	29	8	77	61	69	W.	S.	4	13	C.	C.	
F...5	30.31	34	46	23	66	62	64	S.W.	W.	15	7	O.	O.	
S...6	30.38	36	42	30	75	56	66	W.	N.	12	9	C.	O.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, thunders; N, snow. † Indicates trace of rainfall. ‡ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 6, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Scarlet fever.	
New York	3,550,053	—	—	—	—	—	—	—	—
Chicago	1,619,226	—	—	—	—	—	—	—	—
Philadelphia	1,266,832	513	153	8.40	20.29	.20	6.20	.80	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	283	76	12.60	22.05	.70	5.95	3.50	
Baltimore	506,389	212	51	8.93	16.45	1.41	5.15	1.47	
Cincinnati	405,000	106	—	7.52	21.28	1.88	1.88	1.88	
Cleveland	350,000	—	—	—	—	—	—	—	
Pittsburg	305,000	149	49	20.10	20.16	11.39	3.35	.67	
Washington	277,000	117	24	21.8	19.85	5.95	1.70	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	86	36	13.92	27.84	—	—	1.16	
Nashville	87,754	41	17	2.44	—	—	2.44	2.32	
Charleston	65,165	35	9	2.86	11.44	—	—	—	
Worcester	111,732	42	15	6.76	21.42	—	—	—	
Fall River	103,142	—	—	—	—	—	—	—	
Cambridge	92,520	32	8	12.52	21.91	—	12.52	—	
Lowell	90,114	18	7	—	33.88	—	—	—	
New Bedford	70,511	18	7	16.66	23.22	—	—	11.11	
Lynn	68,218	—	—	—	—	—	—	—	
Somerville	64,394	12	2	8.33	16.66	—	—	—	
Lawrence	59,072	—	—	—	—	—	—	—	
Springfield	58,266	13	2	7.69	—	—	7.69	—	
Holyoke	44,510	8	5	—	—	—	—	—	
Brockton	38,759	—	—	—	—	—	—	—	
Salem	37,723	12	4	—	33.33	—	—	—	
Malden	36,421	11	6	—	35.70	—	—	—	
Chelsea	34,235	14	3	14.28	—	7.14	—	—	
Haverhill	32,651	17	4	11.76	11.76	—	11.76	—	
Gloucester	31,426	2	1	—	—	—	—	—	
Fitchburg	30,523	13	4	7.69	15.38	—	—	—	
Newton	30,461	7	3	14.28	28.56	—	—	14.28	
Taunton	28,527	13	2	7.69	15.38	—	7.69	—	
Everett	28,102	4	2	25.00	25.00	—	25.00	—	
Quincy	24,578	9	3	11.11	3.33	—	11.11	—	
Pittsfield	23,421	—	—	—	—	—	—	—	
Waltham	22,791	7	3	—	28.56	—	—	—	
North Adams	21,583	6	1	—	16.66	—	—	—	
Chicopee	18,316	6	2	—	—	—	—	—	
Medford	17,190	1	1	—	—	—	—	—	
Newburyport	15,036	3	—	—	—	—	—	—	
Melrose	14,721	4	—	—	—	—	—	—	

Deaths reported 1,830; under five years of age 504; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 190, acute lung diseases 355, consumption 175, diphtheria and croup 81, typhoid fever 33, scarlet fever 22, diarrheal diseases 6, measles and whooping-cough 7 each, erysipelas 5.

From diarrheal diseases Baltimore and Pittsburg 3 each, Philadelphia, Boston, Cincinnati and Washington 2 each, Providence and Charleston 1 each. From measles Providence 5, Philadel-

phia 2, Baltimore and Chelsea 1 each. From whooping-cough Pittsburg 4, Boston, Providence and New Bedford 1 each. From erysipelas Philadelphia and Worcester 2 each, Providence 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 30th, the death-rate was 30.6. Deaths reported 6,700: acute diseases of the respiratory organs (London) 1,172, measles 164, diphtheria 122, whooping-cough 102, fever 52, scarlet fever 37, diarrhea 37, small-pox (Hull) 10.

The death-rates ranged from 17.6 in Huddersfield to 49.7 in Plymouth: Birmingham 25.7, Bradford 22.1, Cardiff 20.2, Gateshead 25.9, Leeds 22.3, Liverpool 36.9, London 35.2, Manchester 22.9, Newcastle-on-Tyne 28.3, Nottingham 34.9, Portsmouth 42.1, Sheffield 25.0, Swansea 27.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 13, 1900.

R. W. PLUMMER, assistant surgeon, detached from the "New Orleans" and ordered to the "Petrel" and also to the Cavite Naval Station.

D. G. BEEBE, assistant surgeon, detached from the "Bennington" and ordered to the "Petrel."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 11, 1900.

AUSTIN, H. W., surgeon. To report at Washington, D. C., for special temporary duty. January 6, 1900. To rejoin station at Philadelphia, Pa. January 11, 1900.

WILLIAMS, L. L., surgeon. Granted leave of absence for ten days. January 11, 1900.

VAUGHAN, G. T., passed assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

GEDDINGS, H. D., passed assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

ROSENAU, M. J., passed assistant surgeon. Detailed as delegate to the thirteenth session of the International Congress of Medicine to be held in Paris, France, August 2-9, 1900. January 10, 1900. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1899.

PARKER, H. B., assistant surgeon. Granted leave of absence for thirty days. January 8, 1900.

FRICKS, L. D., assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

BILLINGS, W. C., assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for four days. January 11, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, January 22d, at 8 o'clock.

Dr. Philip C. Knapp will speak briefly on "The Problem of Boston's Insane."

Dr. Henry C. Baldwin will give "A Report of the Work of the Boston Insane Hospital Trustees and Plans for the Development of the Hospital."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, January 24, 1900, at 8 P. M.

Papers: Dr. Agnes C. Viator, "The Question of Supernumerary Fallopian Tubes, with Specimens of Fallopian Tubes with Supernumerary Ostita."

Dr. Charles H. Winn: "Bicornate Uterus with Twin Pregnancy: Abortion from one Horn."

Dr. E. L. Twombly: "A Case of Pernicious Vomiting of Pregnancy."

R. A. KINGMAN, M.D., *Chairman*.
C. H. HARE, M.D., *Secretary*.

NEW YORK STATE MEDICAL ASSOCIATION, FIFTH DISTRICT BRANCH. — The sixteenth annual meeting of the Fifth District Branch of the Association will be held in Brooklyn on Tuesday, May 22, 1900. It is proposed to choose diabetes as the topic for discussion. Fellows who are particularly interested in this topic

and have any clinical data to present, or theories to offer, will kindly correspond with the undersigned.

J. C. BIERWIRTH, M.D., *President*,
E. H. SQUIBB, M.D., *Secretary*,
P. O. Box 760, Brooklyn.

RECENT DEATHS.

MILTON WILDER HALL, M.D. M.M.S.S., died in Roxbury, January 9, 1900, aged fifty-one years.

JOHN S. COOK, M.D., of Hackettstown, N. J., died on January 1st, in his seventy-fourth year. He was born at Easton, Pa., and was graduated from Union College in 1847 and from the Medical Department of the University of Pennsylvania in 1850. He was elected president of the New Jersey State Medical Society in 1879.

F. H. GEHRING, M.D., a prominent physician at Chateaugay Lake, died recently at Malone, N. Y., from septicemia contracted in performing a surgical operation.

JOSEPH E. ARROWSMITH, M.D., of Keyport, N. J., died January 3d, at the age of seventy-seven years. He was a graduate of the Medical Department of the University of the City of New York, and began practice at Keyport in 1844.

BOOKS AND PAMPHLETS RECEIVED.

A Contribution to the Etiology of Pompholyx. By Martin F. Engman, M.D. Reprint. 1899.

The Tonsils as Portals of Infections. By Emil Mayer, M.D., New York City. Reprint. 1899.

A Review of the History and Literature of Appendicitis. By George M. Edebohls, A.M., M.D., New York. Reprint. 1899.

Disfigurements of Nose and Mouth and their Surgical Treatment. By John B. Roberts, M.D., Philadelphia. Reprint. 1899.

Report of the Trustees of the Rhode Island Hospital, presented to the Corporation at its Thirty-sixth Annual Meeting, November 8, 1899.

Transactions of the American Otological Society, Thirty-second Annual Meeting. Vol. VII, Part II. Published by the Society. 1899.

Progressive Medicine. Edited by Hobart Amory Hare, M.D. Vol. IV, December, 1899. Philadelphia and New York: Lea Brothers & Co. 1899.

Report of the Commissioner of Education for the year 1897-98. Volume I, containing Part I. Washington: Government Printing Office. 1899.

The Modern Treatment of Wounds. By John E. Summers, Jr., M.D., Surgeon-in-chief to the Clarkson Memorial Hospital, etc. Omaha: Medical Publishing Co. 1899.

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. LXXXII. London: Longmans, Green & Co. 1899.

Twentieth Century Practice. Edited by Thomas L. Stedman, M.D., New York City. Vol. XVIII. Syphilis and Leprosy. New York: William Wood & Co. 1899.

Encyclopædia Medica. Under the general editorship of Chalmers Watson, M.B., M.R.C.P.E. Vol. I. Abdomen to Bone. New York: Longmans, Green & Co. 1899.

Transactions of the New Hampshire Medical Society, at the One Hundred and Eighth Anniversary held at Concord, May 25 and 26, 1899. Concord: Ira C. Evans. 1899.

The Other Side of the Antitoxin Question. The Failure of Antitoxin in the Treatment of Diphtheria. By J. Edward Herman, M.D., Brooklyn, N. Y. Reprints. 1899.

Food and Feeding. By Sir Henry Thomson, Bart., F.R.C.S., M.B. (Lond.), etc. With an appendix. Tenth edition. London and New York: Frederick Warne & Co. 1899.

Therapeutic Electricity and Practical Muscle Testing. By W. S. Hedley, M.D., M.R.C.S. (Eng.), in charge of the Electrotherapeutic Department of the London Hospital. Philadelphia: P. Blakiston, Son & Co. 1900.

A Practical Treatise on Medical Diagnosis for Students and Physicians. By John H. Musser, M.D., Professor of Clinical Medicine in the University of Pennsylvania, etc. Third edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co. 1899.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By Edward Jackson, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic, etc. With 178 illustrations and two colored plates. Philadelphia: W. B. Saunders. 1900.

Cystitis Produced by Catheterization of the Female Urinary Bladder, and its Prevention. Two Cases of Bilateral Pyosalpinx with Ovarian Cysts; Extensive Adhesions; Celiotomy; Recovery. Ectopic Gestation, with a Report of some Interesting Cases. By J. Murray Johnson, M.D., Bridgeport, Conn. Reprints. 1898-99.

Original Articles.

A RHODE ISLAND PHILOSOPHER (ELISHA BARTLETT).¹

BY WILLIAM OSLER, M.D.,
Professor of Medicine, Johns Hopkins University, Baltimore, Md.

(Concluded from No. 3, p. 53.)

III.

BARTLETT began his career as a medical writer with the *Monthly Journal of Medical Literature and American Medical Students' Gazette*, only three numbers of which were issued. He says in the introductory address, dated October 15, 1831, that there are plenty of practical journals of high character and extensive circulation, but he wishes to see one devoted to "medical history, medical literature, accounts of medical institutions and hospitals, medical biography, including sketches of the character, lives and writings of the chief masters of our art, and of all such as have in any way influenced its destinies and left the deep traces of their labors on its history. . . . To the medical student and the young practitioner, to all those who aspire to any higher acquisitions than the knowledge that calomel purges and salivates, and that tartarized antimony occasions vomiting, who are not willing to rest supinely satisfied in a routine familiarity with doses and symptoms—a familiarity which practice and habit render in the end almost mechanical—we cannot but think these matters must be interesting." And he adds: "The devotion of an occasional hour to such pursuits must have a tendency to enlarge and liberalize the mind. It will help to keep alive and stimulate in the young medical scholar the sometimes flagging energies of study. By calling his attention and directing his desires to high standards of acquisition and excellence, it will urge him on towards their attainment. Delightful and fascinating, in many respects, as the study of his profession may be to him, there are many hours which must be occupied with mental and bodily drudgery. He must make what to others would be loathsomeness pleasure to himself. Amid the wear and tear, the toil and fatigue of such pursuits, he needs at times some intellectual recreation and stimulus, and where can he find one pleasanter or more appropriate than in surveying the career, and studying the characters, of those who have trodden before him the same laborious path, and who have followed it on to its high and bright consummation? If our profession ever vindicates its legitimate claim to the appellation of liberal, it must be cultivated with some other than the single aim of obtaining patients for the sole purpose of getting for services rendered an equivalent in fees."

In the first number there is a statement that on a future occasion the *Journal* will give a "detailed consideration of the character of the old physician of Cos—the venerable father of physic, and of the reform which he effected in medical science," a promise which was not fulfilled to the profession for many years, as Bartlett's well-known lecture on Hippocrates, the last, indeed, of his professional writings, was not issued until 1852. The literature of science, its philosophy, its history, the history of the lives and labors of the founders and cultivators—these he believed it important for the student to cultivate.

¹ An address delivered before the Rhode Island State Medical Society, December 7, 1899.

Among the articles in these three numbers there are some of special merit. One signed S. N., "On the Claims of Medicine to the Character of Certainty," may have suggested to Bartlett his well-known essay, "On the Degree of Certainty in Medicine." The enterprise was not a success, and as Bartlett had said in his introductory address, "of all *weakly* things we most hear ily pity *weakly* periodicals," he had the good sense after three numbers had been issued to give up a publication which the profession did not sustain.

In July, 1832, he became associated with A. L. Pierson and J. B. Flint in a much more pretentious and important journal, the *Medical Magazine*, a monthly publication which continued for three years. It was a very well conducted periodical, with excellent original articles and strongly written editorials. John D. Fisher's original paper on the cephalic brain murmur occurs in Volume II, and in the same one is an excellent paper by E. Hale, Jr., on the typhoid fever of this climate, which is of special interest as containing very accurate statements of the differences between the common New England autumnal fever and the typhus as described by Armstrong and Smith. There are also reports of three autopsies giving an account of ulceration in the small intestine, among the first to be published in this country. There are in addition numerous well-written critical reviews. Among the latter is one of the most virulent productions of that most virulent man, Dr. Charles Caldwell. It is entitled "Medical Language of Literature." I have heard it said in Philadelphia that Dr. Samuel Jackson never forgave the bitterness of the attack in it upon his "Principles of Medicine."

In Volume III there was the interesting announcement that a dollar a page would be paid for all original communications.

In 1831 appeared a little work entitled, "Sketches of the Character and Writings of Eminent Living Surgeons and Physicians of Paris," translated from the French of J. L. H. Peisse. Of the nine lives, those of Dupuytren and Broussais are still of interest to us, and I know of no work in English from which one can get a better insight into the history of medicine in Paris in the early part of this century. One little sentence in the translator's preface is worth quoting: "After making all reasonable allowance for natural tact or talent, and for the facilities and advantages of instruction to be had in extensive medical establishments, it will be found that *study*, intense, untiring, unremitting *study*, is the only foundation of professional worth and distinction."

A great stimulus had been given to the study of phrenology by the visit of Spurzheim to this country. He gave a course of six lectures on the anatomy of the brain and spinal cord at one of the apartments of the Medical College in September of that year, and subsequently a popular course of lectures on phrenology. In 1832 he died in Boston of typhus fever. His brain, it is stated, was in the possession of the Boston Phrenological Society, before which, in January, 1838, Bartlett gave an interesting address on scientific phrenology.

In 1839 Bartlett edited "Paley's Natural Theology," that delightful book, dear especially to those of us who were trained in religious colleges. To some of us at least the freshness of the natural theology, which in Paley's hands was really a delightful commentary on anatomy and physiology, was a happy change from artificial

theology, or even from the "Hora Paulina" of the same author.

Bartlett's claim to remembrance, so far as his medical writings are concerned, rests mainly on his work on "Fevers" issued in 1842, and subsequent editions in the years 1847, 1852 and 1857. It remains one of the most notable of contributions of American physicians to the subject. Between the time of Bartlett's visit to Paris and 1840, a group of students had studied under Louis, and had returned to this country thoroughly familiar with typhoid fever, the prevalent form in the French capital at that time. In another place⁵ I have told in detail how largely through their labors the profession learned to recognize the essential differences between the two prevalent forms of fever, typhoid and typhus. The writings on fever chiefly accessible to American readers at that day were the English works of Fordyce, Armstrong, Southwood Smith and Tweedie, in which, as Bartlett says, "they describe a fever or form of fever (that is typhus) rarely met with in this country," and the writings did not actually represent the state of our knowledge upon the subject. Indeed for a number of years later a chaotic condition of mind prevailed among the writers in Great Britain, and it was not until 1849-50 that William Jenner, by a fresh series of accurate observations, brought the British medical opinion into line. As the *British and Foreign Medico-Chirurgical Review*, in a most complimentary notice of Bartlett's work, says, "A history of British fevers such as Louis has furnished to France, or such as given in the volume under discussion, did not exist." Still, even at that date, 1844, the *Review* expressed the ultra-conservative opinion held in England, that the common continued fever, or the low nervous fever of Huxham, was only a mild form of typhus fever. The work is dedicated to his friends, James Jackson, of Boston, and W. W. Gerhard, of Philadelphia; as he states, "a history of two diseases, many points of which they, especially among his own countrymen, have diligently and successfully studied and illustrated."

As to the work itself, the interest to-day rests chiefly with the remarkably accurate picture which is given of typhoid fever—a picture the main outlines of which are as well and firmly drawn as in any work which has appeared since. It is written with great clearness, in logical order, and he shows on every page an accurate acquaintance with the literature of the day, and, as the author of the review already mentioned remarks, a knowledge also of that best of books, the book of nature.

The practical character of Bartlett's mind is indicated by the briefness with which he discusses the favorite topic of the day, namely, the theory of fever. He acknowledged at the outset that the materials for any satisfactory theory of typhoid fever did not exist. He went so far as to claim that the fundamental primary alteration was in the blood, and that the local lesion was really secondary, and he refers to the prevalent theory of fever as "wholly a creation of fancy; the offspring of a false generalization and of a spurious philosophy. What then can its theory be but the shadow of a shade?" This work immediately placed Bartlett in the front rank of American physicians of the day. It had an immense influence on the profession of the country. Among his letters there is an interesting and characteristic one from James Jackson,

already referred to in the dedication. Acknowledging the receipt of a copy, he says: "I am now writing to express to you the great satisfaction the book has given me. I think that it entirely answers the end that you proposed. It, in fact, translates to the common reader, in a most clear style and lucid method, the acquisitions which science has made on its subjects within the last few years. Nowhere else can the same comprehensive view of those subjects be found. What may be the conclusions of medical men in regard to essential fevers twenty years hence I would not pretend to say. It is certain their views have changed very much within a shorter period, and if new discoveries are made in ten years to come I doubt not you will be ready to change yours. We must take to-day the truth so far as we know it, and add to it day by day as we learn more."

It is evident from his letters that the success of the work on fevers was a great gratification to Dr. Bartlett. The second edition was issued in 1847, and while the history of typhoid and typhus fever remained much in the same state, with certain additions and developments, the subjects of periodical and yellow fevers were greatly extended. The third edition was issued in 1852. The fourth edition was edited by Bartlett's friend, Alonzo Clark, of New York. The dedication of the second, third and fourth editions was to Dr. John Orne Green, of Lowell, "with whom the early and active part of the writer's life was passed; in a personal friendship which no cloud, for a single moment, ever shadowed or chilled; and in a professional intercourse whose delightful harmony no selfish interest nor personal jealousy ever disturbed."

From every standpoint "Bartlett on Fevers" may be regarded as one of the most successful medical works issued from the medical press, and it richly deserves the comment of the distinguished editor of the fourth edition: "The question may be fairly raised whether any book in our profession illustrates more clearly the beauties of sound reasoning and the advantages of vigorous generalization from carefully selected facts. Certainly no author ever brought to his labor a more high-minded purpose of representing the truth in its simplicity and in its fulness, while few have been possessed of higher gifts to discern, and gracefully to exhibit it."

"An Essay on the Philosophy of Medicine," 1844, a classic in American medical literature, is the most characteristic of Bartlett's works, and the one to which in the future students will turn most often, since it represents one of the most successful attempts to apply the principles of deductive reasoning to medicine, and it moreover illustrates the mental attitude of an acute and thoughtful observer in the middle of the century. The work consists of two parts: in the first science is defined and its canons laid down. Ascertained facts, with their relations to others, obtained by observation or experience, and generalized into laws and principles—this constitutes science. He dwells upon the hurtfulness of theories, and sketches in an interesting manner Newton's position as an observer and as a theorist: "If he (Newton) bowed at any time or in any degree his strong neck to the yoke of hypothesis, it was always with a perfect consciousness of his ability at will to shake it off, as the lion shakes the dew-drop from his mane." He quotes from Sir Humphrey Davy: "When I consider the variety of theories that may be formed on the slender foundation of one

⁵ Influence of Louis on American Medicine, Johns Hopkins Hospital Bulletin, August, September, 1897.

or two facts, I am convinced that it is the business of the true philosopher to avoid them altogether."

The five primary propositions with which the second part opens contain the pith of the argument:

Proposition First.—All medical science consists in ascertaining facts, or phenomena, or events; with their relations to other facts, or phenomena, or events; the whole classified and arranged.

Proposition Second.—Each separate class of facts, phenomena, and events, with their relationships, constituting, as far as they go, medical science, can be ascertained in only one way; and that is by observation, or experience. They cannot be deduced, or inferred, from any other class of facts, phenomena, events, or relationships, by any process of induction, or reasoning, independent of observation.

Proposition Third.—An absolute law, or principle, of medical science consists in an absolute and rigorous generalization of some of the facts, phenomena, events, or relationships, by the sum of which the science is constituted. The actual ascertainable laws, or principles, of medical science are, for the most part, not absolute but approximative.

Proposition Fourth.—Medical doctrines, as they are called, are, in most instances, hypothetical explanations, or interpretations, merely, of the ascertained phenomena, and their relationships, of medical science. These explanations consist of certain other assumed and unascertained phenomena and relationships. They do not constitute a legitimate element of medical science. All medical science is absolutely independent of these explanations.

Proposition Fifth.—Diseases, like all other objects of natural history, are susceptible of classification and arrangement. This classification and arrangement will be natural and perfect just in proportion to the number, the importance, and the degree of the similarities and the dissimilarities between the diseases themselves.

Bartlett is the strongest American interpreter of the modern French school of medical observation, which "is characterized by its strict adherence to the study and analysis of morbid phenomena and their relationships; by the accuracy, the positiveness, and the minute detail which it has carried into this study and analysis; and by its rejection as an essential or legitimate element of science of all *a priori* reasoning or speculation. The spirit which animates and guides and moves it is expressed in the saying of Rousseau, 'that all science is in the facts or phenomena of nature and their relationships, and not in the mind of man, which discovers and interprets them.' It is the true *protestant* school of medicine. It either rejects as apocryphal, or holds as of no binding authority, all the traditions of the fathers, unless they are sustained and sanctioned by its own experience."

There are weak points in his arguments, some of which are well pointed out in an able article in the *British and Foreign Medico-Chirurgical Review* (July, 1845), but it is the work of a strong and thoughtful mind, and for a time, at least, it had a powerful influence in the profession. A contemporary writer, S. H. Dickson,⁶ speaks of it in the following terms: "It was particularly well-timed, and addressed effectively to the requirements of the profession, at the period of its publication. It breathes a spirit of thoughtful and considerate scepticism, which was then needed to temper the headlong habit of confident polypharmacy

prevalent over our country. . . . When addressed, however, by Bartlett, on this side of the Atlantic, and on the other by Forbes, he (the orthodox disciple) stopped to listen and consider. These gifted men spoke with authority; they pleaded impressively, eloquently, wisely. If, in the natural ardor of controversy, they went somewhat too far, let that slight fault be forgiven for the great good they accomplished. Nay, let them be honored for the courage and frankness with which they attacked prevalent error, and risked their popularity and position by assailing modes of practice rendered familiar by custom, and everywhere adopted and trusted to."

In 1848 appeared one of Bartlett's most characteristic works, a little volume of eighty-four pages, entitled, "An Inquiry into the Degree of Certainty of Medicine, and into the Nature and Extent of its Power over Disease." The iconoclastic studies of Louis and certain of the Paris physicians, and the advocacy of expectancy by the leaders of the Vienna school, had between 1830 and 1850 disturbed the profession not a little, and in 1846 appeared an article by Dr. Forbes, in which, as Bartlett said, were drawn "in strong and exaggerated colors the manifold imperfections of medical science and the discouraging uncertainties of medical art." These circumstances had combined to shake and disturb the general confidence in the profession, with the effect that "the hold which medicine has so long had upon the popular mind is loosened; there is a widespread skepticism as to its power of curing diseases, and men are everywhere to be found who deny its pretensions as a science, and reject the benefits and blessings which it proffers them as an art." To Bartlett it appeared high time to speak a clear and earnest word for the science which we study and teach, and for the art which we inculcate and practise, and in this essay he set himself the task of vindicating the claims of medicine to the regard and confidence of mankind. In his endeavor "to show how far and with what measure of certainty and of constancy we are able to control, to mitigate and to remove disease" Bartlett occupied at the outset very advanced ground for that date. We must remember that the general body of the profession had the most implicit confidence in drugs, and polypharmacy was almost as much in vogue as in the seventeenth and eighteenth centuries. The reception of the essay in certain quarters indicates how shocking its tone appeared to some of the staid old conservatives of the day. I came across a review of it in the *Medical Examiner*, November, 1848, from which I give the following extract: "This is a curious production, the like of which we have seldom seen from the pen of any one who had passed the age of a sophomore. What makes it the more remarkable is the circumstance that the writer is a gentleman of education and experience and the author of works which have given him a wide reputation." The force of the rebound sufficiently indicates the intensity with which the attack was felt. Bartlett's position, however, reminds one somewhat of the sermon of the liberal Scotch Presbyterian on "things which cannot be shaken," in which he proceeded at the outset to shake off three-fourths of the cherished beliefs of Evangelical Christianity.

After a preliminary discussion on anatomy and physiology, and on the remarkable rapidity with which these sciences were progressing, he proceeds to speak of the state of pathology and therapeutics as illustrated in the well-known disease pneumonia. Time will not

⁶ Gross: *American Medical Biography*, 1861, p. 750.

permit me to do more than to refer to the result of his analysis of the evidence. He classifies the cases into, first, those which terminate naturally and spontaneously, quite independent of any active medical treatment, a proportion "probably large"; second, a group which will terminate fatally notwithstanding any assistance which art may furnish; they are, as Sir Gilbert Blanc said of the worst forms of yellow fever, "determinedly fatal"; and, finally, a third class "not tending necessarily either in one direction or the other," in which the issue depends upon the treatment of the disease. "In these cases, art, judiciously applied, save the life of the patient; the issue of the cases, in death or in recovery, is dependent upon the treatment of the disease." Then follows a discussion on the nature and limits of the medical art in the various groups of diseases, and he concludes with a section on the triumphs of preventive medicine.

The initials "A. S." at the end of a review in the *American Journal of the Medical Sciences*, October, 1848, enable us to estimate the impression which the book made upon a kindred spirit. Professor Alfred Stillé, of the University of Pennsylvania (still with us, I am happy to say), wrote, "He has done a good work, a work for which he deserves the respect and gratitude of the medical profession, and of all sound-hearted men, whatever their pursuits, who fight under the banner of truth, and are the sworn foes of all imposture, the determined opponents of all error."

At times and in degrees differing with our temperaments, most of us have bouts of depression, when we feel that the battle has been lost, and that to fight longer is not worth the effort, periods when, amid the weariness, the fever and the fret of daily practice, things have gone against us: we have been misunderstood by patients, our motives have been wrongly interpreted, and smitten perhaps in the house of our friends, the worries of heart to which we doctors are so subject, make us feel bitterly the uncertainties of medicine as a profession, and at times make us despair of its future. In a voice that one may trust Bartlett concludes his inquiry with these memorable words, which I quote, in the hope that they may soothe the heartache of any pessimistic brother: "There is no process which can reckon up the amount of good which the science and art of medicine have conferred upon the human race; there is no moral calculus that can grasp and comprehend the sum of their beneficent operations. Ever since the first dawn of civilization and learning, through

'the dark backward, and abysm of time,'

they have been the true and constant friends of the suffering sons and daughters of men. Through their ministers and disciples, they have cheered the desponding; they have lightened the load of human sorrow; they have dispelled or diminished the gloom of the sick-chamber; they have plucked from the pillow of pain its thorns, and made the hard couch soft with the poppies of delicious rest; they have let in the light of joy upon dark and desolate dwellings; they have re-kindled the lamp of hope in the bosom of despair; they have called back the radiance of the lustreless eye and the bloom of the fading cheek; they have sent new vigor through the failing limbs; and, finally, when exhausted in all their other resources, and baffled in their skill—handmaids of philosophy and religion—they have blunted the arrows of death, and rendered

less rugged and precipitous the inevitable pathway to the tomb. In the circle of human duties, I do not know of any, short of heroic and perilous daring, or religious martyrdom and self-sacrifice, higher and nobler, than those of the physician. His daily round of labor is crowded with beneficence, and his nightly sleep is broken, that others may have better rest. His whole life is a blessed ministry of consolation and hope."

The last of Bartlett's strictly medical publications was a little monograph on the "History, Diagnosis and Treatment of Edematous Laryngitis," published in Louisville at the time he held the chair of practice at the University, in 1850. It is a carefully prepared monograph, based largely on the studies of Valleix, and to which a fresh interest had been given him by the observations of Dr. Gurdon Buck, of New York, who had cured several cases by directly scarifying the edematous membranes.

IV.

Naturally studious, fond of poetry, history, biography and literature in general, and not for long tied and bound in the chains of general practice, Bartlett had ample opportunities to cultivate his mind. He says in one of his letters to Green (dated Pittsfield, November 1, 1835): "I pass a good deal of my time here quite alone, so that I find myself whiling away the hours in meditation much oftener than when engaged in the more varied and active affairs of business at home. I think that I always leave Pittsfield with the better and purer part of my being somewhat strengthened." Burton concludes his immortal treatise with the advice: "Be not solitary, be not idle," but the true student in some part of his life at least, should know the "fruitful hours of still increase." For many years Bartlett enjoyed a leisure known to-day to few professors of medicine, the fruits of which are manifest in his writings. Among his contemporaries in the profession there were brilliant writers.—Samuel Henry Dickson, Jacob Bigelow, J. K. Mitchell,—but in a style so uniformly high and polished, yet withal so plain, not one of them approached Bartlett. Compare, for example, Samuel Jackson's "Principles of Medicine," written in 1832 with the first edition of the "Fever" (1842)—the one pompous, involved, obscure; the other clear, direct, simple. For style in his medical writings Bartlett may be called the Watson or the Trousseau of America.

Bartlett was at his best in the occasional address, and, as we have noticed already, this talent was cultivated very early in his career, since we find him giving the Fourth of July oration before his fellow-citizens when he had been scarcely a year in Lowell. All of the lectures and addresses illustrate, as Holmes said, "that easy flow of language, that facility of expression, that florid warmth when occasion offers, which commonly marks the prose of those who are born poets." Among these addresses there are four or five worthy of a permanent place in our literature. Perhaps the most characteristic is one entitled, "The Head and the Heart, or the Relative Importance of Intellectual and Moral Education," which is a stirring plea for a higher tone in social and political morality. In the same clear, ringing accent he speaks in his address on Spurzheim of the dangers of democracy. In a lecture on the "Sense of the Beautiful," delivered in 1843, Bartlett appears as an apostle of culture,

pleading in glowing language for the education of this faculty. One short fragment I must quote: "Amongst the Hebrews, and in the age of Moses, it was linked to religion; it dwelt amidst the mysteries of Worship and Faith. It brought costly offerings to the costlier altar; it hung the tabernacle with its curtains of fine twined linen, and blue, and purple, and scarlet; and with cherubim of cunning work; it arrayed the high priest of Jehovah in his gorgeous and consecrated garments, and on the mitre of pure gold upon his forehead, it graved, like the engraving of a signet—Holiness to the Lord. At a later day, and amongst a widely different people, it became the handmaid of a refined and luxurious sensuality. It lapped the soul of Greece in a sensual clysium. Its living impersonations were Pericles and Aspasia. It called the mother of love from the froth of the sea, and bound her zone with its cestus; it filled the hills of Arcady with fleet Oreads; it graced with half-naked Naiads the fountains and the rivers. It crowned the Acropolis with the Parthenon, and it embodied its highest conceptions of physical grace and beauty in the Venus and the Apollo. At other periods during the history of our race, it has manifested itself in other forms than these; under other circumstances, aspects and influences, and with other results."

In 1848 he delivered the Fourth of July oration before his old friends in Lowell. At the opening he refers to the fact that twenty years before he had occupied the same position. "It was the dewy morning of my manhood; 'time had not thinned my flowing hair'; life, with its boundless hopes and its golden visions, spread far and fair before me; and cheered by your words of encouragement, and aided by your helping hands,—your associate and co-worker, and in your service; a stranger, but welcomed with frank confidence and trust,—I had just entered upon its arduous and upward pathway."

In 1849 appeared a "Brief Sketch of the Life, Character and Writings of William Charles Wells," the South Carolinian Tory, who subsequently became a distinguished man of science in London, and who was well known for his researches on the phenomena of dew.

One of the last of Bartlett's publications was "A Discourse on the Times, Character and Writings of Hippocrates," delivered as an introductory address before the trustees, faculty and medical class of the College of Physicians and Surgeons, at the opening of the session of 1852-53. The three pictures which he gives of Hippocrates, as a young practitioner in the Isle of Thasos, at the death-bed of Pericles, and as a teacher in the Isle of Cos, are masterpieces worthy of Walter Savage Landor, and I regret that time does not permit me to make quotations. In no words of exaggeration the late George D. Prentice said, "There are but few word pictures in the English language that exceed the grandeur and loveliness of that one called into being by Dr. Bartlett in which he imagines Pericles upon his death-bed with Hippocrates in attendance."

It is remarkable how many physicians write poetry, or what passes as such. I have been told of a period in the history of the Royal College of Physicians of London when every elect (censor), as they were called, had written verses. Some begin young, as did Bartlett; others become attuned in the deep autumnal tone of advancing years, when, as Plato tells us in the

Phaedo, even Socrates felt a divine impulsion to compose and make verses before quitting the prison house. Those of us who have read the epic of the late distinguished Prof. George B. Wood, of the University of Pennsylvania, entitled "First and Last," published when he was sixty-four, will devoutly hope that professors of medicine, when afflicted with this form of madness, will follow his example and publish their poems anonymously and in another country. Jacob Bigelow, too, when nearly seventy, "darkened sanctities with song" with his American "Rejected Addresses" (Eolopoesis).

Dr. Bartlett had poetical aspirations early in life. In a letter to his sister of December 3, 1826, he speaks of having seen in New York, in the *Garland*, "two fugitive pieces which some months before I had made use of to fill up the corner of a newspaper, but what sense they might have contained had been turned into nonsense, and I blushed for my wandering orphans, notwithstanding they had been so well dressed, and though they had found their way into pretty respectable company. I should have blushed for myself had they been exhibited to the public as my offspring." In another letter of the same period we see how completely he had passed beneath the yoke of Byron.

At the end of December, 1854, Bartlett issued a little volume entitled, "Simple Settings in Verse, for Six Portraits and Pictures from Mr. Dickens's Gallery," the inditing of which had been, as he says, a pleasant occupation which had helped to while away and fill up many a hour which would otherwise have been weary or vacant in his invalid life. I have already spoken of one, "An Allegory," in which are autobiographical details. I cannot do better than to quote the appreciative notice which his friend Oliver Wendell Holmes gave to the little volume. "When, to the friends he had loved, there came a farewell gift, not a last effort of the learning and wisdom they had been taught to expect from him, but a little book with a few songs in it, songs with his whole warm heart in them, they knew that his hour was come, and their tears fell fast as they read the loving thoughts that he had clothed in words of natural beauty and melody. The cluster of evening primroses had opened and the night was close at hand."

Of a warm, affectionate nature,—a manhood fused with female grace,—to judge from the statements of contemporaries and friends, to know Bartlett was to love him. His confrères, John Orne Green and Alonzo Clark, are invariably addressed as "Dear Brother." Among the letters is one of sympathy to Dr. Green, the desire of whose eyes had been taken away at a stroke. In it Bartlett unlocked his heart in a most touching and human appeal to the afflicted soul. It seems almost too sacred to quote, but after listening you will forgive me.

"MY DEAR BROTHER: What shall I say to the melancholy allusion, in the close of your letter, to the death of our dear Minerva? What poor words of mine can be of any service to one on whom the hand of the Great Chastener has been so heavily laid? How shall I, whose life has been comparatively so cloudless and serene, come, with the message of solace and encouragement, into the presence of one whose meridian sun has been shrouded in such utter and dreadful eclipse? But why should I not? Am I not a brother and a man? Has not bereavement been a guest in the dwelling of my childhood; has not death been a familiar visitor

amid the scenes of my early friendships and happiness and hopes? And where, too, is the future — for us all — for me, as well as for yourself? We but follow each other through the furnace of affliction, as we follow each other to the grave. Who of us has so hedged in his earthly treasures that the spoiler cannot easily break through the frail enclosure, and rifle him, in a moment, of the choicest and best? The lines of the Christian poet, familiar to me, chiefly, from the lips of a now sainted mother, occur to my memory here:

'The spider's most attenuated thread
Is cord, is cable, to man's tender tie
On earthly bliss; — it breaks at every breeze.'

We are brothers, then, in all the liabilities and contingencies and uncertainties of the future. Let us be brothers and fellow-helpers, also, in its hopes and its duties. There can be no entire and hopeless wretchedness for the soul of man, except that which arises from its self-inflicted degradation. The sweet sister, the affectionate daughter, the beautiful bride, and the young mother, was taken away in the clear, unclouded morning of her life — taken away, but where? And by whom? The flower was transplanted from an earthly garden — a fair and sunny one, it is true, but from an earthly garden — to be set forever where no worm can feed on its root, where no decay can ever dry up its bloom — in the Paradise of God. By whom? Taken away — by her Father, from a far-off country, where she was only a sojourner or a pilgrim — to her beautiful and eternal home. Take these thoughts into your heart, and they shall lighten up, or drive away, the darkness of the past, and, what is better, they shall again cheer your future with the once familiar forms and faces of Happiness and Hope. How can we know what, even of present good, our indulgent Father may have in store for us? He may have allotted to you many long years, to be filled up first with duty, and, if filled with duty, to be crowned, also, with the cheerful light of social and domestic joy. You may say, perhaps, that this is all very well for me to say, but that I know nothing about it. But I do know something of the mutability of all earthly things. This uncertainty has long been to me a daily theme of meditation; so I am not wholly a stranger. But I have found an antidote to the gloom and sadness which would otherwise occasion in remembering that all things are in the hands of a Wise Disposer, and the surest way to please Him, as well as to secure our own present as well as future peace, is to submit to His dispensations and to follow on in the course of active and cheerful duty to Him, to our fellows and to ourselves."

While at Louisville some obscure nervous trouble, the nature of which I have not been able to ascertain, attacked Dr. Bartlett. Against it in New York he fought bravely but in vain, and after the session of 1853-54 retired to Smithfield, his native place. The prolonged illness terminated in paralysis, but fortunately, did not impair his mental faculties in the slightest. He died on the 19th of July, 1855.

From the many eulogies which appeared after Bartlett's death, I select a portion of one written by his dearest friend, Alonzo Clark, as the preface to the fourth edition of the "Fever." "Sixteen months ago, he closed his brilliant professional career, after years of growing bodily weakness and pain; his mind not dimmed by his physical infirmities, but bright and comprehensive, glowing with the memories of the past, and the visions of the future. He died too soon for

the profession he adorned. The clock had hardly marked twelve at noon, on the dial plate of life, when its pendulum strokes grew faint and gradually fainter to the ear; and now, at length, when all is still, the hand that notes the hours points sadly upward, to indicate how much of daytime still remained to reap the harvest of affection and honor in those fields from which he had already garnered up so many golden sheaves. He died, alas! too soon. The whole profession are his mourners; for conspicuous as he had become by his medical writings and his extended professional labors, his acknowledged worthiness, his innate gentleness and modesty disarmed envy. He left no enemies. His mind and purpose were pure, almost beyond example. His high mental endowments were controlled and directed by a considerate judgment and an earnest, benevolent heart; and as the laws of refraction, wrought out into mathematical formula, enable the lapidary to construct the facets which open the fountains of the many-colored diamond, so for him, cultivation and elegant taste had brought out the varied and winning native lights of his rich intellectual, moral and social nature."

In translating the "Lives of Eminent French Physicians," Bartlett said he had a two-fold object: "First, the delineation of distinguished professional character and attainment, and secondly, by the influence of such high examples to awaken in the younger members of the medical body a more devoted and worthy emulation of the great masters of our art." In this spirit I appear before you to-day, glad to tell over the story of your countryman — the story of "a life in civic action warm," one that all "the muses deck't with gifts of grace," a distinguished teacher, an author of widespread influence and distinction, a serene philosopher, but above all a man in whom you may recognize, even from the brief and imperfect sketch which I have given,

"A likeness to the wise below,
A kinship with the great of old."

SIXTEEN YEARS' EXPERIENCE IN FOOD AND DRUG INSPECTION.

BY SAMUEL W. ABBOTT, M.D., BOSTON,
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THE following brief sketch relates to the work of the State Board of Health of Massachusetts in the line of food and drug inspection for the period beginning with 1883 and extending to the present time.

Several investigations had been made in the early history of the Board relative to this subject,² and it was found that a considerable amount of adulteration existed in the various articles used for human food.

A prize of \$1,000 had been offered by the National Board of Trade in 1880 for the best essay upon the subject, to be accompanied with a draft of an act, as a guide to the necessary legislation. The prize was awarded to Prof. G. W. Wigner, Secretary of the British Society of Public Analysts, and upon his draft of a bill, the law of Massachusetts was passed substantially as it now stands. Several amendments have been made from time to time as experience has dictated.

¹ Read at the annual meeting of the American Public Health Association, November, 1899.

² See reports of 1872, 1873, 1879 and 1882.

For the first year under the operation of this law the time was mainly spent in inspection of the food actually found as offered for sale in the State, an appropriation of \$3,000 for this purpose having been made.

The second year a severe attack was made upon the law by persons who feared that its operation might prove a hindrance to the dishonest speculator in impure food, and the war was carried into the Legislature. But the honest farmer and grocer and druggist came to the rescue, and the result was an additional appropriation, making \$5,000 for the second year's work. In the third year the same tactics were again tried. Inflammatory circulars were issued by persons desirous of breaking down the bars and appealing to the fears of timid milkmen and druggists. The result was the same as before, and the appropriation was

ing out the provisions of the law having been about \$160,000 in the sixteen years. The details of the work are to be found in the annual reports of the Board and are summarized in the following table:

Of the whole number of samples examined, and included in the foregoing summary, 51,198 were samples of milk, 36,524 were other kinds of food, and 9,868 were drugs, patent medicines, cosmetics and other articles of similar character.

One of the results of the early investigations of the Board was the proof that the adulterations in common use were mainly of a commercial and not of a harmful character. The staple articles of food, including the principal cereals, with sugar, and very many other useful and nutritious kinds of food, are almost never adulterated, so that the actual ratio of adulteration is limited to a minor portion of the food supply. The

FOOD AND DRUG INSPECTION, MASSACHUSETTS STATE BOARD OF HEALTH (1883-93).

Summary.	Years.							
	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Total examinations of food and drugs . . .	1,298	2,644	4,778	4,326	5,420	5,766	5,454	5,985
Total examinations of good quality . . .	720	1,210	2,751	2,649	3,563	4,019	3,716	4,096
Total examinations not conforming to the statutes	578	1,434	2,027	1,677	1,857	1,747	1,738	1,889
Percentage of adulteration	44.5	54.2	42.7	38.7	34.3	30.3	31.9	31.5
Expense of collection, examination and prosecution	\$2,931.56	\$5,529.60	\$8,557.43	\$8,025.34	\$8,803.62	\$8,915.41	\$10,356.28	\$10,013.04
Expense of collection, examination and prosecution, per sample	2.26	2.09	1.79	1.85	1.62	1.54	1.89	1.67

FOOD AND DRUG INSPECTION (Concluded).

Summary.	Years.								Totals.
	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	
Total examinations of food and drugs	5,294	6,199	6,409	6,874	7,309	8,357	10,680	10,797	97,590
Total examinations of good quality	3,558	4,111	4,410	4,684	4,496	6,133	8,030	8,076	66,222
Total examinations not conforming to the statutes	1,736	2,088	1,999	2,190	2,813	2,224	2,650	2,721	31,368
Percentage of adulteration,	32.8	33.7	31.2	31.9	38.5	26.6	24.8	25.2	32.1
Expense of collection, examination and prosecution	\$10,019.41	\$11,180.30	\$10,454.11	\$10,364.64	\$11,375.89	\$10,921.61	\$12,076.43	\$11,062.68	\$150,587.35
Expense of collection, examination and prosecution, per sample	1.89	1.80	1.63	1.52	1.56	1.23	1.13	1.02	1.54

doubled, making it \$10,000 instead of \$5,000. For the past four years the appropriation has been \$11,500 annually. With this amount it is possible to conduct a fair amount of inspection through the whole State. Under the provisions of the law, three-fifths of the annual appropriation must be spent in enforcing the laws relating to milk and milk products.

In addition to the general act of 1882 (which is much the same as that enacted in other States), we have several laws relating to special articles of food, and particularly in regard to milk. Under these acts the Board has collected and examined in these sixteen years of work about 110,000 specimens or samples of food and drugs, and has conducted about 1,400 prosecutions against offenders. The amount of fines turned into the treasuries of towns and counties has been \$33,000, the total amount expended in carry-

ing out the provisions of the law having been about \$160,000 in the sixteen years. The details of the work are to be found in the annual reports of the Board and are summarized in the following table: Of the whole number of samples examined, and included in the foregoing summary, 51,198 were samples of milk, 36,524 were other kinds of food, and 9,868 were drugs, patent medicines, cosmetics and other articles of similar character. One of the results of the early investigations of the Board was the proof that the adulterations in common use were mainly of a commercial and not of a harmful character. The staple articles of food, including the principal cereals, with sugar, and very many other useful and nutritious kinds of food, are almost never adulterated, so that the actual ratio of adulteration is limited to a minor portion of the food supply. The public is often led to believe the contrary by means of alarming and sensational statements in the newspapers, such as have recently appeared, but actual inspection does not confirm these statements. For example, a recent statement circulated throughout the country affirmed that wheat flour was being largely adulterated, and in many instances by injurious substances. A collection of many samples of flour from different parts of the State was made by the inspectors, the result of which showed, on examination, that only five samples consisted of anything but pure wheat flour, and in these instances the addition consisted of a small quantity of corn meal. The value of a food supply of a State, however, is so great as to warrant a continuous watch over its quality, since the few articles which are liable to adulteration are of sufficient consequence and value to require constant

supervision to prevent the occurrence of fraud. New and ingenious methods of adulteration frequently make their appearance and demand the exercise of watchfulness on the part of the officials charged with the execution of the law.

The actual cost of the food supply of the population may be determined approximately by observation among different classes of people. The Bureau of Labor Statistics of Massachusetts in an article by Prof. W. O. Atwater, Report of 1886, page 323, states the average cost of the daily ration, by observance of very many dietaries of persons of different occupations, at twenty-five cents. This does not include luxuries, but the common forms of animal and vegetable food necessary for the support of life in a healthy condition.

The daily ration of seventy-five millions of people upon this basis would be worth \$18,750,000 and the yearly cost \$6,843,750,000. If only one-fourth of this amount represents the value of the articles which are liable to adulteration, the comparatively small sum which the different States annually appropriate for the work of careful inspection constitutes a good investment.

The articles most liable to adulteration are milk, butter, spices, coffee, syrups and molasses, cream of tartar, honey, vinegar, jellies and jams, olive oil, and certain kinds of canned goods.

The milk supply of the State is one of the most valuable constituents of its general food supply. An expenditure of two cents each day per capita for milk amounts to an immense yearly sum when reckoned for the whole population.

In addition to the ordinary methods of milk adulteration, the addition of water, and the abstraction of cream, two other questions frequently present themselves in the course of the milk inspection of large cities and towns — the addition of coloring matter and the use of preservatives.

With reference to the propriety of treating the former of these subjects, the addition of coloring matter, as a distinct form of adulteration, in which the motive for its use is usually a fraudulent one, there can be little doubt; and the officials of the Board have been instructed to use every possible means to suppress the practice.

With reference to the use of preservatives in milk, the present statute does not admit of any discretion, since any such addition constitutes "a foreign substance," under the provisions of Public Statutes, Massachusetts, Chapter 57, Section 5, and the later amendments of the same statutes.

The further question, whether additions of such preservatives as boracic acid, borax, bicarbonate of soda, salicylic acid, formaldehyde or other similar substances in such quantities only as may be required to preserve the milk for a period of twenty-four or forty-eight hours, are injurious to the health of the consumer, does not yet appear to have been definitely settled. The subject has recently been discussed with renewed vigor in the British medical and sanitary journals without arriving at conclusions which may be deemed satisfactory.

If the use of such substances for the preservation of milk is to be permitted, it is plain that some definite quantitative limit should be fixed, an excess of which should be deemed a violation of statute.

In 1897 several amendments to the food acts of

the State were made, some of greater and some of less importance, all of which had in view the protection of the general consumer and the prevention of special kinds of adulteration.

The following amendment to the general law of 1882 has had a wholesome effect, since it introduced certain provisions which had not hitherto been embraced in any statute.

Section 3, last paragraph of Chapter 344 of the Act of 1897, reads as follows:

Provided, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if every package sold or offered for sale is distinctly labelled as a mixture or compound *with the name and per cent. of each ingredient therein*, and if such mixtures or compounds are not injurious to health.

The important amendment in the foregoing paragraph consists in the italicized words, which require the name and percentage of each ingredient in a mixture or compound to be distinctly placed upon each package.

The articles to which this applies, as found by the operation of the law during the past two years, are principally coffee preparations, or imitations of coffee, containing chicory and cereal products, spices, syrups, molasses, and baking powders. Several complaints have been made and convictions secured under this provision, and have had a decided effect in securing a better condition of the market so far as the proper labelling of compound articles of food is concerned.

This question of the proper labelling of food products is one of considerable importance, as every one who has had occasion to administer food statutes very well knows. Many of the complaints which have been entered in court in the past few years have rested upon the ground of fraudulent or indistinct or insufficient labels.

The regular routine work of the Board in the department of food comprises the collection of articles of food and drugs from all parts of the State by experienced inspectors and their examination by the analysts of the Board, with the preparation of cases for trial in court. In addition to this routine work, the office is also open daily for the reception of such articles as may be brought in for examination. The articles of this character have not been numerous when compared with those which have been collected by the inspectors, but have represented very nearly all classes of food. The examinations of this class have also extended occasionally to articles not mentioned in the law, but are usually embraced very properly in the laws of other countries among the things which it is deemed proper for sanitary boards to examine, such as cooking utensils and articles intended for the conveyance and storage of drinking-water, wall paper and fabrics used for wearing apparel, children's toys, and other articles in common use among the people.

The articles which were brought to the office for examination during the past year, and were not collected by the inspectors, are included in the following list: Articles of food suspected of containing poisons, milk, spices, coffee, cream, molasses, confectionery, butter, maple syrup, flavoring extracts, flour, honey, diabetic flour, hair dyes, cosmetics and other proprietary medicines, whiskey, wine and cider, wax, wall paper and fabrics to be examined for arsenic, cooking utensils and toys.

The essentials necessary for carrying out a system of food and drug inspection are:

(1) A sufficient annual appropriation.
 (2) A well-equipped laboratory, comprising the necessary apparatus and reagents for chemical analysis, and especially for the examination of milk; microscopes for the examination of spices, coffee and other articles requiring ocular inspection. A small weighing-room and a room for polarizing apparatus. It is also convenient to add a closet for photographing purposes, in order to place on permanent record some of the important forms of adulteration.

The officials necessary for the work are:

(1) A general director, who should be made responsible for the careful and thorough execution of the work of the department. All cases intended for prosecution should first be referred to him for consideration, and he should consider all cases of doubtful or disputed analysis. This person may or may not be connected with a health board. In some of the States, as in Ohio and Connecticut, the work is entrusted by law to a single independent commission.

(2) An experienced food chemist or analyst. I use the term analyst as preferable since much of the work of food inspection belongs to the domain of physics or of microscopy rather than to that of chemistry. This official should not only be an expert in his profession, but should have the qualities requisite for testifying with clearness and decision when upon the stand in court, in such terms as an ordinary jury or municipal judge may clearly comprehend. The chemist should receive the samples by number only, all labels, marks, brands or other indications of their sources or places of sale being removed before they are submitted to him.

(3) The collector of samples. The duties of this official are necessarily complex. Primarily, he has authority to travel throughout the States visiting the different cities and towns, and to collect by purchase such articles, under proper supervision, as are most liable to adulteration. He should keep a vigilant eye upon the markets with a view to detecting the appearance of new and unexpected forms of fraud and adulteration, and should at once report any such matters to the general director. While in order to be a good collector it is not necessary that he should in any degree usurp the functions of the analyst or chemist, he should, nevertheless, possess the faculty of keen observation such as is essential to a successful detection, that is to say, he should use his senses, those of sight, smell, taste and feeling, since by the employment of these powers in detecting the gross appearances of articles of food, half the work of food inspection is often accomplished before submitting samples to the chemist. He should also be familiar with the laws relating to food and should possess the requisite knowledge and skill to make complaints at court, to examine witnesses, and prosecute cases before district and municipal judges.

The question will naturally be asked, What advantage is gained by the enactment of food laws and their execution, since enactment alone is of little use without enforcement? The real advantage gained cannot be exactly stated by means of figures representing pecuniary gain. The saving consists not so much in actual money returned to the pockets of the consumer, as in an improvement in the quality of the articles purchased, and in the sense of security which is afforded by a well-executed law,

That those States that have no such system of inspection have an inferior food supply (so far as relates to articles liable to adulteration) is susceptible of proof, since occasional inspections made in those States have shown this to be the case.

There can, therefore, be no reasonable doubt that the system is well worthy of adoption in all communities. It is now in force in almost every large city on the continent of Europe as well as in Great Britain, and commends itself for general adoption everywhere, until the day shall come when man will no longer line his own pockets by defrauding his neighbor.

THE VALUE OF X-RAY EXAMINATIONS IN THE LESS FREQUENT DISEASES OF THE CHEST ILLUSTRATED BY THEIR USE IN THOSE CASES WHERE ANEURISM IS PRESENT OR SUSPECTED.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

(Concluded from No. 3, p. 57.)

A BUNCH OF ENLARGED GLANDS WHICH GAVE OUTLINES ON THE FLUORESCENT SCREEN SUGGESTIVE OF ANEURISM.

CASE VI. (Fig. 4.) Mr. C., forty years of age, referred to me by Dr. Farlow for x-ray examination.

X-ray examination.—Appearances which indicate an aneurism of aorta. There is obstruction to expiration; the lungs are dilated to their fullest extent; the diaphragm is low down in the chest, nearly to the costal border, and moves very little in expiration. No pulsation of the outline is noticed. It is not improbable that the appearances are due to a new growth which obstructs the trachea. This patient was seen by me once and only an examination with the fluoroscope was made. I expected to see him again, get history, and take an x-ray photograph, but did not; and with this incomplete examination I inclined to the diagnosis of aneurism rather than to that of a new growth.

Since the above note in the first paragraph was written, I have seen an article by Dr. Classen in the *Albany Medical Annals*, in which he makes an excellent report of the clinical features of the case, and gives a record of the careful autopsy made by Dr. Lartigau. The patient died on May 10, 1899. No aneurism was found, and the portion of the autopsy record relating to the aorta is as follows:

"*Aorta.*—Shows no apparent dilatation at any point. The circumference of the thoracic aorta is 5.5 centimetres; the circumference of the abdominal aorta is five centimetres. The intima is markedly irregular, the irregularity being due to various-sized areas of elevated fatty atheroma. Behind the trachea at a point on a level with the aortic arch, and situated more to the left of the median line, is a bunch of enlarged glands about the size of a small orange. The individual glands vary in size from a pea to those having a diameter of three centimetres. They are firm in consistency, and are on section deeply pigmented in the central portions, less so in the peripheries, which are apparently congested. The central pigmented portions are black. Now and then on the sectioned gland small pinpoint to pin-head-sized, discrete hemorrhages are apparent. The individual glands are bound together by old firm bands of connective tissue."

This case is chosen to show how some other disease

may give outlines on the fluorescent screen that simulate those produced by an aneurism, and to emphasize the importance of considering other indications besides the outlines themselves. In this patient the history, the absence of pulsation, and obstruction to expiration on both sides were against a small aneurism. In other patients I have observed this incomplete expiration where there was obstruction of the air passage of one or both lungs.

DIAGNOSIS OF AORTIC ANEURISM BY X-RAY EXAMINATION CONFIRMED BY AUTOPSY.

CASE VII.³ (Fig. 5.) A man forty-five years old was brought to me for examination, from the Out-Patient Department, by Dr. Arnold, on February 18, 1899, with diagnosis of probable aneurism of the innominate artery and possible aneurism of the aorta.

Family history.—Father died of apoplexy at fifty-five years.

Past history.—“Chancroid” thirty years ago. Alcohol in moderation.

Present illness.—One week ago pain and sense of intense pressure in precordium; pain increased by exertion; some cough and expectoration; slight attacks of hoarseness two or three times in the past few days, but not at present.

Physical examination.—Just above inner end of right clavicle is a marked pulsation, being greater than

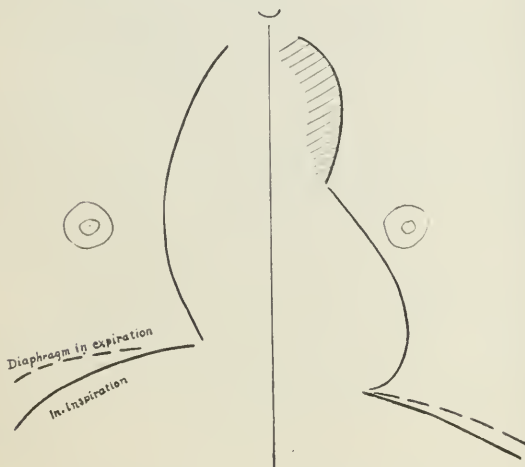


FIG. 4. Case VI. About one-fourth original size.

in corresponding place on left side. At the episternal notch pulsation is greater than normal, felt more distinctly on the right side; there being also a thrust from the right instead of from below upwards. Above the inner end of right clavicle, just outside of the sternomastoid muscle, a thrill is felt. There is a slight but distinct tracheal tug. Left radial pulse delayed. Cardiac apex beat in sixth interspace in mammary line. Over aortic area are systolic and diastolic murmurs transmitted along course of aorta and innominate artery, and heard distinctly over inner end of right clavicle. Systolic murmur is carried to the left subclavian and carotid arteries, but not the diastolic. Slight systolic murmur at apex.

The x-ray examination made February 18th revealed a small aneurism of the descending portion of the

aortic arch, which gave no physical signs even after the x-ray examination.

On February 23d, the patient was found on the street unconscious, was brought into my service at the hospital, and a few moments later died. No cause of death was discovered by Dr. Pearce at the post-mortem, but the autopsy showed a small aneurism of the descending portion of the aortic arch corresponding to the outline drawn at the x-ray examination, likewise an aneurismal dilatation of the innominate artery.

It will be seen by comparing the x-ray lines with the dotted lines, which represent the outlines found by percussion, that we failed to recognize any dulness over the site of the aneurism, and even after I had seen its outline on the fluorescent screen we could not detect it by percussion. Further, by following the dotted line which indicates the left border of the heart as found by percussion, we see that it is incorrect, when compared

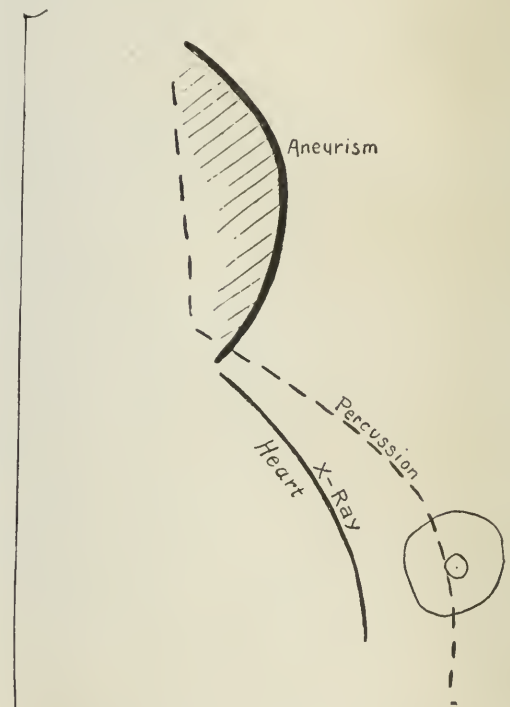


FIG. 5. Case VII. One-third original size.

with the same border as determined by the fluoroscope and at the autopsy. In cardiac disease I have frequently demonstrated a discrepancy between the position of the borders of the heart as suggested by percussion and as determined by means of the fluorescent screen.

A further point of interest in this patient is that the lungs were found to be normal both by the x-ray and post-mortem examinations.

ANEURISM UNSUSPECTED BY PHYSICAL EXAMINATION.

CASE VIII. J. McC., a man, forty years old, referred to me from the Out-Patient Department by Dr. Arnold, illustrates some cases of the class in which aneurism could not be made out on physical examination, and was discovered in the x-ray examination made to determine the size of the heart.

³ This case was cited by me in the Boston Medical and Surgical Journal, May 18, 1899.

History.— Syphilis eleven years ago; rheumatism six years ago; alcohol habitually.

Present illness.— Marked dyspnea on exertion and at times vertigo; very nervous and sleeps poorly; pain at times in the left shoulder and breast; visible pulsation of all large arteries; capillary pulse; heart dulness begins below third rib and extends two centimetres to right of sternum; apex in sixth interspace, three centimetres outside nipple line; double murmurs over aortic area; similar murmurs at apex, which are transmitted toward axilla; diastolic murmur heard over epigastrium, and systolic over large areas in back; diffuse visible pulsation over cardiac area.

X-ray examination revealed with unusual clearness a small aneurism of the descending arch of the aorta, and its pulsations were easily seen. Two examinations were made, with an interval of three weeks between them, and the outline of the aneurism was readily observed; most clearly when the fluorescent

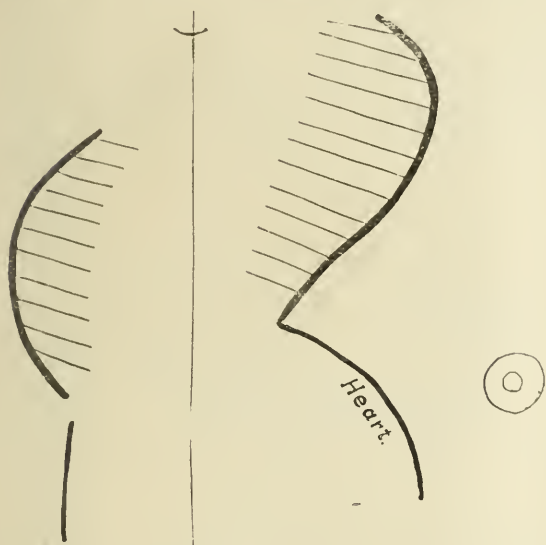


FIG. 6. Case IX.

screen was placed over the upper part of the left scapula. Dr. Bartol kindly brought the patient to me on April 15 and June 3, 1899. We found no change from the previous x-ray examination.

ANEURISM UNRECOGNIZED BY AUSCULTATION AND PERCUSSION SEEN BY AN X-RAY EXAMINATION.

CASE IX. (Fig. 6.) E. D., a neurasthenic woman, forty-two years old, referred to me from the Nervous Out-Patient Department of the Boston City Hospital by Dr. Knapp, after the Throat Department had reported to him complete paralysis of the left recurrent laryngeal nerve. It is interesting to note that the hoarseness, which led to suspicion of aneurism, had made no impression on the patient, because she had been somewhat hoarse since early school-days. Patient has suffered from nervousness for three years; lately easily tired, emotional and depressed. Hoarseness has increased since she has become emotional. Some dyspnea recently.

Physical examination.— Auscultation and percussion gave no signs of aneurism.

X-ray examination revealed a small aneurism of the aortic arch.

ANEURISM RECOGNIZED ONLY BY AN X-RAY EXAMINATION.

CASE X. (Fig. 7.) A. B., referred to Dr. Leland for esophageal stricture, and sent by him to me for an x-ray examination.

History.— In twenty-two years of married life her only pregnancy resulted in miscarriage. Patient was said to have a stricture about an inch below the upper end of the esophagus and another about opposite the second rib. During the past summer her family physician had passed an esophageal bougie every third day. Shortly before coming to me this treatment had been omitted and she felt no worse.

Physical examination gave no sign of thoracic aneurism.

X-ray examination revealed a small aneurism of the descending portion of the aortic arch. Its outline was plain whether viewed from front or behind.

This case suggests the advisability of an x-ray exam-

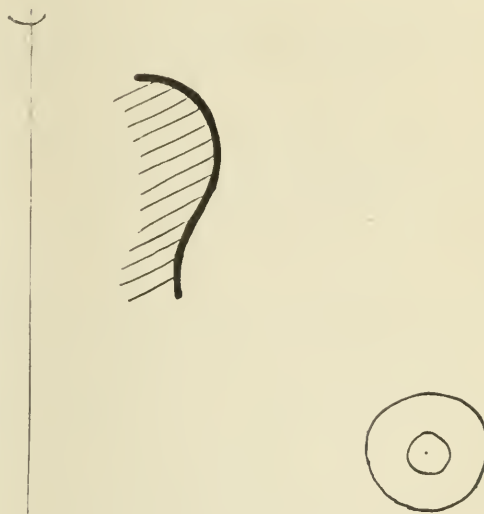


FIG. 7. Case X. About one-half original size.

ination before dilatation for esophageal constriction in some cases.

In conclusion, x-ray examinations should be made both with the fluorescent screen and the x-ray photograph. Normal outlines in the upper part of the chest give us the best assurance that an aneurism of the aorta is not present, though symptoms may obtain which lead the physician to suspect it. Outlines suggestive of aneurism may be caused by a new growth, for example. To make a definite diagnosis of aneurism by the usual physical examination we may be obliged to wait for the development of marked signs, and this delay defers treatment. Before operating on an aneurism near the thoracic aorta the latter artery should be examined by the x-rays, for if an aortic aneurism exists, operation would be inadvisable. X-ray examinations enable us to determine the extent of the aneurism, whether or not it is increasing, and in some cases to make a diagnosis before there are physical signs.

To Dr. William H. Rollins, who has done so much by his investigations to make the use of the Röntgen rays practicable in medicine, I desire to again express my obligation for his untiring helpfulness in my work.

A STERILIZER AND EQUIPMENT FOR CONFINEMENT CASES.¹

BY FRANK A. HIGGINS, M.D., BOSTON,

Assistant in Obstetrics, Harvard Medical School; Physician to Out-Patients, Boston Lying-in Hospital.

RECOGNIZING in my own practice the shortcomings and inconvenience of the ordinary obstetric bag and outfit as commonly sold in the surgical supply stores, and feeling the need of a more perfect yet not elaborate equipment, I have gotten together these things, which, so far as I have already been able to determine, answer the purpose for which they have been designed, and would also be sufficient for all except the most serious operative complications with which we are likely to meet in our obstetric work. Being frequently asked by the medical students with whom I come in contact and occasionally by a practitioner about the contents of my obstetric bag and what I am accustomed to carry to a normal confinement case, I have taken the liberty of showing my outfit to the Obstetrical Society.

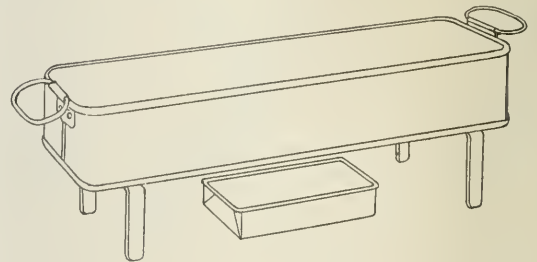
By the man in general practice, as well as by the specialist in obstetrics, the importance of the careful practice of the simpler principles of asepsis as a routine in all cases of labor is now, I believe, pretty generally recognized and practised, and although one occasionally meets with a man doing a considerable amount of confinement work who has very little regard for asepsis and who perhaps uses only a little weak carbolic solution for his hands and neglects to wash them first, yet such instances seem to me now to be comparatively rare.

The almost universal custom at present of sterilizing instruments by boiling has, I dare say, impressed the need of a light, portable and compact sterilizer upon every one, as it has on me, who has occasion to boil instruments frequently in the ordinary private house. It has generally been my lot, both in general surgical operating in private houses as well as in confinement work before operating, to go down into the kitchen and search, usually with poor success, for some suitable basin or kettle in which the instruments may be boiled. To find such a utensil is more difficult for the obstetrical forceps than for the general surgical instruments, because of their length. Moreover, the doubt about such dishes being surgically clean, even after boiling, I have often questioned, and this point might arise to worry one in case of the occurrence of a subsequent sepsis. If there is a trained nurse at hand, who is known to be competent and faithful, such work is of course usually entrusted to her, and if she has been in the house long enough to have anticipated the possibility of an operation, she will probably have had a fish boiler or something equally good provided, but if such is not the case, as usually happens to the young man in practice, the difficulties are then his own.

Recognizing these facts, I have had made this small portable sterilizer, which seems to answer the purpose very well. It is practically only a covered box of nickel-plated sheet copper, approximately about fourteen inches long by five inches wide and two and three-quarters inches deep. The cover fits inside the top, and while not absolutely tight it is sufficiently so to prevent the escape of much steam. Inside on the bottom is the ordinary thin metal perforated tray on which the instruments lie. The tray, as well as the

sterilizer itself, has swing handles which fold over and thus take up no extra room.

The sterilizer is designed so that it may be used either on top of the ordinary coal or gas range or with an alcohol lamp. The alcohol lamp with the sterilizer I have found very efficient for the purpose. It is a small metal box, two and a half by four and a half inches and seven-eighths of an inch deep, fitted with a cover. The box is filled with asbestos, which is covered with wire gauze. For fifteen minutes' boiling it requires about two ounces of alcohol and it burns with a very hot flame. When the lamp is used the sterilizer is raised by inserting the four small legs into the slots, one of which is seen at either corner. With the sterilizer about two-thirds full of cold water it boils with the alcohol lamp in six minutes; with hot water, which we would practically always have, and over a gas or coal range, there is no delay in the boiling. The sterilizer complete with the lamp weighs only about three pounds. It easily holds the obstetric forceps and what few other instruments are required in obstetric work. From my experience with it, it seems to me that its comparatively slight additional weight is much more than compensated for by its convenience and the increased comfort and safety one feels in its use. It readily fits into any operating bag, and as the instruments are carried in it, very



Sterilizer and lamp.

little extra room in the bag is required. I believe that a sterilizer a little larger, slightly broader and deeper, made on the same plan would be sufficient for the instruments for any operation and would prove to be a great convenience to any surgeon who is operating frequently in private houses or outside of the city.

I wish to say, however, that the idea of a sterilizer for the obstetric bag was not original with me, but was first suggested, so far as I know, by Dr. C. M. Green, who had one made for his own use several years ago, but which I had not seen before mine was ordered.

Edgar has recently published² a description of a sterilizer designed for his own use in obstetric practice. It is made of enamelled sheet iron, and consists of two trays, a male and a female one, and which are large enough to contain his whole outfit. These trays he uses for sublimate solutions, for hot and cold water for the asphyxiated infant and also to boil the instruments. The trays are carried in a leather case instead of a travelling bag. This is certainly a more elaborate scheme, but does not seem to me to be necessary, as I have always found at hand in every house a number of porcelain chamber wash bowls which answer every purpose for sublimate and other solutions.

These instruments are carried in my sterilizer: Ob-

¹ Read before the Obstetrical Society of Boston, October 17, 1899.

² New York Medical Journal, June 17, 1899.

stetric forceps with axis-traction rods, pelvimeter, scissors, long dressing forceps, long double-hook volsellum, several artery forceps, scalpel, one long-handled perineum needle, several curved needles, long aspirating needle, glass curved douche tube, soft rubber catheter, long gum-elastic catheter.

In addition to the above instruments, all of which are easily contained in the sterilizer, the following articles are carried in the bag: Thin rubber apron, linen operating gown, four-quart fountain syringe, stethoscope, nail brush, can sterile gauze, collapsable tube, green soap (sterile), bottle fluid extract ergot, bottle alcohol, silkworm gut, chromicized catgut, rubber gloves, spring scales, hypodermic syringe and tablets, gag and tongue forceps, bottle sublimate tablets, bottle saline infusion tablets.

Ether, ergot, sublimate tablets, tincture of green soap, lysol, cheap nail brushes, absorbent cotton and bleached cheese-cloth should be and usually are provided by the better class of patients for use in their own households. Such patients as are in a position to employ trained nurses are always glad to purchase these articles as a part of their preparation, and the nurse will, if so taught, see that they are obtained. Ether, absorbent cotton and bleached gauze are always provided by my patients, but the other things named I still carry.

It has been my custom of late to use in tying the umbilical cord either catgut or silkworm gut in place of the usual tape or bobbin. I do this partly because being smaller it sinks in better and gives a better knot and a tighter grasp, and also because it is always at hand sterile and therefore saves an additional article to provide and have ready.

The rubber fountain syringe has replaced the old Davidson bulb syringe, and although the fountain syringe may be found in practically every house, yet in giving an intra-uterine douche or a subcutaneous saline infusion, the necessity of having a container which is known to be clean seems to me cannot be questioned. The syringe is sterilized by boiling and carried in a sterile towel. It is used quite infrequently, and therefore seldom removed from the package.

No styptic solution for the control of uterine post-partum hemorrhage is used, because gauze packing has proved to be equally efficient and better in every way. The can of baked gauze for the intra-uterine packing is one long strip for ease and safety in removal from the uterus. It is odorless, more convenient to prepare, and just as good for a styptic as iodoform gauze, which is usually recommended, and it will remain sweet for the comparatively short time which it is necessary to keep it in the uterus. The gauze purchased by the patient, twenty-five or fifty yards at three cents per yard, is to be made into vulvar pads and sponges and sterilized by the nurse.

I believe the small spring scales in general use are very inaccurate, but nothing else with which I am acquainted takes their place and most households are not provided with a suitable weighing balance.

There are only four bottles in the outfit, and of these only two contain liquids. The bottles themselves are heavy flint glass, with ground-glass stoppers and metal screw caps; the danger from breaking and leakage of liquids is therefore reduced to a minimum.

The canvas lithotomy sling is carried by some obstetricians, and is said to be very convenient in operative

work when short of assistants. I believe it may be advisable to add it to the list.

I have found it very convenient to have a pair of rubber gloves ready for use under certain circumstances, although I do not make a practice of using them in every case, as advocated strenuously by some men. I believe it is comparatively easy to make the hands sufficiently aseptic for this work, and recent bacteriological work has proved that the normal vagina contains no pathogenic bacteria. Therefore it seems probable that the majority of infections occurring under ordinary precautions at the time of delivery are due to contact of the examining hand with the hairy labia. It is best when possible always to shave and scrub the external genitals, and thus remove, as far as may be, what is now generally accepted as the most likely source of infection.

This list of articles for the obstetric bag seems to me to be condensed about as far as consistent with the best work, and also to be elaborate enough to cope with any ordinary emergency. Any strong bag of moderate size, which will hold these things, is easily carried and suitable for the work. Personally I think it is better to have one which is not distinctive to the specialty.

ON THE HIGH OPERATION FOR DISEASE WITHIN THE SCROTUM.

BY J. G. MUMFORD, M.D., BOSTON.

THERE are certain distinct disadvantages in opening the scrotum for disease in that region. These disadvantages have long been recognized. The character of the skin and hair render disinfection difficult; the apposition accurately of cut edges is not easy; and the subsequent bandaging, cleansing, and care of the field are troublesome for the surgeon and extremely uncomfortable for the patient. This is true especially in such cases as long-standing hydrocele and hernia; for then the skin has become greatly stretched and its shrinking into folds subsequent to removal of the mass renders the proposition of primary union anything but simple—a proposition frequently solved, to be sure, but solved under peculiar disadvantages.

In the case of operation for large scrotal hernia, if the incision be carried from the internal ring to the apex of the scrotum, we have later to deal with a wound traversing two distinct varieties of skin and soft parts—a condition to be avoided always when possible.

In the ordinary Volkmann operation for hydrocele we have the scrotum alone opened, to be sure, but we have a relaxed bag left, instead of firm resisting tissues to deal with. The same statement holds true of such tumors as chronic orchitis, epididymitis and sarcoma. Moreover, after removal of the tumor in all these cases, a considerable hemorrhage is apt to persist, and the hemostasis is rendered so difficult that a secondary ooze and blood clot, with consequent increased risk of sepsis, result frequently.

In certain conditions, to be sure, the scrotum must be opened always. These conditions are malignant disease involving the skin and subcutaneous tissues, and tuberculosis or other burrowing suppurative disease.

Another disadvantage of the scrotal incision—a disadvantage the most important of all—is the great diffi-

culty of securing here an aseptic field, and the resulting condition of a loose, denuded cavity within the scrotum in immediate contact with a skin field but incompletely disinfected.

That all these things are very real dangers every surgeon knows. I doubt if there is another region of the body, presumably suited for aseptic work, in which our asepsis breaks down so frequently as in the scrotum.

The idea of the high operation for these scrotal diseases is no new one; but it was not until some two years ago, in a talk with Dr. Harvey W. Cushing, of Baltimore, that the applicability of the high operation to nearly all these cases was suggested to me. Since that time I have had many opportunities of applying the principle. I have come to regard it as a most useful procedure, and a distinct advance in the surgery of these parts.

The operation consists simply in making a short incision in the groin, similar to that made in the familiar Alexander operation for shortening the round ligaments. This incision opens a window through which all the contents of the scrotum can be reached with perfect ease. The field can be made surgically clean and kept so during convalescence, and the buried silver suture ensures a rapid healing. There is no wounded scrotum to support and protect, no slipping of bandages, no fouling with urine. The scrotum hangs naturally in its normal position and does not enter at all into the problem of after-treatment.

The first case in which I used this method was one of extensive varicocele. On opening down upon the structures about the cord, the usual two large tortuous veins were exposed and resected, and a small vein was left sufficient for the normal circulation of the parts. In such cases and by this method a beautiful anatomical demonstration is made. Nothing safer or more effective could be imagined. In all of these cases — and I have now employed this method in eight — the healing has been rapid and uncomplicated and the results satisfactory. In varicocele the method is most applicable.

Three cases of double orchidectomy for chronic hypertrophy of the prostate have come in my way, and in these cases the high operation has given gratifying results. When the cord and vessels have been exposed freely, and the wound made dry, the scrotum is invaginated and the testicle easily turned up into the wound in the manner so familiar in the radical cure of inguinal hernia. The scrotal contents may then be removed with a minimum of resulting hemorrhage and the cord and vessels separated and tied off intelligently and at leisure. A similar operation was done in a case of chronic epididymitis of long standing. The septic mass intact was removed through the high incision without infecting the wound. In this case there was much hemorrhage from the sac, and the persistent ooze resulted in a considerable clot, but the convalescence was rapid and complete. In such cases I recommend the free removal of the tunica vaginalis, else the secretion from its bruised serous surface will give rise to a considerable tumor.

It might appear that the radical cure of hydrocele by removal of the sac would be difficult when the high incision is employed, but such is not the case. A mass of moderate size may be delivered through the wound in the groin; and if the tumor be too large for this manœuvre, the fluid contents may be withdrawn, after

which inversion of the scrotum is easy and the further steps of the operation self evident.

Large solid movable tumors within the scrotum may present some obstacles to the high method, but it is surprising to see how considerable a mass may be delivered, and if this be found impossible, a slight prolongation of the incision into the scrotal tissues will solve the problem readily.

Of the operation for scrotal hernia it is needless to speak. If the principle of the high incision be borne in mind the scrotum will not be opened in the great majority of cases, as the manipulation necessary for freeing the sac and its contents can be carried on easily without so doing.

Such examples show the applicability of the high operation for disease within the scrotum, and experience proves that this useful procedure may be employed in most cases of disease in this region.

Clinical Department.

A CASE OF PTOMAINE POISONING.

BY W. P. COUES, M.D., BOSTON.

P. M., age twenty-six, married, occupation inside man in a large store, had always been well and strong, with the exception of a rheumatic attack seven years ago. While at his work in Brookline the afternoon of April 24, 1899, he was seen suddenly to fall down, striking his face against the floor and breaking off part of a front tooth. A doctor was called, who, it was said, gave some medicine and sent him to his home in Boston in a carriage. He had left home early that morning feeling perfectly well, taking with him his luncheon, which consisted of chicken sandwiches and cocoanut pie; this was supplemented by some sardines obtained at his place of work. These facts I learned from the patient's wife and the friends who had brought him in the carriage from Brookline.

He was seen about 7 p. m. of the same evening. The result of the examination showed a large, well-developed man, in a condition of profound collapse. The extremities were cold, there was no pulse at the wrist, the man seemed *in extremis*. There was no bleeding from the nose or ears, the tongue was thrust out with difficulty, but in the median line. The patient was in a semi-conscious condition. The pupils were equal and reacted to light. The cardiac area of dulness was not increased.

The result of the examination of the lungs and the abdomen was entirely negative. The cardiac sounds could be made out with difficulty with the stethoscope. He complained of much pain and oppression in the precordial region, could only speak after great effort, and was constantly tossing about and rolling his head on the pillow. Heaters were placed around him, he was given strychnia, one-fifteenth grain, digitalis, fifteen minims, and shortly after, one-eighth grain morphia. His pulse after this was perceptible at the wrist, and the extremities grew warmer, he gradually responded to stimulation. He vomited twice, the vomitus consisting of finely divided, yellowish curds. His bowels moved, the movement being large and watery. The pulse remained for a long time very weak and thready, but he became more conscious and

spoke rationally. The next morning he was comfortable, pulse 100, temperature 100°. The urine showed one-eighth per cent. albumin; the sediment contained many fine granular casts. The albumin and casts disappeared in a few days, and the patient was soon as well as usual.

The points of interest in the case seem to be:

(1) The sudden onset of the trouble, which, with the previous rheumatic history, suggested collapse from cardiac disease.

(2) The profound shock, the pain in the precordial region.

(3) The nature of the last food taken, the vomiting, subsequent movement of the bowels, and gradual relief of symptoms.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of October 17, 1899, the President, Dr. ALFRED WORCESTER, in the chair.

Dr. F. A. HIGGINS read a paper entitled

A STERILIZER AND OUTFIT FOR CONFINEMENT CASES.¹

Dr. C. M. GREEN: This sterilizer is an improvement upon others on account of its lightness. My own is a great deal larger, large enough to sterilize many instruments which, on the other hand, often do not require to be sterilized. My sterilizer is a copper box without legs, and for heat I rely either upon the gas lamp that can be found in most houses or upon the kitchen range. My bag is based upon the principle of packing everything into the sterilizer except the rubber gown, douche bag and ether, and therefore my sterilizer is three times the size of Dr. Higgins's. After all, the individual apparatus one man or another uses is not of so much importance; the real merit of a paper like that of Dr. Higgins is to emphasize for the benefit of the medical public the necessity of doing aseptic work, which with an apparatus somewhat like this is not so very hard to carry out properly.

Dr. E. REYNOLDS: I can speak with much warmth about this sterilizer, for I regard it as just about what a sterilizer should be. My first impression was that it was too small for practical use, but a single trial convinced me of the contrary. It holds easily all that I need in an ordinary case. To be sure, I carry a few others besides those Dr. Higgins has enumerated—for instance, a set for an emergency symphysectomy—but all go in easily. The quickness and power of the lamp that Dr. Higgins has shown is also a great comfort. I have the sterilizer all prepared at hand, and when the obstetrical climax approaches it is simply brought in and placed upon a convenient table and everything is ready for use a few moments after the lamp is lit. As regards the kit, personally I do not care to etherize a patient without having at hand a tracheotomy dilator, as well as the knife we always have. As regards gloves, I have become a thorough convert to their use in surgical work. I never operate or even make a vaginal examination without covering my hands with rubber, and I think that my results have not suffered thereby. In obstetrics I have employed them ever since they became

easily obtained, using them often only upon one hand. I do not like to get vaginal mucus under my finger nails and possibly carry it from one patient to another. In many cases the preservation of the perineum is assisted by the shelling out of the head with one finger in the rectum, and in such cases it is a great advantage to have the hand covered, especially if it is subsequently necessary to do any operative work. The bare hand cannot be quickly disinfected, while it is easy to peel off the glove and have the hand already sterile.

Dr. J. B. SWIFT: I have been interested in Dr. Higgins's sterilizer because it is much like the one I carry. Mine is a little deeper. I carry all my instruments packed in the sterilizer. I have everything already sterilized at home and packed in cotton flannel bags. I do this as it is not always convenient or indeed possible to get things sterilized at the bedside in time. I recognize the advantages in gloves Dr. Reynolds has spoken of. Dr. Swift then demonstrated his consultation bag.

Dr. HIGGINS: I had not seen Dr. Green's apparatus when I had mine made. I have sometimes thought that mine is a trifle small, but it has served very well in the class of cases for which it was intended—local and ordinary cases.

Dr. J. G. BLAKE spoke in the most complimentary terms of the thoroughness of the aseptic teaching given at the Harvard Medical school. As he saw cases in consultation, he was often much impressed by the accurate and complete observance of aseptic principles on the part of the younger general practitioners.

Dr. M. H. RICHARDSON read a paper entitled

OVARIAN CYSTS WITH TWISTED PEDICLES.

Dr. SWIFT: I should like to inquire, whether in cases in which the operation is not done for some time after acute symptoms are seen it is customary to find an extensive general peritonitis.

Dr. RICHARDSON: In all the cases in which there was delay the tumor was totally adherent.

Dr. SWIFT: In a case of mine last spring in which there was considerable unavoidable delay I found the tumor so firmly adherent everywhere and especially to the posterior side of the uterus that I had to remove the uterus with the tumor. The patient died septic, probably from a tear of the rectum, though none was seen at the operation.

Dr. E. REYNOLDS: I have seen five cases of the strangulation of ovarian tumors. The only one without adhesions was a solid tumor of the ovary, the walls of which were extremely friable, and the peritoneum red and rough. She died of embolus, presumably of septic nature. In this case the blood supply was cut off immediately after labor, there being no real torsion. In another case, in which hysterectomy for sepsis was being done by a distinguished obstetrician, upon opening the abdomen a strangulated ovarian tumor was found, apparently caused by delivery.

Dr. F. H. DAVENPORT referred to the peculiar friability of these tumors and instanced a case of his in which there were few adhesions but it was almost impossible to get the tumor out whole.

Dr. J. C. MUNRO: I remember two cases in which the twist was so near the uterus that I had to tie off very close indeed to it. As regards the difficulty of

¹ See page 88 of the Journal.

diagnosis. I remember one case in which the diagnosis of appendicitis was made, and another seen in consultation with a number of the staff which was generally regarded as one of pregnancy associated with pyosalpinx.

DR. H. E. MARION: My experience in this interesting condition is limited to two cases, oddly enough seen on the same day, one of them coming in Dr. Richardson's list.

DR. W. L. BURRAGE: In looking over my notes I find that I have seen five cases, four of them being in women over sixty-one, the fifth being in a girl of thirteen thought by her friends to be pregnant. In one case the patient was an extremely feeble old woman, but recovery after operation was prompt. I think we ought to distinguish very carefully between mere twist and actual strangulation.

DR. MALCOLM STORER: I am glad to hear Dr. Burrage make this distinction. In a paper² read before this Society some years ago, I stated that an average of the observations of a number of men shows that rotation occurs in at least 25 to 35 per cent. of all ovarian tumors, but actual strangulation in only 8 to 11 per cent. In the four cases which I have myself operated upon, in two in which there were two or three twists there was no reaction on the part of the tumor or of the patient. The third case was an old woman, with obscure history and in very bad condition, whom I saw just at the change of a service and foolishly deferred operation. Dr. Burrage subsequently operated with success. My fourth case was in a woman five months pregnant. She had had three attacks of typical pain within a few weeks. I operated and found a tumor with three twists slightly adherent. She brought the child into my office a few days ago to show me. Dr. Burrage has asked my opinion as to the causation of these torsions. My reading has led me to believe with Dr. Richardson that many causes may produce a twist, but that it is especially apt to occur in more or less irregular tumors, the projections acting like ratchets. Moulis and Rebol have mentioned two pathognomonic signs: a systolic murmur at the tender point and a pulsating movement of the tumor coincident with the cardiac beat.

DR. RICHARDSON: I want again to emphasize the difficulty of diagnosis. In one case no tumor could be felt, yet two weeks later there was one filling the abdomen. Any abdominal tumor that is tender and associated with shock should excite suspicion. I have been struck by the comparatively slight symptoms in some of these cases that had extended over some time.

DR. REYNOLDS suggested that the sudden increase in size of these tumors might lead to a sudden sweating, so to say, and thus cause adhesions and pain.

DR. COUNCILMAN: I should hardly think the easily broken up adhesions Dr. Richardson speaks of were real connective-tissue adhesions, being more likely mere fibrin.

BEQUESTS OF DR. DANIEL GARRISON BRINTON.—The late Dr. Brinton, formerly the editor of the *Medical and Surgical Reporter*, has bequeathed to the University of Pennsylvania his valuable library and manuscripts relating to the science of ethnology, a branch of learning to which the latter part of his life was mainly devoted.

Recent Literature.

Enlargement of the Prostate; its Treatment and Radical Cure. By C. MANSELL MOULLIN, M.D. (Oxon.), F.R.C.S. Second edition. Pp. 205. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1899.

The first edition of this book was published at a time when radical operations upon the prostate had passed the probationary period of their development, but were still by no means upon so firm a footing as to be beyond the attacks of their opponents. The writer announced himself as a champion of such radical operations, and in his preface said, "And now it is not too much to say that perfect relief can be assured even in the most advanced stages of the disorder."

The second edition brings the book well up to the present-day knowledge of the subject, and, omitting descriptions of many of the older operative procedures, now chiefly of historic interest, confines itself to those whose practical value is vouched for by the writer's knowledge and large experience.

Of the eleven chapters which the book contains, nine are devoted to a consideration of the (1) normal prostate, its function and development, and (2) the enlarged prostate, its causes, effects upon other organs, its symptoms, diagnosis and palliative treatment, both local and general.

The last two chapters take up the various radical operations and the problems they involve. In his preface to the present second edition, the writer has evidenced his faith in the efficacy of such operations by saying: "There is now no case of enlargement in which perfect relief cannot be obtained, provided only the secondary consequences, which so often and so entirely unnecessarily follow it, and which are due in the vast majority of instances to the careless use of catheters, have not been allowed to work irreparable harm upon the walls of the bladder. In no department of surgery are the disastrous results of temporizing and delay shown more clearly than in that which is concerned with the prostate."

The various radical operations are carefully considered and the place for each is defined. In speaking of ligature and division of the vas deferens as a substitute for orchidectomy, the author is evidently of the opinion that orchidectomy is much to be preferred and that ligature is suited only to a very limited class of cases. The Bottini operation is favorably commented upon and the author's three successful cases are mentioned but not fully reported. The book merits the attention it will undoubtedly command from the surgical profession.

An American Text-Book of the Diseases of the Eye, Ear, Nose and Throat. Edited by G. E. DE SCHWEINTZ, A.M., M.D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia, etc., and B. ALEX. RANDALL, M.A., M.D., Ph.D., Clinical Professor of Diseases of the Ear in the University of Pennsylvania, etc. Pp. 1,251. Illustrated with 766 engravings, 59 of them in colors. Philadelphia: W. B. Saunders. 1899.

In the portion of the work devoted to the eye, its embryology, anatomy, histology, physiology, diseases and injuries are discussed in twenty-four sections by

² Boston Medical and Surgical Journal, November 5, 1896.

twenty-four authors; its operative surgery in seven sections by as many authors. In the portion of the work devoted to the ear, its anatomy, physiology, diseases and injuries are discussed in thirteen sections by fourteen authors, while diseases of the nose and throat are described in twenty sections by nineteen authors.

As the work aims to be both a text-book and a volume of reference to which the practitioner may turn, the practical side of the questions discussed has been brought into prominence.

All the contributions have evidently been written with great care. The articles are, as a rule, comprehensive and accurate, and an absence of padding characterizes the entire work. The suggestions with regard to treatment have been brought up to date more nearly than in some of the collaborative works that have been lately published. The gentlemen who have been asked to write are all well-known practitioners of the highest skill, and perhaps no better praise can be given in this journal than to publish the list of the Boston contributors, who are: Dr. Clarence J. Blake, Dr. J. Orne Green, Dr. John W. Farlow, Dr. Geo. A. Leland and Dr. J. H. McCollom.

The publishers have done their part of the work well, and the paper, type and illustrations are all that could be desired.

Surgical Nursing. By BERTHA M. VOSWINKEL, Graduate of Episcopal Hospital, Philadelphia, etc. Second edition, revised and enlarged. Pp. 206, with 112 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

This book has been written, its writer states, for nurses whose surgical training has been limited and whose technical education is not sufficient to render them thoroughly conversant with all its details. An attempt has been made "to give a concise outline of surgical nursing in general, together with a list of antiseptic agents, the mode of preparation of the various materials used, in aseptic and antiseptic surgery, and finally the application of splints and fixed dressings."

As one reads the book the impression is created that it was written by one whose training has been local rather than general, and whose experience has been acquired from hospitals rather than in private work, also that the subject under consideration is not always kept in view. As an illustration the following quotations are made:

"In case of an emergency when an antiseptic dressing is required and no gauze is at hand, absorbent cotton may be used, first baking it for a few minutes in an oven; then wet it with bichloride solution, then dry, and keep in cheese-cloth bags." In describing the use of instruments at an operation it is directed that soiled instruments, presumably those dropped on the floor, or otherwise accidentally infected, are to be cleaned by rinsing in a tray of hot water before being again placed in use. For the "nurse whose surgical training has been limited," it is somewhat disappointing to find that in the whole book the only statement relating to the sterilization of instruments is that "All instruments should be thoroughly sterilized before and after using."

We are familiar with Thiersch's solution and Professor Kocher's method of preparing catgut, but have not heard of the borosalicylic solution highly recom-

mended by "Tersch," or the catgut of "Kocher." Neither have we seen a "mouth"-tooth forceps. The work of the publisher is quite satisfactory. The book is conveniently indexed, contains a great deal of information, a knowledge of which is essential to the modern surgical nurse, and for some reason or other it has reached a second edition.

A Practical Treatise on Materia Medica and Therapeutics. By ROBERT BARTHOLOW, M.A., M.D., LL.D., Professor Emeritus of Materia Medica, General Therapeutics and Hygiene, in the Jefferson Medical College of Philadelphia; formerly Professor of Materia Medica and Therapeutics and of the Practice of Medicine in the Medical College of Ohio, etc. Tenth edition, revised and enlarged. New York: D. Appleton and Company. 1899.

There are such good books already published on this subject that a new work or even a new edition of an old one is only justified when it furnishes some substantial addition to our present knowledge. This cannot be claimed for the above volume. Far from deserving praise, it merits disapproval, because it contains so many erroneous statements and shows so scant an acquaintance with the present medical literature.

One is constantly meeting passages like the following, on page 30: "Within the present year (1880) Mr. Arthur Melton has published an account of three cases in which the transfusion of milk was performed with success." As authority for another remark, he considers the *New York Medical Journal* for February 3, 1883, a recent issue, page 31. The eighth edition of the author's own work was published in 1893. Under "authorities referred to" on transfusion, the latest date given is 1886.

We fail to understand the author's position when he says, page 34: "Although fat is necessary to the stomach digestion, it does not undergo conversion in the stomach, and escapes in a coarse emulsion, with the chyme, into the duodenum." We should like to know the experimental basis on which this conclusion rests.

"Arsenic" (page 75) "has seemed to the author remarkably beneficial in diabetes of hepatic origin." But the experience of the profession does not confirm the truth of this statement and that this is published in the tenth edition of a book on therapeutics is inexcusable. In the clinical index is to be found under diabetes, "The milk cure has succeeded remarkably in some cases: buttermilk may be better." And in the text, page 60, "In consequence of the large proportion of lactic acid which it contains, buttermilk is more especially indicated in diabetes."

Those interested in children's diseases will certainly be somewhat taken aback to learn that, page 60, "In the author's experience, children, with few exceptions, do well on condensed milk." And so we might go on. Such a book is unworthy of the medicine of to-day.

Selected Papers on Stone, Prostate and Other Urinary Disorders. By REGINALD HARRISON, F.R.C.S. Pp. 190, with 15 illustrations. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1899.

This little book is made up of a collection of sixteen articles which have appeared from time to time, during the last half dozen years, in various periodicals, chiefly of English publication. The chapters have no sequence or connection with one another, and are written for the surgeon rather than for the student of medi-

chine. The first article, Vesical Stone and Prostatic Disorders, was the Bradshaw Lecture delivered at the Royal College of Surgeons in December, 1896, and consists of a necessarily brief résumé of this large subject. It is followed by a chapter headed, A Further Contribution to the Surgery of Stone in the Bladder, and containing a table of the author's cases of stone, 110 in number, treated by litholapaxy during the years 1890-97.

The other articles cover a wide range of genito-urinary subjects of interest at the present day. All are short, all are written in an attractive and readable way, and all give glimpses of Mr. Harrison's great experience, which will be welcomed by readers interested in genito-urinary surgery.

Raynaud's Disease (Local Syncope, Local Asphyxia, Symmetrical Gangrene), its History, Causes, Symptoms, Morbid Relations, Pathology and Treatment. By THOMAS KIRKPATRICK MONRO, M.A., M.D. Pp. xii, 251. Glasgow: James Maclehose & Sons. 1899.

The present monograph gives an excellent account of this rare affection based upon a careful study of the literature, from which the writer has collected and tabulated one hundred and eighty cases. It begins most appropriately with a brief biography of Maurice Raynaud, whose original description of the affection has been but slightly modified by subsequent researches. The author, in fact, at the end of his labors, returns to Raynaud's original theory that local syncope and asphyxia are due to spasm of the small vessels, which, if unduly prolonged, leads to gangrene; and that this spasm depends upon an abnormal excitability of the vasomotor centres in the spinal cord. The theory that the trouble is due to peripheral neuritis is, after careful consideration, rejected. To all who may be interested in Raynaud's disease the volume will afford a very complete summary of our present knowledge.

Minor Surgery and Bandaging. By HENRY R. WHARTON, M.D., Surgeon to the Presbyterian Hospital, etc. Fourth edition, revised and enlarged. Pp. 594, with 502 engravings, many being photographic. Philadelphia and New York: Lea Bros. & Co. 1899.

The demand for this book is shown by the fact that it has reached its fourth edition in a period of eight years. This fact also is evidence of the energy of its author and his desire to maintain a high standard of excellence in regard to the work and to have it an exponent of the most modern ideas. In addition to a careful revision, the new feature of the present volume is the addition of a chapter on Surgical Bacteriology, which is a brief résumé of the subject, also the section devoted to Operative Procedures on the Cadaver, including descriptions of not only the usual typical ligations, amputations, resections and excisions, but also some atypical ones, such as esophagotomy, gastrotomy, pyloroplasty, intestinal suture and anastomosis, osteotomy, etc. The descriptions are brief and are not intended to take the place of elaborate and fully detailed ones given in special works on operative surgery. The list of illustrations has also been increased. The section on Bandaging describes the various applications of roller bandages. If the initial and terminal ends were more clearly designated in some of the illustrations the student would be saved some study.

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THE DISPERSION OF BEQUESTS.

WITH the constantly increasing tendency toward the accumulation of wealth in the hands of single individuals, the ultimate disposition of that money becomes of more and more importance. Charitable objects in general are no doubt claiming greater recognition than ever before, and among such charitable objects the hospital is being accorded an important place. A tendency which, on the whole, is unfortunate is also observable, and that is that in the final distribution of single great fortunes new enterprises are often inaugurated which in themselves are not particularly needed. We have had ample demonstration of this fact in America in the founding, for example, of new universities in the immediate vicinity of old established institutions, in consequence of the bequest of a single individual. This process of multiplication shows no evidence of abatement; on the other hand as individual collections of money grow larger, thereby rendering possible the foundation and at least temporary support of a newly-fledged institution, the temptation to men of means and personal ambition is constantly increasing to put their money into an object which will be definitely associated with their names in the years to come. The general cause of education and of charity no doubt suffers in the long run through this multiplication of existing institutions. What we need is concentration, and for various reasons.

In the first place, the question of expense is of paramount importance. It is a self-evident fact that a preliminary problem merely is solved when buildings are equipped and an institution started on its course of usefulness. Experience has shown that the strain comes when continued support of the institution is demanded, as demanded it must be as soon as it enters upon its active work and is forced to meet the exigencies of improved methods and widening knowledge. As a consequence of this need for increased resources, which frequently are not forthcoming, institutions started by single-man beneficence are apt to

languish when the original source of income fails. To endow an institution in perpetuity is nowadays quite impossible, because one is absolutely unable to see the extent and direction of the expansion of its work in the future. Who could have foreseen, for example, thirty years ago, that expensively equipped laboratories would so soon come to form a necessary adjunct to the modern hospital, or that elaborate arrangements for sterilization and buildings of special construction would be essential to the proper care of the sick? This inevitable expansion always demands large pecuniary resources, and, in consequence, many institutions are now being restricted in their work, because money which might otherwise have come to them is being constantly directed into other channels, leading to the foundation of new institutions of various sorts. This is not economy. It means a duplication of much that already exists, and is quite capable of expansion at a much less expense than is necessitated by an entirely new plant, with its complicated machinery of paid officials and all that goes with the management and conduct of a new institution of whatsoever sort.

What we have said is true of many great public enterprises, educational or otherwise, and applies with particular force to hospitals. A modern hospital is an enormously expensive institution to conduct in a progressive way; its buildings and equipment lack in a peculiar manner the elements of permanency. What is useful to-day may be discarded to-morrow, and improvements of various sorts are an almost daily demand. Since this is so, it is always a matter of regret that sums of money of considerable, as of small, amount should not be left to institutions already in existence, or to seats of learning, which have the confidence of the public, and which would expend such money in the most economical and judicious way to the end of improving medical education and the care of the sick. If it be desirable to have a hospital for the care of those ill with chronic disease, which, as we have frequently had occasion to express, seems to us a crying need, why not establish such a hospital as a department of one already existing, or build a new one in connection with some public or corporate institution, which would stand behind it in the years of growth and development which are sure to come, attract to it fresh endowments and thereby preclude the failure of a naturally expensive undertaking. Otherwise the tendency must be toward disintegration and toward the ultimate multiplication of institutions to the good of none, and to the probable detriment of all. What we need above all things are hospitals strong in resources and not merely in brick and mortar. Whether or not a hospital can be advantageously conducted by an educational institution is a question which merits separate consideration.

But from every point of view, it seems to us desirable that public sentiment should be directed in such a way that gifts of money, by will or otherwise, should go toward the improvement of institutions already in

existence, or toward the founding of departments in close touch with established institutions of broad scope and ample means to ensure the safety and continuance of the work of the new enterprise.

THE WOUNDED IN SOUTH AFRICA.

REPORTS are rapidly coming from the seat of war in South Africa which bear out the more limited experience of our late war with Spain regarding the effect of the modern rifle bullet, and particularly of the Mauser, which is now universally regarded as the most humane of those in use. Sir William MacCormac, writing to the *Lancet*, gives various exceedingly interesting details regarding wounds inflicted by Mauser bullets, wounds which a few years ago would have been thought quite incompatible with life. Sir William says: "One cannot help contrasting with amazement the comparative harmlessness of the injuries so frequently inflicted with the Mauser rifle bullet with the frightful extent of the damage done by those of the needle-gun and the Chassepôt. To any one familiar with the wounds caused by these weapons, many of those inflicted by the Mauser rifle might be regarded as being somewhat of the character of a 'pin-prick.' Quite a large proportion of the wounded, in fact, have returned to duty, and several patients whom I have seen have been wounded for the second time at another engagement."

Some of the cases recorded are as follows: A man was struck by a Mauser bullet an inch above the symphysis pubis, the exit wound being one inch above the level of the anus and somewhat to one side. After being wounded he ran about one-third of a mile without inconvenience, and at the end of a fortnight had completely recovered. A soldier was shot in such a way that the bullet passed through the stomach after having penetrated the ilium. The patient suffered no inconvenience whatever, and was able to eat as usual. A bullet wound through the skull with protrusion of brain substance, dressed on the field, gave rise to no symptoms, and the wounds were healed on the fourth day. Penetrating wounds of the lungs in several instances recorded were followed by a quick recovery.

These are some of the cases to which special allusion is made, and it is certainly not too much to say, as has elsewhere been suggested, that the surgical aspects of bullet wounds must be largely rewritten, in view of the present unfortunate rapidly accumulating experience.

On the other hand it would appear that the Mauser is not always so merciful as the above cases would seem to indicate. Surgeon C. Marsh Beadnell, in a letter to the *British Medical Journal*, speaks, for example, of a poor fellow "raving mad, who had been wandering about for hours with a portion of his frontal lobe protruding through a Mauser exit wound in the fore part of his skull." Another case of considerable

interest reported by the same writer, relative to the effect of the shock of an exploding shell, is as follows: "A shell exploded about ten yards over a Highlander's head; he was untouched by any fragments, but the concussion must have produced some curious pathological change in his nervous system, as he has never ceased (now ten hours) swaying his head to and fro with a pendulum-like motion similar to that of the china dolls with the nodding head so commonly seen in the London streets. His intellectual faculties have also been considerably disturbed, as he is only half-rational." A collection of such cases bearing upon the effects of battle, mechanical or otherwise, would be of great value toward determining certain difficult points in connection with the results of trauma upon the nervous system, as we have previously had occasion to suggest in these columns. In general, we may certainly look for a large collection of data from medical men in the field which will prove of lasting scientific value; a poor compensation, but still a slight one, for the wholesale suffering which such a war of necessity entails.

Dr. Beachell concludes from his investigations on the effect of bullet wounds that those wounds which heal up most rapidly and give the least trouble are wounds produced by bullets having these characteristics:

- (1) A very high velocity.
- (2) A flat trajectory, so that they hit apex first and do not keyhole.
- (3) A hard smooth sheath with a smooth rounded apex.
- (4) A close range, for the same reason as (2) a bullet at a long range may hit the object side on.

He says: "If I were to tabulate these missiles in the order in which the wounds produced by them were progressively more serious from above downwards, the table would read something as follows:

- "(1) Mauser.
- "(2) Krag-Jorgensen.
- "(3) Lee-Metford.
- "(4) Man-stopping Lee-Metford (hollow-headed nickel-sheathed).
- "(5) Any of the first three with the nickel sheaths around the apex removed so that the lead nucleus is exposed.
- "(6) Dum-dum.
- "(7) Remington brass-coated, as used by the Filipinos.
- "(8) Remington lead bullets or the Martini-Henry.
- "(9) Remington brass bullet, with brass sheathing removed so as to expose the lead nucleus.
- "(10) Shrapnel bullets.
- "(11) Shell or their fragments.

"I have no acquaintance with explosive bullets; it is said the Boers have used them, but I think this to be exceedingly doubtful. Most thoughtful men will agree that the Boers have proved themselves to be brave men, and instances of a violation of the laws of civilized warfare are few and far between."

In general, the health of the troops appears to have been excellent; diarrhea, sunstroke and sunburn have been the most annoying maladies.

With regard to the latter trouble, the report continues: "The Highlanders are chiefly afflicted; why

are men sent out in this fierce sun in petticoats? It is all very well to talk about the uniform being the essence of *esprit de corps*, but is not this carrying it too far? Surely they might be allowed to go into action at any rate as other men go. As it is, their legs become covered with crops of vesicles; few of the men like their dress for this kind of work; the beauty of the kilt and sporran is masked by a khaki flap, and when these two part company the aspect is both ludicrous and alarming; I saw one man returning yesterday from his brush with the enemy in a pitiable plight; in his own words, he had had to 'take' a barbed wire entanglement 'at the double,' and emerged 'a bleeding mass, with kilt hard a starboard, his khaki flap half-left turn, and his sporran dangling on the wire.'"

MEDICAL NOTES.

THE PLAGUE SITUATION.—Reports from Honolulu regarding plague are such as to excite considerable apprehension. The number of cases is increasing rapidly, and measures have been adopted by the Board of Health to burn infected buildings in the Chinese quarter, where the disease appears to have gained a foothold. Quarantine is strict and there is fear that the industry of the island, which lies chiefly in sugar, may be seriously hampered. Statistics reported to the Surgeon-General of the Marine-Hospital Service, ending January 19th, show cases from various countries, in part as follows: Honolulu, up to January 16th, 5 cases; Philippine Islands, 5 cases; Brazil, up to December 23d, 38 cases; China, 42; Japan, 13; Portugal, 10 cases and 7 deaths.

HOSPITAL STAFF FOR MANILA.—The War Department is reported to have arranged to send 150 hospital-corps men to the Philippines on the hospital ship *Missouri*, which is to sail from San Francisco some time next month. Acting Hospital Steward Cleveland Hilson, Jr., and 41 privates of the hospital corps, now at the Washington Barracks, D. C., will start for San Francisco in a few days.

FAMINE IN INDIA.—The famine situation in India is reported as worse than ever before. About 22,000,000 persons are now affected in British territory, and about 27,000,000 in the native states. The Viceroy, Lord Curzon, reports that the famine area has expanded, and they are now facing a cattle, water and food scarcity of a terrible character. About 3,250,000 persons are already receiving relief.

SMALL-POX IN INDIANA.—Small-pox is reported as prevalent in fourteen counties of the State. A recent report to the Board of Health showed 15 new cases in Clay County, and nine new cases from Vanderburg County. A general disinfection of the mails coming from infected districts will be undertaken.

STATE CARE OF TUBERCULOSIS PATIENTS.—At the coming meeting of the Medical Society of the State of New York special prominence will be given

to a discussion of the questions relating to State care of tuberculosis patients.

ARRIVAL OF THE "MAINE."—The American hospital ship *Maine* has arrived at Cape Town, South Africa.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, January 24, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 100, scarlatina 51, measles 66, typhoid fever 10.

ANNUAL MEETING OF THE BOSTON LYING-IN HOSPITAL.—At the annual meeting of the Boston Lying-in Hospital Corporation officers were elected as follows: Nathaniel Thayer, President; Hon. Henry H. Sprague, Vice-President; Hon. George v. L. Meyer, Treasurer; William D. Sohler, Secretary, and William H. Baldwin, Thomas F. Edmonds, Oliver Ames, Charles W. Hubbard, Wallace L. Pierce and Samuel Wells, Trustees. With them are associated Dr. J. Collins Warren and Dr. George B. Shattuck, from the Massachusetts Humane Society, and Hon. George G. Crocker and James G. Freeman, from the Massachusetts Charitable Fire Society. The hospital has taken care of more mothers during childbirth than last year, 647 patients having been treated in the hospital, 652 children were born there, and there were four deaths during confinement.

DIPHThERIA AND SCARLET FEVER PREVALENT IN BOSTON.—There is a large amount of both scarlet fever and diphtheria in many wards of the city. Up to the latter part of last week 236 cases of diphtheria and 132 cases of scarlet fever had been reported to the Board of Health this year; the numbers are greatly in excess of the records for the corresponding period of last year. One of the reasons why these diseases are spreading is that there is a lack of accommodation at the City Hospital for the isolation of the patients. In many instances the victims of the diseases cannot be removed from their homes, and be isolated properly, for the reason that the Board of Health has no other place to which to remove them.

BOSTON SOCIETY OF MEDICAL SCIENCES.—A meeting of this Society was held January 16th, at which the following communications were presented. Dr. Mark W. Richardson read a paper on the "Cultivation of the Typhoid Bacillus from Rose Spots," and spoke of his own investigations on the subject. Dr. Theobald Smith spoke on the "Significance of Variation among Pathogenic Bacteria." Dr. J. H. Wright demonstrated an ingenious and simple method for anaerobic cultivation of bacteria in fluid media. Dr. E. W. Taylor showed a series of lantern slides illustrating various lesions of the nervous system.

THE WEST END NURSERY.—At the annual meeting of the corporation of the West End Nursery and Infants' Hospital the following officers were elected for the year 1900: President, Oliver Ames; Secretary, William Rotch; Treasurer, Nelson S. Bartlett; Directors,

Frederick B. Allen, J. Arthur Beebe, Clarence John Blake, George A. Draper, Charles E. Inches, Mortimer B. Mason and T. M. Rotch. Two hundred and fifty sick infants have been admitted to the ward during the past year and 11,231 visits have been made to the Out-Patient Department.

ILLNESS AT HARVARD UNIVERSITY DURING THE YEAR 1898-99.—The official statistical report of illness at the University shows a larger grand total than during the preceding year, but a decrease in cases of contagious diseases and injuries. The report says the latter is undoubtedly due to "more intelligent management of athletics." Among other specified disorders there were five cases of typhoid fever, 48 cases of measles, 126 headaches and seven instances of overwork. The value of statistics of this sort is not altogether apparent.

ADVICE TO PROSPECTIVE MEDICAL STUDENTS.—The committee in the department of zoölogy in Harvard University has recommended to the Board of Overseers that undergraduates about to study medicine be advised to attend a preliminary course on the anatomy of the vertebrates and invertebrates, as well as two preliminary courses in zoölogy. The committee furthermore suggests the desirability of arranging that certain courses in the academic department should be counted in the term of medical study.

COMPULSORY VACCINATION IN MALDEN.—Through the investigation of the Board of Health it has been ordered, owing to the existence of a case of small-pox in Malden, that all school children must be vaccinated, and must show evidence of successful vaccination in order to be allowed to attend school February 5th. Many have not yet complied with the order.

FURTHER BEQUEST FOR HARVARD INFIRMARY.—It is reported that Mr. Stillman, of New York, who gave \$50,000 last year for an infirmary at Harvard University, Cambridge, has recently added \$50,000 more, to be used by the building committee at their discretion. Work on the building will be begun early in the spring.

INFECTIOUS DISEASES IN OUTLYING TOWNS.—Three schools were closed last week in Reading, Mass., on account of the prevalence of diphtheria. It is reported that 29 cases have appeared since December 20th. Fewer cases are reported from Cambridge, Newton and Brookline.

ENDOWMENT FUND FOR NEWTON, MASS., HOSPITAL.—At a recent meeting of the Newton Hospital Aid Association, it was voted to establish an endowment fund for the benefit of the hospital.

NEW YORK.

PROPOSED PRECAUTIONS AGAINST PREMATURE BURIAL.—At a meeting of the Board of Health held January 17th a communication was received from Dr. H. J. Garrigues, chairman of a committee from the Society of Medical Jurisprudence, recommending such alteration of the sanitary code as will better guard

against premature burial; and provision was made for a conference of the Sanitary Committee of the Department with Dr. Garrigues's committee in relation to the matter. The communication recommends that only authorized practitioners of medicine shall decide whether a person is dead or not, and suggests a change in the blank forms of death certificates so that they be made to contain the declaration that the physician personally has examined the body. It is furthermore recommended that the chief signs of death be enumerated in the blank, and that the physician shall indicate the presence or absence of each with "Yes" or "No." Finally, it is suggested that by ordinance it be made illegal "to do anything to the body of the supposed dead which, if he were alive, would cause him pain or injure him, before the certificate of his death has been signed by the physician." With a view to the prevention of premature burials, a bill has been introduced in the Legislature which provides: (1) That no human body shall be buried in the State without the use of such apparatus or mechanical means as may be approved of by the State Board of Health, which will permit of the person whose body is so interred obtaining assistance from living persons in the event of such person having been in a state of lethargy or coma at the time of burial; (2) that any person violating the provisions of this act shall, if the person interred in violation thereof shall be proved to have been prematurely buried, be guilty of a felony, and if the person so interred shall not be proved to have been prematurely buried shall be guilty of a misdemeanor. No exception is apparently made in the case of those upon whom autopsies have been made.

INTERNATIONAL ORDER OF DOUBLE CROSS.—On January 1st, the International Order of the Double Cross, the object of which is the extension of Christianity by the combination of religious effort and medical services, was organized at a meeting held at the headquarters of the International Medical Missionary Society, on East 45th Street. Dr. G. Dowkontt, medical director of the latter Society, presided, and the twenty founders of the Order present represented ten different nationalities. Of these, ten were physicians, six medical students, and four trained nurses. One of the purposes of the Order is the uniting of all medical missions and medical missionaries throughout the world, and the active membership, which is open to persons of both sexes, is to be divided into four guilds, physicians, medical students, nurses and helpers, while all medical missionaries are to be considered as honorary members. The emblem of the Order, from which it takes its name, consists of the double cross formed by the crosses of St. George and St. Andrew. The following officers were elected at the meeting: President, Dr. G. D. Dowkontt; Secretary, Cyril H. Haas; Treasurer, the Rev. W. W. Smith, M.D.; Registrar, the Rev. Theodore F. Hahn. These four officials, together with Drs. John H. Bussteel, Wm. Steward and H. Zeckhausen, constitute the Executive Council for 1900.

THE MONTEFIORE HOME FOR CHRONIC INVALIDS.—The directors of this institution have begun the erection of new buildings at the county sanitarium of the institution at Bedford Station, Westchester County, which will increase its capacity to 300 patients. It is used exclusively for those suffering from pulmonary disease, and very good results have been obtained there. The annual report of the Home, just issued, shows that at the city hospital and the county sanitarium there were treated during the year a total of 609 patients, of whom only eight were pay patients; 8.21 per cent. were discharged as cured, and the death-rate for the year was 16.91, the lowest since the establishment of the Home. One admirable feature of this institution is the Discharged Patients' Fund, maintained through the generosity of the directors, by means of which such persons are given pecuniary assistance until they are able to secure employment. During the year \$1,021 was used for this purpose, 91 persons receiving aid in sums ranging from \$34 to \$5.00.

PENSIONS FOR MEDICAL OFFICERS.—The following bill has been introduced in the Legislature: Providing that any medical officer in the service of the State hospitals who may be physically disabled by reason of any injury or illness incurred in the discharge of his duties shall receive a pension. At a meeting of the New York County Medical Association held January 15th a resolution was adopted endorsing and recommending its endorsement by the New York State Medical Association and the American Medical Association, the bill introduced in the United States Senate by Senator T. C. Platt, for the purpose of giving the same status to acting assistant surgeons of the United States Army that is given to the acting assistant surgeons of the navy.

BOTANICAL GARDEN.—At the annual meeting of the corporation of the New York Botanical Garden, held January 8th, Dr. N. L. Britton, the Secretary and Director-in-Chief, reviewed in his report the work accomplished last year on the grounds and buildings of the garden in Bronx Park. The tract occupied includes 250 acres, and the number of species and varieties of vegetable life under cultivation and native to the grounds is now over 4,000. At the meeting Dr. W. Gilman Thompson was elected a manager.

PORTRAIT OF PROFESSOR METCALFE.—Dr. T. Gaillard Thomas has presented to the New York Academy of Medicine a fine portrait of Prof. John T. Metcalfe, painted by the late Jacob H. Lazarus. Since his retirement from active practice, some years ago, Dr. Metcalfe has been in the habit of spending his winters at Thomasville, Ga., and the rest of the year at Cold Spring, on the Hudson.

DISMISSAL OF A HOSPITAL HOUSE STAFF.—The entire house staff of the Metropolitan Hospital (homeopathic) on Blackwell's Island, consisting of twelve members, has been dismissed by the Commissioner of Public Charities, on account of an act of

discourtesy to the superintendent of the hospital, who had incurred the animosity of the young men.

PHILADELPHIA.

FRAUD IN EXAMINATIONS.—The State Medical Examining Board has secured evidence that the questions to be submitted to applicants for license to practise have been surreptitiously obtained in advance. It is alleged that the trouble is in the office of the State printer, but the proofs have not yet been made public. The medical council is making a rigid examination of the matter.

MORTALITY FROM PULMONARY DISEASES.—The deaths from pulmonary tuberculosis in Philadelphia during 1899 amounted to 2,818 in a total of 23,796 deaths from all causes, or 11.8 per cent. Pneumonia is credited with 2,424 deaths.

A CENTENARIAN.—Mrs. Sarah Doran Terry has recently died in Philadelphia, at the ripe age of one hundred and eight. She was of Irish descent.

Miscellany.

SYMPATHY FOR CATS.

AN interesting incident is related in the *British Medical Journal*, of the late Dr. A. C. Stark, who was recently killed by an exploding shell at Ladysmith. Dr. Stark was an ornithologist of distinction who had volunteered for service as a civilian surgeon when the war broke out. His dying words were: "Take care of my cat." It appears that his fondness for cats was almost abnormal in its intensity. The correspondent who writes of him says: "Dr. Stark's fondness for cats is a point worthy of more detailed reference, and I am permitted by two of his brothers to give the following particulars: He had often told them that he was never able to concentrate his ideas satisfactorily unless a cat were in proximity to him; and I gathered from them that, although he always had a feline companion, his feeling was, in manhood, not so much for the individual specimen as of a want of one of the species about him. Accordingly, whenever he was engaged in his favorite study, that of ornithology—or in a game of chess, of which he was very fond—he liked to have 'puss' on his knee. As a boy, even when playing exercises on the piano, he always had a cat on his knee. As an ardent naturalist he was a lover of animals generally, but his particular favorites were cats and birds, and, though friendly with dogs, he did not care for one as a companion."

HUMIDITY AND DISEASE.

The quantity of water vapor contained in the air varies, according to the *Medical Press*, within very wide limits according to the temperature and the direction of the prevailing winds. It is, however, not so much the absolute quantity of water vapor in the air that exerts an influence on health, as the proportion in relation to the saturation point of the air; in other words, it is the degree of interference with cutaneous

and respiratory evaporation that is of importance. Sudden and extreme variations in the proportion of atmospheric humidity exert a well-marked influence on the absorption, transmission and reflection of heat, light and electricity, and these variations affect in a marked degree the activity of the vital processes. According to M. Chiais, the proportion of water vapor has a pathogenic influence whenever it falls below five or six grammes per cubic metre, or rises above 12 to 13 grammes. If the air contains less than five grammes the tendency is to diseases of the congestive type and the mortality returns are increased by maladies affecting chiefly the respiratory tract, though this circumstance acts prejudicially on sufferers from chronic cardiac disease and enhances the tendency to cerebral congestion, apoplexy, etc., in the aged. If, on the other hand, the air contains more than 14 grammes per cubic metre of water, the tendency is to inflammatory affections of the intestinal tract, gastro-enteritis and the like. There is reason to believe that it is less the relative abundance of water vapor that tells than the occurrence of sudden variations, these variations placing the organism at a disadvantage, only the physiologically active being able to adapt themselves to the change.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 13, 1900.

CITIES	Estimated population,	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,550,053	1348	429	18.90	23.17	1.15	3.71	1.75
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	240	56	19.06	20.16	2.10	2.94	2.10
Baltimore . . .	506,389	182	54	10.45	18.70	1.65	5.50	5.55
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	—	—	—	—	—	—	—
Washington . . .	277,000	118	31	8.50	15.30	2.55	3.40	8.55
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	82	35	31.72	28.06	3.66	2.44	9.76
Nashville . . .	87,754	41	17	24.40	21.96	—	—	4.88
Charleston . . .	65,165	32	5	12.57	15.65	—	—	—
Worcester . . .	111,732	35	9	17.16	17.16	—	—	—
Fall River . . .	103,142	—	—	—	—	—	—	—
Cambridge . . .	92,520	31	6	19.32	12.92	—	—	6.46
Lowell . . .	90,114	33	12	9.09	18.18	—	—	—
New Bedford . . .	70,511	15	5	13.33	13.33	—	—	—
Lynn . . .	68,218	20	1	25.00	10.00	—	—	—
Somerville . . .	64,394	19	7	15.78	42.08	—	—	10.42
Lawrence . . .	59,072	8	7	62.50	37.50	12.50	—	—
Springfield . . .	58,266	29	7	33.05	33.80	—	—	11.55
Holyoke . . .	44,510	15	3	13.33	26.66	—	—	6.66
Brockton . . .	38,759	—	—	—	—	—	—	—
Salem . . .	37,723	14	5	7.14	—	—	—	—
Malden . . .	36,421	—	—	—	—	—	—	—
Chelsea . . .	34,255	15	5	33.33	—	—	—	13.33
Haverhill . . .	32,651	9	3	11.11	22.22	—	—	—
Gloucester . . .	31,426	13	3	15.38	—	—	—	—
Fitchburg . . .	30,523	10	2	10.00	30.00	—	—	—
Newton . . .	30,461	10	2	20.00	30.00	—	—	10.00
Taunton . . .	28,527	14	4	28.56	14.28	—	—	—
Everett . . .	28,102	8	4	25.00	—	—	—	—
Quincy . . .	24,578	3	1	—	66.66	—	—	—
Pittsfield . . .	23,421	7	1	—	14.28	—	—	—
Waltham . . .	22,791	7	3	—	28.56	—	—	—
North Adams . . .	22,583	8	7	25.00	12.50	—	—	—
Chicopee . . .	18,316	10	3	—	—	—	—	—
Medford . . .	17,190	4	2	50.00	25.00	—	—	25.00
Newburyport . . .	15,036	10	—	—	10.00	—	—	—
Melrose . . .	14,721	—	—	—	—	—	—	—

Deaths reported 2,393; under five years of age 721; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 486, acute lung diseases 695, consumption

259, diphtheria and croup 98, measles 38, typhoid fever 31, whooping-cough 16, diarrheal diseases 15, scarlet fever 14, erysipelas 8, cerebrosplinal meningitis 7.

From whooping-cough New York 13, Providence, Lawrence and Chelsea 1 each. From diarrheal diseases New York 5, Baltimore 4, Springfield 2, Washington, Nashville and Clinton 1 each. From scarlet fever New York 6, Boston 5, Baltimore, Cambridge and New Bedford 1 each. From erysipelas New York 6, Boston and Providence 1 each. From cerebrosplinal meningitis New York and Worcester 2 each, Boston, Baltimore and Washington 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending January 6th, the death-rate was 30.9. Deaths reported 6,870: acute diseases of the respiratory organs (London) 1,221, measles 156, diphtheria 121, whooping-cough 93, fever 55, scarlet fever 40, diarrhea 34.

The death-rates ranged from 44.9 in Brighton to 12.5 in Burnley: Birmingham 27.0, Bradford 24.7, Croydon 40.5, Gateshead 17.6, Hull 22.7, Leeds 25.6, Liverpool 34.4, London 37.1, Manchester 23.8, Newcastle-on-Tyne 26.3, Nottingham 40.8, Portsmouth 32.6, Sheffield 24.2.

METEOROLOGICAL RECORD

For the week ending January 13th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'thr.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...7	30.22	33	43	23	77	74	76	S.W.	S.W.	6	16	C.	O.	
M...8	30 11	28	44	13	76	50	65	W.	N.W.	17	14	C.	C.	.10
T...9	30.43	19	29	9	79	69	74	N.	S.W.	9	14	C.	O.	
W...10	29.85	34	45	24	78	58	68	S.W.	N.W.	15	16	O.	C.	.02
T...11	30.20	26	39	13	81	81	80	N.	E.	11	18	C.	O.	
F...12	29.61	34	39	29	91	72	82	N.	N.W.	9	11	R.	O.	1.65
S...13	30.08	29	33	25	77	80	78	N.W.	N.W.	10	6	O.	O.	
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* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. — Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 20, 1900.

D. DICKINSON, medical director, ordered to duty as a member of the Naval Medical Examining Board, Washington Navy Yard, January 20th.

G. S. BEARDSLEY, medical director, detached from the Naval Retiring Board, Washington Navy Yard, and ordered home to await orders.

J. C. WISE, medical inspector, detached from the Naval Medical Examining Board, Washington Navy Yard, January 20th, and ordered to duty as member of the retiring board, same day.

L. G. HENEBERGER, surgeon, detached from the Naval Recruiting Rendezvous, Detroit, Mich., and ordered to the training station, Newport, R. I.

OLIVER DIKHL, surgeon, detached from the "Michigan" and ordered to the Naval Recruiting Rendezvous, Philadelphia, Pa.

A. R. ALFRED, passed assistant surgeon, detached from the New York Navy Yard and ordered to the "Texas."

F. W. OLCOTT, passed assistant surgeon, detached from the "Texas" and ordered to the Naval Recruiting Rendezvous, Detroit, Mich.

H. D. WILSON, passed assistant surgeon, ordered to duty on the "Michigan."

C. E. RIGGS, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, New York, and ordered to the New York Navy Yard.

H. N. T. HARRIS, surgeon, ordered to temporary duty on the "Vermont" in connection with the crew of the "Albany."

R. SPKAR, assistant surgeon, detached from the Naval Recruiting Rendezvous, Philadelphia, Pa., and ordered to the "Constellation" temporarily.

H. A. DUNN, assistant surgeon, ordered to the Naval Proving Grounds, Indian Head, Md.

G. S. BEARDSLEY, medical director, placed on the list of retired officers of the navy from January 23, 1900.

J. M. FLINT, medical director, placed on the list of retired officers of the navy from February 7, 1900.

J. H. MCGUIGAN, pharmacist, detached from the Naval Prov-

ing Grounds, Indian Head, Md., and ordered to the New York Navy Yard.

S. ENGLANDER, pharmacist, detached from the Navy Yard, New York, and ordered to the Naval Hospital, New York.

(CHANGES BY CABLE FROM ASIATIC STATION).

D. L. WRIGHT, assistant surgeon, detached from the "Monterey" and ordered to the Isla du Luzon.

L. MORRIS, passed assistant surgeon, detached from the "Helena" and ordered to the "Brooklyn."

D. H. MORGAN, assistant surgeon, detached from the "Iris" and ordered home.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 18, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Greensboro, N. C., and Jessup, Ga., for special temporary duty. January 13, 1900.

LUMSDEN, L. L., assistant surgeon. Relieved from duty at Seattle, Wash., and directed to proceed to the San Francisco Quarantine Station and report to the medical officer in command for duty and assignment to quarters. January 16, 1900.

KING, W. W., assistant surgeon. To report to Surgeon L. L. WILLIAMS, Immigration Depot, New York, N. Y., for temporary duty, pending departure for Ponce, Puerto Rico. January 12, 1900.

THORNBURY, F. H., assistant surgeon. Relieved from duty at the San Francisco Quarantine and directed to proceed to San Francisco, Cal., and report to the medical officer in command for duty and assignment to quarters. January 18, 1900.

KAMUS, CARL, assistant surgeon. Relieved from duty at Havana, Cuba, and directed to proceed to Fort Stanton, N. M., and report to the medical officer in command, for duty and assignment to quarters. January 16, 1900.

STANSFIELD, H. A., assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to Honolulu, Hawaii, and report to Surgeon D. A. CARMICHAEL for duty. January 17, 1900.

FOX, CARROLL, assistant surgeon. Relieved from duty at the Reedy Island Quarantine Station and directed to proceed to the Port Townsend Quarantine Station and report to the medical officer in command for duty. January 18, 1900.

TROTTER, F. E., assistant surgeon. Relieved from duty at the Tortugas Quarantine Station and directed to proceed to Havana, Cuba, and report to the quarantine officer for duty. January 16, 1900.

EDSON, E. K., assistant surgeon. Relieved from duty at St. Louis, Mo., and directed to proceed to the Reedy Island Quarantine Station and report to the medical officer in command for duty and assignment to quarters. January 17, 1900.

STEVENSON, JOHN W., acting assistant surgeon. Granted leave of absence for thirty days from January 22, 1900. January 17, 1900.

SOCIETY NOTICE.

MEDICAL SOCIETY OF THE STATE OF NEW YORK. — The ninety-fourth annual meeting of the Society will be held January 30 and 31, and February 1, 1900, in the City Hall, Albany, commencing at 9.15 A. M. on the 30th and ending at 1 P. M. on the 1st.

Communications relating to the presentation of papers or to any changes in the preliminary programme should be sent to the Business Committee: Wendell C. Phillips, Chairman, 350 Madison Ave., New York; Henry L. Elsner, Syracuse; Chauncey P. Biggs, Ithaca.

INFORMATION WANTED.

It is desired by the undersigned to investigate systematically the psychophysiology of anesthesia. For this purpose printed blanks have been prepared on which replies to certain simple questions may be written. All persons, and especially hospital surgeons, officers of medical societies and instructors in medical schools, are respectfully requested to send to the undersigned for as many of these as they care to distribute among individuals who have been under an anesthetic within a period not too long to prevent accurate recall of the facts. The blanks will be gratefully sent (and received when filled out) by George V. N. Dearborn, M.D., Physiological Laboratory, Harvard Medical School, Boston, Mass.

BOOKS AND PAMPHLETS RECEIVED.

The Diagnostic Value of Abdominal Palpation in Diseases of the Intestines. Carcinoma of the Duodenum. Hydrochloric Acid, Simple Method of Administering. By Charles D. Aaron, M.D., Detroit, Mich. Reprints. 1897-99.

Original Articles.

INTESTINAL INDIGESTION, AND ITS RELATION TO PULMONARY DISEASE.

BY CHAUNCEY REA BURR, M.D. (HARV.), PH.D. (YALE),
Assistant Surgeon, United States Navy, Puget Sound Naval Station.

UNDER normal conditions, the small intestine is practically free from micro-organisms, while the large intestine is not. The immunity of the former and the susceptibility of the latter to infection appear to be due to the difference in the reaction of the contents of the respective intestines. The chyme is normally acid in reaction and so are the feces, but the intensity of the reaction is greater in the former than in the latter. The acidity depends first on the hydrochloric acid of the gastric juice, then upon the acids normally set free in the digestion of food, as lactic acid, acetic acid, etc., and finally upon the amido and bile acids. Most of these acids are liberated in the upper part of the small intestines and naturally give their reaction to the chyme in this situation; but as the mass moves onwards away from the seat of acid liberation, the continuous admixture with the alkaline secretions of the intestines and the formation of alkaline salts modify to some extent the degree of acidity.

Along with this modified reaction, it is to be remembered that peristalsis is less in the large than in the small intestine, that greater stagnation of the contents here occurs and hence a greater opportunity for bacterial growth. Such carbohydrates, fats and proteids as have reached this situation in their native state are digested and dissolved by bacterial enzymes; the whole effect being to supplement the pancreatic process. Some form sugar from starch, some peptone from proteid, while others break up fats. But the process does not necessarily stop here. The sugar may yield to lactic acid and alcohol; the peptone to amido-acids, as leucine and tyrosine, and the evil-smelling skatol, indol and phenol; the fats to valeric acid, butyric acid, etc. It appears that ptomaines cannot be elaborated in the presence of bile or of free oxygen osmosis, which normally occurs between the blood in the mucous membrane of the canal and the intestinal contents. They need not be reckoned with, therefore, in normal digestion. But toxins do occur and, along with the other products of proteid and carbohydrate digestion, are absorbed by the portal vein, and filtering through the liver diffuse into the general circulation as innocuous and nourishing substances. The work of the investigators who have proved all this is too recent and too well known to need more than passing allusion here.

The value of a healthy liver cannot be overestimated. It is a true filter, which arrests not only micro-organisms, but ptomaines, toxins and toxalbumins in small amounts.

It is evident from this brief summary of what occurs in normal digestion, that there are two points at either one of which, if a departure from the normal occurs, auto-intoxication may result. These two points are the intestinal tract and the liver.

If from any cause indigestion occurs in the former, the small intestine from being a practically sterile tube becomes a veritable culture tube for a variety of micro-organisms. No less than fifty different species have at different times been identified in the feces passed by patients suffering from intestinal indigestion

and catarrh, and the list is constantly growing. These bacteria give rise to their own toxins, ptomaines and toxalbumins, which of course pass to the liver in the portal blood along with the proteoses and other imperfect products of gastric and intestinal digestion. The result is not difficult to imagine. The liver cells are poisoned; the filter leaks. The general circulation is flooded with a variety of poisons and auto-intoxication is established.

Again, it may happen, and often does, that a person is born with what is called an "insufficient" liver, that is, a liver which is functionally weak, which often breaks down and permits of undue leakage from the portal to the hepatic vein. Fothergill says that the children of town dwellers in the second and successive generations from those who immigrated to the city from the country are apt to be so afflicted. Or the insufficiency may result from syphilis or the abuse of alcohol and various drugs. Such an individual is more prone to infection from the intestinal tract than one who has a normal liver.

Having brought a suppositious patient to the point where his system is soaked with toxins, toxalbumins and, it may be, ptomaines, it is instructive to study him still farther, and observe (1) what efforts nature makes to eliminate the poisons, and (2) what symptoms arise in the process.

There are three avenues of exit through which the blood is wont to purify itself, namely, the skin, lungs and kidneys, and the vehicles in which the elimination is accomplished are the sweat, breath and urine. If the toxemia is intense enough any or all of the eliminating organs may show signs of distress. The skin may be hard and dry, pale, or of a sodden, muddy hue; or, again, it may be cyanotic, icteroid or bronzed. Erythema, urticaria, acne, eczema and psoriasis frequently develop. In the lungs congestion, edema or pneumonia occurs, while bronchitis is common. The kidneys are congested, or, it may be, in a state of acute parenchymatous degeneration. Where the toxemia is less intense but longer continued, the changes are more chronic in character and partake of the nature of round-cell infiltration, accompanied with arteritis and hyperplasia of connective tissue. Hence arise scleroses, atrophy and fatty degenerations.

There are few, if any, of the organs of the body which escape the effects of a general toxemia, but beside the excretory organs mentioned and the liver, which has broken down early in the process, the brunt of the toxic shock seems to be expended on the nervous system and the blood. Headache, backache, labored respiration and disturbed cardiac action are concomitants of every case of auto-intoxication and indeed of every case of toxemia. Organic change occurs in the nervous system if the irritation is continued long enough. As to the blood, a condition of hemoglobinemia develops; it clots with difficulty or not at all post mortem, and extravasations and hemorrhages are common.

It is to the pulmonary side of the picture that the writer wishes to draw particular attention. In intestinal indigestion thoracic oppression is frequently complained of. Of course, tympanitic distention of the intestines may in part account for this, but the same cannot be said of Cheyne-Stokes respiration and stertorous breathing when they occur, as they sometimes do. Again in *hepatitis congestiva* without tympanites the same difficulty in drawing a full breath is

complained of, and if the respiratory expansion is measured, it will frequently be found to have dropped from two and a half inches to one inch. This dyspnea occurs as well when the liver is not appreciably enlarged as when it is; and even when there is a mechanical impediment to the downward movement of the diaphragm, the thoracic breathing, which should be accentuated, is less than normal. As toxic principles are present in the blood in such cases, it is fair to assume that they are not without their own influence on the respiratory apparatus, particularly as the same oppressed breathing is seen in those cases in which a toxalbumin is known to be present in the circulation. Such cases are anthrax, hydrophobia, serpent bite and even exophthalmic goitre, as well as most of the infectious diseases. The medulla oblongata and the nerves issuing therefrom seem to be specifically poisoned by toxalbumins. One of these nerves is the pneumogastric, and it is to be noted that its deep origin is intimately associated with the respiratory centre. It is not without significance that so many of the toxemias are accompanied with a weak, hoarse voice. The laryngoscope reveals a condition of paresis of the glottis, and the larynx, as is well known, is supplied by branches of the pneumogastric nerve. In the early stages of phthisis, long before tubercular laryngitis occurs, there is a characteristic laryngoscopic picture. At the last meeting of the American Climatological Association, speaker after speaker rose up to testify as to the constancy with which this picture was observed.¹ Roe described it as anemia of the larynx, Ingalls as atrophy of the larynx, Langmaid as paresis of the glottis. The muscles and vessels stand out with unusual prominence through the pallid mucous membrane. However produced, there is but little doubt that the nerve supply is involved to a greater or less extent. Moreover, tuberculin, itself a toxalbumin, will produce this result, for Langmaid told how, in the early days of the tuberculin test, a number of his patients at the Massachusetts General Hospital were, unknown to him, treated with tuberculin, and it was the remarkable laryngoscopic picture which they subsequently presented which led him to ask for an explanation.

Evidence of a similar kind as to the respiratory insufficiency of incipient phthisis is afforded by Litten's diaphragm phenomenon² and thoracic x-ray examinations.³ Only here it is a phrenic breakdown and not a pneumogastric which is proved. For both these observers have found that there is a shortened excursion of the diaphragm on the affected side, long before the B. tuberculosis can be demonstrated. Whether the inhibition occurs by way of the respiratory centre or is the result of a true phrenic neuritis does not appear. But the fact seems to be proved, as the writer some time ago pointed out,⁴ that in pulmonary tuberculosis a paresis of both the phrenic and pneumogastric nerves occurs.

The truth of the matter seems to be that many toxalbumins as well as toxins and ptomaines, whether introduced by the venom of a snake-bite, the fangs of a mad dog, the excretions and secretions of bacteria, or the absorption of these, as well as of poisonous proteoses from the intestinal tract or elsewhere, may all

embarrass the respiration. The downward excursion of the diaphragm is shortened, to say nothing of the lessened expansion of the thorax. Certain results must follow such a condition. The diaphragm acts as the piston of a syringe, filling the pulmonary capillaries with venous blood on its down stroke and emptying them on its up stroke. When its movement is interfered with, the capillaries are not emptied and a condition of stasis ensues. Under normal conditions the venous blood of the lungs is loaded with excrementitious principles. The aqueous extract of vapors exhaled by dogs has been found to cause death within twenty-four hours when injected into the veins of other animals. How much greater then is the danger in the static lung when these same principles remain for an indefinite period in contact with the walls of its fragile capillaries! One of the effects of such stasis is to weaken, if not paralyze, the epithelial cells of the pulmonary alveoli, and the endothelial cells of the capillaries, so that they no longer efficiently exercise their prerogative of phagocytosis. When the ciliated epithelium of the respiratory tract is in a condition of functional activity, it is inconceivable that either spores or bacilli drawn in with the inspired air can long remain in contact with the pulmonary epithelium; they are hustled out the way they came. But if for any reason this should not be the case, the epithelial cells of the pulmonary alveoli, or *macrophagi*, as Metschnikoff calls them, have still the power of killing and digesting them. It is only when these cells are poisoned or otherwise paralyzed that the power departs from them. The lungs are then open to microbial infection from without.

On the other hand, there is serious danger of microbial infection from within. Fraenkel reports a case⁵ of a young man convalescing from typhoid fever, who in the fifth week after defervescence developed a new rise of temperature. An area of dulness was found posteriorly, and a needle thrust through the chest wall at this point drew off reddish pus. Later a serofibrinous exudate formed there. From both of these pure cultures of the typhoid bacillus were obtained. The facts seem to warrant the conclusion that the typhoid bacillus in this case made its way from an infected intestine, through a paretic liver into the general circulation, and thence to its final resting place and brood-oven in a pulmonary capillary. Even then the endothelial cells of the neighborhood might have exerted their phagocytic powers had they not been put to sleep by the same lethal dose which prostrated the epithelial cells of the pulmonary alveoli. So that without and within the lungs have been opened to infection.

The supposititious patient, therefore, who in the beginning was suffering simply from intestinal indigestion, has been brought to such a pass by the absorption from his intestinal tract of poisonous proteoses and ptomaines, that microbial infection of the lungs has not only been rendered possible, but has actually occurred. It is unnecessary at this stage of the investigation to limit the attention to any particular bacterium, for the least that any of the pathogenic variety can do is to initiate inflammation, and the most, to produce coagulation necrosis.

With the establishment of pulmonary foci of infection, the bacteria get to work, and the structural alterations of tissue which ensue are the same here as else

¹ Sanitarian, July, 1899.

² Cabot: Medical News, April 15, 1899.

³ Williams: Sanitarian, July, 1899.

⁴ The Tuberculous Diathesis, etc. Boston Medical and Surgical Journal, November 25, 1897.

⁵ Medical News, April 15, 1899.

where. There is first diapedesis of the leucocytes and a leakage into the tissues of highly albuminous plasma, which from the presence of so many leucocytes has an inherent tendency to clot. The wandering cells of the connective tissue hurry to the support of the leucocytes and soon the "battle of the cells" is on. Exudation continues and the pressure in the infected area increases, so that this alone may result in much cellular death. The excreta of the bacteria — ptomaines, toxins, etc. — combined with this pressure is enough to account for the appearance of coagulation necrosis, which of course means cellular death in the tissue cells of the part. By means of proteolytic enzymes, which all bacteria capable of inducing inflammation seem to secrete, the necrosed area is digested and dissolved and pus is, in consequence, formed.

From the fact that coagulation necrosis in croupous pneumonia is limited to the epithelial lining of the alveoli, it would appear that in this disease, the primary infection occurs in the epithelial cells, that is, the bacteria are inhaled. The clotted exudate lies in the alveoli and thus produces less pressure than if it were beneath the surface.

For the same reason, the coagulation necrosis of pulmonary tuberculosis argues for a different avenue of infection. Here it is the capillary network of the lung which is attached. The exudate occurs outside the alveoli, and consequently the pressure is greater and coagulation necrosis possible. The bacteria therefore are brought to the capillaries by way of the general circulation, and in many instances are undoubtedly to be sought for in an infected intestine.

Buchner⁶ demonstrated in 1890 that the serum of healthy blood has a germicidal action of its own. As a result of his investigations he concluded that the active element in this phenomenon is a living albumin, an essential constituent of which is sodium chloride, and which, when robbed of this salt either by dialysis or dilution, becomes inert in its behavior toward bacteria.

In pneumonia, as is well known, the chlorides disappear from the urine, and are locked up in the pneumonic exudate. Here they remain till resolution occurs. It can scarcely be doubted, therefore, that they perform a use, and probably a vital one, as in inflammations elsewhere the same paucity of chlorides in the urine is observed. It is to be noted also that with the reappearance of the urinary chlorides peptones appear as well. The digestion of the pneumonic exudate has preceded the peptonuria, and it may well be that sodium chloride has in some way assisted the peptonizing process.

With these facts before one, it would seem as if some changes might be made to advantage in the traditional treatment of pneumonia and pulmonary tuberculosis. In all cases of pulmonary congestion and inflammation the greatest care should be given to the condition of the digestive tract. The intestines should not only be evacuated and disinfected, but should be encouraged to resume their normal functions of digestion and absorption. For this purpose intestinal alteratives are indicated, and of these none stand the test of use better than calomel and podophyllin. Albers states that while many bacteria in the intestinal contents are readily passed in the stools, others remain behind in the intestinal glands and follicles, where being protected by a film of mucus, they cannot be reached by ordinary intestinal antiseptics. Yet these are the bacteria

which are the first to give up for absorption their chemical products and which it is the most desirable to destroy.⁷ Small and repeated doses of these substances after the manner used in the Woodbridge treatment of typhoid fever fulfil these indications. Three, four or five movements of the bowels per diem in pneumonia will tend to do more good than harm. The addition of such drugs as salol, carbolic acid, salicylic acid, menthol, thymol, etc. is of doubtful benefit. For whereas they disinfect the contents of the intestines, many of them are soluble, and once absorbed have a toxic power of their own, and depress the heart in particular. Under such treatment, if judiciously applied, the intestines and liver resume their functions. An adjunct of great value is the inhalation or ingestion of oxygen. It will be remembered that where oxygen osmosis occurs, the formation of ptomaines seems to be prevented and this is as true of the vessels in the intestines as in the lungs. Again the use of calomel and podophyllin, by stimulating the liver and its urea-excreting function, acts upon the kidneys, and diuresis is encouraged. Thus the blood unloads itself of excrementitious matters. The wet pack is useful for the same reason.

In pneumonia two stages should be distinctly recognized, as indeed they generally are. In the first stage there is hyperemia of the pulmonary capillaries, diapedesis of the leucocytes and the exudation into the pulmonary alveoli of a viscid, albuminous plasma. Obviously much good could now be done if an astringent could be employed which had the power of contracting the pulmonary capillaries and so aborting the process. The soluble phosphate of iron has this power if used in small and repeated doses, and the addition of tincture of aconite seems to increase its powers. The writer has repeatedly aborted the pneumonic process at this stage and by this means alone after the previous administration of a purge. It is otherwise, however, when hepatization has occurred. The path to recovery here lies through resolution or the digestion of the pneumonic exudate. The process can be hastened to some extent by the administration of sodium chloride and pancreatin. The ideal way to administer this is to add a few grains of pancreatin to a pint of normal salt solution and inject it well up into the sigmoid flexure.

The recent work of Krönig and Paul⁸ throws some light on the way in which sodium chloride acts in septic blood states. It seems that when salts are dissolved in water, they undergo an electrolytic dissociation into metallic and acidic ions, the former being the electropositive *cation*, the latter the electro-negative *anion*; sodium chloride, for example, resolving itself into its sodium, or *metal-ion*, and its chlorine, or *acidic-ion*. The germicidal value of a metallic salt depends not only upon its specific character, but also upon that of its *anion*, which in the case of sodium chloride is chlorine. Solutions of sodium chloride, therefore, entering the circulation, are dissociated into sodium and chlorine, of which the sodium unites with the carbon dioxide present to form sodium carbonate and bicarbonate and thus assist in maintaining the alkalinity of the blood, while the chlorine unites with the bacteria themselves or with any free hydrogen present to form hydrochloric acid and in

⁷ American System of Practical Medicine, Loomis-Thompson, vol. iii, p. 222.

⁸ Zeitschrift für Hygiene und Infektionskrankheiten, 1897, Bd. xxv, S. 1-112.

⁶ Archiv für Hygiene, Bd. x, II, 1 und 2.

either event exerts an antiseptic influence at the seat of inflammation.

Bovee says⁹ the presence of sodium chloride in the blood favors osmosis and retards coagulation. These of course are desirable effects in the first stage of pneumonia, but he also warns us that the salt if present in excess gives rise to pulmonary edema, dyspnea, headache, vertigo, mental excitement or delirium and severe pain in the left side.

The pancreatin is added in the hope that it may assist in the digestion of the pulmonary exudate, and in the conversion of any primary or secondary proteoses that may be present into peptones. These proteoses result not only from imperfect proteid digestion in the alimentary tract, but from the action of bacterial enzymes on the necrosed tissues of the infected part. Both proteoses and peptones are toxic if free in the circulation, but the diffusibility of the latter is much greater than the former and hence it happens that peptones will leave the blood in the urine, while proteoses remain behind.

Lolu and Emmerich have shown¹⁰ that the enzymes of certain diseases kill not only their parent germs, but also those of cholera, typhoid fever, anthrax, diphtheria, black plague, staphylococci and, probably, gonococci. The bacillus of tuberculosis seems incapable of producing an enzyme that is fatal to itself. This is also true of black plague, and for this reason, say these investigators, the antitoxin of black plague has failed to cure. This hint should not be lost, and it is earnestly to be desired that experiments should be instituted as to the effect of pancreatin on the growth of the bacillus tuberculosis.

Fresh air and the cure of intestinal indigestion will do much to improve the condition of those suffering from pulmonary tuberculosis, and, if begun early enough, a cure may be looked for in a certain proportion of cases. The use of normal salt solution is also to be recommended.

The writer can never forget the extraordinary improvement which once followed his use of a sodium-chloride solution in a case of this kind. The patient was far gone in consumption and had been under observation for many months. One morning the word came that he was dying, and on arrival at the bedside it seemed indeed as if dissolution were at hand. There was great dyspnea, the face was pale and bathed in a cold sweat, the pupils were dilated, the pulse fluttering and almost imperceptible and the temperature 101° F. About three grains of sodium chloride were dissolved in a teaspoonful of boiled water and this was injected under the skin. In a few moments it seemed as if the breathing were easier. At the end of half an hour there was no doubt of it, and in addition the pallor and cold sweat had gone; the pupils were normal in size, the pulse was regular and perceptible and the temperature had dropped from 101° to 100° F.

This patient lived some months longer, but never again had such an attack, and the breathing was comparatively free to the end. The daily use of salted milk or beer had probably much to do with this.

BEQUEST TO A HOSPITAL.—The Flower Hospital, New York, has recently received \$200,000 from the family of the late Roswell P. Flower.

⁹ New York Medical News, December 24, 1898.
¹⁰ Sanitarian, August, 1899.

CASES OF CHOLECYSTOTOMY.

BY EDGAR GARCEAU, M.D., BOSTON,
Surgeon to Out-Patients in the Free Hospital for Women, and in St. Elizabeth's Hospital, Boston.

CASE I. The patient was a married woman, thirty-eight years old, who had never been pregnant. She had always enjoyed good health except during the two years previous to her operation. During this time she had complained of some indigestion and occasional cramps in the region of the epigastrium, which lasted a few minutes at a time; but there had never been any severe attack of colic like the one from which she was suffering when first seen. The history of the attack was that of a sudden sharp pain localized in the region of the epigastrium and also felt in the right hypochondrium just below the ribs. It was penetrating, knife-like, and extended to the right iliac region. There was also slight jaundice, as evidenced by the color of the skin and the bile found in the urine. She was quite prostrated and confined to her bed.

A catheterized specimen of urine showed four per cent. of urea, a few leucocytes, a little blood and a few small granular casts. On examination of the patient, resistance and tenderness were found over the gall-bladder, and likewise over McBurney's point, but no tumor was felt. The temperature was 101° F.

She was treated palliatively for a short while until the pain and tenderness had subsided, and when this happened the operation was performed. The diagnosis of biliary calculi seemed probable, but that appendicitis also did not exist could not be asserted. The incision was therefore made midway between the ribs and Poupart's ligament in order to allow of an examination of the appendix. It was found that the appendix was the seat of inflammation and it was removed. The incision was now extended upwards toward the ribs and the gall-bladder exposed. It was contracted and small. In it was a little thick, brownish fluid and fifteen calculi of various sizes. After removing these, the open gall-bladder was sewed to the upper end of the incision and a drain inserted. One stone was left in the bottom of the gall-bladder, as it could not be easily removed. No forcible attempts were made to remove it on account of the fear of hemorrhage, so serious in these cases. The gall-bladder was washed out twice daily after the operation, but the stone never appeared; it probably still remains in the gall-bladder, or has been passed through the cystic duct, in which it seemed to be firmly impacted.

The patient rallied well after the operation. The fistula closed in about three weeks, during which time bile was discharged in varying quantity, never in very large amount. When last seen, in November, 1899, ten months after operation, she was well, with the exception that occasionally she had had some slight pain in the right lumbar region which radiated to the front, but it had never been severe and she considered herself cured. The general health was excellent and all the bodily functions were acting properly.

A recurrence of symptoms must be looked for in this case, it is feared. The co-existence of appendicitis is interesting, and when it is remembered that the pain in appendicitis may be felt in almost any part of the abdomen, there was ground for believing that the case might well have been one of appendicitis with catarrhal jaundice. Before the incision was made there was doubt as to whether the operation

was to be for appendicitis or for removal of biliary calculi. If there had been a tumor in the region of the gall-bladder the diagnosis would have been more certain with reference to the gall-bladder. Localized tenderness over both gall-bladder and appendix was the deciding physical sign which called for exploration of both.

CASE II. The patient was a married woman, forty-eight years old, who had been suffering from symptoms of indigestion for a period of twelve months before her operation. There had been a gradual decline in the general health and strength and she was finally reduced to a condition of extreme emaciation and weakness. Intense jaundice, the onset of which had been gradual, had been present during six months. The stools were clay-colored. Occasional pain of mild severity was complained of in the *left hypochondriac region*, just to the left of the stomach, and there never had been any distress or pain in the *region of the gall-bladder*. There had been no vomiting and there was no history of biliary colic. Examination was entirely negative, with the exception that there was some tenderness on pressure over the stomach in the epigastric region. The gall-bladder was not distended and pressure over it elicited no tenderness, nor even resistance of the abdominal muscles. No tumor could be felt anywhere.

The case when first seen, in June, 1899, was looked upon as one of carcinoma of the stomach with secondary invasion of the liver, and an unfavorable prognosis was given. But during the summer the patient gained five pounds. This improvement, considered with the atypical group of symptoms, suggested that an exploratory incision be made, in the hope that the jaundice might be caused by remediable calculous obstruction of the bile-ducts. In any event a positive diagnosis could be made by opening the abdomen.

The operation was performed in September, 1899. A crucial incision was made below the tenth rib, exposing the gall-bladder. It was small and firmly adherent by its upper surface throughout its whole length to the under surface of the liver. A small amount of yellow, glairy fluid was aspirated from it; after incising it, six calculi from two to three centimetres in diameter were removed with a pair of dressing forceps. There was some hemorrhage while removing these small stones, but it was not considerable. The finger discovered another stone in the bottom of the gall-bladder, but it could not be dislodged. Rather forcible effort was made with the forceps to remove it, when an abundant venous hemorrhage occurred. The gall-bladder was at once firmly packed with gauze, which controlled the hemorrhage, and the incised sac was sewed to the upper angle of the incision; the lower part of it, however, could not be approximated to the peritoneum on account of the tenseness of the abdominal walls. A gauze packing was therefore placed in front of the gall-bladder to serve as a drain, and the rest of the incision closed. She rallied well under stimulants and an hour after she was put to bed, the pulse was 75 and of good strength. In the evening the pulse failed suddenly and she rapidly died.

At the autopsy the abdominal cavity was found filled with blood clots. The blood had escaped from the gall-bladder, spilling over the edge of it into the peritoneal cavity. The liver, stomach, pancreas and duodenum were removed from the body in one mass

and a careful dissection made. The hemorrhage was found to have proceeded from the very vascular walls of the gall-bladder. A very large stone weighing 130 grains was found at the bottom of the gall-bladder. It measured one and one-fourth inches in length and an inch in width.

The relations of the gall-bladder and the ducts were as follows: The common duct divided at the usual point. The left hepatic duct went to the left lobe of the liver in the normal way. The right hepatic duct was one and one-half inches long, and entered at once into a cavity formed by the lower part of the gall-bladder, in which lay the stone; there was no cystic duct whatever, and on the upper surface of the cavity were several biliary canals entering directly into the substance of the liver. It is possible that the stone in its passage downwards dilated the cystic duct and also the upper part of the right hepatic duct in such a way that both were transformed into a single cavity; subsequent inflammatory changes may have caused adhesions between the upper part of the thus newly-formed sac and the under surface of the liver. There was a constriction about the end of the stone facing the gall-bladder which prevented its extraction, and there was also a vascular band running from side to side of the gall-bladder directly over the stone and further rendering extraction a difficult if not an impossible matter. To have cut this band would have meant a serious hemorrhage. To have excised the gall-bladder in the usual way was impossible as there was no pedicle. To have cut it out would have also meant serious hemorrhage, and sewing the edges together would have been, in this case, a most difficult matter, and in the reduced state of health of the patient, unwarranted. It is possible that the hemorrhage might have been better controlled by sewing up the incision in the gall-bladder. This would have meant a subsequent operation at the end of a few days, when, however, the same conditions would have been encountered. One other method was open to trial for removal of the stone in case hemorrhage had not been met with. It would be possible, in a similar case, to split the gall-bladder down to the common duct, and so remove a stone; but in this case it probably would have given rise to much more serious hemorrhage than that which occurred, owing to the extreme vascularity of the walls.

CASE III. The patient was a man of vigorous constitution, seventy-two years of age. He was of short stature, but thick-set and strong. His health had always been good with the exception of attacks of biliary colic, which had come at frequent intervals during several years preceding his operation. During these attacks pain in the right hypochondriac region was severe, and he usually had to take to his bed. Jaundice, during the attacks, was inconstant. There was indigestion at times, but except for this his general health was excellent, and he was able to work at his trade, that of shoemaking, without interruption. During his last attack of colic the pain was very severe, confined to the region of the gall-bladder, and very prostrating. Large doses of morphia were required to control it. Jaundice was marked and the stools were clay-colored. There was no tumor.

The operation was performed on September 20, 1897. A triangular incision was made over the gall-bladder and that organ exposed. It was found moderately distended with normal bile, but there was no

stone in it. Examination of the ducts with the forefinger revealed a hard mass in the region of the head of the pancreas. An attempt was made to explore it further with the hope of removing it, but at this point of the operation breathing became somewhat embarrassed and the pulse flagged. Added to this was the difficulty of performing an operation of this nature on an old man with thick abdominal walls. It was therefore thought advisable to make an anastomosis between the gall-bladder and the transverse colon. This was quickly done with the Murphy button, the smallest-sized one being used. The button was passed on the fourteenth day. Convalescence was complicated by a severe attack of catarrhal pneumonia affecting the right lung, and the patient nearly died from the effects of this and the shock of the operation. He finally recovered, however, without further accident.

He was last seen in November, 1899, two years after the operation. His health was perfect. He had never had a pain since the operation. Digestion was good and in every way he was in a normal condition.

The case illustrates the great value of the Murphy button in an emergency of the nature described. The time consumed in adjusting the button was very short, and the result good. It is a question whether the stone has since been passed or whether the artificial passage between the gall-bladder and the large intestine is still serving as a passage for the bile.

SOME POINTS SUGGESTED BY THE CLINICAL STUDY IN ONE HUNDRED AND EIGHTY-SIX CASES OF VALVULAR HEART DISEASE.¹

BY RICHARD C. CABOT, M.D., BOSTON,
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I. METHOD OF RECORDING.

ANY one who tries to record statistically a considerable number of cases of any one disease soon meets the following difficulty: Almost any form of chart in which the symptoms are arranged up and down and the patient's numbers across the top (or *vice versa*) soon grows so large as to be unmanageable; the eye grows confused in following the columns, and mistakes easily occur. It is also difficult to get a satisfactory material such as will resist wear and tear.

In recording the cases of which my paper of tonight is a study I have used a book in which points regarding etiology, symptomatology and physical signs are written in a column at the left margin of the first sheet of the book. Then all the other sheets in the book are cut off along their free margin to such an extent that as each fresh page is turned over for the recording of additional cases, it comes in close juxtaposition to without covering the printed column of data in regard to which we are collecting statistics. In this way a series of cases, even up to several hundred, can be recorded in a single book without any of the inconvenience which soon meets us with any form of chart with which I am acquainted, as soon as we get beyond 30 or 40 cases. To record any given point in regard to etiology, symptoms or signs, we need with this book only so much time as is required to make a plus sign or a zero mark opposite the proper word in the printed column which is always

visible and close at hand, owing to the arrangement of the book. I usually stamp a diagram of the front and back of the chest into each record and draw out the areas of the murmurs heard, marking their seat of maximum intensity, as well as the area of the heart.

II. THE APEX BEAT.

(a) When we speak of localizing the apex beat of the heart in order to ascertain the size of the organ, what do we mean, and what ought we to mean? It is well known that it is not the apex of the heart which gives rise to the so-called "apex beat," or cardiac impulse. The impulse is caused by a portion of the right ventricle. In localizing the maximum impulse, therefore, we are not localizing the apex of the heart. What then *shall* we look for? It has been my practice to give the name of "apex beat" to that portion of the chest wall farthest to the left and farthest down at which any rise and fall synchronous with the heart beat can be felt. This is often some distance outside of the *maximum impulse*, and it might easily be objected that what we are localizing by the method here suggested may be simply the outer limit of a *wave* transmitted to the chest wall by the heart. In deciding this question, the evidence of percussion seems to me of great value, and it has been my uniform experience that the percussion dulness begins not at the point where the maximum cardiac impulse is to be seen and felt, but some distance farther out towards the left axilla and farther down towards the base of the chest, in a position corresponding to the lowest and outermost point at which *any* pulsation even very faint, can be felt.

(b) In defining the apex beat, one should be careful so to frame his definition as to include those cases (not at all infrequent in my experience) in which we have a systolic *retraction* at the apex instead of a systolic *impulse*; for I need not remind you that the presence of a systolic retraction at the apex is in no way diagnostic of pericardial adhesion, but is often due simply to the negative pressure produced within the chest by the powerful contractions of a hypertrophied heart.

III. THE PLACE OF MAXIMUM INTENSITY FOR AORTIC REGURGITANT MURMURS.

Modern text-books on diseases of the heart and on physical diagnosis are beginning to correct the old misstatements handed down through many of the older books regarding the point at which the aortic regurgitant murmurs are best heard; yet in the "Twentieth Century Practice of Medicine," Whitaker stated in 1895 (Vol. IV, p. 251), "The murmur is heard in greatest intensity in the second interspace to the right of the sternum."

Musser, in his "Medical Diagnosis," page 382, gives three positions, at any one of which the murmur of the aortic regurgitation may be at its maximum. One of these is in the second right interspace and two are in the middle line of the sternum, at different levels. On page 380, he says, "When a murmur is heard with greatest intensity in the second right interspace, it is usually generated at the aortic orifice." On page 429, he admits that "in some instances, the maximum of intensity is greatest at the fourth left costal cartilage, or even at the apex."

Tyson, in his "Physical Diagnosis," page 136, says, "It is sometimes loudest in the aortic area but often

¹ Read at a meeting of the Boston Society for Medical Improvement, November 20, 1899.

over the mid-sternum, and it is even well heard as low as the ensiform cartilage or at the apex itself."

Osler, in the last edition of his "Practice," page 713, says, "On auscultation, there is heard a murmur, during diastole, in the second right interspace, which is propagated with intensity towards the ensiform cartilage, or down the left margin of the sternum towards the apex."

These statements are a considerable improvement over those of the older text-books, in which the occurrence of aortic murmurs with maximum to the left of the sternum is hardly mentioned, but I do not think that even the statements just quoted give a true idea of the facts, for they seem to suggest that the right side of the sternum is the *common* place to hear the murmur best, and the left side the *rarer* place. In 44 cases which I have carefully examined this summer with reference to this point the murmur was best heard to the left of the sternum in 36; best heard to the right of the sternum in four cases; in the centre of the sternum in two cases; while in two more there were two areas of equal intensity, one at the right and one at the left of the sternum; while over the sternum itself, the murmur was very feeble. In this series, which I believe to be a typical one, the murmur was best heard to the right of the sternum in only four out of 44 cases, or less than one-tenth.

IV.

My fourth point I want to put simply in the form of a question: Upon what evidence should we base the diagnosis of aortic stenosis? Knowing, as we do, that a loud systolic murmur in the traditional aortic area may be produced by simple roughening of the aortic valves or the aorta itself, without any genuine stenosis, and that this murmur may be propagated into the great vessels, what positive signs have we for distinguishing aortic roughening from aortic stenosis? Is the presence of a tactile thrill, in addition to the signs just mentioned, sufficient to warrant in making the diagnosis of mitral stenosis, or do we need in addition the *pulsus tardus, rarus, parvus* of the classic descriptions?

V. RELATIONS BETWEEN THE VALVE LESIONS AND HYPERTROPHY.

The study of the 186 cases of this series has given me, I think, reason to deny that there is any one form of valve lesion which is constantly associated with the clinical evidence either of hypertrophy or of the lack of hypertrophy of either ventricle. The classical text-book statements, that in pure mitral stenosis we have no hypertrophy of the left ventricle; that in mitral regurgitation evidence of a predominant or exclusive enlargement of the right ventricle can be made out; that in aortic regurgitation the left ventricle must be enlarged, all these seem to me contrary to the facts of observation. I have seen several cases of well-marked aortic regurgitation without any evidence of hypertrophy of the left ventricle, and several of apparently pure mitral stenosis in which there was every reason to suppose that the left ventricle was enlarged, while in a majority of cases of mitral regurgitation such enlargement of the heart as could be demonstrated seemed to affect the left ventricle rather than the right. In connection with this, I would like to call attention to the worthlessness of epigastric pulsation as evidence of hypertrophy of the right ventricle.

Surely we have all seen it present when the heart was normal, both during life and at autopsy, and, on the other hand, seen convincing evidence of hypertrophy of the right ventricle without any epigastric pulsation.

VI. PRESYSTOLIC MURMURS IN CONNECTION WITH AORTIC REGURGITATION.

It is a well-known fact, first described by Austin Flint in 1862, that we may have every physical sign of mitral stenosis, and yet at autopsy find the mitral valve normal in cases where there is an associated regurgitation through the aortic valve. I mention this fact simply to call attention to two points: (a) First, that unless we always have it in mind and are closely on the lookout for it, we may altogether overlook the aortic lesion. In certain cases the diastolic murmur is very faint and the presystolic roll and thrill at the apex impress themselves upon one's mind to the exclusion of everything else. The importance of not making this mistake, that is, the importance of recognizing a faint diastolic murmur in the presence of a loud presystolic roll and thrill, is that the prognosis of a combined lesion of both the aortic and mitral valves gives a much worse prognosis than a lesion of the mitral valve alone. (b) Second, I want to ask if any one here present can tell me whether it is ever justifiable to make a diagnosis of mitral stenosis in a case where *we are sure there is aortic regurgitation*. Is there any way, in such a case, in which we can tell the Austin Flint murmur from the murmur due to organic changes in the mitral valve?

EPILEPSY.¹

BY WALTER E. PAUL, M.D., BOSTON,

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THE symptom complex of epilepsy falls within the experience of every physician, and the diagnosis, prognosis and treatment of this affection are most important from the practical standpoint. The class of cases here considered belongs to so-called idiopathic epilepsy, and not to the cases in which the convulsive attacks are symptomatic. For although in many cases of epilepsy pathological cerebral changes have been found, by no means is there associated with epilepsy any constant pathology. Further study of epilepsy may demonstrate a uniform etiology, but if due principally to a disordered function of conducting paths, the etiology would vary widely in individual cases, and might well be beyond discovery. Féré² says of epilepsy, that "the most varied causes produce the same clinical phenomena."

In a general way it seems unlikely that a special toxin or class of toxins is solely, or even in large measure, the one factor causing epileptic seizures. It is reasonable to grant that all of the human kind elaborate the same chemical substances in the economy and that the central nervous system of every individual is subjected to practically the same metabolic processes and products. But there is a wide variation in neural endowment. Is not the cause of epilepsy almost absolutely in the machinery of the brain and cord—a vice of the nerve tissues, a limited

¹ Read at a meeting of the Boston Society for Medical Improvement, November 20, 1899.

² Féré: Twentieth Century Practice, vol. x, p. 586.

capacity to meet all nerve stimuli and retain normal nerve equilibrium? From this point of view every nerve reaction that occurs in the life of an epileptic bears a relation to the culminating symptom of the fit. It is not simply the influence of leucomaines, but other events in the bodily and intellectual life are contributing mites, some against, but more for, the developing attack.

In epileptiform fits that are symptomatic of gross lesions there is a variety of specially prominent factors, as, for example, in cases due to syphilis, or the presence of a foreign body in the brain, or tumor, or alcohol. It is worthy of remark that Gowers³ inclines to the opinion, though he does not dogmatically state it, that convulsive attacks in a syphilitic are not attributable to the virus in the blood but to a lesion of nerve tissues. This probability is reinforced when we remember the comparative rarity of convulsions in syphilitics. Therefore, in idiopathic epilepsy the autotoxic theory seems to me to occupy a small place in the etiology.

Diagnosis.—The diagnosis of epilepsy is simple in many cases, but in the milder attacks it may require much study and observation to determine the character of the symptoms. For some time the mildest attacks may pass unrecognized; in which, for example, one pauses a moment in whatever he is doing, ceases speaking, or drops some object from the hand, or has a transitory giddiness. Night attacks may be discovered only by accident, and Trousseau records a case in which the first knowledge of nocturnal epilepsy was brought to light by a dislocation of the shoulder. The principal difficulty in diagnosis is to differentiate between epilepsy and hysterical convulsions, and it may be impossible to determine from the history whether only one is present or both, for hysteria may be superimposed on true epilepsy. When there is doubt it is perhaps unwise to rule out epilepsy even on the apparently typical hysterical character of an individual fit. The subsequent and previous attacks might well be epileptic, yet the patient's observation and that of his family and friends would regard all attacks of the same character. If the attack is of abrupt onset, and there is loss of consciousness, if the tongue, lips or cheeks are bitten, or there is some escape of saliva, even a slight drooling, and the urine is passed in the attack, and if these symptoms are followed by a period of stupor or confusion of thought, then a positive diagnosis of epilepsy is established. The occurrence of some bodily injury is strong corroborative evidence of true epilepsy, be it a burn, a cut or a broken bone. Even without a clear, assured history of an epileptic fit, it is wise in directing treatment to regard the patient as a probable epileptic rather than as simply hysterical. Amelioration under treatment would only strengthen the suspicion of epilepsy.

So-called psychic epilepsy presents an unusual variety of the disease. Motor symptoms are replaced by impulses and ideas that may impel the individual to various acts. No memory of these is retained. The defence in murder trials not infrequently resorts to this explanation of the homicide.

Prognosis.—Prognosis deals with grand mal and petit mal cases. Perhaps the three following are the most important considerations: (1) What can be ex-

pected from treatment? (2) How does the existence of epilepsy affect longevity? (3) What is the future of an epileptic in his relation to society and the state?

According to the statistics, a large proportion, 80 to 90 per cent., of epileptics are helped by treatment. The attacks are lessened both in severity and frequency, and in favorable cases cease for long periods.

As to cure, I quote Dr. Edgar J. Spratling:⁴ "A very small percentage do recover; but a new onset of the disease is a fate hanging immediately over every former sufferer. Simply because a man goes an indefinite period without a convulsion should not induce us to state epilepsy with him in the future is impossible or even improbable." It seems justifiable to hold out to a patient the expectation of improvement.

The influence of epilepsy on life is in most textbooks referred to as of small moment. Dr. Worcester,⁵ of Danvers, has demonstrated that in asylums for the insane epilepsy in its severe forms is a deadly disease, with a mortality of 19.23 per cent. due directly to the disease.

The development of rapidly-recurring convulsions, the status epilepticus, is cause for gravest apprehension. At any moment, however, the attacks may cease, and the patient recover.

The relation of an epileptic to society and the state is by no mean a simple problem. Few occupations are especially fitted for epileptics; few employers welcome the epileptic employe. An attempt to secure work for one of the afflicted is often discouraging, and if the fact that one is epileptic is discovered after being engaged as a workman, the employer feels he has been deceived. It is easy to see how society is steadily forcing an epileptic into the discouraged and shiftless class. Thus the epileptic condition may be aggravated and the individual finally become a ward of the state.

Treatment.—To the treatment of epilepsy a great deal of study has been devoted. Few diseases have had more drugs and measures directed to amelioration or cure; and epileptics are attracted in large numbers by quacks. Original methods and schemes of treatment have been proclaimed by enthusiasts, but no panacea is yet known. In spite of all the discouragements to a positive cure a great deal is being done for the amelioration of epilepsy.

Treatment includes hygiene, diet, palliative measures, drugs, surgical measures and hospital life. I have reviewed the treatment of the cases coming to the Out-Patient Department of the Massachusetts General Hospital for 1896, and the results are embodied in what follows. Each patient is ordered to take a daily sponge bath, observe regular habits, avoid excesses and vices, and take sufficient exercise out of doors. Caution as to occupation was given in a few cases, for in most epileptics risks have to be taken and excessive caution is to be avoided. Meat is uniformly prohibited hospital patients, but eggs, fish and milk are allowed and urged. These directions are insisted on for Thanksgiving and Christmas Days as well as others. Caution against overeating is given, and an attempt is made to maintain the health of the alimentary tract—a most important consideration, as an error in diet frequently precedes an attack. Refraction, phimosia, nasal obstructions and aural dis-

³ Gowers: *Epilepsy and Other Chronic Convulsive Diseases*, pp. 26-27.

⁴ Spratling, Edgar J.: *Journal of Nervous and Mental Diseases*, May, 1899, p. 297.

⁵ Worcester: *Medical Record*, April 28, 1898, p. 467, et seq.

troubles receive special attention, with the hope of palliation but not the expectation of cure.

One chemical element, bromine, furnishes salts nearly unanimously adjudged most effective of all drugs in opposing the epileptic habit. Opinions vary as to the choice of a bromide salt. At the Massachusetts General Hospital the sodium salt is prescribed most frequently, with an initial dose of 20 grains three times daily for adults. It is sometimes combined with the potassium salt and the ammonium salt, and not infrequently the potassium bromide is used alone. The choice of a drug for treating epilepsy is a simple matter, but it requires a fine judgment to regulate the dosage and method of administering to attain the best results. Shall the twenty-four-hour amount of bromide be given in one dose or divided doses? In nocturnal epilepsy the drug is administered usually in one dose at bedtime. Shall the amount be varied on alternate days, or every third day, and so on? Shall the bromide be omitted for a time or the amount be increased or diminished? Variations along these lines are followed at the hospital. The skin eruptions are combated with potassium arsenitis, but bromide is not omitted because acne exists, even of severe degree. Two cases at the hospital received Flechsig's treatment under Dr. Putnam's direction. In one the attacks ceased for a year and were less frequent when they recurred. The other case was in no wise benefited. Flechsig's treatment has gained no permanent place and what value it has seems to be due to the bromide used.

Nothing is attempted with hospital patients in the way of inhibiting an impending attack. Unless an aura lasting some little time exists such efforts would be useless. A mother, in one hospital case, gives her epileptic child a shaking and thus inhibits the fit. A man reported that tapping his head was effective.

A recent addition to the bromide group is bromalin, a combination of bromide of ethyl and formin. Fére, finding other measures failed to relieve bromidism, and having recognized that constipation and flatulence were often present, surmised that bromidism might be the consequence of auto-intoxication. Large doses of beta-naphthol and bismuth salicylate were followed by striking results; the tremblings, rash and digestive disturbances disappeared; the appetite improved and there was a general sense of well being. Bromalin, invented by Bardet, meets the need of an antiseptic bromide preparation; and its use in a small number of cases by Rohrmann⁶ has been followed by results similar to those obtained by Fére with beta-naphthol and bismuth salicylate. Merck advises giving bromalin in 30-grain doses in wafer paper from one to four times daily. Bromide of strontium is strongly advocated by observers who claim it to be non-toxic. A. Roche,⁷ of Dublin, states that the strontium salt produces no constitutional symptoms and never, so far as he knows, caused a rash. The doses used were 60 to 180 grains daily.

A number of surgical experiments have been tried; ligation of the carotids or vertebrals, cutting of eye muscles, trephining and sympathectomy—each has had a certain vogue. Unless some strong special indication exist, these measures have accomplished little or nothing towards cure or even help. One operator, Chipault, continues hopeful of benefits from sympa-

thectomy; but others can discover no favorable result from removal of cervical sympathetic ganglia.

In the last five or six years institutional treatment of epilepsy has been inaugurated in several States; and the results of even a rather brief trial of this method of caring for epileptics are most encouraging. The cardinal measures carried out at the hospital, or colony, for epileptics, have to do with the diet, hygiene, out-of-door life, and, most important of all, systematized occupation. Very little bromide is used. Some of these institutions are filled to the limit of accommodation and have a waiting list of several hundred eager to be admitted. This method of dealing with epileptics has accomplished most gratifying results; and the special hospitals promise to add largely to the scientific knowledge of epilepsy. At present they offer the most acceptable means for the care of a large proportion of epileptics.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

I. CASE OF COMBINED SUPERIOR AND INFERIOR POLIENEPHALITIS.

BY G. L. WALTON, M.D., BOSTON.

THE patient, a man fifty-three years of age, was seen in consultation with Dr. Aldrich, of Somerville, and consented to come to the hospital for further study and observation on account of the interest of his case. His occupation for the last fifteen years has been that of a die sinker, using tools similar to those of an engraver. There has been no wasting or weakness of the hands, and no other symptoms which could be attributed to his work excepting, perhaps, a slight paresthesia of the right hand.

The first cerebral symptom noted was indistinctness of speech, coming on suddenly the latter part of August, 1899, previous to which time he had been in good health. He found no difficulty in choosing words, but there was indistinctness of articulation. He had chewed gum at his work practically all the time for several months, and had thought this might have something to do with his trouble. One month later (the last of September) weakness in the movements of the lips appeared; at about the same time he found it hard to masticate on account of muscular weakness; food would catch in his cheek, and he began to drool, particularly while eating. At this time he could not whistle, and all the movements of the tongue were greatly impaired; the face is said to have been drawn to one side. Some time in October he noticed a drooping of the right eyelid, a symptom which had appeared a year previously, but was transient and unaccompanied by diplopia. With the present attack diplopia appeared and has persisted. In November he complained of pain in the back of the neck, appearing only when he was out and about (ocular?). There has been some trouble in swallowing, affecting apparently the constrictor rather than the laryngeal muscles, as the difficulty was in pushing along solid food, but there was no choking. He was unable to eat solid food at all during December on account of inability to masticate. There has been no

⁶ Rohrmann: Monatschrift für Psychiatrie u. Neurologie, December, 1898.

⁷ A. Roche: Lancet, October 15, 1898.

headache, no vomiting or vertigo, no edema or shortness of breath. The urine is normal. There is no specific history.

Physical examination made December 20th showed no disease of the radial or temporal arteries, no disturbance of motion, or (objective) sensation. The kneejerks were normal, perhaps rather active, the plantar reflex, normal flexion of toes in both feet. The general condition was good, the nutrition unimpaired. The fundus was normal; the pupils alike, regular in shape, and reacting both to light and accommodation. The movements of the jaw were extremely feeble in all directions, the lips relaxed, the speech indistinct. The disturbance of the fifth nerve was entirely limited to motion, the lightest touch being felt in the distribution of all three branches. There was external strabismus in the right eye. There was drooping of both lids, more marked on the right. The expression was that of the so-called "Hutchinson face" described in the text-books under ophthalmoplegia. The vision was normal. The diagnosis of poli-encephalitis, superior and inferior, was made at this time, and an extremely guarded prognosis was given. The case was classified as subacute and it was uncertain whether improvement would appear, as is common in cases of acute poli-encephalitis, or whether steady progression would ensue. The treatment by strychnia, which had been commenced by Dr. Aldrich, was continued, in doses of one-thirtieth of a grain.

When seen at the hospital January 6, 1900, Dr. Aldrich reported that he had been better and worse during the two weeks, but had on the whole steadily improved. It was found that he could now whistle, though with some difficulty, and that the finger inserted in the corner of the mouth was grasped with considerable force by the orbicularis oris. The patient could shut the teeth, and move the tongue in all directions and protrude it, movements which were formerly impaired. (There was no wasting or fibrillary twitching of the tongue.) The strabismus was less marked, the eye following the fingers fairly in every direction, though double vision was still present when looking straight ahead or to the left. The ptosis was practically unchanged. The articulation was somewhat blurring, but he could pronounce the labials, and the linguopalatals, anterior and posterior, perfectly. The movements of the jaw, though stronger, were still very weak; lateral motion and motion forward and back (pterygoids) were feeble, and the attempt to close the jaw could be effectually opposed by holding the chin down with one finger.

The nuclear origin of the lesion in this case is established partly by the bilateral character of the symptoms and partly by the limitation of symptoms to the motor sphere, for it would be incredible that disease involving cranial nerves at the base should spare the sensory fibres of the fifth nerve while affecting all its motor branches. It would, again, be difficult to imagine a lesion of the third nerve elsewhere than in its nucleus, selecting the fibres to the lid and internal rectus, whereas the nuclear groups furnishing these fibres lie in contiguity posterior to the groups for the sphincter iridis and ciliary muscles, and anterior to those supplying the superior and inferior recti, all of which muscles were spared. Furthermore, the involvement of the orbicularis oris at a period when the muscles supplied by the seventh nerve were spared points to involvement of the twelfth nucleus, which

probably supplies the orbicularis oris, though the fibres proceed by the way of the seventh nerve.

Cases showing combinations of superior and inferior poli-encephalitis are on record but are rare; Dr. Taylor showed one such case from this clinic at a recent meeting of the Clinical Club, the report of which will appear in the JOURNAL. A few cases have been described as "ascending inferior poli-encephalitis," in which the lesion gradually spreads from the inferior to the superior nuclei. In this case the first nucleus affected was apparently the fifth; the ninth, twelfth, and probably to a slight extent the seventh, were invaded at about the same time. The affected nuclear groups of the third succumbed within about a month. The case might perhaps then fairly be classed under the ascending form.

The etiology and prognosis of the case are still indeterminate. The patient's own suggestion that excessive chewing was the exciting cause cannot be quite disregarded, especially in view of the initial involvement of the fifth nucleus; it would seem, however, that in this event the onset should have been more insidious. The sudden appearance of the separate symptoms was suggestive of infection, now recognized as the cause in the acute forms of both poliomyelitis and poli-encephalitis. Here, however, we are met by the comparatively gradual extension from nucleus to nucleus—in other words, this case came on rather rapidly for the chronic progressive form either of ophthalmoplegia or of bulbar paralysis, and rather slowly for the acute infectious process.

The further progress of the case will be communicated in another number.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, November 20, 1899, Dr. R. H. FITZ in the chair.

Dr. BEACH reported orally a case of

INTESTINAL OBSTRUCTION

that entered the hospital Saturday afternoon. It exemplifies the importance of the early recognition of obstruction and the necessity for prompt intervention. The patient, a woman, was seized a week before with severe general abdominal pain that never became localized. Shortly after, vomiting began and continued during the whole week until she entered the hospital. It had become fecal after three days. There was moderate distention, but the transverse coils of intestine could be easily recognized through the abdominal walls, which were rather thin. Her general condition was very poor, and operation only offered a possible relief from vomiting, the severest pain having ceased on Wednesday. On opening the peritoneal cavity chocolate-colored coils of intestine corresponding with the external appearances could be seen, distended with fluid and gas. On attempting to turn them out through the incision I found them so unwieldy from their fluid and gaseous contents, that a rupture might easily occur, so I drew a coil over to the side of the operating table, made an incision into

the ileum and discharged from it three quarts of feces. The vicinity of the wound was carefully cleansed with peroxide of hydrogen and the incision closed with a double layer of Lembert stitches. Then that intestine was returned to the abdomen, and by putting the patient into the Trendelenburg position the small intestine gravitated toward the diaphragm. There was to be seen then a tumor, entirely filling the pelvis, which proved to be a cyst of the broad ligament. It was tapped, discharged and the madherent cyst wall removed. Then, supposing that I had found the whole cause of the obstruction, I tried to push along some of the fluid in the small intestine toward the cecum. I found it impossible, owing to a firm adhesion of a tangled mass of intestinal loops to the left side of the abdominal wall near the ilium. Those were carefully dissected out, the adhesions found to be strong and suggesting that the original lesion may have been an old inflamed tube of the right side with adhesive peritonitis that had extended to the left side, involving the intestine and fastening it firmly to the bone. After the small intestine had been released the fluid contents remaining in the intestine could be easily pushed along to the cecum. The large intestine from the cecum to the rectum contained scybalous masses.

The patient passed through the operation, which lasted one and a half hours, surprisingly well, and was relieved of her vomiting. The expected fatal result occurred on the following morning.

Dr. R. C. CABOT read a paper entitled

SOME POINTS SUGGESTED BY THE CLINICAL STUDY OF 186 CASES OF VALVULAR HEART DISEASE.¹

Dr. F. C. SHATTUCK: With regard to the seat of maximum intensity of the murmur of aortic regurgitation, I am a little surprised that Dr. Cabot finds the statements in the books as he does. I know that in many of the books it speaks as if the maximum intensity were usually at or about the aortic area, but I thought — I am speaking from memory — that a good many of the books said very frequently the seat of maximum intensity was about the fourth left costal cartilage. My experience coincides with that of Dr. Cabot that the seat of maximum intensity is to the left of the sternum and about the fourth costal cartilage in the decided majority of cases. I am reminded by this point which Dr. Cabot makes of the time when the late Dr. Calvin Ellis invited me to teach auscultation in the medical school. I told him I should be only too delighted to do so, and he said, "Are you going to teach that the seat of maximum intensity of the murmur of aortic regurgitation is the fourth left costal cartilage?" I said, "Doctor, I have generally found it to be such." Subsequent observation is confirmatory of my earlier experience.

Dr. Cabot speaks very fairly of aortic stenosis, as it seems to me. The signs of pure aortic stenosis are clearly laid down in the books, as theoretically they ought to be. Practically, however, I believe pure stenosis at the aortic valve, without regurgitation, to be a very rare thing. Personally I am not inclined to think that the presence of a palpable systolic thrill in the aortic area is characteristic of stenosis as against mere roughening.

I am rather surprised at Dr. Cabot's statement that we found — I think it was four or five — well marked

cases of aortic regurgitation, sufficiently marked to produce the Corrigan pulse and the pistol-shot sound in the peripheral arteries, without being able to make out any enlargement of the left ventricle. That certainly has not been my experience. Of course the intensity of a murmur, as we well know, is no index whatever of the gravity of the lesion. The biggest murmurs sometimes go with the smallest lesions, and the disappearance of a murmur may be a thing of very serious import, as showing that the heart is not contracting strongly enough to produce the vibration necessary to result in murmur. Of course a very small aortic regurgitation might make a loud murmur, but I should not think it would be likely to produce a well-marked Corrigan pulse and a pistol-shot sound in the crural, for instance. If I got that group of symptoms I should certainly expect to find well-marked signs of enlargement of the left ventricle.

Dr. MORSE: I have very little to add, as I agree entirely with everything Dr. Cabot has said. As to the location of the murmur of aortic insufficiency, I have found it most commonly at the left of the sternum and sometimes under the xiphoid. I think it ought to be borne in mind that sometimes the murmur is heard in that location when not in the aortic area at all.

As to the diagnosis of aortic stenosis, I have always felt great hesitancy in making that diagnosis. It seems to me one of the strongest points in favor of it is the character of the pulse, that is, the infrequent pulse with the slow rise. When from the sounds there is apparently a combination of aortic stenosis and insufficiency, the character of the pulse is very important in diagnosis. If the pulse shows the character of aortic insufficiency there can be no great amount of stenosis, no matter how loud the systolic murmur or how transmitted. If, on the contrary, the pulse is not characteristic of aortic insufficiency, the mitral valve being intact, there is almost certainly stenosis also. I have also felt great hesitancy in making the diagnosis of mitral stenosis in the presence of a presystolic murmur. I think we may sometimes be led astray by considering a murmur presystolic which really is at the beginning of systole, and that thus we may be wrong in placing the time of the murmur.

Dr. FOLSOM: In regard to epigastric pulsation, I think I have seen cases enough to justify me in saying it does not necessarily mean anything. I have a case in mind which I saw twenty-nine years ago. The pulsation was so prominent that one gentleman felt sure it indicated an aneurism. Another, a professor of clinical medicine, was quite sure there was something, he could not explain exactly what, and he thought there had been a pericarditis, with adhesions to the diaphragm, and gave a prognosis of consequent progressive enlargement of the heart. The pulsation continued quite prominent for eight or ten years and it finally pretty much disappeared. There is a slight mitral insufficiency and no material enlargement of the heart at the present time. I have seen several cases where I am quite satisfied that very strong epigastric pulsation, giving rise to great anxiety perhaps, does not necessarily mean anything.

With regard to mitral stenosis, my great difficulty has been to find any murmur at all, and I think that has given me more difficulty than other condition with regard to that particular valve. I had supposed that the seat of the maximum intensity of the aortic re-

¹ See page 106 of the Journal.

gurgitant lesion was where Dr. Cabot stated it to be, and I had been so long in the habit of considering it so that I had quite forgotten the teaching at the time I was in the medical school, and quite forgotten the fact it was at all generally considered otherwise. I think it has been—I would not say universally so in the cases I have seen, but certainly in a very large majority.

DR. SHATTUCK: Is it possible that this epigastric pulsation may be explained in some cases by a curvature of the spine in that region, a lordosis throwing the heart and great vessels a little farther forward than usual? That would seem to account for some cases of suspected abdominal aneurism.

DR. HEWES: I should like to ask Dr. Cabot if he thinks there is any circumscribed area for the normal apex beat. I ask this in connection with his statement that he found several cases of aortic regurgitation where he perceived no enlargement of the heart, as I understood. I think he said where there was no evidence of enlargement of the left ventricle. In my clinic this year and in former years, I have taken all the normal cases—cases in which the heart was normal—I could find, and tried to locate the apex, and I have found great variation in what we would call the normal position, sometimes as much as three-fourths of an inch in different people, so that it would be quite possible, it seems to me, to have some enlargement of the heart which would make it a large heart for the person in question and yet not be outside of the stated limits for all people. The existence of this variation may account for the apparent lack of hypertrophy in the four cases of aortic regurgitation mentioned. It is difficult to understand how this lesion of the aortic valve can exist for any time without causing enlargement.

DR. SHATTUCK: In a pure mitral stenosis we should have no enlargement of the left ventricle. I have seen this summer a number of cases where I had every reason to suppose I had pure mitral stenosis and yet had enlargement. My general position is that there is no statement any one can make about the connection between any form of cardiac disease and any kind of hypertrophy, and I think I have cases which will justify that. No one can say any form of cardiac disease is always accompanied by hypertrophy of one or the other ventricle, or that in such hypertrophy is always absent in it. I think we have to take a perfectly general and "expectant" position in regard to these points.

DR. CABOT: I am very much in a questioning attitude. Dr. Folsom says that the epigastric pulsation may not mean anything. I should like to ask what it does mean if it does not mean cardiac disease.

Then I want to have another question answered, as to what we are to do in these cases of presystolic murmur clearly recognized at the apex in the presence of an aortic regurgitation: are we to suppose the smallest number of causes possible and say there is no mitral lesion, or say that we do not know, or what is the proper and scientific thing to do? What are we to say to our patients? What are we to write in our diagnosis books?

In regard to Dr. Hewes's question as to where is the normal apex, I have gone on the general supposition that an apex in the normal position was one in which the percussion dulness (agreeing with the outermost points at which you could feel any rise and

fall of the chest) was within the nipple and not lower than the fifth space.

DR. FITZ: When I was accustomed to control clinical observations by autopsies I observed that not infrequently lesions of the heart were found that were not expected and were not found when expected. As regards the question Dr. Cabot has raised with reference to the diagnosis of mitral stenosis, I would say that I lay much more stress upon pulmonary accentuation and hypertrophy of the right ventricle than upon the characteristics of the murmur at the apex.

DR. WALTER E. PAUL read a paper on

EPILEPSY.²

DR. WALTON: Dr. Paul has opened a subject too large to discuss exhaustively, even in the three directions from which he has approached it. It is always of interest and value to hear from one who has treated a large number of cases of a disease so well recognized as this one, to know, for example, how far the clinical types and treatment really agree with the text-books. In regard to the etiology, which Dr. Paul has touched upon, although this branch was not included in his subject, there are several points of interest. I thoroughly agree with Dr. Paul's position that although toxins may act as the exciting cause of an attack, the real underlying condition is a defective neural endowment; that is, these patients are degenerates, unable to stand the stresses to which we are all subject. Under etiology I should like to speak of two symptoms which have been mentioned in connection with epilepsy, namely, infantile convulsions and migraine. It is, I think, not infrequently taught that infantile convulsions, even though disappearing, tend to produce or to fore-run epilepsy later in life. Again, migraine has been spoken of even in text-books as a sort of equivalent for epilepsy, and the fear has been held out in some instances that migraine may precede a tendency to epilepsy or that one may replace the other. I saw, not long ago, such a reference by a Russian writer. These two suggestions, it seems to me, lead to an unnecessary fear. Dr. Carter and I have studied the subject of infantile convulsions, examining a great many epileptics with regard to this point. We found no greater percentage of epileptics who had had convulsions in infancy, disappearing to return again as epilepsy, than we found in ordinary individuals. We did find, however, quite a number of cases in which the convulsions became continuous and led to epilepsy later in life. We drew the conclusion that given the case of an infant suffering from convulsions, we cannot assure the parents that that child will not become an epileptic, but we can say the chances are against it, because out of many such cases only a few become epileptics. We can, it seems to me, fairly assure them that if a child has ceased to have convulsions and grown to the age of twelve or thirteen, he is no more in danger of epilepsy than another child.

In regard to migraine, exactly why this symptom has been deemed analogous to epilepsy it is rather hard for me to see. In the first place, the absence of consciousness, which is the distinctive feature of epilepsy, is entirely wanting in migraine. In the second place, the sudden onset, the fall, the personal injury, is not even suggested in migraine; there is entire ab-

² See page 107 of the Journal.

sence of convulsion or anything of the sort; in fact, the whole picture is one from the sensory side, whereas epilepsy is evidenced largely on the motor side. It has occurred to me recently to start an investigation of epileptics with regard to the number of cases of migraine. I have only had a chance, so far, to question 35 patients, but this number already has brought out one or two interesting features. In the first place, it has shown a rather large proportion of migraine. Out of 35 patients, 13 gave a perfectly distinct history of migraine preceded by a blur and nausea, vomiting, malaise and headache lasting from a few hours to a day or over night. This does tend to favor the proposition that these two diseases have a common parentage, that they both occur perhaps among degenerates, still it is a long step from accepting this proposition to deciding that one stigma of degeneration will lead to the other, because, as we well know, almost every one has one or more signs of degeneracy; we are, however, far from deciding on this account that one is likely to become an epileptic. I should say with regard to these 13 cases, that although they may show a common parentage, yet they are far from indicating that migraine led to epilepsy, because in only four had the epilepsy occurred before the migraine, and of the four in which this was the order, all were typical cases of migraine, beginning at the usual time, namely, ten, twelve to fourteen years of age, and of those four cases one had been completely restored by use of proper glasses. All of them, by the way, had errors of refraction which the oculist to whom they were sent decided were quite sufficient to produce migraine, with the exception of one case of myopia, not, I believe, a common cause of migraine.

Coming to the question of complete loss of consciousness in diagnosis, I agree with Dr. Paul. All the text-books say so also, that complete loss of consciousness is the one characteristic feature of epilepsy without which we are hardly justified in making a diagnosis. I have been in the habit in my clinical exercises of having a half dozen or more patients recognized as epileptics brought in, and making a chart upon the board with the number of the case down the left-hand side, dividing the chart into squares and at the top writing the various symptoms of epilepsy, loss of consciousness, onset of attack (sudden or gradual), question of drooling or frothing, biting the tongue, injuring the face, passing the urine or feces, the cry, the aura, etc., and it invariably occurs that the one list which is uniform is the list under the head of loss of consciousness. They all have complete loss of consciousness, although by no means all drool or froth, and only perhaps half have an aura, or perhaps half void the urine. This is an important point in diagnosing epilepsy from hysteria, while medico-legally it is of the utmost importance in deciding whether a person who has performed a criminal act is to be adjudged a criminal or epileptic. Another important point is in connection with treatment. It is an undesirable thing to put hysterical patients on continuous bromide treatment. I have generally found in the doubtful cases, however, it is wise to regard them and treat them as epileptics.

Coming to medico-legal cases this question of loss of consciousness is a very important one. I remember a lecture of Wagner's in Leipzig, in which I understood him to say that a certificate should never be given of epilepsy unless the physician had seen the patient in

an attack. It certainly is true that we should not accept unquestioned the mere history of absolute unconsciousness, when there is an object to be attained by giving the history of epilepsy, as, for example, in the case of a criminal. A history of loss of consciousness may come from one or two other causes: the first is the good (or rather bad) old-fashioned one of lying, which, somehow of late, in medico-legal investigations, seems to be going somewhat out of vogue, but, unfortunately, it has not gone entirely out of practice. In short, when we find there is an object to be attained, we should investigate the case with the greatest care and not rely implicitly on the patient's statement. The second cause of mistake in diagnosis in these cases is alcoholism. It is not infrequent in murder trials to find the diagnosis of epilepsy brought up in defence in cases in which a considerable amount of alcohol has been taken. Now in these cases it seems to me that unless the history of epilepsy is very strong, and unless the proof is very clear that this was the occasion of an epileptic attack, if the person has taken a considerable amount of alcohol, the benefit of the doubt should be given to the alcohol and not to the epilepsy.

It has been demonstrated that epileptic attacks produce forgetfulness, not only for what has occurred during the epileptic attack, but for what has occurred immediately preceding the attack—so-called retrograde amnesia. Although this may be possible, it is certainly a rarity, whereas it is a common thing for a person under the influence of alcohol to go on, more or less in an automatic way, perhaps with conversations, and to carry on, I will not say his ordinary duties, but his ordinary pleasures, apparently conscious at the time of what he is doing, but retaining no memory of his acts.

It has been asked whether an attack of vertigo can be regarded as an attack of epilepsy. There are certainly many equivalents of epilepsy and one equivalent is a temporary giddiness in which the person loses consciousness, but recovers so immediately that he does not fall. This may be called a true epileptic vertigo, but when it comes to deeming vertigo without unconsciousness epilepsy, I should be inclined personally to draw the line. When we remember what a number of causes there are for vertigo, such as disease or disorder of the eyes, ears and stomach, if the person feels a tendency to fall in one direction or another, or really does so, retaining his consciousness, I should not regard that as epilepsy.

On the subject of treatment I have nothing to add except to emphasize the importance of institutions in which epileptics are kept as far as possible at work in the open air. The worst thing for an epileptic is to be continually watched, attended like an invalid, and guarded from all danger. I always tell parents that, far from doing this, they should take their chances within certain limits, remembering that with every child chances have to be taken when he goes bathing, sailing, or riding a bicycle, and that even if such sports were allowed, the chances would be only somewhat increased in case the boy were liable to an occasional attack of epilepsy. Certainly as far as the less dangerous sports are concerned, the advantage to be gained by watching a person every moment is nothing compared to the injury done by making him morbid on account of the feeling that he is continually under observation.

DR. E. M. GREENE: I do not know why I should be asked to speak unless it is desired to hear from a general practitioner who is more interested in the treatment of these cases than in the more refined scientific points. It seems to me that this idea of the epileptic as a degenerate is being more emphasized than it used to be, and that this degeneration shows itself not only in defective physique, but also by an impaired mental condition, or one which is very likely to become impaired in the future. In this connection a history of alcoholism in the parents is said to be much more frequent than the direct heredity of epilepsy. The hopeful thing at present, it seems to me, is the idea of establishing colonies for epileptics and giving them outdoor life, regular exercise, preventing any occasion for excitement, such as might occur in the evening in a city, and which is absent in the institution treatment, and also carefully regulating the diet. Epileptics are usually great eaters and very injudicious, and it is extremely hard to get them to carry out the proper diet that is prescribed for them. Now, looking at the epileptic as a degenerate, there are two ideas which occur to me which have a bearing on the treatment, especially the drug treatment. We see stated in the text-books the importance of using bromide in large doses, continuously, and for years after the attacks have stopped, in order to prevent their returning, and, on the other hand, we see almost nothing in regard to this newer idea of hygienic regulation of the epileptic's life. In these institutions I am told that very little bromide is given and in some cases not a dose. Personally I have seen some bad results from the use of bromide and, although it is in many cases very useful, yet we should not use it in a routine manner. For instance, to give three illustrations of harmful effects, I have seen in the case of a middle-aged man, who was the proprietor of a liquor store and led a very exciting sort of life, and had some chronic interstitial nephritis, that the effect of bromide was extremely depressing. While taking doses of only ten to fifteen grains three times a day, after a number of months he became strongly suicidal and was in a condition of mild melancholia. I let him go without the bromide, and could not see that he was any the worse for omitting it. Taking a vacation and going to Florida for several months, as he did in three successive years, he was very much relieved. When he came back to work he hated the bromide so much that he took quack medicine instead, and it is my experience that a great many of the more confirmed epileptics do resort to quackery, thus giving conclusive proof that the treatment which they have previously had from regular doctors has been unsatisfactory to them. This quack medicine, which did not taste at all as if it contained bromide, apparently accomplished more than the bromide had, although of course we must remember that the disease has its curious turns apart from treatment. In another case of an aged lady, whom Dr. Folsom saw this summer with me, where there was cerebral arteriosclerosis and typical epileptic attacks, bromide was exceedingly depressing. It was given in ten-grain doses only three times to control mental excitement and restlessness. On the first two occasions the patient went into a comatose condition which lasted some eight hours or more and which I attributed at the time to the progress of the disease and looked for a bad result. The patient recovered and went on in a very satisfactory condition

for a while. A third trial of bromide caused exactly the same state of affairs and I then concluded that it was more dangerous to give ten grains of bromide to this patient than one-fourth to one-half grain of morphine to an ordinary individual. Then in a third case I have seen bromide pushed to such an extent as to produce delusions and hallucinations of sight and of hearing in a person who had never shown any symptoms of insanity. The patient was sent to the McLean Hospital while I was resident there and treated without any medicine, simply as an insane person, and in about a week the symptoms began to disappear; the patient became entirely rational. It seemed to me in the anxiety to control the attacks in this case the doctor might have pushed the treatment in a routine way altogether too far. I have a feeling that, if, after a thorough trial for several months, the general condition of the patient is not satisfactory nor the number of attacks diminished, I should be very much inclined to give extremely small doses or omit it altogether, and preferably to substitute the outdoor life of a colony.

Another point which seems to me important, and which is emphasized in the text-books without very much evidence in support of it, is in regard to the question of omitting meat from the diet. If these people are degenerates, in a poor physical state, we do not want to depress their vitality by large doses of bromide, while at the same time interfering with their nutrition by depriving them of the valuable proteid elements. Some of the text-books advise entire abstinence from meat; almost all of them cut it down to a small amount once a day. I notice in the text-book of Wood and Fitz that the allowance of a moderate amount of meat twice a day is considered beneficial and the contrary treatment, entire abstinence, is regarded as of no value. In regard to this particular point, I have in mind a patient who was a poor man and went to the Massachusetts Hospital, where he was told to abstain entirely from meat and given a good deal of bromide, which was practically carrying out the treatment I had already given him. The attacks did not diminish at all and the man, getting discouraged, did as he pleased. I do not think he had carried out directions in regard to diet strictly, but when he gave up the attempt and indulged in meat as much as he liked and neglected to take bromide, he went two years without having any attacks at all. I should like to have some good evidence in regard to this diet question. In private practice this is very hard to get, but in these institutions the question ought very soon to be settled exactly what sort of diet is satisfactory, because there the diet can be absolutely controlled.

DR. FOLSOM: The diagnosis of epilepsy, of course, in the enormous majority of cases is very simple and the number of cases where there is any difficulty in diagnosis comparatively small, so that does not interest the physician in general practice very much. I do not know that I understand the reader and Dr. Walton, but if I do, it seems to me there are a good many attacks of epilepsy which they are inclined to deny, that is, cases of people who perform acts which seem to be entirely intelligent to persons observing them, and yet where there is complete amnesia. With regard to the etiology, the cases that I see now are usually people in fairly good circumstances in life, and very few of them are degenerates; a very decided minority are degenerates, and in looking over my

cases some time ago, I was surprised to find the large number of people in absolutely perfect physical condition, so far as one can see, and where the condition seemed to be due to a severe injury to the head or to successive injuries to the head. In regard to prognosis, it seems to me there are very few cases where one cannot do a good deal in epilepsy provided there are no signs of degeneration and no indications of decided mental trouble. I think after an epileptic begins to be distinctly demented, it is rather unusual for medical treatment to be of much avail, but I think before that if they show signs of dementia or organic trouble, in the vast number of cases the number of attacks can be enormously reduced in frequency and in severity. I do not think that that means always the giving of medicine. I think quite a number of cases do better without medicine of any kind than they do with any of the drugs which have yet been recommended for epilepsy, but the one which everybody finds of the greatest use, of course, is bromide in its various forms. Personally, I rarely give bromide of potassium or sodium, because they are more depressing to the heart than the ammonium or strontium and the bromide of sodium is more disagreeable in taste, but I think in the vast majority of cases a great deal can be got by giving them. There are various ways. One way is to begin with enormous doses and get the patient thoroughly bromidized. In my experience that does not do well at all. If you have your patient under your care for a few months you are more apt to get a striking diminution in the attacks, a more brilliant temporary result, but the ultimate result is usually bad. The vast majority of cases have to be treated many years. The way I have found most successful is to watch them closely and give the maximum amount of bromide which they can take without injurious effect. Of course some people get bromidized after small doses, some cannot take bromides at all in any form or quantity any more than iodides, and I rarely give either of these drugs in any considerable dose without their being under my observation almost daily for a sufficient length of time to be sure there is no idiosyncrasy and that you get no toxic action of the drug. Of course the cessation of attacks for a long time does not necessarily mean cure. I do not think I have ever seen in my life a case of epilepsy in which I felt satisfied of absolute cure. I have seen them go five, ten, or even twenty years without attacks, and have seen quite a number of cases I thought were cured, but in ten to fifteen years the attacks would come back, and one could hardly call it a new disease. I remember one gentleman who had attacks up to the time he was twenty years old, and they ceased forty-five years, until he was sixty-five. That is, of course, rather unusual. I do think you can get very satisfactory results in the treatment in the vast majority of cases. I think diet makes a great deal of difference. I don't think it makes much difference in the cases you would get in a colony provided you give a reasonably sensible diet, but patients whose nervous systems react rather readily I think are helped a good deal by a very careful diet. With regard to the manner of life, if people are reasonably intelligent, I let them regulate their lives themselves. I think it is the best way to do. They know what is likely to occur and they can regulate their lives accordingly. I remember a gentleman who was under my care some years whose life I did not think it was worth while to

regulate much in that way, and who saw two of the leading consultants in London at my request, and they advised him never to go anywhere unattended, never to be alone under any conditions whatever. He came back to this country and said that a few weeks of that satisfied him, that he would be nothing but a vegetating being in a short time, and led his life; went to riding horseback and canoeing, and in one of his attacks his canoe capsized and he was drowned, and I have no doubt he would say he did the best thing. A young lady, now a patient in this community, rides horseback, jumps over a three-foot fence on that same theory, and I am inclined to think on the whole she is sensible. She says that the minute she begins to restrict her life, her life is all gone, her usefulness ended, so that it seems to me that is a matter one has to leave very largely to the patients.

DR. KNAPP: I have been rather interested in the last few years in the discussions which have taken place as to the toxic theory of epilepsy, especially in the French journals, by an opportunity I have had of comparing the application of the theory to two patients who have been under my care for several years. In one case the patient tried his best to follow a careful régime, yet almost every attack that he has had for a period of half a dozen years could be traced directly to some disturbance of his digestion, or indiscretion in his diet. The other man, when the question of regulation of diet was brought up, said: "I will try to do what I can, but you know a man going out and dining must eat and drink what is set before him, and I cannot always follow a restricted diet." He has had fewer attacks than the other patient, and in no instance, with a single exception, in five or six years, have I been able to trace any connection whatever between any digestive disturbance or indiscretion in diet and the occurrence of the fit. Two cases, of course, in themselves, are of little importance, but it has always seemed to me that the toxic theory is by no means sufficient to explain the epilepsy excepting, as Dr. Paul and Dr. Walton have said, as an exciting cause of the individual attack.

In regard to the diagnosis, I agree fully with Dr. Walton in questioning very much the relation between migraine and epilepsy. We have all of us seen patients who have had migraine for very many years, whose children after them have had migraine, and yet there has been no history whatsoever of epilepsy in the family. I have not gone over my statistics of cases of epilepsy carefully, but my own experience is that very few cases of epilepsy have complained of anything like a typical migraine attack.

I am not quite so ready as Dr. Walton is to regard convulsions in infancy as a mild affair. I think if a child has convulsions it is an indication that the child's brain is a more unstable brain than that of the ordinary child. I admit of course that a young child will have convulsions from an exciting cause which the adult brain will not have, and when a child is brought to me with the history of convulsions in infancy I do not prognosticate epilepsy by any means, but I think that such a child is one most certainly to be watched. A considerable number of those cases in my experience have developed epilepsy later. In other cases the convulsions have proved to be the beginning of some structural disease in the brain, such as hemiplegia or some defective development of the brain leading to imbecility. I unfortunately did not hear the beginning of

Dr. Paul's paper, so that I do not know whether he brought up the point of the necessity for careful examination to see whether there is any trace of infantile hemiplegia which may be the cause of the epileptic trouble. I have found traces of infantile hemiplegia in a certain number of cases, although I think not quite so frequently as Dr. Sachs, of New York, has claimed. Convulsions in infancy, however, are somewhat serious, and I think that such a child should be carefully watched lest in later life trouble develop.

On the question of loss of consciousness I should agree in the main with what has been said. I think that loss of consciousness is the essential factor in making the diagnosis, yet I recall certain cases of undoubted epilepsy where occasionally in the attacks of petit mal the consciousness was not wholly lost. The patients have said that they retained a certain consciousness of what was going on about them; they sometimes have been able to give a correct account of things which were said or more rarely of things which were done during the clouding of consciousness of the petit mal. Furthermore, I have had occasion to question more than once whether the loss of consciousness could be regarded as a definitely distinctive symptom in the diagnosis between epilepsy and hysteria. I have had under my care this summer one of the most trying cases of convulsive attacks that I have ever had anything to do with in which the patient was certainly hysterical to the most extreme degree, presenting the typical stigmata of hysteria. He had attacks which were undoubtedly hysterical attacks, yet he had others in which there was a simple loss of consciousness without convulsion, and it was very difficult to determine whether those could be regarded as epileptic or as hysterical. And in the attacks which seemed more definitely hysterical he went through various automatic purposive movements, yet there was a complete loss of memory for what took place. One feature which had certain weight with me in deciding that there was a mixture of the two diseases was the fact that not infrequently the convulsive attack whose nature was doubtful came on during sleep; he was attacked in his sleep and thrown out of bed in the violence of the attack.

In the ordinary routine treatment of epilepsy I do not go quite so far as they do at the Massachusetts Hospital in the absolute cutting off of meat. I usually allow meat or fish once a day, but as a rule I advise against taking it at night, taking it either in the morning or at noon. My experience with patients is that the great majority of them are fairly ready to follow such regulations. One writer on epilepsy—I think it is Gowers, but I am not quite sure—has questioned whether meat really were so injurious to the epileptic as a good many of the text-books say, and I confess that I am still somewhat in doubt. I think we cannot lay down any absolute rule. We must treat the individual case, and we must especially study the patient's nutrition carefully; if we find under the limitation of meat that the patient is getting weak and pulled down, it becomes necessary to build him up in whatever way we can. In the routine treatment, furthermore, I depend chiefly upon the bromides. Dr. Greene has just spoken of the bad effects of bromide, and of the fact that the text-books say so little about the necessity of cutting off bromide. Dr. Peterson recently has argued quite strongly in favor of the complete cessation of the bromide in chronic epileptics who had been tak-

ing it for a long time. I think that in any event when we are giving bromide we must watch the patient carefully and be guided, not by any general rules as to whether it is desirable to cut off bromide or not, but by the patient's condition. Personally I have seen the bad effects of the large doses of bromide, getting the patient into a condition of bromidism, often enough so that I want to watch the cases very carefully and keep them, as Dr. Folsom has suggested, with about as much bromide as they can comfortably tolerate without getting them into the condition of bromidism.

The Flechsig treatment I have not had the opportunity of carrying out in its detail. I confess that to give the patient the doses of opium which Flechsig has recommended seems to me a somewhat risky thing in the ordinary patient who is wandering about and whom you cannot keep under your control; therefore, in the out-patient clinic I do not like to give it and unless I can absolutely depend upon the patient in private practice to report at the appointed time I hesitate then.

There is one modification of the bromide treatment which Dr. Paul did not speak of which has seemed to me a very valuable one in a considerable number of cases, and that is the combination of the bromides with some cardiac tonic, especially the mixture of adonis vernalis with codeia as recommended by Bechterew. I would agree fully with what Dr. Walton and Dr. Folsom have said about the bad effect upon the epileptic of putting him into too confined a life and forbidding him to do the things which he wants to do and desires to do. In that way I have been somewhat skeptical, I must confess, in regard to the advantages of the colonies for epileptics. Of course there are many cases which must necessarily go to a colony, but at the time the epileptic hospital at Monson was started I went over rather carefully a good many of the cases of epilepsy that had been under my care, and it seemed to me that on the whole, as they had gone on, it was not altogether the best thing to send them to an institution, to put them into a routine life where they were cut off from a good many of the enjoyments of their lives, and where they could not lead the ordinary life of the community which they were leading fairly well and which did not seem to harm them. In the same way we can recognize the possibility of harm to an epileptic from riding the bicycle, sailing, etc., but it is a risk which I think it is, on the whole, better for the ordinary epileptic to take who is having a convulsive attack once in two, four, six weeks or six months, than to feel that he is living an invalided, restrained, cramped life.

DR. PAUL: I would like to correct Dr. Folsom's impression that Dr. Walton and myself do not recognize the psychical equivalent of epilepsy.

Recent Literature.

Nervous and Mental Diseases. By ARCHIBALD CHURCH, M.D., and FREDERICK PETERSON, M.D. Pp. 843, with 305 illustrations. Philadelphia: W. B. Saunders. 1899.

Although bound in one volume this is really two separate treatises, one of which has since appeared in-

dependently. Of these Dr. Church has written the treatise on nervous diseases and Dr. Peterson the treatise on mental diseases. The principle of division is the old one — affections usually requiring restraint are called mental diseases, those rarely requiring restraint nervous diseases. The authors have missed an opportunity to write a treatise on diseases of the nervous system which should deal with those diseases as a whole, emphasize the need of psychiatric examination in all diseases of the brain, and describe paranoia, general paralysis and other cerebral affections which are apt to require restraint in their treatment, in their proper relation to other affections of the brain. By adhering to the old division there is considerable repetition in the introductory chapters of the two sections. The first part of the volume, on nervous diseases, is a fairly good presentation of the subject, although not fully abreast of our present knowledge. No notice is taken, for example, of Flechsig's association centres in the chapter on cerebral localization or of Dejerine's views in the chapter on aphasia. The style, moreover, is often obscure and involved, and the clearness so essential for the beginner is lacking. The work is, however, fairly complete in its presentation of the diseases of the nervous system, the conclusions are usually sound, and the illustrations are many of them original and good. The second part of the work, on mental diseases, is more clearly written, but its classification and description of mental diseases is much more antiquated. Great and unwarranted emphasis is placed on the stigmata of degeneracy, to which one-tenth of the second part is dedicated. Heredity is made prominent, without a word as to modern ideas questioning the possibility of inheritance of acquired characteristics. Strain is put forward as the other important causative factor, in which, as we find later, toxic influences are included, but the influence of toxic causes is not sufficiently emphasized. The classification, always a stumbling-block and always unsatisfactory, is old fashioned. Mania is the first affection described, and we hear nothing of the doubts as to the existence of mania as an independent disease. We read much of the exaggerated flow of ideas, and little as to the possibility that all mania is but a manifestation of periodic insanity. We find no mention of confusional states, and scanty mention — a trifle over a page — of primary dementia, while eighteen pages are given to the autobiography of a paranoiac, something over twice as much as is given to the account of the disease itself. Failing a work which should present the so-called mental diseases in their true relation to other diseases of the brain, it would have been desirable to give a more modern presentation of the subject for the student. Good modern books on insanity in English are rare. The discussion of insanity in the present work, however, is hardly to be commended.

Surgical Anatomy. A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By JOHN B. DEEVER, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. In three volumes. Illustrated by about 400 plates, nearly all drawn for this work from original dissections. Vol. I. Upper Extremity; Back of Neck; Shoulder; Trunk; Cranium; Scalp; Face. Philadelphia: P. Blakiston's Son & Co. 1899.

The first volume of this notable work is an extremely handsome book of six hundred pages, illus-

trated by one hundred full-page plates, most of them from original dissections. In this respect the book is a noteworthy exception to the majority of anatomical and surgical text-books, which are too apt to be content with plates borrowed from other and older works. The artistic work is excellent and details of structure are so well brought out that the plates resemble good dissections far more closely than those in the majority of other works of this kind. Superficial surgical anatomy and the lines of incision and dissection for operating on the nerves and arteries are admirably illustrated.

The descriptive text is in the main concise and clearly written. The book is eminently practical, and replete throughout with references to the surgical application of anatomical points, a feature which adds greatly to its value, by giving a practical interest to a large number of anatomical facts which the student is apt to regard as dry and uninteresting.

From the practical surgeon's point of view the surgical part of the work is not sufficiently full to enable it to take the place of works on operative surgery.

The excellence of the plates and text, however, will render it of great value to the surgeon in looking up the anatomy of special regions to be operated upon, so that it will prove a valuable addition to his working library. When the work is completed by the issue of the remaining volumes, the author and publisher will have the credit of having issued one of the handsomest as well as most complete and comprehensive works on the subject in existence.

The Hygiene of the Mouth. By R. DENISON PEDLEY, F.R.C.S. (Edin.), L.D.S. (Eng.), Dental Surgeon to the Evelina Hospital for Children, London. London: J. P. Segg & Co. Philadelphia: S. S. White Dental Mfg. Co.

This is one of the most important volumes on the subject of hygiene that we have seen. Its usefulness will be only limited by the extent of its circulation. The author has gathered a startling array of statistics from schools and hospitals, showing how widespread is dental caries in both the temporary and permanent teeth. He points out with great directness the evil results of decayed teeth upon the health of the sufferer, and cites many very interesting cases which show how far reaching in its disastrous consequences an unhygienic condition of the mouth may be.

The author has treated his subject with an earnestness and simplicity that is most convincing. He has refrained from advancing new theories for prevention or new methods for treatment, but he has sounded the alarm in no uncertain voice and pleads that the evil may be honestly faced and so far as possible eradicated. The book not only deserves to be in the hands of every physician and dentist, but should claim the attention of intelligent laymen as well.

SANITARY PROGRESS IN GUAM. — In a recent report by Captain Leary, Governor of Guam, it is stated, according to the *Medical Record*, that all precautions are being taken to improve the sanitary condition of the station but a suitable water-supply system is necessary in order that the ground cisterns and wells may be closed and sealed, as they are now contaminated. The evaporating plant at the station is nearing completion, and the sewage system from the government houses to the ocean will be finished in a short time.

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REPORT OF THE SURGEON-GENERAL OF THE ARMY.

As was to be expected from the expansion of our possessions, this last report of the Surgeon-General contains much matter which has not hitherto appeared. The exigencies of the war, of necessity, brought about many changes in the personnel of the Medical Department of the Army, much of which is already familiar to our readers. These matters relating to the hospital corps and nursing are discussed in detail, and the old story of Chickamauga and other camps again officially narrated. The facts of overcrowding and bad management generally are stated in an unvarnished fashion, and the reader is left in great measure to draw his own conclusions.

A statistical résumé of medical matters in Cuba, Puerto Rico and the Philippines is of interest, as showing how large a responsibility is being thrust upon the army medical service, and, we may also say, how well it is being met. This portion of the report is embellished by a number of half-tone photographs of hospitals in those countries. The hospital ship also comes in for its share of attention and illustration.

The *Bay State* receives rather scant notice and does not appear to have impressed the Surgeon-General with her usefulness. No mention is made of her service in transporting the sick during the war to northern ports, and in general the statements regarding her are less flattering than one could have wished. We quote the report's words in full:

"The hospital ship *Aid* was purchased from the Massachusetts Volunteer Aid Association in November, 1898. This vessel, formerly a fruit steamer, had been fitted up at considerable expense by the people of Massachusetts, and under the name of the *Bay State* was reported to have done good work during the previous summer. It was found, however, after a short experience during the occasionally severe weather of the winter months, that her motion in a seaway was such

as to render her unsuitable for the transportation of sick. While in New York Harbor getting ready for sea her ice machine exploded, killing one man, injuring 11 others, and causing much damage to her machinery. Her first voyage was with medical supplies to Santiago, Cuba, which she reached December 24, 1898. Thence she proceeded to Kingston, Jamaica, and Havana, Cuba, returning to Savannah, Ga., for more supplies January 24, 1899. She was then ordered to Cienfuegos, Cuba, the intention being to use her as a supply ship and floating hospital for posts on the southern coast of the island, but early in March, having suffered considerable damage from storms, her commanding officer, Capt. A. N. Stark, assistant surgeon, United States Army, was directed to take her to Newport News, Va., for repairs. Here she was turned over to the Quartermaster's Department, and her hospital property and personnel were carried by the *Missouri* to Havana, Cuba, to be used in outfitting the transport *Terry* as an extemporized hospital ship."

The statistics concerning the various diseases occurring in the army call for no detailed mention. The effects of typhoid fever were something appalling during 1898; 4,130 cases occurred in the regular army in that year, divided as follows: In the first quarter, 16 cases; in the second, 131; in the third, 3,089; in the fourth, 894. The usual bane of armies, venereal disease, shows 3,727 cases, fewer by several hundred than the cases of typhoid fever. Altogether, in spite of the good work now being done, the report is not altogether pleasant reading, in view of all that was left undone during the period it covers.

MILITARY SURGERY IN SOUTH AFRICA.

The stubborn resistance with which the Boers are meeting the British in South Africa has opened the eyes of the world to the thoroughness and adequacy of their preparations for the war, and led to no little criticism of the British Government and the War Office for alleged lack of preparation, and underestimation of the character and amount of resistance which was to be expected. Transportation and distribution of men and supplies seem to have been most effectively provided for. Whatever shortcomings, such as lack of cavalry and artillery, inadequate scouting or whatnot, have been brought to light with regard to the various branches of the service, one branch, the Royal Army Medical Corps, may be said not only to have shown no inefficiency, but on the other hand to have proved more than equal to the arduous tasks imposed upon it, both in preparation and execution. Sir William MacCormac, writing to the *Lancet*, after an inspection of the army hospitals at the Cape and in Natal, and having been present himself at the battle of Colenso, both at the field and base hospitals, as consultant and operator, writes to the *Lancet* that "in all the details of the necessary movements of the sick and

wounded, no army has ever been so well provided as ours is now in the field." He speaks in the highest terms of the medical arrangements as leaving nothing to be desired and expresses surprise at the wonderful recoveries and the very small death-rate. Universal testimony is given by those who have been at the front, that the surgical results are exceptionally good. This is no doubt partly attributable to the favorable nature of the Mauser bullet wounds, and to the healthful climate of South Africa, but the use of antiseptic dressings, the care taken to secure surgical cleanliness, the coolness and skill of the surgeons in the field, and the excellent arrangements for prompt aid and transportation of the wounded must be given no small share of the credit.

At the battle of Colenso a hospital train was actually run into the scene of action, and was ordered back by the chief medical officer when two shells burst close to it. The wounded were taken to the train directly from the field and all the wounds had been dressed, and dressed extremely well, under fire. "Very few of the dressings needed readjustment, and rifle-splints and tourniquets had been adjusted carefully and deliberately, under circumstances of great difficulty and danger."

At the field hospitals at Chieveley, which were situated on a hill about 400 yards outside the fire zone during the battle, there were three operating tents, where some 800 patients were treated during the day (December 15th). "The way in which the wounded had been dressed upon the field, and each man ticketed with the nature of his wound, his name and regiment, was excellent, and extremely useful for purposes of identification." The more trivial cases were sent to the tents, the severer cases redressed and operated upon by the four surgeons of the field hospitals and the three surgeons of the bearer companies.

Ambulance after ambulance, and stretcher squads in continual succession, poured in their quota to the long line of wounded, who lay in rows outside the hospital tents awaiting their turn. The work performed in the operating tents was of great efficiency, the operations being deliberately carried out with skill and despatch under the very trying circumstances of intense heat, hurry and excitement all round. The surgeons on duty began work at 3 A. M., and when Sir William visited them in the evening, they were still at it and continued for hours afterward without food or rest. As soon as the men were treated at the field hospitals, the hospital trains took them rapidly away to the base. Five trains carrying on the average 100 wounded each left between 2 P. M. on the 15th and 8 A. M. on the 17th. This wonderfully rapid and efficient work at the field hospitals was only made possible by the still more remarkable and heroic services of the medical force on the field and the 2,700 ambulance bearers under Major Stuart Wortley, who was able to report at 5.30 P. M. on the 15th, that the whole field had been cleared of wounded. During the battle Captain Hughes, R. A. M. C., on General Buller's staff, was

killed by a bullet which severed the intromittent artery, and Major Brannigan, R. A. M. C., was shot through the foot.

The hurried notes taken by Sir William at the field and base hospitals, though necessarily incomplete, teem with instances of remarkable recovery from Mauser bullet wounds of the head, the chest and the abdomen. Bullets traversing a lung, and sometimes both lungs, frequently produced no more symptoms than a slight hemoptysis, and almost invariably did well. One man who ran five hundred yards after a bullet had traversed his right lung, entering near the sternum and emerging near the spine, had no other symptoms than a slight hemoptysis, and was doing well when the notes were taken. Abdominal wounds where the positions of the openings of entrance were such as to make it seem impossible that the bullet had not perforated the intestines or stomach made excellent recoveries without symptoms.

The wounds which Sir William saw but a few hours after they were inflicted showed small openings of entrance and exit. Hemorrhage was exceptional, and the subsequent course of the cases was almost invariably aseptic, healing taking place rapidly under a scab. With regard to the remarkable recoveries after abdominal wounds, the conclusion becomes almost inevitable that the small punctures close up without leakage or extravasation. In these cases, as Sir William writes, "either mortal damage is inflicted, when no operation is possible, or the injury is recovered from without inconvenience to the sufferer."

A similar experience with the results of abdominal wounds by the Mauser bullet fell to the lot of the surgeons of the United States Army during the fighting before Santiago. Of head injuries Sir William writes: "The most extraordinary head wounds with damage to the brain seem in many instances to entail no mortal results."

The medical history of the Transvaal War bids fair to add immensely to our knowledge of military surgery, and the prognosis and treatment of wounds by the long-range, small-bore rifle with jacketed bullet. But however great may be the scientific results of this deplorable conflict, the medical profession throughout the world have already reason for pride in the heroism and efficiency of the medical officers on the field. May the work of the Royal Army Medical Corps deal a finishing blow to the fiction that the medical officer, as far as personal exposure is concerned, is a non-combatant! The following note is quoted by the *British Medical Journal* from the *Morning Post* of January 12th, written by the war correspondent of the latter at Magersfontein: "It is most necessary here to say a word in praise of the Royal Army Medical Corps, who faced a hot fire all day long, going close up to the firing line to bring back our wounded. It seems almost incredible that during the day five hundred wounded men should have been brought back by the Medical Corps, though to get them back stretcher bearers and searchers had

to cross and recross a zone of fire at least a mile wide."

A few verses in praise of the Medical Corps end as follows:

"But, here's to the man of the R. A. M. C.,
Buzzing about on the field like a bee,
Tending the wounded where lead's flying hot,
Biting his lip when he gets hisself shot;
Brave as the best of us, hurt and not tell,
Doctor he may be—he's soldier as well."

MEDICAL NOTES.

THE GALLINGER BILL.—Certain changes have been made in the Committee on the District of Columbia, relative to Senator Gallinger's bill for the "Further Prevention of Cruelty of Animals in the District of Columbia." The Committee, as it now stands, consists of Senator James McMillan, Michigan, Chairman, and Senators J. H. Gallinger New Hampshire; H. C. Hansborough, North Dakota; R. Redfield Proctor, Vermont; J. C. Pritchard, North Carolina; Lucien Baker, Kansas; George L. Wellington, Maryland; S. R. Mallory, Florida; W. V. Sullivan, Mississippi; W. A. Clark, Montana; Thomas S. Martin, Virginia; Wm. M. Stewart, Nevada; and Richard Kenney, Delaware. Personal letters may be addressed to them or to other senators. Petitions should be addressed to the Senate of the United States. For details regarding this bill, see Dr. W. W. Keen's letter in our issue of December 21, 1899.

SMALL-POX IN KENTUCKY.—It is reported that small-pox is prevalent in five counties of the State, and the State Board of Health is without money to meet the epidemic. Resignations of the county boards of health in about a dozen counties in which the disease is the most serious have been received. The cause of these resignations is the lack of money with which to combat the disease. Daily requests for inspectors come from other counties where small-pox undoubtedly exists, but the State Board has no money to send the inspectors, and county authorities refuse to take any action.

THREE CENTENARIANS.—It is reported that Mrs. Phebe D. Hedges, who recently died in New Jersey, was one hundred years and six months old. Her father was a minute man in the Revolution. Mrs. Sarah Weed, of Merrimac, Mass., it is claimed, has reached the age of one hundred and two years, and still finds herself interested in passing events. Mrs. Ellen Callahan, a native of County Cavan, Ireland, died in New York on January 22d, at the age of one hundred and one years.

BUBONIC PLAGUE AT ROSARIO AND HONOLULU.—The Argentine Government has issued a decree acknowledging the existence of bubonic plague at Rosario. The Government has decided to isolate the town from the rest of the country. It is announced that Major Taylor, at Honolulu, reports under date of January 15th, that there have been 34 cases of bubonic

plague and 27 deaths in Honolulu, and that the situation is serious.

DIED OF A BROKEN HEART (?).—The somewhat extraordinary statement is made that a horse, suddenly separated from his mate, refused food and finally died four days afterwards. The autopsy showed a ruptured heart, from which it is assumed the lesion resulted from the emotional disturbance incident upon the separation. Apart from this doubtful relation of cause and effect, the lesion is of considerable interest.

WIRE-CUTTING PLIERS FOR THE BRITISH ARMY.—A soldier at the front, in writing to a friend, has suggested the desirability of having a limited number of wire-cutting pliers issued to the troops, for the purpose of quickly cutting through barbed wire entanglements while under fire. The experience of the United States Army during the operations about Santiago might have forestalled this criticism.

NO YELLOW FEVER AT ORIZABA.—Cases of so-called yellow fever at Orizaba, Mexico, have been investigated by the Board of Health of the State of Vera Cruz, and they report that the disease is not yellow fever, but an acute form of malarial fever. Nearly 35 per cent. of the cases have been fatal.

FLEAS AND PLAGUE.—It is reported from Sydney, N. S. W., that a man has been infected with plague, probably by inoculation through the bite of a flea.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, January 31, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 93, scarlatina 61, measles 53, typhoid fever 6.

NEW OUT-PATIENT BUILDING FOR CARNEY HOSPITAL.—For a long time the building used as an out-patient department by the Carney Hospital has been inadequate to the increasing demands made upon it. Ground has been purchased in the neighborhood of the hospital, on which it is hoped to erect a substantial four-story brick building, about 51.85 by 55.38 feet, and arranged for ten clinics, with all the necessary facilities for the staff. The money necessary for this project must be raised in part by subscription; \$10,000 has been appropriated by the Legislature, under the condition that an equal amount be provided by those in charge of the institution.

NEW BUILDINGS FOR BOARD OF HEALTH HOSPITALS FOR BROOKLINE, MASS.—It is desired to improve the Board of Health Hospitals in the town of Brookline, that they may be able to meet the exigencies of a possible epidemic. The plan is to have three new buildings erected in the southern part of the town on the site of the old buildings.

A NEW MORGUE FOR BOSTON.—The contract for the building of a new and much-needed city morgue on North Grove Street has been awarded, and the work of construction will begin at once. The appropriation amounts to \$9,000.

NEW YORK.

A CASE OF AMNESIA. — In the *JOURNAL* for October 6, 1898, a notice of an interesting case is given, in which a Norwegian, as a result of an injury to the brain, for which he was treated at St. Vincent's Hospital, New York, entirely forgot his native language, although he was able to speak with some difficulty in English. Since then the man has been living in New London, Conn., and a recent account of him published in the newspapers states that he has never regained the use of Norwegian, and that, although in a normal condition in other respects, he still has absolutely no memory of events occurring or persons met with previous to his accident.

ERYSIPELAS AT AN INFIRMARY. — Several cases of erysipelas having appeared in the wards of the S. R. Smith Infirmary, at New Brighton, Staten Island, the principal hospital in the Borough of Richmond, and ordinary methods having failed to check the spread of the disease, the medical staff have determined to isolate all the erysipelas patients in the contagious wing of the hospital. Consequently it has been necessary to give notice that no more cases of diphtheria or other contagious disease can be received at the institution for the present, and hospital cases of this character will have to be taken to Manhattan or Brooklyn for treatment.

A BOOK ON MUNICIPAL GOVERNMENT. — Announcement is made that Mr. Bird S. Coler, Controller of the City of New York, is about to publish an important work entitled "Municipal Government," in which he will set forth the practical working of the new charter as regards the various city departments, and point out such defects in the charter as have shown themselves in its administration. It is understood that in it he devotes much attention to the water supply, present and future, and to a discussion of municipal charities and of private charitable institutions, and their relations to the public and to the City Government.

A BEQUEST TO CORNELL. — The twentieth annual dinner of the Cornell University Alumni Association, of New York, was held on January 26th. The guest of honor was Dr. Jacob Guild Schurman, President of the University, and in the course of his remarks he announced that an anonymous gift of \$80,000 had recently been received for the erection of a building devoted to the study of anatomy and physiology.

ARMY NOTES.

STUDY OF TROPICAL DISEASES IN THE PHILIPPINES. — By direction of the Secretary of War, a board of medical officers, consisting of Lieutenants Richard H. Strong and William J. Calvert, assistant surgeons, and Acting Assistant Surgeon Joseph J. Curry, United States Army, has been appointed to meet at one of the general hospitals near Manila.

Philippine Islands, for the purpose of studying tropical diseases as they occur in those islands. The board is to receive its instructions from the Surgeon-General and will be under the immediate direction of the chief surgeon at Manila. Drs. Strong and Calvert are graduates of Johns Hopkins University Medical Department, and have devoted considerable time to the study of pathology and bacteriology. Dr. Curry has been in the service since the outbreak of the war with Spain and has served as pathologist and bacteriologist at Chickamauga Park and at the general hospitals at Fort Myer, Va., Savannah, Ga., and Manila, P. I. He was formerly attached to the pathological department of the Boston City Hospital.

DENTISTS AND VETERINARIANS FOR THE ARMY. — Strong efforts are being made to induce congressional action establishing a corps of dental surgeons in the military establishment. The latest proposal is to appoint a dental surgeon with the rank of major to each 1,000 men. As the grade of major is attained by the army medical officer only after eighteen or twenty years' service, it is scarcely possible that any such discrimination in favor of dental surgeons will be made. The services of dentists are much needed by troops serving on foreign stations and it is probable that Congress will authorize the hiring of competent men to satisfy this need, under the same regulations as those under which contract surgeons are now employed. It is also urged that veterinary surgeons should be admitted as commissioned officers. The plan is said to be opposed by Surgeon-General Sternberg and Adjutant-General Corbin.

FORT BAYARD HOSPITAL FOR TUBERCULOSIS. — The post of Fort Bayard, New Mexico, has been discontinued as a military station for troops and all the buildings pertaining thereto have been turned over to the Surgeon-General for use in connection with the general hospital at that post, established for the treatment of pulmonary tuberculosis occurring in officers and enlisted men of the army. We have already had occasion to refer editorially to this action of the War Department as a needed and most desirable means of increasing the efficiency of the medical service.

Miscellany.

PRECAUTIONS AGAINST THE IMPORTATION OF PLAGUE.

We learn from the *Lancet* that the Local Government Board for Scotland, in a circular letter dated January 15, 1900, again calls the attention of local sanitary authorities to the presence of plague in Portugal and the necessity for carrying out "with especial care" the measures in force in these islands for preventing the importation of infection. Their notice is specially directed to a general order issued by the Commissioners of Customs on October 31st of last year. The object of that order was "to make certain that in carrying out the regulations of the Board the

medical officer of health shall receive the greatest possible assistance from officers of customs," and it is pointed out that, on one occasion at least, such assistance was actually declined by an inspector of customs. The mechanism adopted for joint action by the medical officer of health and customs officials for dealing with arrivals from infected ports is briefly as follows: The officers of customs look to the medical officer of health to inform them from time to time of any particular ports or countries, the vessels arriving from which he would desire to visit. In this connection it is pointed out in the letter of the Board that "the earliest information which would usually be available to this end is that which would be obtained by a regular examination of the news telegraphed from abroad for the purposes of the daily press. On the other hand, the officers of customs will, in their turn, give the medical officer of health any information which they may possess respecting the arrival or impending arrival of any ships from the ports or countries in question. The term "medical officer of health," it may be noted, includes any duly qualified medical practitioner appointed or employed by a local authority to act in the execution of the orders relating to plague. Attention is also drawn to the possibility of the infection of plague being carried by some of the lower animals, and especially by "rats, mice, and, by natural sequence, cats," and the necessity for inquiring into the evidences of disease in these animals and taking measures for destroying them if occasion should arise. That rats can and do suffer from plague and are an important means of diffusing infection appears no longer to admit of doubt. The susceptibility of mice appears to be very much less marked, and these animals would seem to be far less active agents in the spread of plague than rats. There is, however, evidence that they can aid in spreading the disease and it is believed that they did so to some extent in Formosa, in Jeddah, in Alexandria, and perhaps elsewhere. Cats, the third group of animals mentioned, appear to be even less susceptible than mice. Scattered samples of what have been believed to be attacks of plague in cats have been published from Poona Worlee, Jawalapur and elsewhere in India, and from Hong Kong, Jeddah, Mongolia, Hoihow, Mauritius and Oporto; but it is perhaps open to question whether in any instance there has been scientific proof that the animals have in truth suffered from the plague.

THE DISCOVERY OF SCABIES.

ALTHOUGH, as far back as the twelfth century, Avenzoar described a disease of the skin characterized by the presence beneath the epidermis of animalcule resembling lice, so small as scarcely to be visible, which, he remarked, could be extracted by scratching the skin, the disease now universally known as scabies was, even as recently as this century, regarded as a constitutional affection associated with cachexia and inflammation. It appears, however, that Rabelais, who, though a doctor of medicine, is better known as a political writer than as a physician, was well acquainted with the disease, and was perfectly cognizant of its nature, contagiousness and treatment. It is narrated indeed in his famous work that one of the ancestors of Pantagruel was "exceedingly expert in removing worms from the hands," and elsewhere

Rabelais laments the death of a medical friend who died in consequence of his having accidentally wounded himself in removing one of these worms with a paper knife. The re-discovery of itch in France dates from 1835, when a medical student demonstrated to Alibert, incredulous, how in his native land of Corsica the peasants withdrew the parasite by the aid of a needle, a feat which he repeated in Alibert's clinic. In a recent monograph on the subject it is shown that the disease has been discovered and re-discovered some half-dozen times, at intervals of centuries. How often is this the case with medical discoveries? The worst of it is that treatments which have been again and again discovered and dismissed as useless or injurious are from time to time once more brought forward only to excite and cause fresh disappointment. If contemporary discoverers would only take the trouble to consult Neale's Digest or the *Index Medicus* before launching their fancied innovations, they would often be dissuaded from encumbering medical literature with their "mare's nests." — *Medical Press*.

TYPHOID INOCULATIONS.

AN interesting article by Dr. A. E. Wright and Major W. B. Leishman, professor and assistant professor of pathology at the Army Medical School, Netley, on the results which have been obtained by the anti-typhoid inoculations and on the methods employed in the preparation of the vaccine may be found in the *British Medical Journal*, January 20th. Of 2,835 men inoculated in India from a force of about 11,000 troops, and a large proportion of those inoculated were unseasoned recruits especially prone to typhoid, only 27, or .95 per cent., took typhoid fever and only 5, or .2 per cent., died, whilst of 8,460 uninoculated men, many of whom had passed safely through previous exposure, 213, or 2.5 per cent., contracted the disease, and 23, or .34 per cent., died. These observers are inclined to the belief that the protection of inoculation may last at least eighteen months, and that the type of disease when contracted after inoculation is perhaps a mild one.

The conditions for keeping and preparing the material for inoculation were not in all respects favorable, otherwise possibly even better results might have been obtained.

Correspondence.

ASEPTIC MILK.

AUGUSTA, ME., January 23, 1900.

MR. EDITOR:— At the suggestion of the municipal authorities of Augusta, Me., I began in June, 1899, an investigation of the milk supply of that city, and some facts and conclusions arrived at by myself and co-workers, as set forth in my report, may be of interest to the profession.

That milk is an almost perfect culture medium for all pathogenic bacteria, and consequently should be handled under well-studied antiseptic precautions, is a fact well known but too much ignored by the profession which aims at saving life, especially in smaller cities and villages. Milk occupies on our diet list a unique position, for several reasons: (1) It contains no refuse matter; (2) It contains members of all the essential food elements, namely: Albu-

mins are represented by casein and lactalbumin, which amounts on an average in 100 specimens examined by the writer to 3.4 per cent. Fats are represented by butter fat, about 3.7 per cent.; while the hydrocarbons are represented by milk sugar, averaging 4.7 per cent.; lastly, we have in the "ash" the inorganic salts. It occupies a unique position for another very important reason, in that it is practically the only food staple taken into the stomach unsterilized by cooking, and no food needs sterilization more.

Ernest Finchman, of London, makes a statement, as he says, largely on theoretical grounds, that "milk immediately taken from the cow's udder contains no bacteria, but before it is fairly settled in the pail it contains more than 10,000 to the cubic centimetre." I must record a different result from my observations, for in every instance where, under the strictest antiseptic precautions, I have withdrawn milk from the cow, I have found bacteria of various kinds; most conspicuous were "bacillus coli communis," which could not have come from outside contamination. My method of "milking" was as follows: The udder was rendered as nearly surgically clean as soap, alcohol, permanganate of potash, and corrosive sublimate would render it; then a sterilized silver canula with a sterilized rubber tube attached, with the distal end closed, was inserted into the udder. The milk was allowed to run for two minutes, and then a portion was received into sterilized flasks, and cultures made immediately. Some of the bacteria found were non-pathogenic, such as the *oidium lactis*, but in one specimen tubercle bacilli were clearly demonstrated, and in several the *bacillus coli communis*. I will not here enumerate all the varieties found by the tests.

There is nothing surprising in finding bacteria in the milk ducts, when we stop to consider that the udder is by no means an hermetically sealed part. Bacteria of any sort which happen to be in contact readily gain access and follow up the lacteal ducts even to the minute ramification of the milk gland. If the gentle bovine happens to be wading in a swamp, or lying in a dung heap, both of which customs she is prone to indulge in at favoring opportunities, her flanks, hair and udders, of course, swarm with bacteria. Certain micro-organisms, for instance, that which produces lactic acid fermentation and those which determine the color of milk, exist normally in the milk. The *oidium lactis* may be well likened to the yeast germ, and in itself is equally harmless, as are also the parachromophoric bacteria whose products color the milk. If the normally existing bacteria in milk were all that we had to deal with, fewer children would die with cholera infantum, ileocolitis and other zymotic diseases.

Probably the one bacillus giving us the most trouble is *bacillus coli communis*, which, as is well known, exists normally in the colon of all warm-blooded animals, and when existing to excess gives us diarrhea, dysentery, ileocolitis, cholera infantum, or perhaps only chronic intestinal indigestion of a milder degree. It is vastly different to possess a small, or we might say a normal, number of these bacteria in the intestine, or have an excess of the same. The animal economy can cope safely with a certain amount of poison, or a certain number of bacteria, but beyond this point, differing as to the "vital resistance," we may not go with impunity.

Were it possible for all infants brought up on artificial food to receive at all times a supply of cows' milk which was free from putrefactive and pathogenic bacteria, a result would be obtained beside which all other sanitary and hygienic improvements of the past half century would seem insignificant.

Leipsic, in a paper presented to the Düsseldorf Congress in Berlin, gives the following résumé: "The continuous use of milk sterilized by heat by infants leads to a large number of cases of impaired digestion and nutrition, anemia, rhaehitis and scurvy, and in any case a predisposition to any and all infections." Of refrigeration nothing need be said, except that only during continuance of the low temperature a slight retarding of the development of bacteria is accomplished. The sterilization of milk by

chemical means as it has been practised by milkmen, dairymen and "contractors," has been very crude and faulty. Good reason for objections to the use of boracic acid, bicarbonate of sodium and salicylic acid exists, based on clinical and laboratory experimentation. The one agent, bicarbonate of sodium, which appears perhaps the most harmless is by no means the least harmful, though in itself non-toxic. It is a very feeble germicide, but what it accomplishes in milk which gives a false sense of security is to neutralize the acids produced by fermentation, while not retarding the development of the germs which produce the acids. In other words, it puts a mask on the milk, so that it does not present the gross badness with which we associate decomposition, while at the same time all sorts of bacteria may be swarming in the fluid. Boracic acid, more germicidal and also practically non-toxic, when in milk in sufficient amount to prevent development of bacteria, also has an inhibitory effect on the digestive enzymes. Salicylate of sodium has a place in our armamentarium, but it is removed from the dairy and kitchen, for the same reasons that apply to boracic acid.

There has recently been brought forward by Reinhardt, of Berlin, a chemical which combines some very valuable properties, hitherto uncombined in any other single substance. To it he gives the chemical name "iso-ethylene." It is formed something after the manner of formaldehyde, that is, by destructive distillation of ethylic alcohol. While it possesses some of the characters of formaldehyde it is lacking in other essentials. The exact architecture of the chemical equation is still a matter of doubt, though the properties have been studied for two or three years. It is volatile at temperatures above 100° F. Its germicidal action is slightly less than formaldehyde. It responds feebly to the ferric-chloride test for formaldehyde, as do two or three other analogous bodies. I have recently made some experiments with it on animals, and cannot learn that it inhibits digestion in strengths sufficient to entirely stop development of bacteria in milk and bouillon. It is effectual only during its presence, and this in part explains the reason that it has no inhibitory action on digestion, for the body temperature is sufficient to at once volatilize it.

Even though this substance "iso-ethylene" possess all the advantages we hope for it, it will be looked upon with some doubt, because many of the chemical agents hitherto used in milk are in disrepute, and for good reasons. It would seem from some recent experiments that we were nearing the proper solution of the "antiseptic milk" question. It is certainly a subject worthy of the most careful study and research, and anything new which bears upon the subject should be given to the profession.

Very truly yours,
G. M. RANDALL, M.D.

METEOROLOGICAL RECORD

For the week ending January 20th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S.. 14	30.04	29	34	24	63	93	80	W.	S.	10	4	C.	N.	.04
M.. 15	30.30	34	38	30	74	82	83	N.	S.	8	8	O.	O.	.04
T.. 16	30.12	41	43	34	87	72	80	S.	N.W.	12	14	O.	C.	.12
W.. 17	30.59	30	35	24	57	62	60	N.	E.	15	11	C.	O.	.0
T.. 18	30.45	27	34	20	73	74	74	N.W.	S.E.	4	2	N.	O.	.0
F.. 19	30.05	46	60	33	87	85	86	S.W.	S.W.	6	10	G.	C.	.0
S.. 20	29.48	48	56	39	98	88	93	E.	S.W.	4	16	G.	O.	.43
☞	30.15		43	29			79							.63

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JANUARY 20, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,550,053	1351	450	21.70	19.60	.70	3.64	1.96
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	525	160	21.47	16.34	1.52	7.22	.19
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	222	58	28.80	19.80	1.35	7.65	1.35
Baltimore . . .	506,389	186	52	18.36	21.60	1.62	3.78	.54
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	128	42	15.60	17.94	7.80	.78	1.53
Washington . . .	277,000	106	27	13.16	22.56	1.88	—	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	43	—	60.58	39.61	2.33	6.99	—
Nashville . . .	87,754	38	8	22.88	28.60	—	—	—
Charleston . . .	65,165	26	6	7.70	—	3.85	3.85	—
Worcester . . .	111,732	37	12	18.90	10.80	—	2.70	2.70
Fall River . . .	103,142	36	7	27.70	13.85	2.77	—	—
Cambridge . . .	92,520	35	12	22.80	8.55	—	2.85	—
Lowell . . .	90,114	36	5	22.16	22.16	2.77	2.77	—
New Bedford . . .	70,511	14	2	14.28	—	7.14	—	—
Lynn . . .	68,218	17	3	15.33	23.52	—	17.62	—
Somerville . . .	64,394	21	9	9.42	28.56	—	—	—
Lawrence . . .	58,072	20	8	20.00	35.00	—	10.00	5.00
Springfield . . .	58,266	8	1	12.50	25.00	—	—	—
Holyoke . . .	44,510	8	2	33.33	34.33	16.66	—	—
Brookton . . .	38,750	6	2	11.76	11.76	5.88	—	—
Salem . . .	37,723	14	5	—	—	—	—	—
Malden . . .	36,421	17	2	16.66	—	—	—	—
Chelsea . . .	34,235	12	2	33.33	11.11	—	11.11	—
Haverhill . . .	32,651	9	3	28.56	—	—	—	—
Gloucester . . .	31,426	7	1	—	20.00	—	—	—
Fitchburg . . .	30,523	10	1	—	—	—	14.28	—
Newton . . .	30,461	7	3	28.57	—	—	—	—
Taunton . . .	28,527	11	2	18.18	27.27	—	—	—
Everett . . .	28,102	6	2	—	50.00	—	—	—
Quincy . . .	24,578	8	2	12.50	25.00	—	—	—
Pittsfield . . .	23,421	7	2	14.28	14.28	—	—	—
Waltham . . .	22,791	7	2	—	14.28	—	—	—
North Adams . . .	21,583	6	1	50.00	16.66	—	—	—
Chicopee . . .	18,316	9	4	11.11	—	—	—	—
Medford . . .	17,190	6	—	33.33	—	—	—	—
Newburyport . . .	15,036	3	1	—	—	—	—	—
Melrose . . .	14,721	—	—	—	—	—	—	—

Deaths reported 3,015; under five years of age 1,008; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 565, acute lung diseases 593, diphtheria and croup 128, measles 50, typhoid fever 43, scarlet fever 27, whooping-cough 19, cerebrospinal meningitis 19, diarrheal diseases 17, erysipelas 14.

From scarlet fever New York 13, Boston 6, Philadelphia 4, Cambridge 2, Washington and Worcester 1 each. From whooping-cough New York 11, Philadelphia and Baltimore 2 each, Boston, Nashville, Fall River and Chelsea 1 each. From cerebrospinal meningitis New York and Worcester 4 each Somerville and Gloucester 2 each, Boston, Baltimore, Washington, Providence, Lynn and Amesbury 1 each. From diarrheal diseases Fall River 4, Providence 3, New York, Philadelphia, Pittsburg and Nashville 2 each, New Bedford 1. From erysipelas New York 7, Boston 3, Philadelphia 2, Baltimore and Lowell 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending January 13th, the death-rate was 29.1. Deaths reported 6,074; acute diseases of the respiratory organs (London) 994, measles 142, whooping-cough 105, diphtheria 89, fever 56, diarrhea 31, scarlet fever 27, small-pox (Hull) 3.

The death-rates ranged from 15.6 in Burnley to 44.9 in Nottingham; Birmingham 33.6, Bradford 20.0, Bristol 20.1, Gateshead 22.4, Hull 22.3, Leeds 21.5, Liverpool 34.6, London 33.3, Manchester 23.0, Newcastle-on-Tyne 22.0, Sheffield 25.5, West Ham 22.2.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 27, 1900.

H. N. T. HARRIS, surgeon, ordered to the "Albany" via the "Prairie."

L. L. VON WEDEKIND, passed assistant surgeon, ordered to duty on the "Richmond."

(CHANGE BY CABLE FROM ASIATIC STATION.)

R. C. HOLCOMB, assistant surgeon, detached from the "Solace" and ordered to the "Helena."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 25, 1900.

WILLIAMS, L. L., surgeon. Granted extension of leave of absence for ten days. January 23, 1900.

PETTUS, W. J., surgeon. Granted leave of absence for one month and twenty-nine days from February 10th. January 22, 1900.

PARKER, H. B., assistant surgeon. Directed to report at Washington, D. C., for special temporary duty. January 23, 1900.

FRICK, JOHN, acting assistant surgeon. Granted leave of absence for thirty days from February 28th. January 25, 1900.

BOARD CONVENED.

Board convened to meet at 378 Washington Street, New York, N. Y., on Wednesday, February 7, 1900, for the purpose of examining candidates for appointment as assistant surgeons in the Service. Detail for the Board; Surgeon H. W. AUSTIN, Chairman; Surgeons C. E. BANKS and L. L. WILLIAMS, Recorder.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, February 5th, at 8 o'clock.

Subject: "Splenic Anemia." Dr. James M. Jackson will open the discussion with a short paper and report of a case. Drs. F. C. Shattuck, Hewes, Morse, Wentworth, Fitz and others will report cases. Any member having a case is urged to be present and report it.

Dr. Jas. S. Stone will read a paper entitled, "Injury to the Shoulder-joint at Birth."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION.—The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, February 7, 1900, at 8.15 o'clock.

Papers: "The Operative Surgery of the Knee-joint for other than Tubercular Disease," by Dr. J. E. Goldthwait.

"Varieties of Bacteria in Abdominal Infections," by Dr. Daniel Fiske Jones.

F. G. BALCH, M.D., Secretary, 279 Clarendon St.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.—A regular meeting will be held on Wednesday, February 7th, at the Medical Library, 19 Boylston Place, at 1 o'clock, P. M.

The following papers will be read:

"Declarations of Persons Immediately Preceding Death," by District Attorney M. J. Sughrue.

"The Marks Produced by Pistol Shots," by Dr. G. deN. Hough.

"A Case of Extra-uterine Pregnancy," by Dr. F. Holyoke.

Members of the medical profession are cordially invited.

JULIAN A. MEAD, M.D., Secretary.

NATIONAL PURE FOOD AND DRUG CONGRESS.—The third annual meeting of this Association will be held in Washington, D. C., beginning Wednesday, March 7, 1900.

RESIGNATION.

CHARLES G. CUMSTON, M.D., has resigned his position of professor of surgical pathology in the Tufts College Medical School.

RECENT DEATHS.

CLARA COOLIDGE WILLIAMS, relict of the late Dr. Lewis Williams and aunt of Dr. Roswell Park, of Buffalo, died in Pomfret, Conn., January 22d, aged eighty years, one month and twenty-nine days.

JOHN CARGILL SHAW, M.D., professor of diseases of the nervous system at the Long Island College Hospital, Brooklyn, died on January 23d, of pneumonia, resulting from influenza. He was fifty-five years of age, and was born in the Island of Jamaica, West Indies. He was graduated from the College of Physicians and Surgeons, New York, in 1874. Having won distinction as a specialist in nervous diseases he was appointed superintendent of the Kings County Insane Asylum, where, by the introduction of modern methods, he revolutionized the treatment previously in vogue there. Later he returned to private practice and was successively elected president of the New York Neurological Society, the Kings County Medical Society and the Pathological Society. At the time of his death he was consulting neurologist to the Kings County Hospital, St. John's Hospital, St. Catherine's Hospital and other Brooklyn institutions.

WILLIAM S. HOUSE, M.D., a prominent physician of Rockland County, N. Y., died at his home in Haverstraw, on the Hudson, on January 27th, of apoplexy. He was in the sixty-third year of his age.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Commissioner of Education for the Year 1897-98. Vol. II.

Ueber Tanocol, ein neues Darmadstringens. Von Dr. Gölner, Erfurt. 1899.

Twentieth Annual Report of the Associated Charities of Boston, November, 1899.

Old Times and New. By Sara Hammond Palfrey. Boston: W. B. Clarke Co. 1899.

Massachusetts Institute of Technology, Boston, Twenty-fifth Annual Catalogue, 1899-1900.

Preliminary Catalogue of Plants Poisonous to Stock. By V. K. Chesnut, B.S. Reprint. 1898.

Sixth Annual Report on Births, Marriages, Divorces and Deaths in the State of Maine, 1897.

Over 3,000 Questions on Laws of the Human Body or Physiology. By Prof. J. P. Schmitz, M.D.

The Harvard University Catalogue, 1899-1900. Cambridge: Published by the University. 1900.

Historique des Applications Pratiques de la Phonétique Expérimentale. Abbé Rousselot, Paris. 1899.

A Plea for the Treatment of Typhoid Fever by Cold Baths. By Charles Shattinger, M.D. Reprint. 1899.

New War Map of the Transvaal and South Africa, corrected to date, 1899. Philadelphia: Published by J. L. Smith.

Ein modificirter "Cauterisator prostatae" zur Bottini'schen Operation. Von Dr. Albert Freudenberg, Berlin. 1899.

Brain in Relation to Mind. By J. Sanderson Christison, M.D., author of "Crime and Criminals," etc. Chicago. 1899.

Transactions of the American Orthopedic Association, Vol. XII. Philadelphia: Published by the Association. 1899.

The Aristophilon: A Nemesis of Faith. By Frank D. Bullard, A.M., M.D. Chicago: R. R. Donnelley & Sons Co. 1899.

The Lute and Lays. By Charles Stuart Welles, M.D. New York: The Macmillan Co. London: Geo. Bell & Sons. 1899.

Two Cases of Spontaneous Rupture of the Heart with Demonstrations of Specimens. By A. W. Hoisholt, M.D. Reprint. 1899.

List of Local Boards and Bureaus of Health in Pennsylvania. Extracted from the Fourteenth Annual Report of the Board, 1898-99.

Fifth Annual Meeting of the Associated Health Authorities of Pennsylvania. Extracted from the Fourteenth Annual Report, 1898.

Lessons from Two Hundred and Twenty-four Consecutive Abdominal Sections. By J. H. Carstens, M.D., Detroit, Mich. Reprint. 1899.

A Case of Ectopic Gestation; Rupture; Hæmorrhage; Operation; Recovery. By J. M. Elder, B.A., M.D., C.M., Montreal. Reprint. 1899.

Transactions of the Medical Society of the State of California, Twenty-ninth Annual Session, Vol. XXIX, April, 1899. Published by the Society.

Transactions of the American Association of Obstetricians and Gynecologists, Vol. XI, for the Year 1898. Philadelphia: Wm. J. Dornan. 1899.

How Surgery Became a Profession in London. By D'Arcy Power, M.A., F.S.A., F.R.C.S. (Eng.). London: Medical Magazine Association. 1899.

International Clinics. Edited by Judson Daland, M.D. (Univ. of Pa.), Philadelphia. Volume III. Ninth Series, 1899. Philadelphia: J. B. Lippincott Co. 1899.

The Etiology and Classification of Cystitis. Excision of High Rectal Carcinoma without Sacral Resection. By N. Senn, M.D., Ph.D., LL.D., Chicago. Reprints. 1899.

The Wisdom of Surgical Interference in Hæmatemesis and Melæna from Gastric and Duodenal Ulcer. By G. E. Armstrong, M.D., Montreal. Reprint. 1899.

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Original Articles.

THE MASSACHUSETTS STATE HOSPITAL FOR CONSUMPTIVES AT RUTLAND; ITS PURPOSE AND THE WORK ACCOMPLISHED DURING THE FIRST YEAR.¹

BY VINCENT V. HOWDITCH, M.D., BOSTON.

In the spring of 1895 the Massachusetts State Legislature, upon the suggestion of physicians and members of the city, appropriated a sum of money for the establishment of a hospital, or sanitarium, for the treatment of consumptives in a suitable location in the State.

The hilly region of central Massachusetts, in the town of Rutland, about twelve miles northwest of Worcester, was wisely selected by the Board of Trustees, and in October, 1898, Governor Wolcott formally declared the institution to be ready to receive patients.

This event marked an epoch in the treatment of tubercular disease in our country, inasmuch as it was the first legislative attempt in the United States to cope with consumption and other diseases of tubercular origin.

The sanitarium treatment of phthisis has become an old story to most of us, but until comparatively recently in this country, institutions have been established by private individuals only, and usually for the well-to-do classes, the exceptions being, so far as I know, Dr. Trudeau's Adirondack Sanitarium, the Sharon Sanitarium and another small one at Aiken, S. C., recently established under Dr. C. F. McGahan's supervision, all intended for people of very limited means. I am speaking of sanitarium for incipient cases, not of hospitals for the hopelessly sick.

In the original prospectus of the Rutland Hospital, or Sanitarium, as it should more properly be termed, the trustees use the following words: "Inasmuch as the primary purpose of the hospital is to arrest the disease, and if possible to extirpate it, only such patients will be admitted as are deemed not too far advanced to admit of reasonable hope of radical improvement. In no sense is the hospital to be considered as a home for the hopelessly sick; for, great as is the recognized need for homes of refuge for advanced consumptives, such service is manifestly incompatible with the even more needed service of rescuing lives that can be saved only by sanitarium treatment."

The results of the first year's work are of special interest, therefore, from the fact that they show what can be done for people of very limited means, even in the harsh climate of New England, which is considered so unfavorable for consumptives.

The hospital stands upon the southern slope of a hill about a mile and a half from the village of Rutland, at an altitude of about 1,200 feet. It is protected on the northwest by a thick forest of pine, hemlock and hard wood, overlooking the rolling country of the centre of our State, Mt. Wachusett being about eight miles to the north. The water supply comes from Muschopauge Lake, near by, and the sewage is disposed of by means of large filter beds on the northern slope of the hill, about a mile distant. The buildings are arranged as pavilion

wards, one story in height, spreading like the outstretched fingers of the hand towards the south from a long convex corridor which connects the buildings; the kitchen, heating, electrical and laundry departments being all towards the northern side of the institution. The patients sleep in open wards as a rule, a few small isolated rooms being used chiefly in case of severe illness or for special reasons only. Sun-rooms and piazzas are placed at the ends of the wards, the whole arrangement throughout being such as to obtain the maximum of both sunlight and fresh air. For winter use, small temporary wooden shelters are erected, open only towards the south, where patients take daily and hourly air baths. In the neighboring wood, as picturesque and useful adjuncts to the hospital, are the various camps made by the patients from boughs and other material and here much of the daytime is passed both in summer and winter.

At the outset many cases of advanced pulmonary disease were admitted for whom there was very little hope of anything other than temporary improvement. The large number of applications since that time has justified the more careful selection of cases in order that those with really incipient disease may have the benefit of the treatment. By this decision we believe we accomplish the greatest good to the greatest number.

From October 10, 1898, to October 1, 1899, the number of patients	
who were admitted to my service was	212
Number re-admitted	2
Total number of admissions	214
Number discharged up to October 1, 1899	126
Number still under treatment October 1, 1899	88
	214

Of the 126 discharged, the number who remained less than two weeks and are therefore not considered in the results is	11
The number who remained more than two weeks is	115
(Of these one was a case of bronchitis only.)	
	126

Of the remainder (114), the number discharged as "arrested cases" is	35
Number "much improved"	37
Number "improved," including one case of tubercular disease of the bladder, without pulmonary disease	17
Number "not improved," including those who failed and returned to their homes or were sent to other hospitals	24
Number "well," bronchitis only	1
Number died in the hospital ²	1
	115

SYNOPSIS OF "ARRESTED CASES."

Of these the number having bacilli in their sputa previous to or after entrance	20
The number of cases without sputa on whom the tuberculin test was tried with positive result	2
The number of cases having undoubted symptoms and physical signs of pulmonary disease without bacilli. (Tuberculin test not used.)	9
The number of cases having very suspicious symptoms without definite signs in the chest (cough, malaise, slight fever, loss of flesh, etc.). (Tuberculin test not used.)	4
	35

In my nomenclature I have differed from some of my colleagues for the following reason: By the use of the term "arrest of disease," I have adhered to the custom which I have followed at the Sharon Sanitarium for several years, as being on the whole to me the simplest method of describing those cases in which all active symptoms, like cough, expectoration and fever, have disappeared and where the general symptoms would seem to indicate a complete restora-

² This patient had so much improved that he had decided to leave and keep a hen farm. In the train he received a sharp blow on the chest, which was followed by a severe hemorrhage, from which he never rallied.

¹ Read before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

tion to health, even when there may be abnormal sounds in the chest remaining. The treacherous nature of the disease, however, has made me unwilling to use the term "cured" before many months have elapsed after cessation of active symptoms, even in cases where an apparent lack of definite signs would seem to make such a classification justifiable at the time of discharge. The term "much improved" is used in those cases in which marked amelioration of all or most of the prominent symptoms is noted, for example, cough, expectoration, temperature and weight, the degree of improvement of course varying in individual cases from a state of decided improve-

ment to one almost reaching an arrest of disease, but where patients have been obliged for various reasons to leave the hospital contrary to advice. The term "improved" is used in those cases where only a slight

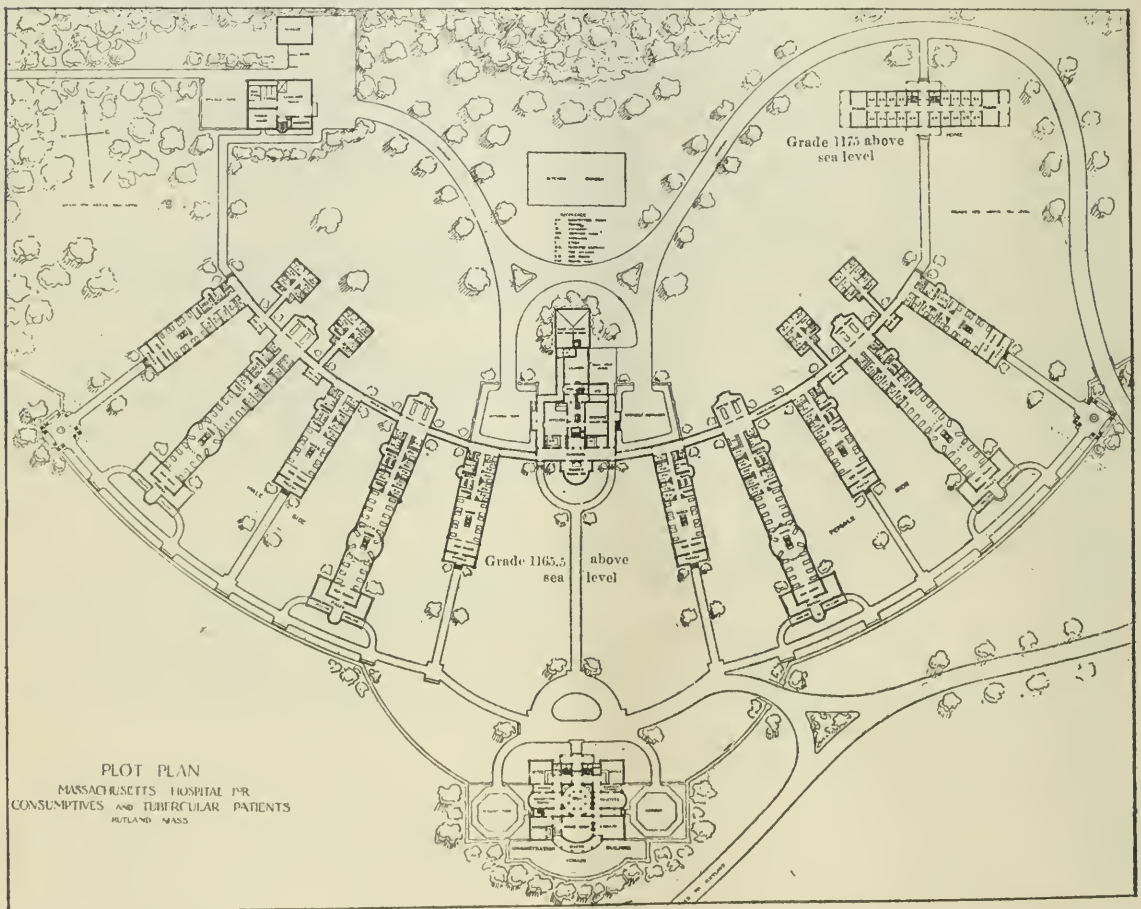
degree or possibly rather marked improvement of the symptoms is noted.

CONDITION UPON ENTRANCE OF CASES DISCHARGED AS "ARRESTED."

Incipient cases with slight signs in one or both apices	27
Cases with signs somewhat advanced in one or both lungs	8
	<u>35</u>
Average stay in the hospital of the "arrested" cases	4½ mos.
(Maximum stay 10 months, minimum stay 6 weeks.)	
Average stay in the hospital of the total number discharged before October 1, 1899, and whose cases are considered in the report (115)	4 mos.
Average stay in the hospital of those "much improved"	4 mos.
Average gain in weight of the 35 arrested cases	15 3-5 lbs.
The largest gain in weight by any one of these arrested cases was	45 lbs.
The length of stay at the hospital of this patient was	6 mos.



PERSPECTIVE



ment to one almost reaching an arrest of disease, but where patients have been obliged for various reasons to leave the hospital contrary to advice. The term "improved" is used in those cases where only a slight

Incidentally it may be mentioned that this case gave a history of cough for over six months previous to entrance, great loss of flesh and strength, with signs of disease in the tops of both lungs (dulness and moist

râles), and that all outward symptoms disappeared at least two months before discharge and she has remained in the same condition ever since.

The percentage of "arrested" cases of pulmonary disease is	30.97+
The percentage of cases "much improved" and "improved," together	46.10+
The percentage "not improved"	21.23+
The percentage of cases discharged "well," one of bronchitis only	.85
The percentage of cases who died in the hospital (one)	.85

These facts are the result of careful examination of the patient, both as to the physical signs in the chest and the general condition at time of entrance and before discharge. It is a curious and interesting point that the percentage of arrested cases is almost exactly the same as that noted at the Sharon Sanitarium during the past eight years and is in accordance with the experience of others in sanatoria elsewhere. That this has been accomplished even when hampered by the lack of sufficient appropriation this year is additional proof of the efficacy of hygienic treatment alone in this class of cases. With larger means at our command we believe that even better results can be shown in the future.

In offering this paper for your consideration it should be distinctly understood that no claim is made thus far other than that the disease has been *arrested in its progress*; in other words, that cough, expectoration and fever have ceased; and that the general condition is one of apparent health, even though in some cases abnormal sounds have persisted in the chest. The crucial test of the efficacy of any method of treatment lies in its lasting effect. The subsequent histories, therefore, of these patients a few years hence will be of special interest and of even greater value than the present records.

In a paper before the American Climatological Association in New York last May I gave the subsequent histories of 34 arrested cases treated at the Sharon Sanitarium. The percentage of those who had remained apparently well after intervals varying from two to seven years since their discharge was gratifyingly large. The results moreover were instructive, inasmuch as in those cases where symptoms of the disease had returned it was, except in one case who died after an operation, either because of the apparently advanced condition of the disease at time of entrance, or in consequence of the patients' returning to unhygienic surroundings and occupations.

At Sharon and at Rutland constant effort is made to induce patients to seek some other form of livelihood than that in which the trouble arose, experience having taught us the necessity of this advice. Persistent effort in this direction will often accomplish much even in cases whose outlook for a change in their life work is far from encouraging at first.

One serious obstacle to success in some cases is the lack of funds to enable patients to remain a sufficient time under hospital supervision. Several discharged as "much improved" during the year were apparently on the highroad to renewed health and vigor but were obliged to leave Rutland from lack of means. This could and doubtless will be obviated in the future by a more generous appropriation, a part of which can be devoted to the support of such people during the necessary stay at the hospital.

METHODS OF TREATMENT AT RUTLAND.

Whatever good results have been obtained are due chiefly to hygienic measures alone. In following these

methods much the same course is pursued as in other modern sanatoria for consumptives. Constant life in the open air, whether resting or exercising, is insisted upon. Except at the hours of rising and going to bed (at which times in winter the heat is turned into the wards), the windows are left open, varying somewhat according to the outside temperature, during the twenty-four hours. Sponge or plunge baths at regular intervals are an essential part of the treatment, while three hearty meals a day, with lunches of milk, eggs or their equivalent, are given. Pulmonary gymnastics are also taught and regularly practised. Little weight has been given to medicinal treatment except as an occasional adjunct to the other and more important kinds. One attempt has been made with a certain form of serum in a limited number of cases, but as the results were quite negative it was discontinued after giving it a fair trial. No record of the results should be given without expressing my sincere appreciation of the cordial co-operation of Dr. Mareley, the superintendent, Miss Thrasher, the matron, and the nurses, without whose aid, often under difficult conditions, little could have been accomplished.

To the indefatigable work of my assistant, Dr. Henry B. Dunham, we owe much of whatever success has been attained, and to his colleague, Dr. David P. Butler, Jr., my sincere thanks are due for his efficient help during the recent unfortunate illness of Dr. Dunham.

In thus showing you what is being done by our State for the treatment of tubercular disease, especially in its pulmonary form, I have endeavored as far as possible to avoid the much dreaded and much quoted "personal equation" in giving results which have been corroborated by others. That the sanitarium treatment of phthisis is *par excellence* the most efficacious method of checking the disease, I am perfectly convinced after a personal experience of eight or nine years. The fancied objections which not many years ago occasionally were, and even now are, offered against it, such as the depressing effect of the patients upon each other, the danger of infection upon segregation of consumptives, etc., are mere shadows of the imagination to those who have had any experience in the matter. The manifold advantages far outweigh any possible objections, and the results are far more gratifying than any attempt at less radical measures.

At the opening of the Rutland Hospital I confess now to having had considerable doubt as to the wisdom of building open wards, lest the lack of privacy would prevent many desirable patients from entering. All fear on this point, however, has long since been dispelled. The philosophy and good cheer shown by most, if not every one, of the patients, under present conditions, has been a most encouraging and inspiring feature of the place. The method of having open wards for a large number of patients has this distinct advantage, moreover, that it allows a much larger circulation of air and freer ventilation than would be possible by an arrangement of small cubicles massed together. The custom of single bedrooms, as in other much smaller institutions, is of course at Rutland impracticable on the ground of expense.

At other times and places I have spoken of the great need of such institutions not only in remote regions but in properly selected sites near our great cities. The fact that in three months after the first patient was received the hospital was filled to its

utmost capacity (about one hundred and seventy beds) corroborates this opinion; that similar institutions for incipient cases are needed in different parts of the State is also shown from the fact that the applications far exceed the capacity of the hospital, many of them being from western Massachusetts, the large majority, however, coming from the eastern portion, especially the vicinity of Boston. To increase the number of institutions moreover, rather than to greatly enlarge the capacity of the present hospital is much to be preferred. The largest sanatoria abroad with a corps of assistants have about 200 patients only. With a larger number we run serious danger of making the institution too bulky, and deterioration in the quality of work accomplished would almost inevitably follow.

Again I wish to emphasize what I believe to be one of the most important features of an institution of this nature; namely, its educational effect upon the community in general. Having positive proof of the beneficial effect of life in the fresh air, day and night, the patients preach this gospel far and wide to their families and friends with good results which I believe to be incalculable. Constant evidence of this is given in numerous letters received from former patients. During their stay they have had it impressed upon them that when they leave the institution they can act as missionaries, as it were, in the crusade against tuberculosis by teaching others the value of fresh air, proper diet, judicious exercise and cleanliness. That the lesson has not been lost upon them is one of the hopeful signs for the future.

To Massachusetts, then, belongs the credit of taking the first step in this direction in the United States. Indiana has lately followed her example, and if one may judge by the enthusiasm displayed at a recent meeting of the New York Academy of Medicine, New York will not be slow in following the example of her sister States. At that meeting a committee was formed to confer with the municipal and State authorities in consequence of a paper by Dr. Alfred Meyer, upon the Rutland Hospital. That many institutions of similar character will in another decade be established throughout the United States is more than probable.

One fact must, however, be recognized and guarded against. In the enthusiasm which marks the beginning of every new movement, we have to meet the inevitable errors of judgment and exaggerations of statement which, if not anticipated, will surely detract finally from the merits of any cause. Where popular interest is excited, as in this case, these dangers are more than doubled. Already we have been obliged to modify, if not deny, the exaggerated and often sensational statements of the lay press in regard to the Rutland Hospital. We, as physicians, are more or less prone to seize upon new ideas, and in the first glow of enthusiasm to paint with too glowing colors opinions which, under soberer judgment, have often to be modified, even when not completely abandoned. Progress seems to be always marked by the middle path between ultra-conservatism and blind enthusiasm.

In urging vigorous State action in the treatment of tuberculosis, we certainly cannot be accused justly of taking either extreme; we are simply building upon the idea which received its first strong impulse from Brehmer, in the mountains of Silesia, forty years ago; an idea which has steadily and surely grown, fostered by the patient and careful work of competent obser-

vers in Europe and America. Keeping in mind the fact that every method has its limitations and that as yet there is no known panacea, we can rejoice, nevertheless, in the public recognition of the necessity of using radical measures, as our State is now doing, believing them to be a great step forward, not only in the treatment but the prevention of tuberculosis. That the medical profession of Massachusetts, therefore, may strengthen by their personal influence the work just begun by the State is my earnest desire.

BRADYCARDIA, WITH REPORT OF A CASE.¹

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BELIEVING that cases of persistent slow pulse are sufficiently rare and interesting to warrant reports, the following is submitted:

Mr. A., machinist, age seventy-five. His father and mother died of phthisis; four sisters and a brother died of heart disease; there is one brother now living, eighty years old. He has always used strong tea and coffee in liberal amounts, and for fifty years has consumed a ten-cent piece of tobacco daily, both smoking and chewing; of late this amount has lasted him a week. In alcoholic liquors he has indulged very moderately. There is no venereal history, and he has never received any injury of consequence. At the age of twenty-five he had rheumatic fever in several joints, of about three months' duration. From that time to seven years ago, he does not remember consulting a physician. Seven years ago he had an attack of bad breathing; said the doctor feared pneumonia, but was not confined to his room and fully recovered in a few days. At this time he gave up work and has done none since, although he has been well and active, frequently taking walks of several miles. For the past year he has been obliged to take occasional rests during the walks, on account of difficulty in breathing.

February 2, 1899, he consulted me on account of edema of both legs, scantiness of urine and general weakness, of about two weeks' duration. For past several months he has complained of a numbness of head, vertigo and faintness, but has never fainted; also of being short winded and always feeling cold.

Examination showed a man six feet in height, rather spare in flesh and active, of a calm nervous temperament. There was cyanosis of lips, nails and ears; the veins of hands and arms were very prominent; there was also some puffiness under the eyes and moderate edema of both legs and feet; no ascites. The pupils were contracted, but would react to light and accommodation. Knee-jerk and ankle clonus normal. The lungs and abdominal viscera were negative. There was no atheroma of radial, brachial or temporal arteries. Pulse in right radial while sitting was 30 per minute, strong, full and regular; the left radial the same, but less strong. A few minutes later while standing the pulse was 26 per minute.

Examination of heart.—Pulsation seen in epigastrium while sitting, not on standing. Percussion gave no enlargement; if any change, it seemed undersized. The apex beat was easily felt in the fifth interspace,

¹ Read in part before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

one inch within the nipple. At the apex the heart's sounds were heard, strong and labored; sometimes irregular, but usually regular; there was a soft, blowing, systolic murmur, transmitted to a little outside of the nipple and upwards for about two inches; not heard in the back. The pulmonic second sound was slightly accentuated. The sounds over other valvular areas were indistinct. The heart's systole and arterial pulsations were synchronous.

The appetite was fairly good, the bowels were regulated by a laxative. Acetate of potassium, 10 grains, three times daily, and tincture nux vomica, eight minims, three times daily, were prescribed. The patient at this time seemed very little inconvenienced by his affection.

February 22d. After ascending a flight of stairs the breathing was accelerated and the pulse was 32; after ten minutes, undergoing examination, pulse was 32; fifteen minutes later it was 30.

February 24th. Sitting, pulse 29. Edema diminished; less cyanosis; was passing more urine.

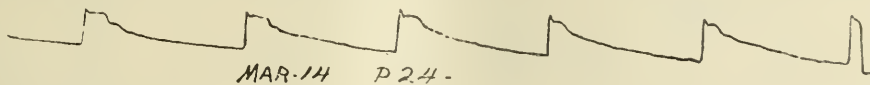
February 28th. Lying, pulse 29; twenty minutes later, 30. Edema still more diminished; less trouble in breathing and feeling stronger.

March 2d. He was seen by Dr. Harold Williams at Boston Dispensary and shown to students. Immediately after going up two flights of stairs and being somewhat excited, the pulse was 34 and irregular.

March 5th. Edema nearly disappeared; no pitting. Pulse 24. Was seen by Dr. Twombly, who agreed in points of examination. During past several days had taken nux vomica irregularly.

March 10th. On account of the increased slowness of pulse, nux vomica was increased to 12 minims, three times daily, apparently without any effect. Examination of urine at this date was negative. Pulse 28.

March 14th. While taking a sphygmographic tracing, in which he was much interested, there was occasional irregularity of the pulse, which was 24.



March 17th. Pulse 27, standing; temperature 97°, respiration 26, following exercise.

March 19th. Pulse 27, standing; temperature 98°, respiration 21.

March 21st. Pulse 27, sitting; temperature 98°, respiration 20. Prescribed atropia, .01 grain, three times daily.

March 24th. Before going up two flights of stairs hurriedly, pulse 26, respiration 24. After, pulse 28, respiration 29. Some edema present; mouth very



APR-2-P.35.

dry; pupils dilated. Omit atropia; take potassium acetate, 15 grains, three times daily.

March 30th. Pulse 29.

April 2d. Edema slightly diminished; slight pitting over tibiae. Urine increased; gets up once at night, but has not formerly. On my arrival, pulse was 28, temperature 98.6°, respiration 22. While using the sphygmograph the pulse reached 36, the highest I had ever counted it. There was also an occasional irregularity, as noted on previous occasions, usually when patient was excited; the condition is shown by tracing of this date, the only time I succeeded in catching it with the sphygmograph. The high pulse rate and occasional irregularity I could not account for, as the patient was not excited; there was no apparent cause. This was the last time I saw him.

April 4th. He walked to his daughter's, a distance of three-quarters of a mile. On his arrival did not seem fatigued or out of breath; he sat down and talked a few minutes. Shortly his daughter, not receiving a reply to a question, looked up and saw that he was very pale and motionless — "looked as if he was dead." In a minute consciousness returned. He became purple, spoke a few words and vomited; afterwards he felt all right. Directly after a light dinner he had another attack; recovered in two minutes. He sat up that evening and talked as usual, retired at 8 p. m., slept well and arose next morning refreshed, but a little weak. During the morning of April 5th he had three attacks; could tell when they were coming on. That afternoon he went to bed, had one severe attack and died. A physician who was called said the pulse was as low as 25.

An autopsy could not be obtained.

The features of this case which seem of interest are, (1) the cause of the slow pulse; (2) the duration; (3) the influence of the excessive amounts of tea, coffee and especially tobacco; (4) the relation of the valvular lesion to the slow pulse; (5) the rise of pulse and temperature three days before the patient died.

It will be seen in the following list of cases that this case is assigned to a class in which the cause is rarely determined before death, and not always, by any means, at the autopsy. During his illness seven years ago, he said "the doctor took his pulse and remarked that he had some fever," and he inferred that the rate was high. From correspondence with the physician I found he did not remember the case; had there been a markedly slow pulse, it seems probable that he would have recalled it. The duration of the symptoms has

been less than one year, and probably the slow pulse did not much precede them. Tea, coffee and tobacco

have been assigned as causes of bradycardia; that either was the cause in this case would be difficult to prove. Bradycardia, as we all know, is rarely met in valvular lesions, its presence from whatever cause might be expected to interfere with compensation, and in this case it seems not improbable that it may have done so. That the valvular lesion was the cause of the slow pulse there is no way of determining. In any similar case a spasmodically increased pulse rate without apparent cause would to me be an ominous sign.

Another case that recently came under my observation will serve as an example of another very different type of bradycardia, and may warrant a brief report.

Man, forty years old, health generally good. Examined him in May, 1899, with reference to his heart, which was found normal; pulse the same. Was called to him in October, 1899, on account of an attack of indigestion, and found the pulse 43 and 45 per minute. During the hour I was with him it did not exceed 45, and was synchronous with the heart's systole. The next morning the patient was feeling quite well and the pulse was 90; three days later it was 74 per minute. There were no symptoms referable to the slow heart's action; the duration probably did not exceed twenty-four to forty-eight hours. The cause was most probably a reflex one arising from the stomach.

The term "bradycardia" has been given by Grob to those cases of slow pulse which are synchronous with the heart's systole, the rate being less than 60 per minute. The term has, however, been incorrectly applied to cases in which the pulse and heart's systole were not synchronous, the pulse for some reason failing to indicate every ventricular contraction. Moreover, there has been a tendency with some writers to accept only a lower rate, as 50 or under, as constituting a bradycardia. Hence there is confusion not only regarding the rate but the frequency of occurrence of bradycardia. Grob, during a period of three years at the Zurich Medical Clinic, found 82 cases of slow pulse in 3,578 cases observed; all but four occurred in males. Riegel, in seven years' observation at the Giessen Medical Clinic, found 1,041 cases in 7,567 patients; 710 were in males, 331 in females. On the other hand, R. Gossett Brown in 1889 said: "In many thousands of cases both in hospital and in private practice, I have twice seen cases of slow pulse." The most obvious reason for this discrepancy in observations would seem to be a difference in pulse rate referred to, that of Brown's probably being much lower than that given by Grob. Accepting Grob's rate, cases of bradycardia may be considered of fairly common occurrence.

It must, however, be borne in mind that the figures of Grob and Riegel have reference to hospital cases only, a class in which slow pulse is more commonly met, being secondary to some illness, but it occurs in the healthy as well as in the sick. Statistics collected from all sources, though of larger figures, would show a much smaller per cent. of bradycardia than the above. Prentiss, who in 1889 must have made a diligent search for individually reported cases, collected 94. To this number I have been able to add but nine cases reported since 1889, making a total of 103 cases. This collection differs from that of Grob's and Riegel's

in embracing a far larger proportion of the unusual types. Of these 103 cases, excluding those due to fatal injury and others in which the age is not given, we have 77 cases, of which the average age is found to be fifty-three years. Adding 84 of these cases in which the sex is recorded to Grob's and Riegel's collections we have a total of 1,207 cases, which is a larger number and offers a greater representation of all classes than any statistics previously presented. Of these 1,207 cases we find over 70 per cent. occurred in males. The fact that bradycardia is more common in males than in females has given occasion to Morison for an article on this feature, in which he concludes: "The belief is justifiable in the meantime until statistics prove the contrary that the constitution of the male more frequently results in bradycardia than do the like conditions in the female, although large statistics show that heart disease is more common in women than in men."

The conditions in which bradycardia occurs are of interest, and are well given by Riegel in his classification, which, by the way, is the one most generally accepted. It is as follows:

- (1) Physiological bradycardia.
- (2) Pathological bradycardia.

Physiological bradycardia includes those cases due to physiological conditions only. Probably Napoleon's case is the best-known example of this type. The condition is reported to have been observed in entire families. It occurs in the puerperal state at full term, abortions and premature labors; also in fasting and other conditions. In any case of slow pulse an extended observation may be necessary to determine its class.

Pathological bradycardia embraces all cases not physiological. It occurs in the following conditions:

- (1) Convalescence from acute fevers, such as pneumonia, typhoid fever, erysipelas, scarlatina, diphtheria, acute rheumatism, and the like. It is most seen in young persons in whom the fever has run a normal course. Hibbard concludes that its presence in young children with diphtheria is a sign of serious heart trouble. According to Atkinson and others, it is met with in the beginning of acute rheumatism as well as in convalescence.
- (2) Diseases of the digestive system: Acute, chronic and nervous dyspepsia, ulcer and cancer of stomach, and esophageal affections.
- (3) Respiratory diseases: Emphysema, bronchitis, pleuritis and laryngeal affections.
- (4) Circulatory disturbances: Myocarditis, fatty degeneration of heart, pericarditis and arteriosclerosis; not common in valvular diseases.
- (5) Diseases of the urinary organs: Nephritis and cystitis.
- (6) Toxic agents: Uremia, lead, alcohol, tea, coffee, tobacco and certain drugs.
- (7) Constitutional disorders: Anemia, chlorosis and diabetes.
- (8) Diseases of the nervous system: Epilepsy, apoplexy, cerebral tumors, medulla affections, injury to cervical cord, meningitis, mania, melancholia, and the like.

(9) Various other affections, as skin diseases, affections of the sexual organs, sunstroke, etc.

After giving these divisions and subdivisions, Riegel feels that there are still cases which may not properly

come under this grouping, and mentions as an example those cases in old persons in whom some affection of the heart or blood-vessels, most probably due to old age, is the cause of the slow pulse. Again, of the 94 cases by Prentiss, in 35 no cause is assigned for the slow pulse. This is of particular significance for the reason that every writer has probably done his utmost to ascertain the cause.

For the above reasons, but more particularly from the observation of one of these cases and the study of many reported cases, I am led to believe there is a class of case which thus far has not received its due amount of consideration. In confirmation of this belief I present a series of cases which, both in number and in similarity to one another, seem sufficient to establish a class of their own. In number they constitute about one-third of all the individually reported cases, and undoubtedly many more might be added to this list; were they not of particular interest they probably would not have been reported.

Of 33 cases in which the age is given, the average

other cases of a different type it is a temporary condition, Truffet has divided all cases into (1) *Transitory* and (2) *Permanent* bradycardia. This division, like all others, has been more or less criticised. The temperature in the few cases recorded was subnormal, except perhaps near the end.

The bradycardial symptoms referred to consist of attacks of syncope, vertigo, dyspnea and sensitiveness to cold, all of which may be due to disturbances of the circulation, resulting from the slow pulse. These symptoms were present in all but one case. It is of interest to note that in a large number of these cases no accompanying disease has been apparent, and even in those cases attended by some affection it would often seem a question of how much influence it may have had on the bradycardia. From the indiscriminate use of the terms "epileptic," "epileptiform" and "apoplectic" in the reports of these cases, it is difficult at times to determine if a true epilepsy or apoplexy were present. Perhaps attacks of syncope may have been mistaken for true "epileptic fits."

BRIEF REPORTS OF THIRTY-FIVE CASES OF SLOW PULSE, DESIGNATED BY THE AUTHOR AS CASES OF IDIOPATHIC BRADYCARDIA.

No.	Sex.	Age.	Duration.	Bradycardial Symptoms.	Lowest Pulse.	Temperature.	Respiration.	Accompanying Disease.	Termination.	Autopsy.
1	M.	54	Years.	Present.	12+	94.5-98°		None mentioned.	Died in attack.	Thorough but negative.
2	M.	83	"	"	36	96°	20	" "	Living.	
3	F.	75	"	"	34			" "	Living.	
4	M.	51	Days.	"	9			" "	Died.	Four ounces fluid in ventricles of brain.
6	"	46	Years.	"	14			Epilepsy.	Living.	
8	"	70	Weeks.	"	16			None mentioned.	Died in fit.	Ossification of aorta.
11	"	67	Years.	"	32			None mentioned.	Living.	
12	"	70	"	"	38			Symptoms of brain.	Living.	
18	"	40	Years.	"	40			None mentioned.	Died in fit.	Fatty degeneration of heart.
19	"	70	Years.	"	26			" "	Living.	
20	"	60	"	"	17			" "	Living.	
38	"	45	Years.	"	28			" "	Died in fit.	Hydropericardium. Heart muscle softened.
44	"	58	Weeks.	"	22			" "	Living.	
48	"	53	Years.	"	24			Valvular.	Sudden death.	
49	"	57	Years.	"	18			None.	Died in fit.	
58	"	62	Months.	"	33			None.	Living.	
59	"	62	Months.	"	23	95.6-96.8°		Epilepsy. Syncope?	"	
63	M.	96	"	"	36			Slight bronchitis.	"	
68	F.	69	Years.	"	30			None mentioned.	"	
69	M.	71	Years.	"	28			" "	"	
82	"	52	"	"	22			" "	Died suddenly.	
83	"	79	Months.	"	4			" "	Died with fits.	
85	"	70	Years.	"	25			" "	Died in fit.	
92	"	38	"	"	19	97.4-98°		" "	Living.	
16	"	62	"	"	30			" "	Living.	
23	"	"	"	"	26			" "	Died.	Heart dilated.
52	F.	78	"	"	18			" "	Living.	
55	M.	66	"	"	21			" "	"	
61	"	61	Months.	Present.	36	96°		" "	"	
Mayer.	"	65	Months.	"	18			" "	Died in attack.	Fatty degeneration of heart.
Claybaugh.	F.	55	"	"	36			La grippe.	Died as result.	Ossification of coronaries and aorta.
Mengy.	M.	75	"	"	27			Epilepsy?	Died.	
Hanot.	"	55	Weeks.	"	28		27-30	None mentioned.	"	Atheroma and hydronephrosis.
Hanot.	"	72	Months.	"	36			Bronchitis.	"	General atheroma.
Author's.	"	75	Weeks.	"	24	97°	20	Valvular.	Died with attacks.	

Numbered cases are taken from Prentiss's collection.

is found to be over sixty years, and but one case occurred under forty years. Of 34 cases in which the sex is recorded, 30 were in males. In more than half of the cases the duration has been years; in any case it was probably longer than was recorded, as the condition is rarely discovered in the very beginning. The pulse rate recorded was the lowest observed, and although it may not have remained at that point it usually continued low to the end. From the fact that in these cases the slow pulse was persistent, whereas in

In the cases where a fatal termination has been reported, many times it seems to have been caused by the bradycardia, the person dying in, or directly following, the attacks of syncope. Fatty degeneration of the heart and atheroma were most frequently found in the ten autopsies; in some, however, there were no pathological conditions which might be assigned as the cause of the slow pulse. This is the type of case we see reported under the headings, "A remarkable case of slow pulse," "An unusual case of persistent slow

pulse," and the like. Unlike the cases due to acute fevers, digestive disturbances, etc., this type is rare; from the usual fatal termination it becomes of especial interest and warrants consideration. Should it not then be assigned to a class of its own? Two classifications have already been referred to, Riegel's and Truffet's.

Riegel's classification is based on the physiological and pathological conditions supposed to exist, for certainly our knowledge of the physiology and pathology of bradycardia at the present time warrants but little more than a supposition in any case. Besides, under one heading he groups those temporary cases usually terminating favorably, together with the persistent cases generally ending fatally. Surely a distinction should be made between these two classes.

Truffet, as I have said, bases his classification on the duration, and places under one division those persistent cases generally believed to be due to physiological conditions, and not affecting the health, together with the persistent cases ending fatally. Here again a distinction should be made, if possible.

Flint has divided all cases into "functional" and "organic." But this division, like Riegel's, calls for a knowledge of the pathological conditions, which we lack.

Without entering further into a discussion of this feature, let us understand (and it is hoped it has been made clear) that there are three types of bradycardia, which differ from one another either in cause, duration, symptoms, or termination. Then let us assign each type to a class of its own. Such a division, one consisting of three classes, has been made by Grob, and he has used the terms "physiologic," "idiopathic" and "symptomatic," which are perhaps as significant as any, and to avoid the introduction of new terms it seems best to use these, but with a somewhat different assignment of cases. Thus we have (1) *Physiological* bradycardia, (2) *Idiopathic* bradycardia, (3) *Symptomatic* bradycardia.

Physiological bradycardia includes those cases due to physiological conditions only. This class is fairly well agreed to by all writers on the subject.

Idiopathic bradycardia may embrace those cases of persistent slow pulse usually occurring in advanced life and more commonly in the male sex, accompanied by the usual bradycardial symptoms, but rarely attended by any discoverable disease which is the cause; the termination is usually fatal, though cases have been known to last for years without seriously affecting the health.

Symptomatic bradycardia should include all cases embraced by Riegel's pathological division, excepting the above classes. To this class belong those cases in which the pulse is symptomatic of some usually apparent condition, ordinarily of temporary duration, but it may include cases terminating fatally from injury, sunstroke, poisoning and certain other serious conditions. As has been said, all classifications are subject to criticisms, but it is hoped the one now offered may in a degree serve its intended purpose.

Cause.—The immediate cause of bradycardia may be due to (a) a condition of the nerve centres producing either irritation of the pneumogastric or paralysis of the sympathetic (accelerator) nerves of the heart; (b) a condition of the pneumogastric increasing its irritability; (c) a condition of the sympathetic nerves paralyzing them; (d) or to some condition of the

cardiac ganglia in which the influence of the pneumogastric preponderates; (e) or a condition of the heart muscle whereby it fails to respond to the normal stimulus; (f) or to poisons acting either on the nerve centres or endings.

Pathology.—Our knowledge of the physiology of bradycardia is limited, and the same is true of the pathology; at the same time, regarding the pathological causes of bradycardia we are not lacking in theories. The following 31 autopsy reports give some idea of the pathological conditions thus far observed.

Disease of Brain.—Hydrocephalus, Cases IV, XXIV and XLV; softening, Case XXXIX; adhesions, Case XXV; abscess of medulla, Case XXVIII. Total, six cases.

Disease or Injury of Cord.—Fracture of cervical portion, Cases XXIX, XXX, XXXI, XXXII, XXXIII, XXXIV, XXXVII; induration, Case XXXV. Total, eight cases.

Disease of Heart.—Fatty degeneration, Mayer's, Cases XXXVIII, XVIII; ossification of aortic valves, Case X; hypertrophy, Case XXII; dilated, Case XIII; heart flabby and mitral lesion, Case L; mitral lesion, Case LXXVIII; aneurism of ventricular septum, Case XLVII; gumma of ventricular wall, Coggeshall's. Total, ten cases.

Disease of Circulatory System.—Ossification of coronaries, Claybaugh's, Case XXI; arteriosclerosis, Hanot's, two cases; ossification of aorta, Case VIII. Total, five cases.

Negative.—Cases I, LXXXVI. Total, two cases.

Numbered cases are taken from Prentiss's collection.

Prognosis.—From what has already been said it is believed the prognosis of the various types of bradycardia is fairly evident.

Treatment.—As to treatment it is also evident that many cases require none, the removal of the cause effecting a cure. In those cases where the patient suffers from the result of a slow pulse, and in which life may be threatened, rest and certain drugs seem indicated. Strychnia, atropia and nitroglycerin are most commonly used, but in the majority of cases without any beneficial effect.

A complete review of this subject has not been attempted. If the reader's attention has been directed to the following points the object of this paper is attained.

(1) A pulse rate under 60, which is synchronous with the heart's systole, constitutes a bradycardia, according to Grob.

(2) The condition, all classes considered, is of common occurrence.

(3) It is much more common in males than in females.

(4) There are three types of bradycardia, as classified according to their clinical aspects.

(5) The class here termed idiopathic bradycardia, on account of its usual fatal termination, must not in any case be passed by as a mere curiosity.

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A BRIEF NOTE ON SOME OF THOSE GRAVE ABDOMINAL LESIONS WHICH OFTEN DEFY DIAGNOSIS.

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It is a fundamental principle in our profession and in the science of the healing art, that the first step in the management of a case is to study, interpret, and elucidate symptoms and signs; in other words, make a diagnosis. And, generally speaking, the art of diagnosis has of late years spread far in advance of the power to arrest or cure disease.

Abdominal lesions, traumatic or pathologic.—The above holds good in the lesions of any organ in the body; however, there yet remain very many pathologic conditions within the abdominal cavity wherein definite diagnosis is not possible, except through the breach made by the surgeon's scalpel, the exploratory incision, and exploratory manipulation, something which under many circumstances greatly adds to the gravity of many cases.

Hemorrhage, perforation, obstruction, or enteric paresis.—Very often, after a grave abdominal contusion, who can say with certainty which one of the above conditions prevails? The patient is in shock, with a distended belly; in pain; is vomiting, and depressed in spirits. He is anxious to live and ready to take the chances of an operation. But let it not be forgotten that injudicious operations kill. Our responsibility here is terrible when we properly view the case, and assume for the moment that the patient is a member of our own family.

Without operation.—But we endeavor to quiet our conscience by affirming that the patient "must die in any event." This is a vicious conclusion, as we all know that the abdominal viscera possess remarkable power of safely adjusting themselves to many pathologic conditions. Intra-abdominal hemorrhage is rarely mortal *per se*. Stimson, some years ago, showed by statistics that of the penetrating gunshot wounds of the abdomen, the mortality was larger after laparotomy than those cases treated on conservative lines. Reclus, of Paris, has demonstrated the same condition of affairs. The latest surgical reports from the campaign in South Africa by Sir William MacCormac¹ point strongly in the same direction.

The late Hispano-American imbroglio again showed that there was no place for "abdominal surgery on the battlefield," as the few who had the abdomen opened for bullet wounds succumbed, while all those who were left alone did well.

If in doubt, don't interfere.—Unless our patient is in fairly good form, or unless the symptoms point unequivocally to the seat of a lesion which we know to be definite, leave the patient alone, or rather follow closely on conservative lines. Unhappily, in our days, there is altogether too much surgery of the abdomen done simply for the purpose of "operating."

When death follows an acute abdominal lesion, before reacting inflammation sets in, it is invariably attributed to *hemorrhage* or *shock*. The rupture of a

hollow viscus is always followed by great shock. To operate on one in this state deprives him of his only hope of recovery. Rather wait till reaction sets in, though we have then to deal with peritonitis. But let us not open our eyes in amazement at the mention of "peritonitis," for this follows every so-called "aseptic" operation performed in the peritoneal cavity, even when very good recoveries are secured. The French use the refined term "*peritonisme*" for this post-operative condition.

Perforation or mechanical obstruction.—Will not some of those of a fervid imagination and who have an explanation for everything be kind enough to point out the fundamental distinction between the symptoms of perforation and those of obstruction? Absence of hepatic dulness is a fairly certain guide in some instances, but it may be wanting. In both the onset is sudden; the patient is seized with furious colic, just such as is noticed in acute hepatic, renal, or appendicular stenosis. Manipulation of the abdomen, with the history of the case, will not always assist us in ferreting out the seat of trouble.

But, with some grave cases, there is no antecedent history of any moment; the abdomen may be clothed by a six-inch layer of abdominal fat, or it may be as hard as a plank from muscular spasm.

Traumatic and pathologic conditions.—In traumatic conditions leading us to suspect grave intra-abdominal lesion, the time to operate, if to operate at all, is indeed a serious problem; but in pathologic states, with but few exceptions, indubitable signs or symptoms of perforation or obstruction call for prompt surgical interference as the only means of saving life.

Crushes of the abdomen with grave symptoms.—When laparotomy is performed after violent compressive or concussive force has been sustained the mortality is very great.

To do a laparotomy for a moderate intraperitoneal hemorrhage is an inexcusable blunder, as it places life in needless jeopardy for a condition comparatively harmless in itself. When the extent of visceral disorganization is large, with few exceptions, the only effect of a laparotomy is to shorten life. In violent abdominal contusions after evisceration, we are frequently unable to immediately determine just what extent of gangrene may later follow.

In this class we should hesitate, deliberate, and weigh our cases well before we commit them to the last extremity of major surgery. I can recall about a dozen such cases in my own practice. Not a single one survived that was laparotomized. As the full course of anesthesia was approached their eyes closed, never to open again, for but few of them ever rallied from the shock. Three of such cases have come under my care within a year.

CASE I. A vigorous young man riding a "wheel" collided with a heavy watering-cart, was thrown down, both wheels passing over his body, just above the umbilicus. Brought to the hospital in desperate shock. Six hours later, rallied somewhat. Belly ballooned, hypersensitive, lower extremities drawn up, vomiting, but no blood, hands cold, pulse thready, bedewed in a cold perspiration, suffered agonizing pain till morphine was freely given. Hepatic dulness absent, abdomen tympanitic to percussion, rather of the character of *false meteorism* than true or *enteric*.

Operation.—Everything in readiness for complications or accident, etherization was begun and continued

¹ Lancet, January 20th.

with caution. A central incision through the median *raphe* above the navel was made, the peritoneum punctured, when there issued through, first a gush of gas, then fluid blood and clots, with semi-digested food and fecal matter. There had not been very much blood lost. The transverse colon was torn off from the gastrocolic omentum, the bowel laid open on its anterior border. Drawing the stomach out through the incision, a rent completely through its posterior wall near the cardia was found. Liver was not injured; blood oozed up behind the hepatic flexure of the colon. Exploring deeply, came on a rent in the capsule of the right kidney; this was sutured and bleeding arrested. Wound in colon closed easily and quickly, the one in the posterior wall of stomach reached and sutured with great difficulty. The small intestine was then completely turned out, when it and all the viscera were scrutinized. Peritoneal cavity was well washed and dried. Abdominal incision closed. Returned to bed in great collapse. Reacted well. At midnight had report that his condition was excellent. Called at 6 A. M. at hospital myself, to find that he suddenly sank at 3 A. M.

Autopsy at 5 P. M. same day. Rents sutured had closed completely, there had been no consecutive hemorrhage. Such had been the melancholy end of a case wherein recovery had been hoped for.

CASE II. Patient, a young man twenty-seven years old, was working a large circular saw, when he was struck sideways by a large splinter of plank. His left forearm, which was flexed at the time he was struck, was fractured through both bones. Timber glanced and hit him in the hypogastrium, knocking him down. Saw him three hours after the accident. In deep shock and great agony. Was prepared for laparotomy. On opening the abdomen there issued forth an enormous gush of bright red blood. There was found a deep laceration in the left lobe of liver with evident rupture of the celiac axis. Notwithstanding large intravenous injections of saline were given mortal symptoms so rapidly culminated that we had to discontinue intra-abdominal manipulations and close the incision, but before it was completed the patient was dead. An autopsy was not permitted.

This was a case in which there was no evidence of perforation of any of the hollow organs, one in which it seemed to me that full stimulation and free opiates might have afforded the patient a chance.

My experience has been that the value of intravenous injections has been much overestimated. They certainly, alone, are not to be trusted in acute traumatic anemia. I am inclined to believe that by rapidly diluting the blood, impairing its hemostatic properties, and by distending the arterial system, this excess of aqueous material very much interfere with nature's provision against death from hemorrhage.

CASE III. A boy of twelve years fell from a cherry tree, striking his abdomen on the rail of a fence. Was brought into the hospital in great distress. Had free vomiting, tympanitic abdomen, absence of hepatic dullness. Nine hours after entrance, *sectio abdominalis*. Large escape of gas and blood intermixed with chylous elements. A rent in the anterior wall of the stomach and through the jejunum in upper fifth were found. There was free bleeding from the mesenteric vessels, which were ligated and rents quickly closed, but before peritoneal toilet was completed, patient succumbed. Autopsy denied.

Might this last case not have survived by symptomatic treatment alone? With the rents in the alimentary canal and chylous leakage, it might seem preposterous to make such an inquiry, but facts are hard things to get over. The peritoneum, we know, possesses remarkable digestive and absorbent properties. An intestine heals with astonishing rapidity, and the jejunum being generally empty there is little chylous material to escape.

My sad experience with these three cases, coming rapidly after each other in one year, chilled my enthusiasm for early operation in this class. Unless we are assured beyond all doubt that a large rent or rupture of a hollow organ is involved, immediate section for violent contusions of the abdomen should be discouraged, and under any circumstances before reaction is established it is a desperate resource of very questionable expediency.

Clinical Department.

A CASE OF MULTIPLE CEREBRAL HEMORRHAGES FROM CHRONIC LEAD POISONING, WITH NECROPSY.¹

BY J. W. COURTNEY, M.D., BOSTON,
Assistant in Nervous Department, Boston City Hospital; Visiting
Physician to the Home for Incurables, Dorchester.

THE reason for the vague title first given to this communication lies in the fact that when Dr. Ogden spoke to me about it, a week or more ago, the brain which I have to show had not yet been sectioned.

The clinical history of the case is as follows: The patient, a married man of forty-one and a painter by occupation, presented himself for treatment at the Nervous Out-Patient Department of the City Hospital on the 18th of September last, complaining of constant headache, dizziness, muscular tremor, and, at times, nausea. The headache was vertical and occipital, and extended down the back of the neck, especially on the right. There was some complaint of deafness for the past year. The patient was said to be excitable and irritable and to be suffering from some impairment of memory. His family history was negative from a nervous and mental standpoint. As to his personal history, he said that he had always been well except for two attacks of colic, the first of which occurred six years ago and lasted for about five weeks; the second was in June, 1899, and was slight in character, but accompanied by dizziness, nausea and vomiting. Consciousness was lost on one occasion during this attack, and altogether the patient was confined to his bed for about ten days. From this time he claimed to have never fully recovered, and he had done no work for over a year on account of general weakness. Venereal disease was strongly denied, as well as excess in alcohol and tobacco.

The physical examination made September 18th reads: "Slight tenderness of right occipital region and superior curved line, down the neck and right posterior lateral region. No tenderness over mastoid. Station good. Pupils react to light and accommodation; external ocular muscles normal. Tongue protruded slightly to right; blue line on gums. Heart

¹ Read before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

negative, except that second sound is accentuated over whole cardiac area. There is a moderate tremor of hands, which is increased during excitement. Kneec-jerks good; no clonus. No tenderness about legs."

The urine showed specific gravity 1.012; albumin one-tenth per cent.; no sugar.

A diagnosis of lead poisoning was made, the patient given K1, 10 grains, three times daily, and referred to the Ear Department for examination.

A note by Dr. J. J. Thomas a week later reads: "Temperature 99°; headache pretty constant; no epistaxis; bowels regular."

Dr. E. M. Holmes, of the Ear Department, reported: "The cerumen in this man's ears could cause his vertigo and tinnitus. There is a chronic dry middle-ear inflammation and some tension on membrane. This can be relieved."

A further note by Dr. Thomas, under same date as above, says: "Abdomen negative, no rose spots; spleen not palpable."

The iodide was continued and sodium phosphate in 10-grain doses was given to aid elimination from the bowels. A specimen of urine was sent to Dr. Ogden for lead examination.

I first saw the patient on October 2d. His main complaint then was of excruciating pain in the head, with occasional nausea and vomiting. The pain was located by him chiefly in the left side of the head and the vertex, and somewhat in the left frontal region. He had also noticed that his vision was failing. There was marked pallor of the face and mucous membranes, but except for the tremor, which was flexor-extensor in the hands and involved also the face, physical exploration was negative.

On account of the exceptionally intense character of the headache, associated as it was with nausea and more or less vomiting, I was impelled to believe that lead was not the only factor present in the case, and entertained the possibility of cerebral neoplasm. With this idea in mind I referred the man to the oculist, for examination of his eye grounds, and on October 11th received the following report: "This patient is hypermetropic and is wearing suitable glasses. The media and fundi are clear, but the right optic disc is moderately hazy, the left much less so. While the condition may be normal for him, I think it would be well to see if it changes any."

October 23d, Dr. Ogden reports: "Trace of lead in 500 cubic centimetres of urine."

The patient says that he has been in bed for a week past on account of the pain in his head. This pain has been so intense as to make him shriek and groan, and for three nights in succession gave him no sleep at all. While talking to me he complained of pain in the vertex, as if some one were pulling his hair out by the roots, and said that slight shaking of the head or movement of the jaws was sufficient to start the pain. He had had no diplopia.

A second examination of the eyes was made on this day by Dr. G. H. Thomas, and the following noted: "The outline of the right disc is slightly more hazy and that of the left decidedly more hazy than at last examination. To my mind there is a distinct swelling of both discs."

In my subsequent handling of the case I was led by the following considerations: Here was a man who had not been exposed to lead for about a year; who had had no colic for many months; and who presented

none of the peripheral nerve lesions common to lead poisoning. Furthermore, examination of his urine for lead had shown only a slight trace in 500 cubic centimetres. For these reasons, and from the fact of the great rarity of cephalic manifestations of lead in this community, I was inclined to view lead merely as a contributing element, and favored the idea of cerebral neoplasm. This idea was strengthened, as I have hinted, by the persistent and constantly increasing headache, by the nausea and the beginning papillitis in both eyes. The tremor I considered might be consistent with either lead or tumor. As to the nature and seat of the new growth, I naturally did not attempt to form a positive idea from the data at hand, but with the intention of excluding gumma, I applied the therapeutic test of mercury. This soon produced a stomatitis and was stopped.

On the 30th of October, twenty-eight days after I saw the patient for the first time, and about a month and a half after his first advent to the hospital, he reported that his headache was still constant but not so severe. He went home, passed a fairly good night and in the morning his wife went off as usual to her work, leaving him comfortably fixed in bed. At noon one of the neighbors came in to get him something to eat and found him dead.

Through the family physician, Dr. R. J. McCormack, of Roxbury, I was enabled to obtain a necropsy, and this was kindly done for me by Dr. Joseph Pratt, of the Pathological Department of the City Hospital, some four or five hours after death. The head only was opened. The calvarium was normal, but the dura was much injected and seemed to adhere over the left frontal region. There was much serous dripping from the brain and the convolutions generally showed abnormal flattening. Palpation of the brain was practised but yielded no results, so it was decided to harden it *in toto* in formalin without further examination.

Two days ago, Dr. Pratt made anteroposterior vertical sections of the brain for me, with the results I am about to show. As we proceed from front to back in this series of sections we find, first, in the right hemisphere, what is evidently a recent small hemorrhage occupying the gray matter of the upper portion of the ascending parietal gyrus, and another, and smaller, in the first temporal gyrus. From this point until we reach the left crus cerebri nothing abnormal presents itself, but here you can see the beginning (or rather ending) of a hemorrhage which may be traced backward along its long axis longitudinally into the centre of the ventral part of the pons. This hemorrhage measures one and seven-tenths centimetres in length and is four-tenths centimetres in its average width. Near the periphery of the pons, also on the left side, you notice a second, though very minute, hemorrhage. The tissues surrounding both hemorrhages are blood-stained.

From the general convolitional flattening which was noticeable when the brain was in a fresh state, and from the findings just pointed out, we are naturally constrained to look upon lead as the sole causative factor in the case: its *modus operandi* having been to produce blood dyscrasia and renal irritation — the latter as evidenced by the albuminuria — and then the arterial breakdown which caused the fatal issue. Optic neuritis, as you all know, sometimes occurs during the course of chronic lead intoxication. As to the

headaches, I can only say that they were the severest I ever encountered unassociated with cerebral neoplasm. The absence, clinically, of those psychical manifestations which are grouped under the title of "encephalopathia saturnina" is interesting in view of the diffuse arterial disease which the widely-separated hemorrhages would lead us to suppose was present in the case.

In conclusion, I must say that the case, taken as a whole, seems to me a rather unusual and instructive one.

Medical Progress.

RECENT PROGRESS IN OBSTETRICS.

BY FRANK A. HIGGINS, M. D., BOSTON.

MATERNAL IMPRESSIONS.

LEWIS,¹ in a review of the subject of maternal impressions, says that if maternal impressions explain human anomalies, they should also explain such occurrences among the lower animals and even among plants. Monstrosities are perhaps more common among domestic animals and fowls than among men. The strongest blow is dealt to the theory of maternal impressions by the results of experiments in the production of monsters artificially. Innumerable experiments have been performed upon the eggs of bird, fish, insect and echinoderm which have resulted in the production of almost all the typical varieties of monsters, especially of single monsters. Different varieties can even be produced at the will of the experimenters by different ways of managing the eggs. Monstrosities can be artificially produced in the embryos of birds exactly like those which, occurring in human fetuses, are ascribed to mental shock or nervous impression of the mother. It has often been observed that fish eggs hatched in running water produce a far greater number of double embryos than do those hatched in still pools. The shaking caused by railroad or wagon journeys to the hatchery also results in a greater profusion of double monsters. In human fetuses, even at full term, there are sometimes found remains of amniotic bands and adhesions which, obviously, by interfering with development of different parts at an early period of gestation, were the causes of various malformations. In short, all malformations and monstrosities can be explained by purely physical and mechanical causes, entirely remote from psychic influence, so that there is never any reason to invoke the mysterious or the supernatural to explain natural phenomena.

ANTISTREPTOCOCCIC SERUM IN PUERPERAL INFECTION.²

In 1898 the American Gynecological Society appointed a committee to report on the value of antistreptococcic serum in the treatment of puerperal infection. The committee reported at the 1899 meeting and their conclusions are quoted, and are interesting in that they help to strengthen what already was generally believed to be good judgment:

(1) A study of the literature shows that 352 cases of puerperal infection have been treated by many observers, with a mortality of 20.74 per cent.; where

streptococci were positively demonstrated, the mortality was 33 per cent.

(2) Marmorek's claim that his antistreptococcic serum will cure streptococcic puerperal infection does not appear to be substantiated by the results thus far reported.

(3) Experimental work has cast grave doubts upon the efficiency of antistreptococcic serum in clinical work, by showing that a serum which is obtained from a given streptococcus may protect an animal from that organism, but may be absolutely inefficient against another streptococcus, and that the number of serums which may be prepared is limited only by the number of varieties of streptococci which may exist.

(4) Thus far the only definite result of Marmorek's work is the development of a method by which we can increase the virulence of certain streptococci to an almost inconceivable extent, so that one hundred-billionth of a cubic centimetre of a culture will kill a rabbit.

(5) The personal experience of your committee has shown that the mortality of streptococcus endometritis, if not interfered with, is something less than five per cent. and that such cases tend to recover if nature's work is not undone by too energetic local treatment.

(6) We unhesitatingly condemn curettage and total hysterectomy in streptococcus infections after full-term delivery, and attribute a large part of the excessive mortality in the literature to the former operation.

(7) In puerperal infections a portion of the uterine lochia should be removed by Döderlein's tube for bacteriological examination and an intra-uterine douche of four to five litres of sterile salt solution given just afterwards. If the infection be due to streptococci, the uterus should not be touched again, and the patient be given very large doses of strychnia and alcohol if necessary. If the infection be due to other organisms, repeated douchings and even curettage may be advisable.

(8) The experience of one of the members of the committee with antistreptococcus serum has shown that it has no deleterious effect upon the patient, and, therefore, may be tried if desired. But we find nothing in the clinical or experimental literature or in our own experience to indicate that its employment will materially improve the general results in the treatment of streptococcus puerperal infection.

FAT AND FECUNDITY.

Reed³ says that the question, a natural one, as to which is the cause and which the effect in a given case of sterility, coexisting with obesity, is best answered by the history of the case, and the antecedent condition may generally be assumed to be the causal one. Thus in the case of a comparatively young woman who takes on fat and whose increase of weight is followed by a corresponding decline of sexuality, there is logical inference that the first condition is the cause of the latter. This assumption is confirmed when a reduction of the obesity is followed by a spontaneous return of the menstrual and reproductive functions. The physiological conditions underlying the normal deposit of fat are those of abundant supply of nutritive material, normal digestive functions, a free circulatory activity, an absence of excessive muscular exercise, a normal metabolism and the unobstructed elimination

¹ American Journal of Obstetrics, July, 1899.

² Loc. cit., September, 1899.

³ American Medical Quarterly, June 1899.

of metabolic products. When, therefore, in a mature person, in whom the nutritive functions have attained a relative equilibrium, and in whom there occurs a change of type due to the sudden accession of fat, there occurs a re-establishment of the functions of growth, a disturbance in the balance between waste and supply, the latter preponderant. With this recurrence of growth there is also a readjustment of function approximating the prepuberty standard. There is progressive amenorrhœa, genital anesthesia and loss of sexual desire, increasing to the clinical picture of a well-established case of sterility. The prognosis depends much upon the intelligent and persistent co-operation of the patient. The acquired obesity of this class may be cured practically always, while restoration of the genital function is less amenable to treatment. Plethoric cases are more easily cured than anemic, while the most tractable of all are those complicated with neurasthenia. The treatment of sterility due to obesity is both constitutional and local, varying according as the case may be anemic or plethoric, simple or complicated, and must embrace a consideration of diet, exercise, bathing, medication and general personal hygiene, while the local treatment must embrace all resources that are calculated to overcome manifest pathologic states and to re-establish the functional power of the genital organs. There is no special diet which should be employed in every case without more or less radical change, and any attempt to apply any one of the numerous so-called systems in a routine way is fraught with hazard.

THE CAUSES WHICH RENDER DIFFICULT THE LABOR OF CIVILIZED WOMEN.

Reid,⁴ in a paper read before the British Medical Association, remarks that it is a well-founded belief that the obstetrical forceps is used much more frequently by men of the present generation than the past, and that the change was due, in part at least, to necessity, owing to the fact that there was a gradually increasing disproportion between the fetal head and the maternal pelvis. His belief was that the labors of civilized women were so severe that in the absence of skilled aid a very considerable proportion would perish, and even in cases where surgical aid was unnecessary delivery approached in severity a major operation, the effect of which a woman felt for a fortnight or a month. The labors of savage women were known to be safe and easy, and the question arose, how did civilization render labor difficult? Dr. Reid's view was that women with small pelvises tended to have daughters with a like peculiarity, and people who at birth had large or small heads tended to transmit that peculiarity. When a savage woman had a small pelvis or a large-headed child, she generally died in labor. The race was thus purged, generation after generation, of all narrow hips and large heads, while the right proportion between head and pelvis was secured. In the highest civilization many small-hipped women and large-headed children were annually preserved. If these perished, the average difficulty of labor in the next generation would be artificially ameliorated. Here was the reason why the labors of civilized women were becoming increasingly difficult, and he thought that it was not improbable that about the end of the twentieth century forceps operations would be performed much more frequently than at present.

⁴ British Medical Journal, August 26, 1898, p. 602.

SYMPHYSEOTOMY, FOLLOWED BY EASY FORCEPS TWO YEARS LATER.

Balfour⁵ reports a case in which the patient at her first labor was delivered by craniotomy, at the second by symphyseotomy, after failure of forceps, and at the third labor, delivery was easily accomplished by forceps. The case is reported as of interest, because showing a permanent improvement in the size of the pelvis after the operation of symphyseotomy. The reporter comments on the ease of the operation for symphyseotomy by the subcutaneous method, only a knife and a catheter being used, making it eminently suitable for small, dark and dirty houses where no skilled assistance can be had.

IS A SLOUGHING PROCESS AT THE CHILD'S NAVEL CONSISTENT WITH ASEPTIC IN CHILDBED?

Dickinson,⁶ under the above title, makes an elaborate review of the subject of umbilical cord ligation and sloughing and a plea for the application, in amputating the cord, of the surgical principles that govern other amputations. He says it is not a little curious that the earliest operation in the world, and the only one done on every individual, should be treated by measures that antedate our animals, namely, ligation and absorbent dressings. He lays down the following principles as being directly opposed to the prevailing practice:

(1) Mass ligation should be avoided. Hemorrhage follows the present method occasionally because shrinkage of the gelatine loosens the seizure. Ligatures belong on bared vessels.

(2) A hernial opening should not be closed by a granulation scar. Primary union is readily substituted.

(3) As in the funis the line of demarcation is known, removal should be practised at or beyond that point.

(4) That form of operation should be chosen which will do away with sloughing or pus production. Prevention of suppuration, of putrefaction in the stump and of systemic infection has been attempted by means of numerous devices and dressings. Removal alone is prevention. To frankly sever the cord at the skin margin with ligation of the vessels, or suture; one or both brings about safe, clean and prompt healing. Thereby, the navel of the second day looks like the navel of the tenth or fifteenth day under other methods.

The method used by him is to snip the cord with blunt-pointed scissors all around the skin margin. The sheath and gelatine are stripped backward with as much jelly as possible, leaving the vessels standing alone, and a fine silk or catgut ligature is put around. The vessels are cut off short and the stump tends to roll in. The stump may or may not be sutured. A dry gauze pad suffices for the dressing.

Objections to complete primary amputation: (1) Increased danger of contact infection, owing to operation on parts supplied with lymphatics, as compared with the ordinary ligation of vessels and jelly on parts having no nutrient capillaries or absorbents: (2) lack of drainage in case of infection: (3) danger of concealed secondary hemorrhage (hematoma) after the suturing method: (4) inaccessibility of vessel ends in case of bleeding as compared with facile plugging of

⁵ British Medical Journal, February 18, 1899.

⁶ Transactions American Gynecological Society, 1899.

second ligature where stump is long; (5) the risk of striking an umbilical hernia; (6) as this is surgery it is not yet adapted to the general practitioner.

To admit most of these objections is to confess that we, as instructors and surgeons, fail in our attempts to drill the students in hand cleaning and instrument boiling, and avoidance of unclean contacts. The method requires hands no cleaner than for a vaginal examination and far less wound knowledge than for the repair of perineal injuries.

CÆSAREAN SECTION IN SEPTIC CASES.

It is beginning to seem quite possible that, owing to the increased knowledge of the technique of Cæsarean section, the comparative ease with which it is performed, and the low mortality rate, that operators may be led to resort to the operation in unsuitable cases, particularly those with possible septic infection, for which some other method of delivery would formerly have been found. We have considered that a dead child or a septic mother were almost positive contraindications to the Cæsarean operation, and if occurring with a pelvic tumor, the abdomen should be opened, the tumor removed and the child delivered by forceps or eraniotomy. With this in mind, the case of Docktor⁷ is of special interest, with his report of 21 cases collected in literature. The patient was a multipara admitted in labor, expulsion of the child being impossible because of a tumor growing from the sacrum. The necessity of Cæsarean section was positive; choice of method only remained. On extracting the child, which was dead, the appendages were found partly decomposed and the uterus contained offensive pus. Fortunately, through efficient help, the uterine contents were kept outside the abdomen. The womb was amputated, a strand of gauze was passed through the cervix for drainage and the upper borders of the stump united. The recovery from sepsis was tedious. She had a characteristic eruption, a pelvic exudate and pleuropneumonia, but recovered sufficiently to be removed to the medical department of the hospital, where her lung symptoms indicated a permanent tubercular infection.

Docktor's⁸ studies of the 21 cases collected lead to these conclusions: The incision of the uterus, the extraction of its contents and suture of the womb was followed by a mortality of 40 per cent., while those patients that recovered had prolonged fever. A still worse result followed amputation of the uterus, with extraperitoneal treatment of the stump, the mortality of these being 40 and 50 per cent., and the patients who recovered suffered from pus formation in the stump and various septic complications. Those cases treated by amputation of the uterus, with intrapelvic treatment of the stump, did better than either of the foregoing, their mortality being 14.27, including the complications of sepsis, as in the other methods of treatment. So far as the comparison goes at this point, the best results are obtained by amputation of the uterus, with intraperitoneal treatment of the stump. The removal of the entire septic uterus and its contents, if possible, without contaminating the abdomen, would be the most desirable operation. This was effected in two cases by total extirpation of the pregnant uterus, through the abdomen, and in each case the mother recovered without complications. From

these cases his conclusion is that in cases of septic infection, affording considerable risk in delivery through the vagina, the womb and contents should, if possible, be removed without being opened in the body of the mother.

THE ANTENATAL AND INTRANATAL FACTORS IN NEONATAL PATHOLOGY; AN ATTEMPT TO EXPLAIN THE PECULIARITIES OF THE MORBID STATES OF THE NEW-BORN.

Dr. J. W. Ballentyne,⁹ of Edinburgh, presented a paper on this subject at the meeting of the American Medical Association at Columbus. The article is an able and interesting one, and the following is the summary of his conclusions: From all that has been said above it is clearly evident that if the characters of the diseases of the new-born infant are to be understood, it is essential that account be taken, not only of the facts that the infant's organism has just passed through a period of traumatism and is passing through one of readjustment to meet new requirements, but also that during the nine months of intra-uterine life which precede birth, it may have been the sphere of morbid processes which have left their impress on it. It may come into the extra-uterine environment already diseased and malformed, or predisposed to some pathologic development. Like pregnancy, neonatal life is an epoch which has a physiology in many respects peculiar to itself, and which borders very closely on the pathologic, tending very easily to pass over into it. In a certain sense, the ordinary vomiting of pregnancy is to the uncontrollable form as the ordinary "physiological" jaundice of the new-born is to pernicious icterus neonatorum. Further, just as every woman brings with her into her pregnancy the results of her past pathological history, so the new-born infant brings with him, out of his antenatal life into his neonatal existence, the effects of any morbid processes which may have attacked him *in utero*. In this way the pathology of pregnancy and the maladies of the new-born infant are both invested with peculiarities. The peculiarities, therefore, of neonatal diseases are not inexplicable, but are the direct outcome of the action of the antenatal and intranatal factors on the organism at this period of life.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 15, 1899,
DR. H. F. VICKERY in the chair.

DR. R. F. CHASE reported

A CASE OF BRADYCARDIA.¹

DR. KNIGHT: The case reported is a very interesting one. The slowest pulse I remember in a case of valvular disease was in one of aortic disease after compensation was lost, when the patient was within a few days of death, and for a few days the pulse would

¹ See page 130 of the Journal.

⁷ Archiv für Gynäk., 1899.

⁸ American Journal of the Medical Sciences, January, 1900, p. 112.

⁹ Journal of the American Medical Association, November 18, 1899.

beat either at the rate of 18 or at a very much higher rate. I have forgotten exactly what the higher rate was. There was a regular alternation. It would go along at the rate of 18 for several hours and then change to the higher rate and go on again several hours and then back again, and pursued that course several days until the patient died. I think that is the lowest I have ever counted—18. There are cases on record where it has gone a good deal lower than that.

DR. TWOMBLY: I saw the case with Dr. Chase on March 11th, and at that time I counted the pulse very carefully; it was 28. There was also a very slight systolic murmur at the apex. It was not remarkable and you would not notice it unless you listened pretty carefully for it, but having had my attention called to the fact that there had been one, I naturally made a careful examination, and found it unmistakably present. How long the murmur had been there, or to what extent it had exerted any effect on the slowing of the pulse, I think it is very difficult to say. Dr. Chase has watched this case very carefully, and obtained a good many records of the pulse rate, and in no case, he says, has it been over 36 per minute. I wish he had drawn the inferences, which I hoped he would make, of the relation of this slow pulse to age. We know that there are different forms, one of which is a temporary slow pulse which gradually resumes its natural number of beats. I have seen it in the case of a growing boy who had a great deal of malaria, when the pulse was down to 40, but that condition was not permanent. When we get it in the cases of old men, the continuance of a very slow pulse like this must be thought of and regarded as a very dangerous condition and the prognosis is a very grave one. If we look up the literature we find very few such cases. In those that have been seen and reported, it has been found that old men, where there is not the temporary but the permanent bradycardia, live but a short time, dying within one or two years after observation, and even at a shorter period. It certainly is an instructive case, because we had an old man, looking very well, jolly and seemingly very comfortable, and yet there was that condition which, when he had walked a little way to his daughter's house, resulted in the fatal overtaxing of the heart muscles.

DR. WHITTIER: This subject presents one of the most remarkable, as well as one of the most undesirable forms of abnormal variation in pulse rate, one that will always offer to the clinician problems of the most perplexing type. Whether the abstract condition is constant or paroxysmal, physiological or pathological, a reflex of diseased or disordered action in other functions, notably of the digestive apparatus, or associated with arterial scleroses, with myocardial changes, or with unmistakable evidences of valvular disease, whether arising from chronic intoxications from lead, alcohol, or renal disease, or in connection with acute infections, etc., there will remain a very considerable percentage of cases wholly unassignable to changes appreciable during life, or discoverable after death.

Slow pulse, constant or paroxysmal, should be regarded with great apprehension; seemingly, it is more frequently connected with organic disease, particularly with disease of the coronary arteries or of the myocardium, than tachycardia is. I believe that life in-

surance companies will accept risks with a high pulse more readily than they will those classified as bradycardiacs: slow pulse, more frequently than rapid, influences "expectancy of life." It is extremely difficult to demonstrate the physiological origin of bradycardia; its association with pathological processes is much closer and more intimate than is generally thought. Sub-standard pulse rate is much more to be dreaded than super-standard; it is relatively infrequent, experience shows it to be rarely met with, and when seen does not receive the attention its harmful influence commands and should render imperative. We are inclined to underestimate the significance of abnormal slow pulse, excepting in connection with structural changes, and then more attention is paid to the supposed cause, which may range from catarrhal jaundice to long-standing intestinal disease, cardiac, renal, hepatic, etc. This frequent association of bradycardiac and organic disease leads us to regard as unimportant the abnormal slow pulse of undetermined origin. It is needful, in all these cases, to exercise special care in the examination of the patient and to determine the question of uniformity of radial and cardiac pulse. I have seen, recently, a difference of 24 between wrist and apex and remember well a case of paroxysmal and slow pulse, not irregular nor intermitting, but regular at one-half the apex rate. These cases must be regarded with extreme apprehension, for the condition is grave wherein the ventricular contraction is so insufficient and incomplete as to fail to transmit pulse wave to the radials.

I somewhat hoped the subject of rapid heart would be included in the paper presented, for there seems to be larger interest in the aspect of abnormal heart rates—it may be because people survive the influences of high rate and prolonged rapid action exceeding all our preconceived opinion of the heart's endurance. The most energetic and, in most regards, the most interesting member of this group, is paroxysmal tachycardia of the functional neurosial type. In such cases the pulse rate, without warning or appreciable cause, by quick strides reaches a rate seemingly far beyond the limit of more than very few hours of cardiac action, and yet, I think the Massachusetts General Hospital records show a case of pulse rate of 180 or more during twenty-seven consecutive days.

I followed for a number of years a gentleman, whose first attack, of thirteen hours' duration, gave a pulse rate of 200 to 210. Dr. Ellis saw him in consultation and gave a lethal prognosis, immediate and from cardiac exhaustion; however, the patient survived not only the initial and exceptionally prolonged paroxysm, but also numberless similar paroxysms, covering several years and finally died of malignant disease of the lower bowel. The sphygmograph seemed to offer the only explanation of the heart's tolerance of such rapid movement, for in this and in other cases, from 178 to 200 pulse rate, the pulse was of low tension and the expenditure of energy as shown by the height of the primary wave was not more than one-third normal. The tracings submitted to us this evening are evidently of high arterial resistance and some of the primary waves are so short and other elements so defective as to suggest impending cardiac collapse.

There may be preventive remedies for this class of cases, and it may be also that there are palliative measures fairly constant in their effect, but of one thing I am certain, that is, that digitalis is dangerous:

it seems to make the patient somewhat more comfortable, but I believe that it shortens the period of the heart's viability in all cases where tachycardia or bradycardia is an element in organic disease, notably of the myocardium. Strychnia, however, in combination or alternating with nitroglycerin, offers the best promise of assistance.

Dr. J. W. COURTNEY read a paper entitled

A CASE OF MULTIPLE CEREBRAL HEMORRHAGES FROM CHRONIC LEAD POISONING, WITH NECROPSY.²

Dr. PRATT: I have been fortunate to make the autopsy in two cases of hemorrhage into the pons; this case of Dr. Courtney's and one that occurred at the City Hospital last spring. There have been 26 cases of cerebral hemorrhage among the 1,138 autopsies performed at the Boston City Hospital since January 1, 1896. The case just mentioned was the only one in which the hemorrhage involved the pons. The subject was a man of forty-five. Singularly enough, he also was a painter by trade. There was marked arteriosclerosis, chronic interstitial nephritis and hypertrophy of the heart. The hemorrhage was a centimetre and a half long and five millimetres in its greatest width. Unfortunately, the hemorrhage took place in the early morning hours and the character of the convulsions which occurred was not carefully observed. He died a few hours later.

Gowers states that the hemorrhage is often spherical in shape. In both of our cases it was fusiform, with the long axis extending longitudinally through the center of the pons. This agrees with the description von Monakow gives in Nothnagel's "System." Bode collected 78 cases of hemorrhage into the pons. In 46, death occurred within 24 hours.

Relative to the size of the hemorrhage, it may be interesting to state that, according to von Monakow, it varies from a hemp-seed to a walnut. The hemorrhage in Dr. Courtney's case measured 1.6 centimetres in length and two to nine millimetres in width.

Dr. V. Y. BOWDITCH read a paper entitled

THE MASSACHUSETTS STATE HOSPITAL FOR CONSUMPTIVES AT RUTLAND; ITS PURPOSE AND THE WORK ACCOMPLISHED DURING ITS FIRST YEAR.³

Dr. KNIGHT: It is hardly necessary to say much to this audience in favor of sanitarium treatment of this disease. I wish some of us might have an opportunity, in some way, perhaps to approach the public. However, that will be done by the reports of the work of this institution and by the necessary work which will have to be done before the Legislature. I am very proud certainly that our State was the first to undertake this work and of the little part which I had in it. The whole question of treatment of disease in this way has developed gradually of course, largely through the initiatory work of Brehmer, but still I think, aside from that, that the experience in hospitals, in homes for consumption which were supposed to be for incurables, and the result in general hospitals of patients getting well who had undoubted tuberculosis, turned attention in that direction. I remember in Bellevue Hospital years ago, when I was assistant to Dr. Flint, he said that patients with tuberculosis who came into the hospital all improved wonderfully. It did not make much difference whether we gave cod-liver oil or something else. A ward was set apart for

patients to whom no medicine was given, but good diet, etc., and he found they improved just the same. The food and regular life and hygiene in every way put them on the road to improvement and recovery in some cases, and so in the hospitals for consumption, the homes all over the world, in Brompton and in the others, there have been cases of cure. I have been interested in seeing in a recent work an enumeration of the homes, hospitals and sanitarium of all kinds for tuberculosis, and finding that in this country we stood pretty well up in the list. Germany has the largest number, something over 40, of homes and sanitarium for tuberculosis, and the United States between 30 and 40, France 20 odd, and England 20 odd; but now the institutions which have been starting up for the last ten or twelve years in almost all the countries of Europe, particularly in Germany, also an excellent one just out of Vienna, under the direction of Professor Schroeter, also one in Italy, and in most of the countries, in fact, are more on the plan of the strict sanitarium where patients are under constant supervision and proper treatment.

I agree entirely with what Dr. Bowditch says, that a patient has a great deal better chance of recovery from tuberculosis in a sanitarium than in private life, no matter how rich he may be. It is the one disease which of all others requires constant watchfulness on the part of somebody who understands it, and I have hoped that in these institutions a class of nurses will come up with whom we can trust our patients, who will understand the general management of them so that well-to-do patients who want to travel can do so with safety with these educated attendants. I had a very good illustration this summer of what may happen to a patient who is going on his own responsibility. A gentleman, who had followed rules very carefully, had gone on for about two years struggling very successfully against tubercular disease, had been perfectly willing to live the life which I advised, but he felt that he was obliged to attend to his business, with a certain amount of recreation in the summer. I happened to be in a hotel with him this summer. I think it was great good fortune that I was. He came to me one day and said: "I feel chilly and uncomfortable and I think I will go and take a long horseback ride and see if I can sweat it out." I directed him to go to bed. I found he had a very high temperature brought on by over-exercise. He thought that if he rode horseback ten miles it might do him more good to ride twenty or thirty. I kept him in bed ten days and his fever left him entirely and he recovered from that setback, but his pulse did not become normal until to-day. To-day for the first time he has a normal pulse. Fortunately there was no lighting up of the pulmonary disease. He had an attack of fever which lasted ten to fourteen days, and weakness afterward, but recovered. If I had not been there, I think he would have had a very much more serious time, perhaps been put back fatally. There was a man doing his best on his own responsibility; if he had been in a sanitarium that would not have happened.

I think that we all can do perhaps better than we have done, not only in putting patients in a sanitarium, but in beginning treatment of whatever kind earlier; not only finding out the disease ourselves, and admitting it to ourselves in an earlier stage, but also as a rule telling the patient the gravity of the situation. The patient will not do what he ought to do unless he

² See page 136 of the Journal.

³ See page 127 of the Journal.

comprehends the seriousness of the affection, but I have never found any ill effect from making the patient aware of his condition. Even Hippocrates says, if you treat the consumptive patient in the beginning he will get well. What I mean by early is to take the patient within a few weeks of the beginning of his cough, before he seems sick, before his friends feel that he is ill at all, as soon as the nature of the affection is determined. The majority of patients I have sent to Colorado, where I have had a great many recover, have been patients who seemed well when they went and seemed well there, nobody mistrusting they were sick. That is the time to send them. I had a consultation a few weeks ago with a physician in the neighborhood. He had a patient who began to cough last spring and various things had been suggested for relief. He went on from bad to worse. In the conversation I had with this physician he said: "I haven't much faith in the treatment of these cases." Suddenly he started up and said: "Perhaps I don't get hold of them soon enough." That is the whole business. If we can send patients into sanitarium within five or six weeks of the recognition of trouble, as we often can, if we take the trouble to thoroughly investigate, especially now that we can examine the sputum, we will get recovery in a very large proportion of cases.

DR. OTIS: I am sure that Dr. Bowditch, in thus presenting so admirably his year's experience and results at Rutland, has done to the profession as well as to the laity of the State an invaluable service. There are many of the profession still, I fear, who are unappreciative of the very great advantages of the hygienic-dietetic treatment of phthisis and the systematic methods of enforcing it in vogue in this sanitarium, and it will be a long time yet before they are fully realized both by physicians and the people. Only this morning an intelligent gentleman was in my office who had incipient pulmonary tuberculosis, and as I was explaining to him the plan of life he should pursue and the importance of outdoor air night and day, he seemed surprised and remarked: "Why, doctor, I thought I had to keep indoors with this disease," and I have no doubt that he illustrates the ideas of many consumptives regarding the management of their disease. I remember Dr. Baldwin, of Saranac Lake, told me of a young woman whose disease had been arrested at the Adirondack Cottage Sanitarium, and who, on her return to her home in Hartford, Conn., continued the habit she had learned at Saranac of sitting out of doors, even during the winter, much to the astonishment and horror of her neighbors, who looked for some untoward event in consequence. She remained well, however, and was the better for her daily and long-continued doses of outdoor air.

Dr. Bowditch has referred to the educative effect of the sanitarium treatment, and this, I believe, is of very great value. The patients become apostles when they return home and preach to others of the hygienic measures by which they have been cured; of the value of pure air by night and day; of the avoidance of overheated and ill-ventilated rooms; of the value of good food and the care of the sputum—such personal influence must be of very great importance in the prevention of the disease.

The best results of sanitarium treatment which up to the present time have been presented are, I think, those of Dr. Turban, of Davos, Switzerland, which

he has published this year. Of 498 cases dismissed from his sanitarium, he reports 66.1 per cent. relatively or absolutely cured, and of these, 97.6 per cent. were of the first stage, 73.2 per cent. of the second, and 23.6 per cent. of the third. Subsequently he communicated with these cases who had been out of the sanitarium from one to seven years, and he found that 48 per cent. of the whole number remained relatively or absolutely cured, as attested by a physician's examination, and of these 80.4 per cent. were of the first stage, 48.8 per cent. of the second, and 17 per cent. of the third; surely most excellent results. Dr. Bowditch, in his 114 cases, shows wonderfully good results also, and without the advantages of the high altitude climate as in Turban's cases. Such results could not have been obtained, I believe, either in this or any climate *outside* of a sanitarium.

There are a number of problems which the sanitarium movement brings up. One sanitarium in a State like this is only a beginning, and I fully believe that when the value of the Rutland institution is fully appreciated others will be demanded by the people, and some of them for a rather different class of persons, I hope, from those the Rutland Sanitarium now receives. Looking at the photographs of the Rutland inmates you notice they represent a refined class of people. The worthy working class who, when they are obliged to give up their occupation, become penniless, ought to have an opportunity for *free* sanitarium treatment. Fifty cents a day is as impossible for them as five dollars a day. This class—the working people—is a very important and large one, and provision for sanitarium treatment should be made possible for them. We need, indeed, in many of our well-known health resorts such carefully conducted institutions as the one at Rutland, to which we can with assurance send our well-to-do patients. If we were assured that at Colorado Springs, for example, there existed an institution as admirably conducted as Dr. Bowditch's at Rutland, we should feel greater security in having our patients in them and expect better results than from the so-called open-air treatment, which is often a go-as-you-please one. I remember at the last meeting of the American Climatological Association, one of the gentlemen read a paper upon the management of patients in Colorado, and on being asked how many hours a day he was able to keep his patients out of doors, replied, only about five and one-half hours in winter, on account of the difficulty of exercising proper control over them. With the magnificent climate in Colorado, under the direction and control of a sanitarium, we ought to expect equally favorable results as those at Davos.

With regard to gymnastics, to which Dr. Bowditch has referred, I desire to utter a word of caution regarding their use, as indeed of all exercise. It is well to bear in mind that in the treatment of phthisis over-exertion is to be strenuously avoided, and in certain conditions, as the febrile, all exercise is to be interdicted, as Dr. Knight's illustration has just shown us. Every diseased organ needs rest in order to recover itself, as Dettweiler has so well shown in the case of the lungs. I do not wish to be understood as opposing lung gymnastics; I consider them a valuable adjunct in treatment, only the cases must be selected with the skill and care which Dr. Bowditch exercises with his. With regard to the length of stay in the sanitarium, it should be long enough to obtain the best results. With the 408 cases of Turban's the average residence was

two hundred and twenty-five days, about seven months. Dr. Bowditch's cases averaged four months, and in the sanatoria for the poor in Germany, according to Cornet's recent statement, the average was only about three months. Cornet does not regard this as long enough to obtain the best results, but it seemed to be a pecuniary necessity. Once having established free sanatoria for the poor, it would be a pity and poor economy to dismiss a patient before he had obtained the maximum of benefit the sanitarium is capable of affording him. Another very important problem is the matter of proper occupation for a patient after he leaves the sanitarium, to which Dr. Bowditch has referred. A great many cases come from unwholesome, indoor occupations, to which they ought not to return if they are to maintain their restored health; and in some way they must be aided in securing work which will be wholesome and if possible keep them out of doors. Some association perhaps might be found to accomplish this. Then, again, when you have a sanitarium for the laboring people, some arrangement for the support of their families must be made while the bread-winner is being cured and so taken away from his work which sustains his family. What a common occurrence it is for the poor consumptive to continue at his occupation almost as long as he can stand up, and thus destroying his chances of recovery or arrest.

These are some of the problems which will come up for consideration and solution in connection with sanitarium treatment; but I do believe that the great wave of enthusiasm which is spreading over the civilized world, in England of late especially, and beginning also in this country, in favor of sanatoria as affording the best and most hopeful treatment for phthisis, especially for the poor, will continue, and that the authorities of the different States will recognize that it is an economic measure as well as a philanthropic one to restore to their occupation and usefulness, through sanitarium treatment at public expense, the thousands who would otherwise become a burden sooner or later to the State.

DR. WORCESTER: I am only too glad to have the chance to endorse all that has been said, and at the same time I am glad of the chance to point out some of the difficulties the institution has had in starting. It was my fortune to be one of the trustees appointed to establish the hospital, but I am no longer a trustee, and so perhaps am more free to tell some of the woes and miseries which my former colleagues on the board must still endure. The hospital cost more than the Legislature appropriated, and that was in part due to our ignorance. We did not know how impossible it was to build a complete hospital with the money the Legislature allowed. Had we known more, however, and undertaken less we should not have had the institution at all. Now the trustees are again in somewhat the same predicament: the appropriations this year are not sufficient to pay the running expenses and it will be necessary for the trustees to ask for a larger grant this year and also a grant to make up the deficiency. How far the popular enthusiasm which now seems to exist for the hospital will come to the rescue of the trustees and carry them through I do not know, but I imagine that the friends of the hospital, the medical profession especially, which is most competent to recognize the good of it, will have to put a pretty generous shoulder to the wheel to carry the thing

through. The hospital will hold only 200 at most, and it was full, as Dr. Bowditch says, within a few months, so there is no use in our thinking of it, except as a splendid practical illustration of what may be done in fighting tuberculosis. We have got to have many other such institutions scattered through the State. We have got to put a hundred times more effort into this business than has yet been put.

I cannot help drifting from Rutland and speaking a little of similar work I have tried to do in Waltham. It certainly has taught me what may be done and ought to be done. Before the Rutland institution was started I undertook to take consumptive patients into our little general hospital, which has only sixty beds, and there I obtained results strikingly successful. I think now this result was largely due, as Dr. Bowditch at the time pointed out, to the hygienic surroundings. Those patients were certainly stuffed with eggs and beef and milk and had all the fresh air there was, and they certainly did well; but after going back to their homes most of them did very poorly. Now what is the use, it may be asked, of getting a man or woman built up in any of these institutions and letting them go back to the conditions in which they were before? They may live a year or two longer, but then they have been away from their families a year or two. It is very easy to be a pessimist in the matter, but it is also possible to be an optimist. It is not necessary that they should go back into the same unhygienic conditions, and care must be taken of them in some organized systematic way. I have heard of an Irishman who left the Rutland hospital, and trouble arose between him and his wife because he insisted upon sleeping with the windows open. That illustrates one difficulty.

And then I have sometimes questioned if it is a real benefit to separate families as much as is necessary if going out of the county and miles away is a necessary part of the programme; but it is a very different thing if the sanitarium treatment can be employed in the town where the patient lives. Of course, it is an advantage to a patient to leave the low altitude of Boston and all this dreadful air that so many of you have to breathe, and go out into the country, but it is not necessary to go as far as Rutland. Even if there is such a great advantage in breathing higher air and living in it there is a corresponding depression in returning to one's home. I have always felt it was no special advantage to send a person to Colorado who could not have his family go with him, because it is so seldom possible for a patient to come back and live here. If the same horseback riding and outdoor life was employed in Massachusetts that is fashionable in Colorado Springs, would not a great many who have received benefit there have been also benefited had they stayed here and gone through the same régime? If we can only persuade people who are afflicted with tuberculosis that it is absolutely indispensable that they shall have everything that is nourishing in the way of food and any amount of oxygen, and if we can persuade them to carry out that régime here, I think in all ways it is very much better. Of course the little sanatoria started through the State will do much to teach people. But there must be a sanitarium in each town and city to teach the people in the towns and cities what to do. It is all very well to read reports about this work, but the many will never see or hear about it, and so we shall go on as

we have been going on unless the medical profession rises from its apathy. It seems to me, gentlemen, that the medical profession is most blamable in the treatment of tuberculosis. I am ashamed of myself to think how many times I have neglected a consumptive. There has been more lying on the part of the medical profession in regard to consumption, I believe, than can ever be atoned for. We know how easily we shift them off. The first time we think it is not so, and after we think it is so, we think it is not best to tell them so, and then we go through the farce of discussing with a relative whether it is best to tell the patient. I am thankful to hear Dr. Knight speak so emphatically as he has upon that subject. If the truth can only come into the treatment at the start, it will do a large part of good we trust later to obtain from oxygen and higher altitudes.

And now I cannot help adding that it is not enough to fold our hands and trust to fresh air and good food and give up all idea of other therapeutic agents. Hygiene is all well enough in its way, but it is merely an adjunct in the treatment of tuberculosis, and no matter how unpopular the subject is, I believe that in the use of tuberculin we are yet to find the proper treatment of that disease. I have used it year after year and I believe in it more and more, and I wish very much that instead of trying some of the serums that never will amount to anything anyway, there might be, in some of the hospitals devoted to the treatment of tuberculosis, a chance of carrying out systematically and thoroughly the experimentation that is going on and has been going on all these years in the wards of the Charité in Berlin. It is only too sadly true that tuberculin is an exceedingly dangerous thing to meddle with, and that there has been a great deal of mischief done in the ignorant use of it, and then we have only just lately found out that the tuberculins we have been using have been made from different varieties of the tuberculous germs, which have very different effects. There is great difference in the effect of tuberculin made from the bovine tuberculous germ and from the human tuberculous germ. The tuberculin from the bovine produces very much less reaction in man. I am one of those who believe that human tuberculosis never came from bovine tuberculosis any more than variola ever came from vaccinia. When you see, as you can see in Prof. Theobald Smith's work, the morphological and physiological differences of the different species or varieties of the tuberculosis bacillus, and when you realize that until recently we have had no means of standardizing tuberculin, no one can wonder at the very varying results that we have had. I never shall allow myself to be caught on my feet in speaking about the treatment of tuberculosis without insisting that the medical profession must yet listen to the claims of the treatment of the disease by tuberculin.

DR. GETCHELL: Speaking as a trustee I can only reiterate and emphasize what Dr. Knight has said. This year we shall be obliged to go before the Legislature with a deficit, and also a request for considerable sums of money for what seems to us to be absolutely necessary additions. The law called for an institution that should accommodate 200 patients. As Dr. Bowditch has said, under the contingencies of the additional expense that could not be foreseen the accommodations were curtailed, so that a part of the hospital that was intended for patients has been

occupied by nurses and other members of the administration force; and the hospital is not doing the work that it should do. As you will see by the report, which will be placed in the hands of every physician in the State, an attempt will be made to remedy this by providing a dining-room which will relieve the rectangular buildings at the rear of the hospital, and which will give accommodation for servants and will enable those rooms to be used for patients. There will be another question which will arise in the Legislature, and it has already arisen, and that is the question of enlarging the hospital beyond the capacity for 200, and it is here we want and need the aid of every physician in the State that the Legislature may understand what the hospital is for. I am perfectly sure that many of them look upon the institution as an institution that is analogous to the insane asylum—that is an institution built by the State and for State charges. As a matter of fact, the people who come to the sanitarium are not State charges. The majority of them are people who have been earning their livelihood at the time of their admission or just previous to it, and as time goes on and the matters that have been brought forward to-night are recognized more clearly, the disease will be detected earlier by physicians, and the number of people who are earning their livelihood will be much greater. It is very important indeed, I think, that the Legislature should recognize this, and for help we look to the profession.

We find in the papers a good deal about the State aid for consumptives. Now it seems to me, that that is the best attitude for us to take at present in the matter. The people who come to Rutland only pay one-half of the actual cost. It costs some over \$8.00 a week for each patient and the charge, at first \$3.50, is now \$4.00, and it seems to me, the idea ought to be as widely disseminated as possible that this sanitarium is built by the State as an aid and not necessarily as a place where people go and will be kept at the expense of the State. Under the present methods of administration, more than 200 patients cannot properly be cared for and unless the institution depart from the sanitarium idea it should not be enlarged. We are behind in our current expenses. The request was made of the last Legislature for \$40,000 for current expenses, and at that time I think it was felt the hospital would not be filled as readily as it was. In February the full capacity was reached and the hospital has been full ever since. Furthermore, there were necessary expenses and those expenses have been taken from the current expense appropriation, ordinary repairs, matters that could not be neglected; so that I think at this time the appropriation is exhausted and a deficit is accumulating month after month. There has been the utmost attempt to economize. I think I am not divulging any secrets of the board when I speak of the difficulties that we have had this summer in regard to the matter of food. The administration has been between the two fires of insufficiency of means and the attempt to economize particularly on that most vital of all articles of food in a sanitarium, eggs, a matter in which undue economy is of doubtful wisdom. I have no doubt of the outcome. The Legislature of Massachusetts, when it has felt an expenditure for public purposes to be necessary, has always granted the means, but I do feel that every avenue of information will have to be used this year in order to enable the institution to go forward

with the work that it has, without question, very satisfactorily begun.

DR. PERCY: It seems to me it is hardly necessary to add anything to what Dr. Getchell has already said, but it has occurred to me as I listened to Dr. Bowditch's very interesting report that one thing he has omitted to say, and that is that another question may be solved and solved in a very short time in regard to the statistics of our hospital, and that is verifying a suspicion or an opinion which is entertained by a great many men now, that cases which are arrested in their environment are much more likely to remain so than cases where the disease is arrested elsewhere, and they return to their former environment. That is a very interesting problem the State is trying to solve, and, it seems to me, is bound to solve, and I feel confident the answer is to be a favorable one. Dr. Otis has asked several questions to-night and I feel deeply grateful to him for doing so. Among them, no problem has been more serious than the one in regard to the occupation of these people who come out apparently restored to health, and it is a matter still under very serious consideration. It may be met in a variety of ways, but, it seems to me, it must come by co-operation on the part of people interested, and if a corps of workers can be organized who will have the interest of those people at heart, we shall be able to do far better for them, and shall be able for the first year to provide for them in a way which is certainly in their favor. Another thing which constantly comes to the trustees is this problem in regard to children. No problem, the superintendent said this week, had vexed him more than what should be done with a little girl who came from the North End of Boston, who is absolutely restored to health and has absolutely no place to go. With regard to the children of mothers who are there, and who naturally have a very deep interest in them and are very lonesome without them, they are provided for in boarding-houses in Rutland. Already a nurse of the kind Dr. Knight spoke of, who has been trained in sanitarium methods, has opened in Rutland a home for cases not admissible to the hospital, where people can be sent with the idea of doing for them what cannot be done at any other place.

DR. BANCROFT: The city of Boston is making a move in this direction, but limited to a very small field. At Deer Island there is an institution where all tuberculous prisoners from the prisons of the city can be assembled in one building, that place being so situated that they can be kept out of doors as the circumstances demand. Then our two prisons will be freed, so far as the cell occupants go, of tuberculous cases, which is impossible now.

DR. BOWDITCH: In speaking of incipient cases, I am much struck with the fact that so many patients are sent for examination as incipient cases, merely because there are comparatively few signs in the chest. No regard seems to have been paid to the presence of a rapid pulse, high temperature and often bad digestion. Such cases are most unfavorable for treatment as a rule, and usually show the symptoms later of a general tuberculosis. The non-febrile cases are much to be preferred in any attempt to bring about an arrest of disease.

As to the necessity of caution in pulmonary gymnastics, too much stress cannot be laid upon this point. At Rutland classes are formed for this kind of exer-

cise, but it is not used when, for any reason, rest seems indicated. For the sake of making variety for the patients, even baseball is resorted to, but with caution, and only the most vigorous are allowed to take part. In the past six or eight months, in consequence of the precautions taken, I know of no case that has received any injury from this form of exercise. Golf is now in use with excellent effect both on the mental and physical condition of the patients.

Dr. Worcester has spoken of the use of tuberculin therapeutically. He knows the respect that I feel for his views upon any subject, and yet on this point we have been, as it were, at the opposite ends of the pole on that question. Even as to its use diagnostically, I have held, as stated in this room several months ago, what may be an ultra-conservative position, because I was not convinced of its absolute innocuousness. From that position I have retreated somewhat, having felt that in a few cases I was justified in its use where other means failed and a definite diagnosis was imperative. As to its use therapeutically I am still a skeptic, although glad and willing to be convinced when absolute proof is given me. Dr. Worcester has spoken himself of the marked variation in the strength of the different preparations and under these conditions the indiscriminate use of the substance, except by those who have a knowledge of bacteriology, seems to me wrong. Under present conditions, with the means at our command, I should be unwilling to use the substance, unless more fully convinced of its efficacy.

Recent Literature.

Pyorrhea Alveolaris and its Relations to General Medicine. By JOHN FITZGERALD, L.D.S., Dental Surgeon to the Italian Hospital and to the National Hospital for Diseases of the Heart and Paralysis, Soho Square. London: The Medical Publishing Co., Ltd. 1899.

The author states in his preface that the object of this little book is to point out the bearings of this disease upon medical practice and to indicate simple methods of treatment within the reach of the family physician.

The book is interesting from many points of view and contains many valuable suggestions for the diagnosis and treatment of this truly formidable disease. Attention is called to the secretion of the gingival organ and the importance of not mistaking this secretion for pus. The effect of mal-occlusion of the teeth is pointed out, although hardly enough importance is given to this as one of the predisposing causes of the disease.

We are inclined to believe that the presence of lactic acid in sufficient amount to have any serious bearing upon the disease is not sufficiently proven. It is also doubtful if the invasion of the pockets at the sides of the roots can be called a "streptococcus" invasion, as the observations of bacteriologists in this country would tend to show that the staphylococcus forms only are generally found in these pockets and are probably responsible for the production of pus.

The author has evidently not too high an opinion of the ability of the average dentist to treat this disease and has a somewhat exalted opinion of the tech-

nial skill of the average medical practitioner. He gives directions for the treatment of the disease by the physician, and gives a list of the instruments likely to be required in the course of treatment, and in doing this we think that the author has rendered his work almost valueless.

The amount of time and training that would be required to train the average physician to recognize the varying aspects of the disease and to use the necessary instruments with proper skill would not be less than the training which would be necessary to render the average dentist competent to perform an operation for appendicitis.

While we believe that the attention of the physician should be called to the importance of an early diagnosis of pyorrhea alveolaris we are equally confident that its operative treatment should be left in the hands of the dentist.

Diseases of Women. A Treatise on the Principles and Practice of Gynecology, for Students and Practitioners. By E. C. DUDLEY, A.M., M.D. Second edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co. 1899.

The publishers' part of this second edition of a book which has now become standard is admirably done. The text is clear, the plates numerous and admirable. The arrangement is very original, and at first strikes one as odd, but after reading the book through it becomes evident that it is admirably natural, leading the reader easily from one subject to another, and that it is extremely easy to find any subject which one wishes to look up. It is especially unique in one respect. It combines the careful treatment of detail which is characteristic of the older type of book, such as Emmet's and Thomas's gynecologies, with all the advantages of the modern operative school, in which latter respect it is fully up to date. One feels too often after reading the recent text-books that the author is a surgeon rather than a man equipped with a specialist's knowledge of the diseases of the female pelvis. This book is written by perhaps the most scholarly of American gynecologists, and shows it on every page. Each disease or lesion is treated in the most thorough way from the standpoint of the mechanical relations and pathology, before treatment is taken up. In spite of its being limited to but seven hundred pages, it is encyclopedic in its thoroughness and completeness.

Part I, devoted to General Principles, is admirable in the clearness and detail of the descriptions which it furnishes for a beginner. In Part II, on Inflammatory Infections, the chapter on Pelvic Cellulitis is especially timely. That on the Treatment of Salpingitis, Ovaritis, and Pelvic Peritonitis is very thorough and useful. In Part III, devoted to New Growths and Malformations, the pathology is remarkably clear, the directions for diagnosis good. In Part IV, Traumatism, the descriptions of the lacerations of the perineum and cervix and their method of repair are most remarkably clear and good. Every beginner may learn from them how the operations should be done, while even the expert may learn something of value from reading them. Part V, upon Displacements, is thoroughly up to date, and is supplemented by an admirable chapter on Massage. Part VI, upon Disorders of Menstruation and Sterility, treats this complicated subject wisely and conservatively.

The book as a whole is perhaps our best text-book.

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THE EVOLUTION OF SURGERY IN LONDON.

THE growth and evolution of the profession of surgery will always be a fascinating study, notwithstanding the fact that it serves the profession as the Darwinian theory served the race in tracing it back to a humble origin. The part played by the barbers and the barber surgeons, not only in surgical practice but as an organized body, in London from the earliest times even to as late a period as 1745 cannot but excite surprise in the mind of the modern student of surgical history. A very readable pamphlet entitled, "How Surgery became a Profession in London," by D'Arcy Power, reprinted from the *Medical Magazine*, gives an account of the history of the surgical profession in London which is well worthy of a review.

In the Middle Ages there were two types of surgeon in London, "the military surgeon and his peaceful though often brawling brother, the barber surgeon. The military surgeons, who formed rather the aristocracy of the profession, were in attendance on the kings and nobles as early as the third Crusade, (1189-1192), and in the thirteenth century there were formal gradations of rank, such as Royal Surgeon, Common Surgeon," etc. A clear view of their status earlier than 1415, however, cannot be formed. In that year, when Henry IV crossed the Channel to conduct the campaign which ended in the battle of Agincourt he took with him his physician, Nicholas Colnay, and his surgeon, Thomas Morestede. These gentlemen, who had respectively medical and surgical charge of the king's army, received the munificent recompense of twelvecence a day, in addition to the usual allowance of one hundred marks to the quarter, the pay, it is stated, of thirty men-at-arms, with a share of the plunder. They were each attended by three archers as a guard, each of whom received sixpence a day. Morestede took with him a staff of twelve surgeons as his deputies and assistants, who received sixpence a day, or the pay of an archer. This scale of remuneration was very liberal, the wages of a day laborer at the time being one penny a day.

As a day laborer in London nowadays earns three shillings a day, while a surgeon on probation in the British Army receives only eight shillings a day, the assistant surgeons and archers in Morestede's time would receive, if paid at the present time in like proportion, eighteen shillings a day, beside their share of the booty. So it appears that military surgeons of the fifteenth century were better paid than those of the nineteenth.

Let us hope that the authorities of the twentieth century will take a lesson from those of the fifteenth, and increase the pittance paid to the surgeons in charge of the health and lives of their armies, a change sorely needed to attract a better class of men into a service the importance of which to military success has been for centuries unaccountably underestimated! Notwithstanding the remuneration, however, the service was so perilous that Morestede had such difficulty in securing twelve suitable assistants that he requested the king for authority to press twelve qualified men into the service.

A Guild of Surgeons, as distinguished from the Guild of Barbers, existed in London from time immemorial, but was first incorporated, apparently, in 1369, and occasionally harassed the members of the Barbers' Guild, who meddled with surgery to such an extent that in 1410 "certain good and honest folk, barbers of the city," appeared before the aldermen and demanded that "they peaceably enjoy their privilege, without the scrutiny of any person of other trade than barbers. And this neither in shaving, cupping, bleeding nor anything in any way pertaining to barbery or to such practice of surgery as is now used or in future to be used within the craft of said barbers."

The movement for a complete medical education, together with a more effective control over the practitioners of medicine and surgery, began in 1423, with a petition of the Mayor and Aldermen of London, praying that physicians and surgeons practising in London might be considered as a single body of men governed by a Rector of Medicine with the assistance of two surveyors of the Faculty of Physic, and two Masters of the Craft of Surgery. There was to be a common place of meeting, with rooms for examinations and lectures. . . . No surgeon was to be allowed to practise in London unless he had been examined by the Rector, the two Masters, and the majority of the Craft, and duly licensed by the Mayor and Aldermen, under penalty of one hundred shillings fine. A patient unable to pay a fee might appeal to the Rector and Masters in Surgery, who would assign him a good practitioner, "busy to take heed of him without expense."

For an account of the career of the distinguished Dr. Gilbert Kymer, the first Rector of Medicine, we must, for lack of space, refer our readers to the original article. This "Conjoint Faculty of Medicine and Surgery" was, while it lasted, formidable to the Guild of Barbers, but it probably lasted not longer than two

years, after which the two bodies of physicians and surgeons each went their own way till 1435, when the surgeons appear as an established fellowship, with a code of laws for its government. Thomas Morestede was one of the first seventeen members agreeing to the ordinances of the fellowship. In 1462 the guild obtained a charter of incorporation, and in 1492 received a grant of arms. In 1493 it was on friendly terms with the Barbers' Company, and in May of that year entered into a composition with that body which recognized the independence of the two fellowships of "surgeons enfranchised within the City of London and of barber surgeons and surgeon barbers enfranchised within the said city." No more is heard of the Guild of Surgeons till 1540, when they were formally united with their old competitors to form the "United Barber Surgeons' Company."

In the years immediately preceding and following this consolidation surgery reached the lowest ebb, and was of no account as a profession, for an act of Parliament was passed allowing any quack to practise. Of the history of the little band of surgeons, Thomas Gale, William Cloues, John Halle, John Read and John Banester, who, working independently at first, afterward banded together to lift their profession from the mire, Power's article gives a most interesting account, full of anecdote and quotation, which is well worth reading as setting forth the difficulty of getting the public out of the hands of ignorant pretenders. It seems that members of nearly as many trades put themselves forward as practitioners of surgery as do at the present time. Master Cloues mentions painters, glaziers, tailors, joiners, cutters, cooks and chandlers, as well as "tinkers, tooth drawers, pedlers, ostlers, carters, porters, horse gelders, horse leeches, idiots, apple squires, broom-men, bawds, witches, conjurers, sooth-sayers and sow gelders, rogues, ratcatchers, runagates and proctors of spittle-houses, with other like rotten and stinking weeds which do in town and country without order, honesty or skill, daily abuse both physic and surgery," etc. The gradual elevation of the Barber Surgeons' Company through the efforts of such men as these whose histories are given, their establishment of public dissections and lectures, with a fine for non-attendance, make a story of surpassing interest.

The stories of John Woodall, who discovered during the Elizabethan era that lime juice was a preventive of scurvy, and of his effort to free the surgeons from the impositions of the physicians, of his successor, Richard Wiseman, of Cheselden, Sharp, Percival Pott and Hunter, bring the story down to 1745, at which time at last the surgeons seceded from the Barber Surgeons' Company, and the Surgeons' Company was organized. Surely it took time enough to free surgery from its tonsorial associations and place it on its feet as a profession. Cheselden had raised surgery as a manual art, Hunter left it richer in pathology, but to Pott our author gives the credit for the social improvement which took place during the Hanoverian

dynasty. At the beginning of the present century the higher rank of surgeons had been established in a social position, as is evidenced by the lives of Sir Astley Cooper, Sir William Lawrence and Sir Benjamin Brodie.

A brief review such as this can give but a slight idea of the interest and value of such a study of professional history as is embodied in Power's article, which will repay the reading by all who are interested in the story of the struggle of the surgical and medical professions from humble and obscure origin to the position in which they belong, a study which ought to be worth the while of every enlightened practitioner.

SANITARIUMS FOR TUBERCULOSIS.

THE recognition of the fact that tuberculosis is a highly preventable and in many cases a curable disease has led to an entire change of front in the attitude of the community toward it. By degrees the air of hopelessness surrounding the tuberculous person has given place to quite a different feeling, and with this changed feeling has come the natural desire, first on the part of physicians and then on the part of legislators to take an active interest in the treatment of the afflicted class to which such a person belongs. As a consequence, institutions have come into existence for the rational treatment of tuberculosis, at first regarded with suspicion, but now rapidly being accepted as a most necessary part of the hospital system.

A new impetus has, evidently been given to this tendency in New York State, first, through the report from a committee of the State Board of Charities, the details of which we have noted in another column, and secondly, through the discussion recently held at a meeting of the New York State Medical Society. The committee of the State Board of Charities strongly recommended the establishment of local sanitariums, as the most efficient means of combating the disease, rather than crowding tuberculosis patients into one or two large institutions, possibly at considerable distances from their homes. Such a plan appears possible, both from the point of view of expense and ease of management.

Inasmuch as the régime of the patients should be hygienic, fresh air and good food and a certain amount of medical supervision, it should not be difficult to establish relatively simple and yet adequate hospitals in the neighborhood of centres of population. Elaborate buildings are certainly not required, and the equipment of such a sanitarium need be of the simplest. With the subsidence of prejudice regarding hospitals and sanitariums there is small reason to fear that such institutions would not be patronized, particularly if a slight stimulus in the shape of a law regarding precautions against infection were applied.

Drs. E. O. Otis and Vincent Y. Bowditch both spoke at the meeting of the New York State Medical Society from their wide experience in the care and

treatment of tuberculous patients. Dr. Otis alluded to the desirability of securing legislative action in regard to tuberculosis, thereby bringing the disease under State control, as has been done, in a measure at least, in Massachusetts. Dr. Bowditch described the excellent work now being done at the Rutland Hospital, an example which should certainly be quickly followed by other States.

Others who spoke, among whom was Dr. Baldwin, of Saranac, simply echoed the general feeling of encouragement regarding the treatment of the disease by modern common-sense methods. No doubt continued perseverance on the part of physicians will finally lead legislatures to the complete recognition of the folly of longer delay in adequately providing for the hospital care of all persons ill with tuberculosis.

MEDICAL NOTES.

PLAGUE.—The St. Petersburg plague board reports that bubonic plague is prevalent in Assyr, Mecca and Jeddah, and that, accordingly, this year's Mussulman pilgrimage to Mesopotamia is to be prohibited. In a recent attempt to eradicate the centre of plague infection in Honolulu, the fire started in the Chinese quarter for this purpose, was for a time beyond control, and threatened the entire city. Instead of two city blocks, an area of thirteen blocks was finally burned before the fire could be brought under control. A report from Major Blair D. Taylor, United States Army, in regard to the progress of plague in Honolulu, dated January 15th states that up to that date there had been 34 cases, with 27 deaths. The following week there were 12 new cases and six deaths. Plague has disappeared from Kobe, Japan, but is active in Osaka, taking the form of a lung disease which proves very fatal. Thirty-nine cases have been reported.

SMALL-POX IN THE WEST.—It is reported that small-pox is assuming considerable proportions in several Western States, on account of the evasion of vaccination and the refusal to obey the orders of the health authorities, on the ground that compulsory vaccination is a restraint upon the liberties of the people. As a daily paper says, "Perhaps a good-sized epidemic there might be useful for educational purposes."

SIR MICHAEL FOSTER A CANDIDATE FOR PARLIAMENT.—According to *Science*, Sir Michael Foster, professor of physiology in the University of Cambridge, one of the secretaries of the Royal Society, and last year president of the British Association, has consented to become a candidate for the University of London's seat in Parliament, vacant by the elevation of Sir John Lubbock to the peerage.

THE "MARYLAND MEDICAL JOURNAL."—This journal, for many years published as a weekly, will hereafter appear as a monthly, beginning with the January issue. It will be published in Baltimore and Washington, considerably increased in size and improved in appearance.

SECTION OF A FIELD HOSPITAL GIVEN BY AN AMERICAN. — An American, Mr. Van Alen, now resident in London, has offered to provide a complete section of a field hospital for service in South Africa under the superintendence of the British Army Medical Corps, and his offer has been accepted.

OSTEOPATHY IN GEORGIA. — At its recent session, the General Assembly of Georgia passed a bill legalizing the practice of osteopathy. In spite of considerable pressure the Governor vetoed the bill.

INCREASE OF CREMATIONS IN LONDON. — In 1885 three bodies were disposed of by the London Cremation Society. In 1898 the number had risen to 240.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, February 7, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 121, scarlatina 53, measles 38, typhoid fever 11, small-pox 1.

DIPHThERIA AND SCARLET FEVER IN MASSACHUSETTS. — The prevalence of diphtheria in Newton is about the same as it has been for a week or more. Three cases of scarlet fever have recently developed in Medford. In West Springfield the diphtheria epidemic is regarded as serious; the situation will be investigated by the State Board of Health. In the last six months West Springfield has had ten times as many cases of diphtheria to each thousand inhabitants as Boston. An order has been issued by the Medford Board of Health closing the Tufts and Lincoln School buildings in the South Medford district, on account of diphtheria. The prevalence of diphtheria is hardly to be regarded as an epidemic, since there are only about 15 cases, and only three deaths have occurred in two weeks, but the residents of the district have refused to send their children to the schools.

MEETING OF THE NEWTON HOSPITAL CORPORATION. — The annual meeting of the Newton Hospital Corporation was held February 4th. The report showed in general a satisfactory condition of affairs. New wards and other additions have enabled the hospital to meet the increasing demands made upon it during the last year. There are now accommodations for 150 patients. Particularly useful have been the isolation wards for diphtheria and scarlet fever.

LINCOLN SCHOOL IN MALDEN, MASS., TO BE REOPENED. — Notice has been given by the Malden Board of Health that the Lincoln School would be reopened on Monday, February 5th. It has been closed for the past three weeks, owing to the prevalence of small-pox in a neighboring house. One patient has recovered and another is rapidly improving.

TYPHOID FEVER IN OUTLYING TOWNS. — Fifteen cases of typhoid fever are said to have appeared on the route of a certain milkman in Brockton, Mass. A careful investigation by the State Board of Health has shown that the recent outbreak of the disease at Nor-

wood, Mass., was due to the pollution of well water in which milk cans were washed.

AMBULANCE FOR SMALL-POX SERVICE. — An ambulance ordered by the Boston Board of Health some time ago, exclusively for small-pox service, is completed and in commission.

NEW YORK.

INCREASE OF INSANE CRIMINALS. — In his annual report, submitted to the Legislature January 29th, State Superintendent of Prisons Collins calls attention to the increase in the number of insane criminals, and states that 719, nearly 200 more than the buildings were designed to accommodate, are now crowded into the hospital at Matteawan. The over-population of this institution he regards as a very urgent demand for the earliest possible completion of the new hospital at Dannemora, for which an additional appropriation is necessary. A peculiar fact referred to is that out of 85 criminals sent to the hospitals for the insane during the year 40 come from the Elmira Reformatory, nearly as many as from the three State prisons combined.

A STATE HOSPITAL FOR TUBERCULOSIS. — On January 31st a hearing was given at Albany, by the Senate Finance Committee and the Ways and Means Committee of the Assembly, for the discussion of the bill recently introduced calling for an appropriation of \$200,000 for the purpose of establishing a State Hospital for the treatment of incipient pulmonary tuberculosis. Commissioner Stoddard of the State Board of Charities and a considerable number of other medical men were present, and among those who spoke was Dr. Otis, of Boston, who gave some account of the establishment and work of the State Hospital for Consumptives in Massachusetts.

NEW YORK DIET KITCHEN. — The twenty-seventh annual meeting of the New York Diet Kitchen Association for the Relief of the Sick Poor was held on January 17th. Among the speakers of the evening was Dr. A. Jacobi, who incidentally alluded in terms of warm praise to the good results of the free distribution of sterilized milk by Mr. Nathan Strauss, who had persisted in his philanthropic work regardless of the ingratitude of some and the hostile criticism of others.

Miscellany.

LOCAL SANITARIUMS FOR TUBERCULOSIS IN NEW YORK STATE.

A REPORT has just been made by a committee of the State Board of Charities, consisting of Harvey W. Putnam and Drs. Stephen Smith and E. V. Stoddard, which strongly recommends the establishment of local sanitariums as the most efficient means of combating the spread of tuberculosis. The argument advanced by the committee is somewhat as follows: Fresh, pure air is now declared to be the remedy for consumption. The question to determine is, how can the fresh air treatment be most effectually and eco-

nomically made available? No one familiar with the peculiar habits of those who believe themselves to be the victims of tuberculosis can doubt the absolute necessity of placing them under rigid medical supervision. Under the discipline of the hospital or sanitarium, they can be compelled to conform to a prescribed method of living, and hence these institutions are essential to the treatment of consumptive patients of the laboring class. By the multiplication of these institutions, so that every consumptive would either undergo treatment in a special hospital or in his house, the disease could not spread among the people, and would eventually be exterminated. We are no longer compelled to seek health resorts for consumptives in remote mountain districts. On the contrary, it is possible to find in or near every community locations which, with the addition of hygienic conditions that may be supplied, will prove suitable for the full development of the fresh air treatment. The report concludes by expressing the conviction that if the Legislature should enact a law on the general plan outlined, it would at once lead to the establishment of local hospitals near all the great centres of population, the beneficent results of which would stimulate the people of smaller communities to the creation of their own sanitarium.

THE WAR IN SOUTH AFRICA.¹

THE BATTLE OF TUGELA (COLENSO).

FREDERICK TREVES, F.R.C.S., consulting surgeon with the British forces, sends the following graphic statement to the *British Medical Journal*:

It was from Frere Camp that the army under General Buller started for the Tugela River. Frere is merely a station on the line of rail which traverses Natal, and as it consists only of some four houses, it can hardly be dignified by the name of hamlet. These few single-story houses had been thoroughly looted by the Boers, and in one of them — the station master's house — the General had his headquarters. Frere is simply a speck — a corrugated iron oasis — in the vast undulating plains of the veld. On the way to Ladysmith are a few large kopjes, from any one of which the line of the Tugela River can be seen, with the hills beyond occupied by the Boer entrenchments, and over them again the hills which dominate Ladysmith. There was no shade of any kind, and as the weather was exceptionally hot the camp was not precisely comfortable. The inconvenience of a continued sun-glare was intensified by constant clouds of brown dust and by the scarcity of water. On the other hand, the evenings were cool and the early mornings delightful.

The river which is reputed to "run" through Frere had long since ceased to run. The water was retained by certain dams, and the pools thus formed were not over numerous. The water was the color of pea soup, and when in a glass was semi-opaque and of a faint brownish color. It soon blocked a Berkefeld filter, the pencil of which had to be cleaned after each water bottle had been pumped full. The filtered water was pleasant enough to the taste. In the lowest pool, immediately above the iron railway bridge which had been blown up by the Boers, Tommy Atkins could bathe in what seemed to be a light-colored mud. Here also he washed his socks and his shirts.

We came up to Frere — I, and my two nurses — with No. 4 Stationary Field Hospital. We reached the camp on the Monday before the battle, when it was reputed that 30,000 men were under canvas. A camp of this size of necessity presented an endless scene of bustle and movement. Nothing seemed to be at rest but the interminable array of white tents and the rows of baggage wagons. Cavalry would be moving in one direction and infantry in another. Here a mounted patrol would be riding out or a couple of scouts coming in. Gallopers would be seen in all directions, and everywhere would be a struggling team of oxen or of mules enveloped in clouds of dust and urged on by sweating men and strange oaths. The camp, during the day, lay dry, dusty, parched and restless under a blazing sun, but at night there was a cool wind and cheery camp fires, and a darkness which blotted out the dusty roads, the dried up river, the dismal piles of stores, and the general picture of a camp in a desert of baked earth. Every night a search light was at work sending despatches to Ladysmith, and almost every morning could be heard the Boer guns thundering over that unhappy place. Tommy Atkins looked very smart in his khaki suit when leaving Waterloo Station, or when embarking at Southampton, but at Frere he showed the effects of wear, and his tunic, his belt, his pouches, his boots and his face had all toned down to one uniform tint of dirt color. He was of the earth earthy. Even his brown face and red neck were well powdered with the common dust, but nothing seemed to have blotted out his cheerfulness and his determination to make the best of even a camp on the veld.

BEFORE THE BATTLE.

On Wednesday the army began to move forward to Chieveley, and on Thursday the whole camp had nearly vanished and little remained but smouldering fires of camp refuse, the inevitable dust, the inevitable sun and the inevitable Kaffir.

From a kopje some three miles beyond there — the kopje from which the Boers fired upon the ill-fated armored train — the new camp at Chieveley could be seen. The baggage train which followed the army was eight miles in length. This train was made up mainly of wagons drawn by teams of oxen — 18 to each wagon. The last bearer company was well out of sight in the new camp before the last wagons — carrying pontoons — had started. The course of this enormous caravan across the veld was marked by a line of brown dust which gave one the idea that the very road was smoking under this unwonted burden.

From the kopje we could see the firing of the great naval guns and the clouds of dust sent up by the exploding shells, and now and then from the weary road would come an attenuated sound, which was all that reached us of the shrill yells of the nigger drivers, whose dust-dried throats gave out noises like the shrieks of parrots.

On Friday morning No. 4 Stationary Hospital moved hurriedly to Chieveley. To our numbers had been added two Netley sisters, whose skill, devotion and un-elfishness were soon taxed to the utmost. On the way up it was evident that the battle was raging. The roar of the big guns was incessant, and rising above their solemn boom was the sharp, irritable crack of the quick-firing ordnance. Our hospital was about three and three-quarters miles from the Naval Hill on

¹ Abstract from advance sheet, *British Medical Journal*.

which our big guns were pitched. Close behind the ridge formed by this hill were four field hospitals. The scene presented at this spot was beyond description. The men were coming in as fast as the ambulances and bearers could bring them. Some were dead, some were dying, all were parched with thirst and baked and blistered with heat. The men were lying on all sides on stretchers — amidst tents, piles of rifles, accoutrements, battered helmets and blood-stained tunics. It was a sight no one would wish to see again, and the blazing sun added to the miseries of all.

Some 800 wounded were passed through the field hospitals and dealt with by 16 surgeons. Those who harshly criticise the Army Medical Department should have seen the work done on that memorable Friday on the Naval Hill before Colenso. No work could have been done better. The equipment was good, the arrangements elaborated, and the officers worked on hour after hour without rest or food under the most trying possible conditions. No greater strain could have fallen upon a department and all concerned met the brunt of it valiantly and well. One could not be other than proud of one's profession.

In addition to the ordinary bearer companies, Colonel Gallwey had organized a volunteer ambulance corps of some 2,000 men, disposed in the proportion of 12 men to a stretcher. It was intended that these bearers should convey the more seriously wounded from the field, so that they might be spared the jolting of the ambulance wagons over the somewhat rough ground. Not only did the bearers do this and so save infinite suffering, but all Friday night and Saturday they were carrying the graver cases from the field hospitals to the stationary hospital at Chieveley. So admirably was the stretcher work done that not a single wounded man was left upon the field after dark on Friday.

Our hospital at Chieveley was crammed to its utmost, and very many wounded men had to lie all night in the open. Fortunately the nights on Friday and Saturday were very fine, and there was a bright moon.

The work on Friday and Saturday was the heaviest I have ever experienced, and we all suffered a good deal from thirst. The nurses worked not only all day, but also all night. Some hundreds of wounded soldiers will have reason to remember their devotion that day, and how well they succeeded in rendering a little more tolerable a state of misery which was horrible to contemplate.

After a heavy afternoon on the field I returned to Chieveley Field Hospital in the evening, but had hardly got in when a galloper arrived to ask me to see Lieutenant Roberts, who had just been brought back. I returned at once with a full equipment of instruments, and much regret that that valiant soldier was from the first quite beyond the reach of surgery. In addition to a penetrating wound of the abdomen, his forearm was shattered by a Mauser and his knee wounded by a shell. He was pulseless. I slept outside his tent that night, and saw him up to Chieveley on Saturday morning. He never rallied nor regained a pulse, and died on Saturday at midnight. Before he was brought in he had been lying for seven hours in the sun in a donga. He was attended to by Major Babbie, R.A.M.C., who rode into the donga through a hail of bullets, and whose horse was killed under him. Major Babbie kept by the many wounded men in the

donga until the battle was over, and as he alone had water in his water bottle he doled out water to each man in a minim measure, one drachm to each.

On Sunday we had to leave Chieveley as the hospital was within reach of the Boer shells. We therefore retired to our previous "pitch" at Frere. The hospital tents at Chieveley were admirably situated, but the work was much hampered by want of water. The temperature on Friday and Saturday was up to 100° F. in the shade. On Monday the temperature rose to 104° F. in the shade. A clinical thermometer in a bag and under cover of a tent registered 104.5° F.

The method of dealing with the wounded in the Natal Field Force is as follows: The railway — a single line — is open as far as Chieveley, and on it are two admirably-equipped hospital trains in charge of the indefatigable and ever-obliging Major Brazier-Creagh, R.A.M.C. The hospital train was on the field before daybreak on Saturday morning, and was soon filled with wounded. Some few of these were landed at the No. 4 Stationary Field Hospital at Chieveley, the rest were taken on to Estcourt and Maritzburg. At both these towns, but especially at Maritzburg, there is very excellent hospital accommodation. The base hospital alone at Maritzburg can take in 1,100 patients, and, besides, there is the large military hospital at the College, Grey's Hospital, and the hospital for volunteers established at the Legislative Assembly.

From Maritzburg the patients are sent down to Durban by the hospital train, and are then conveyed to Cape Town by the hospital ship *Spartan*. From the careful examination I made of her when I boarded her at Durban, I should think she was the best equipped and best-managed hospital ship afloat.

Colonel Gallwey's organization has now been tested to the utmost, and has been proved to be efficient and admirable. The wounded placed upon the hospital train by the Naval Hill below Chieveley could have — as soon as they were placed in their berths — iced soda water and whiskey, iced milk, hot soup, or even champagne and seltzer.

The great majority of the wounds are by Mauser bullets, some few are due to fragments of shell, and a still less number to shrapnel. The Mauser bullet is a very merciful one, and in no instance have I met with a case in which the head of the bullet had been cut off, as had been asserted by some. The damage done by the Mauser depends mainly upon the range. At 1,500 to 2,000 yards it penetrated like a needle. At 500 yards or less it will smash a femur or a humerus to fragments. When a bone is fractured the bullet — if retained — is generally found to be much distorted or broken up into many fragments. The shell generally peels off the leaden core. As an instance of the fine hitting of the Mauser, I may mention a case (from the armored train) in which the bullet went through the middle phalanges of the ring and little fingers, making four small wounds which healed kindly and neatly. The two bones were fractured, but the man recovered with sound union and mobile joints. On the other hand, I have seen a fracture of the humerus in which the bone was broken into twenty-three small fragments. Many gunshot fractures of the thigh heal by first intention.

The point of entry of the Mauser is very small — often, as Tommy says, like a bugbite; it is not difficult to overlook. The point of exit is also often very small, but is more apt to be slit-like. The hole made

in the bowel by the Mauser is very small, and can be closed by from three to five Lembert sutures. Several penetrating wounds of the liver and kidney have been followed by no symptoms. One distinguished officer had a shrapnel bullet pass through his liver and kidney. He had little collapse, and beyond some temporary tympanites and hematuria he had no trouble of any kind.

In several instances the bullet has passed through the brain without causing marked symptoms, and perfect recovery has followed. For example, a bullet entered near the vertex, passed through the brain, hard palate and buccal cavity and escaped at the root of the neck on the opposite side. No discomfort followed except headache and some strabismus. Speaking generally, operations upon the skull for gunshot wound have done exceptionally well, and such operations have been numerous. I met with four cases of paraplegia on Saturday, the bullet having in each case apparently passed through the cord.

Amputations have been comparatively few. I have seen a Manser go through the centre of the patella and out at the centre of the popliteal space, and lead to no trouble in the joint. Some cases are hard to understand; as, for example, one in which the bullet entered above the clavicle and came out on the inner side of the opposite thigh, there being no symptom except temporary shock.

The field dressing carried by each soldier answers its purpose admirably.

On all sides there is evidence that our soldiers behaved splendidly on the field; and I can say that when brought back wounded they were plucky, patient and uncomplaining. Their unselfishness was many times very marked.

Obituary.

FRANCIS CHARLES PLUNKETT, M.D.

DR. FRANCIS CHARLES PLUNKETT, whose death occurred November 29, 1899, was born in 1842 at Castle-mere House, County Mayo, Ireland. At the age of fifteen years he passed the preliminary examination at the Royal College of Surgeons, Dublin, and graduated from there in 1863. In 1864 he came to America and offered his services in the Civil War and enlisted as assistant surgeon in the One Hundred and Eighty-Third Ohio Volunteers. He passed the examination for assistant surgeon, United States Army, but declined a commission. In 1866 he came to Lowell, where, as one of the local daily papers said, "Dr. Plunkett's life in Lowell was a worthy one." He early set himself to work building up his practice and soon became one of Lowell's foremost physicians.

He is survived by a widow, two daughters and one son, Mr. Harry Plunkett, a medical student.

Correspondence.

THE CASE METHOD OF TEACHING SYSTEMATIC MEDICINE.

PHILADELPHIA, PA., January 28, 1900.

MR. EDITOR:—The principles for which Mr. W. B. Cannon so ably contends in his article on "The Case Method of Teaching Systematic Medicine," have long been recog-

nized, and so far as possible applied in the teaching of clinical surgery at the University of Pennsylvania. I have for years endeavored to make the students acquire for themselves in any given case the facts necessary for a diagnosis, carry out for themselves the reasoning process by which the diagnosis is reached and then defend their opinion and the treatment they recommend against my criticism or that of other teachers.

The usual limitations of clinical material have prevented this course from being as systematic or as comprehensive as I desired, and it had not occurred to me to use the histories of cases in the way suggested by Mr. Cannon. I am writing to express my obligations and to enclose copies of histories which were given yesterday to the students of the third and fourth year classes. I cordially agree with your editorial estimate of the probable usefulness of this plan.

Yours truly,

J. WILLIAM WHITE, M.D.

[The foregoing letter relative to Mr. W. B. Cannon's paper, published in our issue of January 11th, on "The Case Method of Studying Systematic Medicine," leads us to suspect that Dr. White has not clearly in mind the distinction which Mr. Cannon intends to draw between the conference and the case systems. The essential feature of the conference system as practised for many years at the Harvard Medical School is the careful study and report of an actual case by one student, the remainder of the class acting mainly as listeners, rather than as actual participants in the investigation. The advantages of such a method for the individual student are manifest, and, in fact, probably greater than any other as yet devised. For the body of the class, however, who have had no opportunity to see and examine the case under consideration, the discussion loses much of its significance and value. Mr. Cannon's scheme is devised to obviate or supplement this weakness of the conference system by substituting histories of cases which each student in the class may have an equal chance to study, and therefore to discuss with intelligence and interest. The essence of the plan is to throw open to all the students the advantages derived from a personal study of actual cases, rather than limit those advantages to the few. Inasmuch as the study of patients, by a large class, is impracticable for obvious reasons, the alternative of studying case histories presents itself; the demonstration of this possibility is due Mr. Cannon, as outlined in his paper, and in this idea, we are confident, lies an essentially new and very hopeful field for the development of medical teaching. We are glad to know that the plan is being tested in Philadelphia, as it has been, with success, in Boston.—Ed.]

METEOROLOGICAL RECORD

For the week ending January 27th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	* A. M.		* P. M.
S..21	29.80	37	52	23	79	55	67	N.W.	N.W.	30	15	C.	C.	.08
M..22	30.14	38	53	22	69	44	56	S.W.	S.W.	16	11	C.	C.	
T..23	29.87	46	56	35	65	53	59	S.W.	W.	16	15	C.	C.	
W..24	30.34	24	35	14	47	64	56	N.	E.	11	12	F.	O.	
T..25	29.74	30	37	24	81	96	88	N.W.	N.W.	9	6	O.	R.	.37
F..26	29.33	24	38	11	69	56	62	W.	W.	22	36	O.	N.	.05
S..27	30.02	20	28	11	45	47	46	W.	W.	27	16	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 27, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,550,053	1281	422	24.00	24.16	.56	4.88	2.56
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	208	61	28.32	17.76	1.44	5.76	.48
Baltimore . . .	506,389	225	72	18.92	22.00	1.76	3.96	.44
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	129	43	12.79	20.79	9.24	1.54	1.54
Washington . . .	277,000	102	29	27.72	22.77	4.95	1.98	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	74	27	21.60	25.65	16.20	2.70	2.70
Nashville . . .	87,754	24	3	29.12	12.48	—	—	4.16
Charleston . . .	65,165	25	5	32.00	4.00	—	—	—
Worcester . . .	111,732	38	17	23.31	5.26	5.26	5.26	—
Fall River . . .	103,142	29	14	13.80	20.70	—	—	—
Cambridge . . .	92,520	24	7	33.28	8.32	4.16	20.80	—
Lowell . . .	90,114	36	10	21.60	24.93	—	5.54	—
New Bedford . . .	70,511	13	3	15.38	15.38	—	—	—
Lynn . . .	68,218	15	4	35.33	34.33	—	—	—
Somerville . . .	64,394	16	5	13.50	18.75	—	6.25	—
Lawrence . . .	59,072	22	11	16.60	12.45	—	—	—
Springfield . . .	58,266	16	4	—	—	—	—	—
Holyoke . . .	44,510	13	3	23.07	—	—	7.69	—
Brockton . . .	38,759	13	7	—	—	—	—	—
Salem . . .	37,723	13	7	—	—	—	—	—
Malden . . .	36,421	11	6	—	36.36	—	—	—
Chelsea . . .	34,235	15	2	6.66	—	—	—	—
Haverhill . . .	32,651	7	2	14.28	14.28	—	—	—
Gloucester . . .	31,426	2	—	50.00	—	—	—	—
Fitchburg . . .	30,523	7	1	—	—	—	—	—
Newton . . .	30,461	6	1	16.66	16.66	—	—	—
Taunton . . .	28,527	12	3	8.33	16.66	—	—	—
Everett . . .	28,102	7	—	21.42	—	—	—	—
Quincy . . .	24,578	7	2	—	21.42	—	—	—
Pittsfield . . .	23,421	8	1	12.50	—	—	—	—
Waltham . . .	22,791	8	2	25.00	12.50	—	—	—
North Adams . . .	21,583	9	3	22.22	22.22	11.11	—	—
Chicopee . . .	18,316	3	2	—	33.33	—	—	—
Medford . . .	17,190	2	1	50.00	—	—	50.00	—
Newburyport . . .	15,036	4	1	—	—	—	—	—
Melrose . . .	14,721	2	2	—	—	—	—	—

Deaths reported 2,438; under five years of age 785; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 550, acute lung diseases 517, diphtheria and croup 103, measles 41, typhoid fever 35, scarlet fever 26, diarrheal diseases 25, whooping-cough 18, erysipelas 9, cerebrospinal meningitis 9.

From diarrheal diseases New York and Baltimore 8 each, Pittsburg 4, Fall River 2, Washington, Providence and Nashville 1 each. From scarlet fever New York 16, Boston 4, Pittsburg, Worcester, New Bedford, Holyoke and Fitchburg 1 each. From whooping-cough New York 9, Boston, Baltimore, Washington, Providence, Charleston, Lawrence and North Adams 1 each. From erysipelas New York 6, Boston 2, Baltimore 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending January 20th, the death-rate was 24.9. Deaths reported 5,552: acute diseases of the respiratory organs (London) 728, measles 121, whooping-cough 115, diphtheria 96, fever 39, scarlet fever 35, diarrheal 35, small-pox (Liverpool and Hull 1 each) 2.

The death-rates ranged from 11.2 in Oldham to 32.2 in Nottingham; Birmingham 27.9, Bradford 26.3, Cardiff 14.5, Gateshead 19.5, Hull 27.5, Leeds 20.6, Liverpool 32.0, Manchester 22.2, Newcastle-on-Tyne 25.6, Portsmouth 19.8, Sheffield 26.2, Swansea 18.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 3, 1900.

H. E. AMES, surgeon, detached from duty in connection with the "Kearsarge" and ordered to duty on board that vessel February 20th.

J. C. BOYD, medical inspector, commissioned as medical inspector from October 25, 1899.

R. WAGGENER, pharmacist, detached from the "Pensacola" Navy Yard and ordered to be examined at the Washington Navy Yard, February 13th, for retirement, and then home to wait orders.

(CHANGE BY CABLE FROM ASIATIC STATION.)

J. J. SNYDER, assistant surgeon, detached from the "New Orleans" and ordered to the "Isle de Cuba."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 1, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Winston, N. C., for special temporary duty. January 29, 1900. To proceed to High Point, N. C., for special temporary duty. January 31, 1900.

NYDEGGER, J. A., passed assistant surgeon. To proceed to Manila, P. I., and report to Passed Assistant Surgeon J. C. PERRY for duty. February 1, 1900.

TABB, S. R., assistant surgeon. Granted extension of leave of absence for seven days on account of sickness. January 27, 1900.

GRUBBS, S. B., assistant surgeon. To proceed to Marseilles, France, for temporary duty. January 31, 1900.

KAUFFMANN, H. B., acting assistant surgeon. Granted leave of absence for thirty days on account of sickness, from February 3, 1900. February 1, 1900.

RECENT DEATHS.

AUSTIN MARSH, M.D., M.M.S.S., died February 2d, at Carlisle, Mass. He had been a member of the Society since 1839.

A. P. RICHARDSON, M.D., a prominent physician and contributor to the JOURNAL, died at his home in Walpole, N. H., February 3d. He had practised in Walpole for thirty-four years. He was sixty-five years of age, was a graduate of the University of Vermont and was formerly president of the New Hampshire Medical Society.

ERNEST G. METCALFE, M.D., of Brooklyn, N. Y., died February 2d, from Bright's disease, at the age of forty-nine. Dr. Metcalfe was a Civil Service Commissioner from 1886 to 1888, and for four years was an examiner in lunacy for the Department of Charities.

SIR THOMAS GRAINGER STEWART died in Edinburgh, February 3d, at the age of sixty-three. He was educated at the high school and University of Edinburgh, and subsequently studied in the universities and hospitals of Berlin, Prague and Vienna. On his return to Edinburgh he became resident physician in the Royal Infirmary. In 1876 he was appointed professor of the practice of physics at the University of Edinburgh. He was an honorary Fellow of the Royal College of Physicians of Ireland, and of the College of Physicians, Philadelphia, an M.D. of the Royal University and received the like honor from the University of Dublin on the occasion of the tercentenary of Trinity College. From the University of Aberdeen he received the degree of Doctor of Laws. He was at various times president of the Royal College of Physicians and of the Medico-Chirurgical Society of Edinburgh, and of the Section in Medicine of the British Medical Association, and was one of the honorary presidents of the Berlin International Congress. He presided over the meeting of the British Medical Association in August, 1898. In 1882 he was appointed physician in ordinary to the queen in Scotland. He received the honor of knighthood in 1894. He was representative of England at the International Congress on Tuberculosis, which met at Berlin in May of last year, and took an active part in the discussions.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the American Ophthalmological Society, Thirty-fifth Annual Meeting, New London, 1899. Hartford, 1899.

The International Medical Annual Synoptical Index to Remedies and Diseases for the Twelve Years 1887-1899. New York and Chicago: E. B. Treat & Co. 1900.

Chirurgie du Foie et des Voies Biliaires. Par J. Pantaloni (de Marseilles). Avec 348 figures dans le texte. Paris: Institut de Bibliographie Scientifique. 1899.

Transactions of the Association of American Physicians, Fourteenth Session, held at Washington, D. C., May 2, 3 and 4, 1899. Volume XIV. Philadelphia: Printed for the Association. 1899.

Specielle Pathologie und Therapie, Nothnagel. XIX Band, II Thiel, III Heft. Die Krankheiten der Prostata. Von Dr. A. Von Frisch, a. ö. Professor der Chirurgie in Wien. Wien: Alfred Hölder. 1899.

King's College Hospital Report: being the Annual Report of King's College Hospital and the Medical Department of King's College. Edited by Nestor Tirard, M.D., F.R.C.P., W. Watson Cheyne, F.R.C.S., F.R.S., John Phillips, M.A., M.D., F.R.C.P., W. D. Halliburton, M.D., F.R.S. Vol. IV. Vol. V. (October 1, 1897, to September 30, 1898). London: Printed by Adlard & Sou. 1899.

Original Articles.

A SYSTEM OF CLINICAL INSTRUCTION.— FOR THE SIMULTANEOUS INSTRUCTION IN SMALL SECTIONS OF A LARGE NUMBER OF STUDENTS.

BY A. H. WESTWORTH, M.D., BOSTON,

*Assistant in Diseases of Children in the Harvard Medical School;
Assistant Physician to the Children's Hospital; Senior Assistant
Physician to the Infants' Hospital.*

THE purpose of the paper is to show that large numbers of students can be given clinical instruction in small sections on the same day. A plan for the introduction of this method into the third year course of study in the Harvard Medical School required a few alterations to be made in the present system of instruction for that year, in order to obtain the requisite time. These changes must not be construed into an attempt on my part to revise the course of instruction for the third year. My object is simply to demonstrate the practicability of section teaching.

Some of the faults in the present method of teaching clinical subjects are that the student hears a great deal but does very little himself; that he is not made to think for himself; that he is not made to express and to commit himself before others, and that he is not given opportunities to make mistakes and to have them corrected. He, therefore, fails to learn systematic and accurate methods of examination; his deductions are very faulty and he acquires but little self-reliance.

Not that I would advocate abandoning lectures and large clinics. I believe that they are essential in order to complete the students' knowledge. I would merely give fewer lectures on clinical subjects and make the greater part of the work practical by teaching the students in small sections at the bedside, and in out-patient departments. The present system of making ward visits is only partially successful in this respect, because the sections are too large to enable the students to examine the patients individually. In most cases the instructor calls attention to the abnormalities, and permits as many students as possible to examine very superficially what he has pointed out to them. In some cases one or more students are assigned to a patient while the remaining students are making the rounds with the instructor. These students have an opportunity to think for themselves and to thoroughly examine the patient. The obvious fault here is that only a limited number of students have such opportunities, and in the course of a year's instruction even these fortunate ones have examined but a limited number of patients. The fundamental principle of all instruction should be that all of the students should have *equal* opportunities, otherwise the system is manifestly unfair. A certain amount of section work is laid out for the students by the present system, but each section rarely goes more than six times in the course of the year. This is just enough to show the student how desirable it would be if he could only have more of it.

For several years I have employed the method which I am about to describe in teaching sections consisting of nine students in a section.

Three students are assigned to each patient. They are allowed three-quarters of an hour in which to make their examinations. The histories of the cases

are withheld until the instructor goes over the cases. The students are permitted to ask the patients only such questions as relate to the physical examination. The object of this is to prevent the students from forming hasty conclusions about the cases, and thus to force them to make systematic and thorough examinations of the patients.

The students are informed beforehand that all that is required of them is to make accurate physical examinations of the patients with reference to their general condition and the condition of the various organs. If they are able to make diagnoses from the results of their examinations, so much the better. After a little practice they almost always make provisional diagnoses and have prepared a series of intelligent questions about the history and the results of the examination of urine, blood, etc., which will help them to decide. This is a good drill and teaches them careful observation and system.

At the end of the allotted time, the instructor asks them various questions about the normal organs as well as about the abnormal ones, in order to be sure that they have neglected nothing. They are expected after a few exercises to be able to tell the instructor everything that is abnormal about the case without his asking them a question.

When they have finished the description the instructor goes over the case himself and corrects or verifies their observations. The remaining six students are then permitted to examine any abnormalities which may be present.

The discussion of the case is then taken up. Deductions are made from what has been found. The students' diagnoses are criticised. Differential diagnosis is carefully considered. The students are questioned about the diseases which ought to be considered and how some of these diseases can be ruled out. This part of the exercise is of the greatest value, because it not only makes the students think for themselves, but they are forced to express their opinions before the other students. It teaches them to express themselves clearly, and to arrange their confused ideas. The remaining students are appealed to, to suggest anything which has not been considered. In this way, they all take part, and when the "quiz" on one case is completed, the instructor rapidly considers the etiology, symptoms, complications, prognosis and treatment of the disease which has been diagnosed. There is usually not much time left for this, so that this part of the instruction must be concise and to the point if the instructor hopes to complete the three cases.

The value of this system becomes apparent in a very few exercises. The students become *thinkers*; they become self-reliant; they are obliged to do their own work. They are criticised *freely* and impartially but never ridiculed, and they take pleasure in it because they note the improvement from day to day. It frequently happens that the trained observer's deductions appear so simple and evident that the students are convinced that they had the same thing in mind. It is necessary only to compel them to make the deductions themselves to show them that they erred in supposing they could make these deductions without careful thought and training. They learn more through their mistakes than in any other way.

Two hours is the shortest time, in my opinion, that such a course can be given in. Three-quarters of an

hour for the students and the remainder for the instructor. Even then the time will be found to be very short, because the students require time in which to express themselves, and much time is needed to allow the students to examine abnormalities individually. The students become so interested in examining the cases and in taking part in the discussion that I have not found them to be dissatisfied with the length of the exercise.

The problem in teaching large classes in small sections is to permit each student to examine as many patients as possible in the course of a year. If the sections are small and the class is large there will be fewer opportunities for each student unless the number of instructors is very large. If the sections are too large it will be found that two hours will not suffice for the instructor to go over the cases. If too many men are put upon one case they interfere with each others' examinations in the allotted time of three-quarters of an hour. It has been found by experience that three men on a case get along very well. Two of them can make some of the examination at the same time, and

for the display of his talents as a teacher in the discussion of the case and in his subsequent summary of it.

I have chosen 144 for the total number of students, because the classes in the Harvard Medical School have not exceeded that number. But by the method which I am about to describe, the number of sections is limited only by the number of available instructors and by the number of patients which can be utilized. In order to ensure impartial instruction and to avoid dissatisfaction among the students it is essential that a system of rotation should be adopted by means of which the instructors teach each section in turn, so that at the end of a given number of exercises the entire class shall have been taught by each instructor. Furthermore, it is important to give more clinical instruction in some branches of medicine than in others. In my scheme I have assigned 50 per cent. of the clinical instruction to clinical medicine, 25 per cent. to clinical surgery, and the remaining 25 per cent. to pediatrics, clinical pathology and contagious diseases.

In the plan which was submitted to the Committee on Education in the Harvard Medical School, section

TABLE I.

TABULAR VIEW FOR THIRD YEAR REVISED TO ALLOW SECTION TEACHING ON FOUR DAYS IN THE WEEK.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9. Clinical Medicine. (M. G. H.)	Clinical Medicine. (B. C. H.)	Clinical Medicine. (M. G. H.)	Theory and Practice. (M. G. H.)	Clinical Surgery. (B. C. H.)	Clinical Medicine. (B. C. H.)
10. Surgery. (M. G. H.)	Clinical Surgery. (B. C. H.)	Section teaching from 10 to 12, or from 11 to 1, for those sections which have to cross the city to other hospitals (see tabular view of section teaching).			
11. Theory and Practice. (M. G. H.)	Pediatrics. (Med. School.)				
11½.					
12. Surgical Conference. (M. G. H.)					
3. Obstetrics. Lecture. (Med. School.)	Theory and Practice. Lecture. (Med. School.)	Obstetrics. Conference. (Med. School.)	Obstetrics. Lecture. (Med. School.)	Theory and Practice. Lecture. (Med. School.)	
4. Surgery. Lecture. (Med. School.)	Obstetrics. Recitation. (Med. School.)	Pediatrics. Lecture or recitation. (Med. School.)	Surgery. Lecture. (Med. School.)		

If it were considered preferable to continue to teach dermatology and neurology in the third year instead of in the fourth year, arrangements could be made for one lecture to be given in each of these subjects every week and for one section to be assigned to an instructor in each of these departments to receive section teaching.

after one or two exercises they keep the run of the time and are careful not to allow one man to monopolize more than his share. Twelve men in a section with three cases cannot be handled so well in two hours, because four men on a case cannot examine thoroughly in three-quarters of an hour. If four cases are given out there is not sufficient time for the students to examine the other cases and for the instructor to discuss them. If two men are assigned to a case in sections of six students it would require more instructors and more patients to enable a large class to be taught at the same time.

In order to obtain the best results the teaching should be uniform. All the instructors should be required to conduct their exercise in the same way. The students should be made to think and to do their own work, and the instructors should correct the students' observations. At first sight this may appear to be a very elementary way in which to teach, and likely to prove objectionable to the instructors on the ground that it hampers their capabilities as teachers by its limitations. I can assure any one who has not tried this method that he will find unlimited opportunities

teaching was arranged for four times a week. This was a provisional arrangement owing to the number of available teachers. It would be an improvement to give section teaching six times a week. The time required for each exercise is two hours, but the hospitals in Boston are some distance apart and it was necessary to allow an additional hour for some of the sections to cross the city (Table I). The hours from 10 A. M. to 1 P. M. were selected for this purpose. The tabular view of the arrangement will make this clear. The sections which have to cross the city will begin their exercise an hour later.

The entire class is divided into sections consisting of nine students in a section. If the number of students does not permit an equal division into sections of nine men, one or two of the sections can consist of six students. The sections are numbered, and the students in each section retain the same numbers throughout the year. The assignment of students to sections can be made a day or two before the beginning of the fall term. The names can be bulletined, and if desirable a day or two can be allowed for some of the students to exchange into other sections.

TABLE II.

	Wednesday, Nov. 1st.	Thursday, Nov. 2d.	Friday, Nov. 3d.	Saturday, Nov. 4th.	Wednesday, Nov. 5th.	Thursday, Nov. 6th.	Friday, Nov. 7th.	Saturday, Nov. 8th.	Friday, Nov. 9th.	Thursday, Nov. 10th.	Saturday, Nov. 11th.	Friday, Nov. 12th.	Wednesday, Nov. 13th.	Thursday, Nov. 14th.	Friday, Nov. 15th.	Thursday, Nov. 16th.	Friday, Nov. 17th.	Saturday, Nov. 18th.	Wednesday, Nov. 22d.	Thursday, Nov. 23d.	Friday, Nov. 24th.	Saturday, Nov. 25th.	Wednesday, Nov. 29th.	Thursday, Nov. 30th.
Contagious.	No. 1, B. C. H.	No. 2, B. C. H.	No. 3, B. C. H.	No. 4, B. C. H.	No. 5, B. C. H.	No. 6, B. C. H.	No. 7, B. C. H.	No. 8, B. C. H.	No. 9, B. C. H.	No. 10, B. C. H.	No. 11, B. C. H.	No. 12, B. C. H.	No. 13, B. C. H.	No. 14, B. C. H.	No. 15, B. C. H.	No. 16, B. C. H.	No. 11, B. C. H.	No. 12, B. C. H.	No. 13, B. C. H.	No. 14, B. C. H.	No. 15, B. C. H.	No. 16, B. C. H.	No. 1, B. C. H.	No. 2, B. C. H.
Clinical Medicine.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	
Clinical Surgery.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	
Clinical Medicine.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	
Clinical Pathology and Pediatrics.	No. 5, Lab'y, M. G. H.	No. 6, Ward, B. C. H.	No. 7, Lab'y, M. G. H.	No. 8, Ward, B. C. H.	No. 9, Lab'y, M. G. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Lab'y, M. G. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	
Clinical Medicine.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	
Clinical Pathology and Pediatrics.	No. 7, Out Pat, B. C. H.	No. 8, Out Pat, B. C. H.	No. 9, Out Pat, B. C. H.	No. 10, Out Pat, B. C. H.	No. 11, Out Pat, B. C. H.	No. 12, Out Pat, B. C. H.	No. 13, Out Pat, B. C. H.	No. 14, Out Pat, B. C. H.	No. 15, Out Pat, B. C. H.	No. 16, Out Pat, B. C. H.	No. 11, Out Pat, B. C. H.	No. 12, Out Pat, B. C. H.	No. 13, Out Pat, B. C. H.	No. 14, Out Pat, B. C. H.	No. 15, Out Pat, B. C. H.	No. 16, Out Pat, B. C. H.	No. 1, Out Pat, B. C. H.	No. 2, Out Pat, B. C. H.	No. 3, Out Pat, B. C. H.	No. 4, Out Pat, B. C. H.	No. 5, Out Pat, B. C. H.	No. 6, Out Pat, B. C. H.	No. 7, Out Pat, B. C. H.	
Clinical Medicine.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.
Clinical Pathology and Pediatrics.	No. 9, Lab'y, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Lab'y, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Lab'y, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Lab'y, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Lab'y, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Lab'y, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Lab'y, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Lab'y, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Lab'y, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Lab'y, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Lab'y, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Lab'y, B. C. H.	No. 10, Ward, B. C. H.
Clinical Medicine.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.
Clinical Surgery.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.
Clinical Medicine.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.
Clinical Pathology and Pediatrics.	No. 13, Lab'y, B. C. H.	No. 14, Out Pat, B. C. H.	No. 15, Lab'y, B. C. H.	No. 16, Out Pat, B. C. H.	No. 11, Lab'y, B. C. H.	No. 12, Out Pat, B. C. H.	No. 13, Lab'y, B. C. H.	No. 14, Out Pat, B. C. H.	No. 15, Lab'y, B. C. H.	No. 16, Out Pat, B. C. H.	No. 1, Lab'y, B. C. H.	No. 2, Out Pat, B. C. H.	No. 3, Lab'y, B. C. H.	No. 4, Out Pat, B. C. H.	No. 5, Lab'y, B. C. H.	No. 6, Out Pat, B. C. H.	No. 7, Lab'y, B. C. H.	No. 8, Out Pat, B. C. H.	No. 9, Lab'y, B. C. H.	No. 10, Out Pat, B. C. H.	No. 11, Lab'y, B. C. H.	No. 12, Out Pat, B. C. H.	No. 13, Lab'y, B. C. H.	No. 14, Out Pat, B. C. H.
Clinical Medicine.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.
Clinical Surgery.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.
Clinical Medicine.	No. 16, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.	No. 2, Ward, B. C. H.	No. 3, Ward, B. C. H.	No. 4, Ward, B. C. H.	No. 5, Ward, B. C. H.	No. 6, Ward, B. C. H.	No. 7, Ward, B. C. H.	No. 8, Ward, B. C. H.	No. 9, Ward, B. C. H.	No. 10, Ward, B. C. H.	No. 11, Ward, B. C. H.	No. 12, Ward, B. C. H.	No. 13, Ward, B. C. H.	No. 14, Ward, B. C. H.	No. 15, Ward, B. C. H.	No. 16, Ward, B. C. H.	No. 1, Ward, B. C. H.
Clinical Pathology and Pediatrics.	No. 17, Out Pat, B. C. H.	No. 18, Out Pat, B. C. H.	No. 19, Out Pat, B. C. H.	No. 20, Out Pat, B. C. H.	No. 21, Out Pat, B. C. H.	No. 22, Out Pat, B. C. H.	No. 23, Out Pat, B. C. H.	No. 24, Out Pat, B. C. H.	No. 25, Out Pat, B. C. H.	No. 26, Out Pat, B. C. H.	No. 27, Out Pat, B. C. H.	No. 28, Out Pat, B. C. H.	No. 29, Out Pat, B. C. H.	No. 30, Out Pat, B. C. H.	No. 31, Out Pat, B. C. H.	No. 32, Out Pat, B. C. H.	No. 33, Out Pat, B. C. H.	No. 34, Out Pat, B. C. H.	No. 35, Out Pat, B. C. H.	No. 36, Out Pat, B. C. H.	No. 37, Out Pat, B. C. H.	No. 38, Out Pat, B. C. H.	No. 39, Out Pat, B. C. H.	No. 40, Out Pat, B. C. H.

Abbreviations. — B. C. H. = Boston City Hospital; M. G. H. = Massachusetts General Hospital; C. H. = Children's Hospital.

At the end of 16 exercises the rotation is complete and Section No. 1 has returned to its first instructor.

Clinical pathology and pediatrics alternate with each other. During the first rotation of 16 exercises the old numbers are assigned to clinical pathology and the even numbers to pediatrics. During the second rotation the old numbers are assigned to pediatrics and the even numbers to clinical pathology. This must be remembered in preparing a tabular view for the entire year.

By this arrangement each section has two exercises in clinical medicine; one exercise in clinical pathology; one exercise in clinical pathology; one exercise in pediatrics; and one exercise in contagious diseases every fourth week.

In an average school year of 32 weeks each student will have examined 142 medical cases, 96 surgical cases, and 48 children.

A tabular view of the section work for the ensuing year can be printed at any time before the school year begins and distributed among the students after they have received their section numbers. In this way all confusion will be avoided and the students will present themselves at the various hospitals at the hours assigned, without further notice. The absence of one or more students from a section will not interfere with the instruction of the remaining students.

By adopting a system of rotation each section meets a different instructor each time until the rotation has been completed and Section No. 1 has returned to its first instructor. In arranging such a system it is necessary so to arrange the instruction that at the end of rotation each section shall have had the same number of exercises in each subject. This may be accomplished by arranging the subjects in such a way that the same subject shall not be assigned to more than one section in succession, that is, two sections should not be taught clinical medicine in succession. If this arrangement is not adhered to, it will be found at the end of several exercises that one section will have had more instruction in surgery, and another, more in clinical medicine, etc. A study of Table II will explain this.

To avoid interfering with the rotation and at the same time to give less instruction in clinical pathology and in pediatrics, these two subjects are arranged to alternate with each other. It will be seen that during the *first* rotation the odd numbers are assigned to clinical pathology and the even numbers to pediatrics. To enable the sections that had pediatrics to have clinical pathology and *vice versa*, it is necessary in the *next rotation* to assign the even numbers to clinical pathology and the odd numbers to pediatrics. This alternation must be arranged in the tabular view. After receiving their section numbers at the beginning of the term, the students have only to consult the tabular view to find out which hospital to go to and what the exercise will be on any day in the school year.

There is one important objection to the method of teaching, namely, the number of instructors that are needed. This objection applies chiefly to clinical medicine. If the method were adopted in the Harvard Medical School, *without any alteration* in Table II, it would require eight additional assistants in clinical medicine, because the time of the present instructors is fully occupied in teaching auscultation and percussion. It should be borne in mind that the apportionment of sections can be altered to any extent. Two of the sections assigned to clinical medicine could receive instruction in neurology, a third and fourth section could be assigned to dermatology and to pediatrics respectively. By this arrangement only four additional instructors would be needed in clinical medicine. As a preliminary arrangement for the first year or two, the number of exercises could be reduced to two or three times a week instead of four times.

The purpose of this paper, as I stated at first, is to show the practicability of section teaching, but I should like to add a few words about didactic lectures and to offer a few suggestions about conducting a course in section teaching. I believe that didactic lectures are needed by the students to supplement section teaching. Most of the time at a clinical exercise should be spent in correcting errors in observation and in deduc-

tion and in permitting the students to examine the abnormalities which have been detected. The time which remains, if this be done thoroughly, will be found to be so short that the instructor will be forced to omit much useful information about the disease under discussion, information that is often of the greatest value in the management and treatment of cases in practice and much that is essential in order to obtain a clear conception of the nature of the disease. To obtain such information from text-books alone is usually beyond the powers of the student because his reading-time is very limited and because he lacks the experience which is necessary to enable him to separate the essential from the non-essential.

SUGGESTIONS.

(1) The section teaching should be under the control of the professor. This would not require a great expenditure of time if the clerical details were performed for him by an assistant or by a secretary.

(2) A list of the diseases which the professor wished to have shown to the students could be prepared, and the instructors could arrange to show these diseases during the year.

(3) The instructors could keep a record of the diseases which had been shown and the sections that had seen them. These reports could be sent to the professor every week and would enable him to arrange the teaching so that all of the students could see the same diseases in the course of the year.

(4) An effort should be made to show the students different stages and complications of the same disease.

(5) The professor could arrange a series of lectures to supplement the section teaching. These lectures would be delivered before the entire class in the amphitheatre of the hospital and the students would be expected to take careful notes for future study. In a large hospital it would often be possible to find a number of cases in different stages of a given disease. These cases would serve as illustrations and would help to impress a distinct picture of the disease upon the students' minds.

(6) Patients with chronic diseases often remain in a hospital for several weeks. If a given case were shown to each section in turn it would be possible for the entire class to see the same patient in the course of one rotation.

(7) I believe that the students should be required to pass both a practical and a written examination in auscultation and percussion at the end of the second year in order to show that they are competent to begin section work.

THE CASE OF A MAN WHO SWALLOWED HIS SUSPENDERS; REMOVAL BY EXTERNAL ESOPHAGOTOMY; RECOVERY.—OTHER SIMILAR CASES.

BY MAURICE H. RICHARDSON, M.D., BOSTON.

WILLIAM H., shoemaker, aged twenty-nine, entered the Massachusetts General Hospital on April 13, 1899. He had been discharged a few days before from the Worcester Insane Asylum, of which he had been an inmate for thirteen months. He said that two weeks before entrance, while despondent, he attempted to swallow his suspenders. He succeeded in getting down certain portions of the suspenders and some broken glass, but just how much was uncertain.

I questioned the patient repeatedly, but could get little information as to what or how much he had succeeded in getting by the fauces. He was not unwilling to tell, but he was dazed and stupid and somewhat silly. He complained of no pain, but rather of a discomfort under the sternum while eating. The food at times passed easily into the stomach; at times it was immediately regurgitated. There had been no blood in the regurgitated material.

The history given by this mentally unbalanced patient would seem extraordinary, except that the insane do the most incredible things. I had had some experience with foreign bodies in the melancholy and suicidal, and in every case operation had demonstrated the truthfulness of the patient's statements, even when it was hard to believe them. I therefore was inclined to accept as a fact that somewhere in the alimentary tract would be found portions, at least, of the man's suspenders, and perhaps other things. The precordial discomfort and the occasional regurgitation suggested impaction in the esophagus. The man was physically strong and well developed; mentally, he was slow and stupid. Nothing could be seen or felt in the fauces. With the olive-tipped probang an obstruction of some kind was perceptible in the esophagus at or about the level of the transverse portion of the aortic arch. Nothing metallic could be detected. An x-ray negative showed unmistakably a suspender buckle at the level of the arch, and possibly another higher up.

The safest route of removal — whether by mouth, by external esophagotomy, or by gastrostomy — was the most important question in this case. The chief danger in esophageal impaction is from ulceration into the great vessels, especially when the impacted body is a flattened one with sharp edges — a coin, a tooth plate, for example. Moreover, the usual time for a fatal erosion is two weeks or less. In this case, therefore, the erosion, if any was taking place, must have been sufficiently advanced to make even the most refined manipulations dangerous. Indeed, it would be by no means surprising if attempts at extraction, by whatever route, would end in a deluge of blood from the aorta. The selection of route would depend, not upon the facility with which a hemorrhage might be checked — for such a hemorrhage could not, of course, be checked — but rather upon the feasibility of detachment and removal without causing that hemorrhage.

The instruments usually selected for removing foreign bodies from the esophagus through the mouth cannot with intelligence be either directed, applied to the foreign body, or withdrawn. Some of them, once fast to a foreign body, cannot be made to let go. Some years ago the coin catcher got fast to a tooth plate impacted at the lower end of the esophagus, and in attempts to detach it enough force was applied to it to break off the metal end of the coin catcher. No harm was done in this case, but it is easy to imagine what might have happened — what, in fact, often has happened in trying to dislodge foreign bodies. On the other hand, I removed with great ease, by means of a coin catcher, a tooth plate which had been for eleven months impacted in the esophagus behind the sternoclavicular joint. I had fully decided to operate through the neck and was using the coin catcher to determine the firmness of the impaction, when the plate became detached and was drawn up.

In the present case the impaction was considerably above the aortic arch. Though we could not make out exactly the kind of buckle, it was evidently a flattened metallic thing, with sharp edges, and it was caught in most dangerous proximity to the aorta and its great branches.

From these considerations I decided to take no chances by instrumentation through the mouth. Gastrostomy was not seriously considered, because the foreign bodies were high up. By external esophagotomy the esophagus could be inspected, felt of, the foreign bodies could be accurately localized, instruments could be directed, applied and withdrawn with precision.

External esophagotomy was performed April 15th. As soon as the esophagus was opened, a thin, brownish, foul-smelling fluid escaped. The finger detected at once that the esophagus below the incision was plugged with something soft. By means of curved, long-bladed hemostatic forceps there were first removed a ball and string attached to a brass ring; then half a suspender web with two buckles; then a third buckle — all covered with a dark, foul-smelling slime. The olive probang, the coin catcher, the bristle probang were successively passed into the stomach without meeting further obstruction. With the finger an ulcerated area could be felt just above the aortic arch. The esophageal wound was closed in two layers with fine, interrupted silk sutures. The external wound was closed except for a gauze strand, leading from the esophageal sutures.

The wisdom of provisional gauze wicking was shown, I think, by this case, for at the end of twenty-four hours there was a fully-developed wound infection, with a temperature of 104°. Thorough irrigation of the wound was followed by rapid subsidence of the infection, the wound rapidly healed, deglutition became normal. The patient was discharged on the 29th of April, physically well, but mentally as unsound as ever. Seven months later, I received the report that the patient was very well, both physically and mentally; that there was no trouble in deglutition and that the wound was in good condition.

The things that an unbalanced patient may do are certainly extraordinary. That he may do them should be borne in mind in obscure symptoms connected with the alimentary tract. My experience has not been large, but it has been enough to guide me to the lesion in several curious cases, some of which I have already published in detail.

One of the most extraordinary was that of a strong young woman who swallowed successfully a gold pencil. She then got an open safety pin stuck in her gullet and detached it with a steel crochet needle, which she then successfully swallowed. This was followed by a lot of common pins. For gastric symptoms, I opened the pylorus, through which I found sticking the open safety pin. I left the other articles in the alimentary canal, whence in due time they all emerged, except the crochet needle, which never has been found.

My first dissecting-room subject had her stomach full of straw. The specimen is now in the Warren Museum. Recently, Dr. Brewster removed for me a ball of hair from the small intestine of a girl of ten years old. This hair ball had completely obstructed the lumen.

An insane woman, after her cup of tea, swallowed the sharp-edged silver teaspoon. It lodged in the

esophagus bowl downward. I succeeded in removing it by external esophagotomy, without hemorrhage. She died, however, in a few days from some unknown cause. There was no wound infection to account for her death.

In another case, that of a hysterical girl, I opened the epigastrium for a tumor supposed to have been caused by the habitual swallowing of rubber gum. Though no gum was found, there was an abscess about the pylorus which I have always thought was caused by the gum. This girl recovered.

Perhaps a little remote, anatomically at least, are the cases of foreign bodies introduced into the rectum. They illustrate, however, the freaks of the insane, the hysterical and the perverted. The most extraordinary instance I have known was the man who lost a ketchup bottle in his rectum, whence Dr. Warren successfully removed it.

Dr. Warren's case recalls that of a general paralytic, in close confinement, whose silver-plated dinner knife disappeared. It was a brilliant exemplification of the possibilities of eliminative diagnosis, for a careful search eliminated every possible place of concealment except his rectum, where, in fact, he had concealed it. He had thrust the knife through the rectal wall into the abdominal cavity, where it was lying free when I explored. A general peritonitis was under full headway, and he died.

Another case deserves mention, though it is not quite analogous to those described. A hysterical and neurasthenic woman declared that she had accidentally swallowed a plum stone, and suffered, she said, extreme torture from its pressure in the stomach. A surgeon, thinking (as I believe rightly) that her troubles were imaginary, passed an instrument into the stomach, withdrew it and showed the patient a plum stone. Unfortunately, the patient immediately declared that it was not that kind of a plum! I finally opened the stomach in this case, but found nothing. The woman died later from an acute inflammation of the alimentary tract caused by drinking, with suicidal intent, corrosive-sublimate solution.

THE CLINICAL VALUE OF OLIVER'S HEMOCYTOMETER.¹

BY DAVID D. SCANNELL, A.B., HARVARD MEDICAL SCHOOL, BOSTON.

DURING the course of a series of lectures on the physiology of the blood delivered before the Royal College of Physicians, of London, in 1896, George Oliver, an English physiologist, described a new and ingenious method of red corpuscle estimation, at once time-saving and accurate as compared with the Thoma-Zeiss procedure. The invention of this new device was prompted by the same desire for physiological exactness and investigation that led to the production of his tintometric hemoglobinometer, the observations of which are fully as accurate, reliable and definite as the hemoglobinometers of von Fleischl and Gowers.

In his argument for the need of an apparatus more exact and consistent than the Thoma-Zeiss counter, Oliver says: "The present methods for determining the red corpuscles are, (1) the examination by the microscope, and (2) the percentage estimation by the centrifugal machine. The former enumerative method is

perhaps on some grounds preferable, especially for clinical work, for it enables any alterations in the individual corpuscles to be observed at the same time. But repeated observations have shown that this same method as ordinarily applied does not possess that degree of accuracy with which it is usually credited. Even though all the necessary precautions have been taken, a series of trials derived from the same mixture of a sample of blood may yield the wide variation of *ten per cent.* The possibility of such a large margin of difference must render the method totally unreliable for any physiological inquiry, however immaterial it may be for clinical purposes. Extended enumeration will, of course, average the discrepancies, but it necessarily involves the expenditure of more time, labor and eyesight than are at the disposal of most observers, especially, too, as physiological work demands the largest possible collection of data and much repetition. It was therefore necessary to search for a simple and time-saving method of hemocytometric observation which, founded on extended enumeration in the first instance and attaining to the accuracy of it, might be substituted for it."

Oliver's hemocytometer is based on the following principle: In the process of drawing out a glass tube, the sides of the tube become minutely corrugated in the direction of its axis. When a candle or small gas flame is looked at through this tube containing water, a transverse line of light is seen, consisting of closely packed minute images of the flame produced by the above-mentioned corrugations of the glass. The parallel furrows and ridges are demonstrable with the aid of a small magnifying glass. Each ridge acts as a lens, hence the horizontal line made up of an aggregation of the images of the flame.

Oliver discovered that if, instead of the water as a refracting medium, he used normal blood diluted with some fixing fluid (such as Hayem's, ferrocyanide of potash, or sodium chloride), the resulting mixture presented a degree of opacity varying according to the amount that the blood was diluted by the fixing fluid.

The opacity so produced completely shuts off all view of the transverse line of light until, on still further diluting, a definite point is attained when it can be seen faintly as a delicate thread of light running transversely across the tube, "the dawn, as it were, of the bright minute images of the flame seen when the opacity is absent or still further reduced." Repeated observations by Oliver have shown that the development of this delicate horizontal line by dilution of the blood with either of the fixing fluids mentioned is an extremely sensitive index of the number of red corpuscles present in any individual blood. This was determined in many ways; for example, by the observation that the amount of fixing fluid required to bring the horizontal line into view was always in proportion to the different quantities of the same blood experimented with, and therefore in proportion to the number of the blood corpuscles present at each observation.

The apparatus required for such observation is extremely simple and should be relatively inexpensive. It consists of (1) a flattened graduated tube; (2) a capillary pipette having a capacity of 10 cubic millimetres of blood; (3) a mixing pipette for which an ordinary medicine dropper is a perfect substitute; (4) a candle or gas flame, and (5) a fixing solution, preferably Hayem's.

¹ From Dr. Richard C. Cabot's clinic at the Massachusetts General Hospital.

to the drop, which immediately fills the lumen of the tube by capillary attraction. At this point success or failure is dependent upon the degree of speed employed. The pointed end of the pipette is thoroughly and quickly wiped clean of blood with the fingers, the rubber nozzle of the medicine dropper is fitted over the blunt end of the pipette (most satisfactorily with both held horizontally, to prevent premature ejection of the blood by the weight of the mixing fluid), and the 10 cubic millimetres of blood are thoroughly washed into the flattened tube by the compression of the bulb of the dropper. Experience has demonstrated that the quickest and best results are attained when the patient himself holds the flattened tube in a position convenient for the operator. The filling of the pipette with blood, the application of the rubber nozzle of the drop glass to the blunt end of the automatic



blood measurer, and the washing of the blood into the tube, can all be done after a few trials in ten to fifteen seconds. If these steps in the technique are not done quickly, coagulation of the blood in the pipette is almost inevitable, necessitating a cleansing of the pipette and a fresh start. After the capillary pipette has been emptied of its contents, it is best to detach it from the drop glass and make the further additions of the fixing fluid from the latter. The amount of fixing fluid to be used in the subsequent steps will be roughly suggested by the degree of capacity of the mixture already in the flattened tube, or by the previously made hemoglobin estimation, though the latter bears no fixed relation to the final reading.

After the initial addition of Hayem's solution, the contents of the tube are thoroughly mixed by inverting the tube a few times with the thumb over its mouth, care being taken each time on removing the

thumb to draw it over the lip of the tube so as to restore as much as possible the adherent fluid. This procedure is repeated after each addition of the solution. The tube and its contents should never be violently inverted or shaken, since such manœuvres readily produce a frothy condition which renders the reading unsatisfactory and erroneous.

The observation is made in a dark room (the darker the better), free from cross-lights. The small lighted candle is placed about on a level with the observer's eyes and 10 feet distant from him. This distance has been found experimentally by Oliver to give the most accurate readings. In making the observation, it is important to exclude as much as possible the diffuse light of the candle. This is easily and satisfactorily done by resting the lower end of the tube with its long diameter in line with the candle, in the concavity between the thumb and index finger (Fig. 4), and then holding the tube close to the eye.

The observer must be on the alert for the first appearance of the transverse line of light which progressive dilution brings into view. The earliest indications of the approach of this will be obtained on the sides of the tube when the latter is turned on its axis by the slightest rotation of the hand. The fluid is then added drop by drop until the line is just apparent all the way across the field when the long diameter is in line with the flame. The transition between the total absence of the line and its sudden presence is usually rather rapid. The appearance of the incomplete line on the sides, however, is a constant forerunner of the complete transverse line and should put one on one's guard. The sign is extremely delicate and it requires at the beginning very careful observation to recognize it without overstepping the necessary dilution which obviously brings it more definitely and unmistakably into view. The first difficulty is the only one, for when the earliest appearance of the line has been once noted, it cannot fail to be afterwards recognized. Furthermore, there is no occasion for hurry in these later steps, for the opacity remains uniform for many minutes.

During the summer of 1899 the clinical observations appended below were made in the male medical Out-Patient Department of the Massachusetts General Hospital. In 27 cases, of which 10 were essentially blood diseases, the blood was examined both by the enumerative method of the Thoma-Zeiss apparatus and the percentage estimation of Oliver's hemocytometer. In this way the results of the former controlled those of the latter. In each case the Thoma-Zeiss count was applied to 10 large or 360 small squares at least, always two and often three drops of the mixed blood being taken. The hemocytometric observations were made twice in many cases, in order to test the consistency of the readings. A white count was also made in such cases as promised either a leucocythemic condition or a high leucocytosis.

From the following table it will be seen that the results, taken as a whole, are strikingly similar. The maximum difference in the two methods of estimation was 108,400, and this occurred in a case of splenic myelogenous leukemia where the whites numbered 480,000. As stated before, the leucocythemic condition is acknowledged to be a source of interference in the reading of the hemocytometer, giving a result less accurate than in non-leucocythemic states; and

yet, even in the presence of so many white corpuscles (a proportion of one white to five reds), the error of 108,000 in the reds as compared to the Thoma-Zeiss count, is not of very serious moment, such a difference not being of the rarest occurrence in the counts of two average observers on the same blood. In the other case of leukemia, lymphatic in character, where the whites were present to the extent of 102,400, the hemocytometric reading showed a disagreement of only 76,000. In cases with no pathological increase of the leucocytes the greatest difference in the results was 74,000, the smallest 1,000 and the average about

diagnosis of appendicitis made by Dr. Beattie. At 12 o'clock midnight the pain was less on account of opiates, but the area of pain had extended. Temperature $102\frac{1}{2}^{\circ}$, pulse 112. The pain caused so much rigidity and spasm of the abdominal muscles that now a thorough examination could not be made. I saw the patient with Drs. Beattie and Hall at 8 A. M.

At 9 A. M. I made operation, assisted by Dr. Beattie. Ether was administered by Dr. Hall. An incision an inch long was made over the normal site of the appendix and in a line which followed the trend of the fibres of the external oblique aponeurosis. The

No.	Diagnosis.	Thoma Zeiss Red Count.	Hemocytometer Reading = Red Corpuscles.		Remarks.
1	Pernicious anemia.	1,704,000	32 per cent.	1,700,000	
2	Debility (?).	4,368,000	87 "	4,350,000	
3	Normal.	4,626,000	92 "	4,600,000	
4	Leukemia.	2,492,000	52 "	2,000,000	Whites 480,000.
5	Pleurisy.	4,734,000	95 "	4,750,000	
6	Gastric cancer.	2,579,000	51 "	2,570,000	
7	Syphilis.	4,428,000	90 "	4,500,000	
8	Secondary anemia.	2,632,000	52 "	2,600,000	
9	Pernicious anemia.	1,178,000	24 "	1,200,000	
10	Lymphemia.	3,726,000	73 "	3,670,000	Whites 102,400.
11	Normal.	5,024,000	99 "	4,950,000	
12	Pernicious anemia.	2,907,000	59 "	2,950,000	
13	Normal.	5,136,000	102 "	5,100,000	
14	Pernicious anemia.	2,934,000	59 "	2,950,000	
15	Debility (?).	4,784,000	96 "	4,800,000	
16	Normal.	5,000,000	99 "	4,950,000	
17	Pernicious anemia.	1,596,000	32 "	1,600,000	
18	Debility (?).	4,584,000	92 "	4,600,000	
19	Chlorosis.	3,583,000	71 "	3,550,000	
20	Gastric cancer.	4,080,000	81 "	4,050,000	
21	Secondary anemia.	4,120,000	82 "	4,100,000	
22	Normal.	5,472,000	109 "	5,450,000	
23	Gastric cancer.	4,120,000	82 "	4,100,000	
24	Debility (?).	4,824,000	96 "	4,800,000	
25	Pernicious anemia.	1,976,000	40 "	2,000,000	
26	Raynaud's disease.	3,486,000	70 "	3,500,000	
27	Chlorosis	4,268,000	85 "	4,250,000	

35,000. Even granting that the Thoma-Zeiss count was absolutely correct in each instance, this average discrepancy of 35,000 on the part of the hemocytometer would only imply an error of considerably less than one per cent. in the enumeration of 5,000,000 red corpuscles, and certainly this is so small as to be of no significance. In many cases, as stated before, the hemocytometric observations were made twice within a very short interval and in every instance the two readings were identical, a consistency not expected and rarely found in enumeration by the Thoma-Zeiss method.

Clinical Department.

DIFFUSE PERITONITIS FROM ACUTE APPENDICITIS IN A GIRL AGED THIRTEEN YEARS; OPERATION; RECOVERY.

BY J. COPLIN STINSON, M.D., C.M., SAN FRANCISCO, CAL.

J. R., age thirteen, a thin, nervous child, although never sickly, was seen by Dr. D. A. Beattie, of Santa Clara, July 13, 1899. She had been acutely ill for thirty hours, complained of severe pain over the right side and tenderness over the whole abdomen, temperature $103\frac{1}{2}^{\circ}$, pulse 128. On his second visit at 3 P. M., temperature was 103, pulse 122. Ice bags were continuously applied and small doses of the mild chloride and salol given. At 6 P. M. Dr. J. U. Hall, of San Jose, was called in consultation and confirmed the

subadjacent muscles were separated in the direction of their fibres and the peritoneum opened. Pus at once escaped freely. The index finger of right hand was introduced, but no adhesions could be detected. The incision was enlarged and now measured about two and one-half inches. The pus was sponged and washed away and the abdominal cavity further examined. A large mass of inflamed, thickened omentum covered with pus was brought to the surface.

The appendix was gangrenous, bound down by fresh adhesions, contained two large concretions, but there was no perforation; the cecum was inflamed and sloughy. All intestines in sight were inflamed and covered with fibrin and pus. Pus escaped from the pelvis, the left and right sides of the abdomen. All pathological intestines, till normal bowels were freely seen and handled, were withdrawn from the abdominal cavity to the surface and covered with hot towels. The infected portions of the abdominal and pelvic cavities were freely irrigated with water, hot as the hands could bear, and all shreds and fibrin, etc., removed from the peritoneal cavity.

The pathologic omentum was excised. The omentum was spread out, the vessels in it were tied with fixation ligatures of fine chromicized catgut and the omentum cut off external to the tied vessels. No mass ligatures were used. The mesentery of the appendix was separated by dissection well down to the cecum, a bleeding vessel was clamped and ligated with fine chromic catgut, after which the cut edges of the mesentery were approximated with continuous catgut sutures.

The appendix was held up by the tip, and after dividing in a circle its peritoneal and muscular coats about one-quarter of an inch from the appendico-cecal junction, leaving the lymphoid and mucous coats intact, the divided layers were dissected back to the cecum and a narrow-bladed lock forceps was applied transversely to the lymphomucous cylinder, close to the cecum to temporarily close its canal. The appendix was cut off close to the forceps, leaving only a small cuff of mucus membrane, etc., protruding beyond the outer edge of the forceps. The cuff was cleansed with moist gauze and the cut edges of the mucous and lymphoid coats were united with a single layer of continuous fine chromic catgut stitches, after which the forceps were removed. Several continuous sutures were also used to approximate the peritoneal and muscular coats, but the latter stitches did not hold as the layers were very soft. All pathologic and exposed intestines were freely irrigated with hot water: all visible pus, shreds, plastic fibrin, fibrinous exudate, etc., on the surface of the bowels, etc., were removed with the fingers and gauze pads. The infected portion of abdominal cavity, intestines, etc., were again thoroughly flushed with hot water till the fluid came away clear, dried with sponges and the intestines returned within the abdomen to as near as possible their normal positions.

The peritonitis was a spreading or diffuse infection without the formation of protective adhesions and (as near as could be estimated during a very hurried and critical operation) involved the appendix, the cecum, the lower one-half of the ascending colon, over seven feet of the ileum, the adjacent omentum and the parietal peritoneum extending from the infected viscera.

The inflamed, sloughy surface of the cecum, the line of sutures at the former site of appendix and the adjacent parietal peritoneum were lightly covered with aristol. The upper angle of the wound was closed with several medium-sized continuous chromicized catgut sutures. No more suturing was done, as the patient was in a weak condition and I did not wish to further prolong the operation.

The balance of the wound was consequently left open and lightly packed with borated gauze strips each two inches wide. A strip was carried down to the posterior abdominal wall between the ascending colon and the lateral wall; a second between the cecum and the lateral wall, a third between the inner surface of colon and other adjacent coils, a fourth between the inner surface of cecum and adjacent viscera, and a fifth under the inner portion of abdominal wound for about three inches between the parietal peritoneum and intestines. The surface of the cecum was lightly covered and the wound lightly packed with gauze, and the dressings, adhesive strips and binder applied. She was put to bed in rather weak condition but shock was combated successfully. I saw her twice after the operation. The post-operative treatment was carried on by Dr. Beattie.

On July 8, 1899, some gas with foul odor escaped from wound, but no fecal matter was ever noticed. The wound healed kindly and was solidly cicatrized by August 25, 1899. She was allowed up September 8, 1899. Her general condition is good. She feels well and looks strong. Her appetite and digestion are good. She has no pains in the abdomen; the scar is two and five-eighths inches long, and no hernia has as yet developed.

Reports of Societies.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.

J. W. COURTNEY, M.D., SECRETARY.

REGULAR meeting at the University Club, Thursday, October 19, 1899, Dr. R. T. EDDES in the chair.

REPORT OF A FEW CASES OF INSANITY TREATED BY THE COLD PACK.

DR. ABBOTT read a paper with the above title, chiefly with the view of calling attention to the marked social improvement (so called because of the patient's improvement in his social relations with those about him) which followed the occasional use, or the continuous use for short periods of time, of the cold wet pack in cases so excited, violent or otherwise difficult to manage, that they would have needed seclusion or restraint by nurses or the camisole.

Brief details were reported of a number of cases, including one of epilepsy, with irregularly recurring attacks of irritability increasing to well-marked epileptic furor, four of maniacal phase of manic-depressive insanity, two of mental deficiency with periods of uncontrollable irritability culminating in violent fits of anger, and seven of dementia precox whose conduct for different reasons made them difficult to manage, one being desperately suicidal, another destructive of walls and floors, others making violent attacks on patients or nurses, etc.

That the packs did not act as a means of punishment was shown by the fact that three patients frequently asked for them, many liked them, others were, at most, indifferent to them, and only two resisted them after having had two or three, and of these, one often expressed after them a feeling of great improvement. In every instance an occasional pack or two, or a series of daily packs for a week or two, was sufficient to enable the patient to have the liberty of the ward without special watching. No special therapeutic effect on the psychosis was observed except in the cases of manic-depressive insanity, and in one case of general paralysis, on whom it was tried for that effect alone; in those who had packs regularly for ten days or more there was marked improvement in nutrition. Many slept in the first pack and began to sleep better from that time.

The technique used was practically that described in Baruch's "Hydrotherapy," and it was found that if the very desirable results were to be obtained, four precautions must be very carefully observed: (1) Skin surfaces must be kept separated by wet sheet; (2) the blankets must be kept closely drawn around the neck to exclude the air; (3) the head must be kept constantly cool by means of frequently renewed wet cloths wrapped about it; and (4) the least possible time must be used in getting the patient into the pack. The water in which the sheets were wet was 80° F. for a first pack, about 70° for the second and 60° for subsequent ones. Menstruation was not considered a contraindication; the water was raised to 70° for two days, then lowered to its previous temperature. Patients were kept in the pack for one to three hours, occasionally even longer. In 25 cases treated no harmful results and no disturbing symptoms occurred. The cases were too few in number and the packs given for too short a time to warrant any conclusions as to their therapeutic value in the psychoses.

DR. PAGE: I have been very much interested both in the paper and in this subject of hydrotherapy for some years. I would say first that it was never my intention to use it as a form of restraint or for purposes of discipline. I have always had in mind the beneficial and remedial effects of the pack whenever I have used it, and in order that it might not seem to be quite so closely resembling a form of restraint, at one time I secured a quantity of sweaters which were used, dipped those in cold water and applied them so that patients would get all the benefits of keeping the arms away from the surface of the body and not feel quite so constrained as in the ordinary pack. Of course they were wrapped with woolen blankets on the outside, but that would be a less objectionable form or appearance of restraint than a wet sheet wrapped tightly about the person. A record was kept of a good many cases at Danvers. Perhaps Dr. Worcester can give some details of those. I have not had access to the records for a long time and have not made an effort to refresh my mind in regard to them. Packs were used there, but not full packs as a rule — very few instances where the full pack was used. Partial packs were used, especially for insomnia. They used to have a practice of putting on wet bandages or packs, perhaps, to the lower extremities at bedtime. In all such instances a wet sheet was covered by one or two thicknesses of coarse woollen cloth, blankets, or something of that sort, and I think, almost always some waterproof material above that, and the patients were put to bed. Occasionally, instead of applying the packs or bandages to the lower extremities, I have had them applied to the arms, and in some instances it operated, I thought, as well, perhaps better, than where applied to the lower extremities. A few years ago, by the use of wet packs, the use of hypnotic drugs at the Danvers Hospital was almost entirely suspended. There were very few cases where any medicine was given for hypnotic purposes for months. I do not know how it is now, but I think very little hypnotic medicine is used there.

The effect that you want to produce of course should be considered, and your application should vary with the point you have in view, because water is a very powerful agent, and the effect produced by it depends very much upon the method by which you apply it. It seems Dr. Abbott has applied it practically by only one method. If you want to affect patients such as these reported by him, no doubt that was a proper expedient, but for strictly tonic effect I should not think it would be best to continue the pack so long as they were in his cases. A short pack is generally quite as good. Then, too, the water when used under pressure impinges upon the body as in the douche and has a mechanical effect, something of course like massage, and the length of time, variation of temperature and variation of pressure all have certain effects upon the system, and it is important, of course, to understand the physiology of the circulation, especially of the skin, effects of cold, etc., and to know just what you want to do in the case, because there are some principles that seem at first sight almost contradictory which are brought into the field of experimentation, and yet they are not contradictory; they all operate upon plain physiological principles. The fact that water is so very useful and can be used as a domestic remedy is evident from the fact that such a large number of European people, peasants especially, have

used the Kneipp treatment for years. Some 200,000 or 300,000 volumes of Kneipp's water cure have been published and sold, and that is certainly proof that it is a popular remedy. I presume most of you remember Dr. Godding thought he had cured two or three cases of general paresis by water treatment. I do not know what the ultimate results were; he never gave a final account of those cases. I never expected to hear he had actually cured them, although he relieved them of some of the disagreeable symptoms, no doubt. I remember being told at the Sunnyside Sanitarium in Southport, England, that they cured there a young man who had been at the celebrated Hallowell Private Insane Asylum in England, and there, by Dr. Phillips, the superintendent, had been pronounced incurable; the friends had been told the young man was hopelessly insane. He was taken to this place and in about six months was restored, and no treatment given except the water treatment. In that case they brought about what the water-cure people have always advocated in certain cases where there was some poisoned condition of the blood; brought about what they called the "crisis," used the water almost continuously on certain portions of the body, kept wet packs on nearly all the time, if not all the time, until a series or crop of foul ulcers were developed, and those were then treated, but they said it would be impossible to heal up such ulcers under several months. The discharge would be peculiarly offensive and disagreeable, but they were never willing to say a case was incurable unless they had failed to benefit them by that method of treatment at that place, and the man who had charge of that was for years associated with the celebrated Harper, I think it was, who was the leading water-cure disciple of England, having a place at Mattock Baths.

I certainly have had great faith and great expectations in regard to what water will do. At Middletown we have not the facilities to carry out the treatment there as I did at Danvers, but I have been preparing plans and a place for the establishing of a hydropathic department, and eventually I certainly expect to have one in full operation. I would say while we do not use the packs there we do not use restraint. We have 2,000 patients, and not one has been under restraint for months.

DR. WORCESTER: I don't know that I can add very much to what Dr. Page has said. Although I have from time to time been called in in the absence of other physicians, I have not had patients under my charge for any great length of time. Quite a number of cases during the time in which I have had charge of them have been taking hydrotherapeutic measures in one form or another, and with more or less varying success. I can recall two or three instances somewhat the character of those of which Dr. Abbott has spoken in which it was applied quite persistently without any very marked improvement; in fact I do not recall any case of that character in which the improvement was very decided as far as the troublesome, destructive or violent symptoms were concerned. There has been in a number of cases improvement in the general health and in the nutrition, and I can recall one case of what we classified as acute confusional insanity, although we were very doubtful about the case at the onset and at one time were quite confident she was going to pass into dementia, in which there was coincidentally with the use of the packs very marked

improvement and the patient ultimately recovered and went away. I certainly think that the use of hydrotherapeutic measures in that form as well as in others is of very marked advantage in proper cases. I don't feel yet as if I had determined to my own satisfaction the cases in which it would be useful. I have met with very decided disappointment in some cases in which I had pretty confident expectation of benefit.

Dr. NOYES: At the Boston Insane Hospital we have no facilities at present for hydrotherapy. Our efforts are directed mainly to the use of the bath tub. I have not tried the wet pack, but of course it is possible to get considerable range of therapeutic use with the bath tub warm baths. Beyond that we have not gone at all.

Dr. PUTNAM: I have used the wet packs very largely in cases of debility and anemia and depressed nervous conditions, although not in these cases of pronounced mental disease, and I have been much interested in hearing what Dr. Abbott has said. I think that for getting the best effects as regards improvement in nutrition the wet packs should be followed by colder applications. It seems to me without that the bath as a whole lacks a decided element in its efficiency. The wrapping in the wet sheets and blanket is really to be considered, generally, as preparatory to cold applications, which are relied on to induce tonic contractions of the blood-vessels of the surface and interior of the body and to stimulate the processes of metabolism.

As regards the effect to be expected on the *morale* of the patient, I cannot help thinking the effect of the baths is a good deal like static electricity and any other agent of the sort, a means by which the physician carries one step further the influence of his authority and personal feeling. If he feels confidence in the value of the application or at any rate is able to assume a confidence and inspire the patient, and can make the bath point in that direction it seems to me the results are likely to be considerable. Simply regarded in and for itself I should not suppose on general principles that the baths would have very great effect in that way, and I should not imagine that they would have the effect which Dr. Abbott suggests, certainly not very often, in increasing the social good behavior, social self-control of the patient.

Dr. BANCROFT: I think Dr. Abbott's paper very interesting and suggestive. We have tried the wet pack at Concord quite a little on a number of cases, and it seemed to me that it has had a temporary sedative effect and a permanent tonic effect on the cases in which we have tried it, particularly the cases of mania. I have been very much pleased in applying it to see how satisfied the patients were with the process. I recall only one case of excitement where a maniacal patient objected to the pack, and we were obliged after trying it for a week or two weeks to give it up because the struggles were so persistent, but in all the other cases in which we have tried it on maniacal subjects the patients have apparently liked it very much, and the first effect has been to make them quiet, and a number of the most excited cases have gone to sleep during the pack and have never made any particular objection to taking it. I think the wet pack as has been described to-night has this to say in its favor — it is cheap and does not require expensive apparatus, and can be used either in a private house or by any institution that is not provided

with the more expensive apparatus for applying hydrotherapeutic measures. I think it is a therapeutic remedy that we should try in our cases. I have been disappointed, however, that the psychoses have not been modified in any way by this treatment. I cannot say that in any case in which we have tried it a mental cure has followed the pack. The improvement has been largely physical and sedative. A few cases have recovered, but I cannot say they recovered because of the application of the pack. The recovery came as it does in all acute cases at the proper time, and I cannot say that the application of the pack has hastened recovery, but I do think it is a help in these cases of excitement. I should recommend its use very strongly in such cases, particularly as a sedative.

(To be continued.)

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

NINETY-FOURTH ANNUAL MEETING, HELD AT ALBANY, JANUARY 30, 31 AND FEBRUARY 1, 1900.

PRESIDENT'S INAUGURAL.

THE first session on January 30th was opened by the Inaugural Address of PRESIDENT MACDONALD. This was brief, yet at the same time filled with valuable suggestions, and was received with scrupulous attention. After expressing his thanks to the Society for choosing him to preside over their deliberations, he took up the topic of a legal definition of the term "the practice of medicine," and proposed co-operation with the New York Academy of Medicine in order to establish such an interpretation as will exclude all forms of quackery. He suggested that the approval of the Society be withheld from State control of chronic infectious diseases until after the most careful consideration. He declared that the standards of the State Board of Examiners are the highest and most practical in the land and their work deserves the highest commendation. As to the schism between the Society and the American Medical Association, he said that the settlement was simple; let the Association admit the duly accredited delegates of the Society through the same door that was closed in the faces of the New York delegation at St. Louis; then the Association would be truly representative of the united medical profession of the United States. In his view of the field of national legislation on medical topics he took ground in opposition to the Gallinger Antivivisection Bill, and in support of the measure which Surgeon-General Sternberg has proposed for the increase of the medical corps of the army.

MEDICAL EXAMINERS.

Following the President's Address the State Board of Examiners, through their Secretary, Dr. M. J. LEWIS, reported 836 applicants for medical certificates examined and 165 rejected.

CARCINOMA OF THE STOMACH

was the first subject presented to the attention of the Society. Dr. A. McFARLANE, of Albany, read a paper and submitted cases showing increased hydrochloric acid.

AGE, SEX AND SEASON AS FACTORS IN NERVOUS DISORDERS.

were discussed in a contribution by Dr. WILLIAM C. KRAUSS, of Buffalo. He showed how each period of the life of men and women had its particular diseases, how conditions that were at one time harmless became at another productive of the greatest harm, and therefore how necessary it was to take into account questions of age, sex, seasons and general surroundings.

FACIAL PARALYSIS.

Dr. WILLIAM M. LESZYNSKY, of New York, read this paper by title.

Dr. D. B. ST. JOHN ROOSA, of New York, introduced the subject of

STRABISMUS.

At the last meeting of the Society, he observed, he called attention to a new operation for the cure of this defect. By this operation both muscles were stretched and divided at one sitting. Professor Pannasi, of Paris, had performed 20 successful operations in the way referred to before reporting results, and since then Dr. Roosa and his colleagues had also performed many cases with success. It was important to the general practitioner to know that specialists in eye complaints could enter on these operations with knowledge as to what they were doing and a large amount of certainty as to the result. In 95 per cent. of cases they could ensure the removal of the deformity.

Dr. A. EDWARD DAVIS, of New York, followed with a paper showing what could be accomplished by means of non-operative treatment of strabismus.

THE DIFFERENTIATION AND TREATMENT OF OCULAR AFFECTIONS COMMONLY MET WITH IN FAMILY PRACTICE

was dealt with by Dr. FRANK VAN FLEET, of New York, who pointed out the great advances that had been made in connection with the treatment of ear diseases since it had engaged the attention of specialists. There was no reason why general practitioners should not make themselves familiar with all that had been ascertained in regard to the more common complaints, and so leave only the more obscure affections to be dealt with by specialists.

Dr. T. H. HALSTED, of Syracuse, called attention to the significance of earache in children.

THE TEACHING OF THERAPEUTICS

was discussed in papers read by Dr. ELI H. LONG, of Buffalo, and Prof. REYNOLD W. WILCOX, of New York, the former treating the subject in its bearing on undergraduates, while the latter referred to the instruction of post-graduates. Dr. Long said there were two things they had to deplore: on the one hand a growing skepticism as to the efficacy of drugs, and on the other an inclination to make a too ready resort to preparations. He thought they should protest against the dictation of the commercial houses as to therapeutics. In teaching it was best to commence with a consideration of the physiological conditions, and for this purpose the conference system was best adapted. Professor Wilcox said the problem of how to teach post-graduates was by no means a simple one. This was largely due to the fact that they had three classes to teach: (1) those who hold teaching positions in

the smaller schools, and who want the latest information in regard to the results of discovery and research in matters pertaining to medicine; (2) recent graduates who elected a post-graduate instead of a clinical course in order to complete their training for the practice of their profession, and (3) the practitioners of several years' standing who wanted to learn all that was to be learned that would assist them in their practice. Post-graduate teaching was a failure unless it to some extent met the requirements of these heterogeneous classes. He confessed that sixteen years' experience had not enabled him to solve the problem with satisfaction to himself; but one conclusion he had arrived at was that, so far as possible, all such instruction should take the form of practical demonstration. Theories, new remedies, preparations, etc., were for the teachers to investigate themselves; as regarded their teaching, what was most important was that they should urge their students to attend cases in wards, and give them practical demonstration of what was being done.

THE CHARACTERISTICS AND SYMPTOMS OF WEIL'S DISEASE

were explained by Dr. HARLOW BROOKS, of New York, who also presented a pathological study on the subject.

Dr. A. JACOBI, of New York, in a paper entitled THE TREATMENT OF TEMPERATURES AND HEART FAILURE,

described the ways in which it had been attempted to reduce increased temperatures. High temperatures he showed were not always dangerous, but on the contrary often exercised a minimizing influence on the disease. Where they were dangerous there was no reason why they should not endeavor to reduce the temperature, either by tonic treatment or by direct attack upon the micro-organisms.

Dr. JAMES K. CROOK, of New York, read a paper on

ACUTE CROUP'S PNEUMONIA,

in which he discussed its pathogenesis and treatment in the light of the newer pathology. The efforts made to discover a serum for pneumonia, while not altogether satisfactory, were encouraging as far as they went; and considering the brilliant results obtained by the treatment of diphtheria, as well as what had been actually ascertained in regard to pneumonia, he thought there was good ground for believing that similar results would yet be achieved in connection with the latter disease. Incidentally the reader of the paper took exception to the opinion expressed in a published paper by Dr. Andrew H. Smith, that the condition of the lungs in pneumonia was not inflammation, but only a condition of germ growth. Dr. Crook agreed with him that the process was one of germ culture, but he thought that the condition might also be described as inflammation, though not analogous to other kinds of inflammation.

Dr. ANDREW H. SMITH, in opening the discussion on the paper, said he was pleased to know that Dr. Crook agreed with him as far as he did. At the same time he adhered to his previously expressed opinion, that pneumonia was purely a germ culture, and not at all properly describable as inflammation. The most important thing, however, in connection

with the discussion of the pathology of pneumonia was the fact of the double circulation of the lung. This fact had been overlooked to a singular extent in connection with the only disease in which its existence had an important bearing.

Dr. H. P. HOPKINS, of Buffalo, thought that until pathologists and therapists made up their minds as to what was the proper germ to be attacked in pneumonia, general practitioners should remember the advice given by Dr. Jacobi in relation to another disease, and that was not to lose sight of the fact that every patient represented a separate individuality. In other words, they should attend to the constitution of their patients, and above all should not neglect hygiene and diet.

Dr. CROOK, in replying on the debate, said he fully agreed with the last speaker as to the value of fresh air and diet; but while strengthening their patients' systems, it was also necessary to attack the cause of the disease by means of germicidal drugs or methods of treatment.

Dr. WILLIAM H. THOMPSON, of New York, read a paper entitled

THE CLASSIFICATION OF INFECTIOUS DISEASES

in which he spoke of the harm that was done by labeling diseases infectious or contagious, and at the same time showed the confusion that existed even in the profession as to the use of these and other terms. Diseases of the kind usually thus described should, in his opinion, be divided into three groups. In the first should be placed diseases that are contagious and communicable, and for these the treatment should be isolation; in the second diseases that are non-contagious but communicable, and in these the treatment should consist of the destruction of the carriers of the infection; and the third of diseases which were inoculable, and these required specific treatment.

PROPHYLAXIS IN GYNECOLOGY.

A symposium of papers on this subject was next on the programme, but owing to the absence of several of the authors some of the papers had to be read by title. The full list was as follows: "Introduction," Dr. Henry C. Coe, New York; "Prophylaxis before and during Puberty," by Dr. W. Gill Wylie, New York; "Prophylaxis after Marriage," by Dr. Ralph Waldo, New York; "Prophylaxis in Obstetrics," by Dr. J. Clifton Edgar, New York; and "Prophylaxis in Gynecological Surgery," by Dr. William M. Polk.

STATE CARE OF TUBERCULOUS PATIENTS.

A special session of the Society was held in the evening in the Assembly Hall of the State Capitol for the purpose of considering the attitude that should be assumed to the State in regard to the care and treatment of tuberculous patients and the prevention of the spread of tuberculous infection. Members of the Legislature and the general public were invited to attend, and responded in goodly numbers. Several members of the Legislature took part in the speech making, and the result was a lively debate, the honors being carried off by the doctors, if the applause which they received was to be accepted as evidence of their success.

Dr. EDWARD O. OTIS, of Boston, Mass., was the first speaker. He began by remarking that the fact that pulmonary tuberculosis was the most prevalent

and destructive of diseases was proved by the mortality statistics of all countries. It was the cause of about one-seventh of all deaths, the proportion being three in twenty-two. It was worse where people were crowded together; it was contagious and therefore preventable, and it was a constant menace to the public health, because in large measure of the ignorance and carelessness of the people affected by it. The number of lives that could be saved would be the means of returning a large amount of the money expended in preventing the spread of the disease. Nearly all the countries of Europe had recognized the wisdom of making the matter one of State control, and several States in this country were now taking action in the same direction. The speaker then proceeded to describe the excellent results that had been obtained in Massachusetts, and expressed his hope that the people of New York State would succeed in their effort to get legislative action with the view to the establishment of a sanatorium and the adoption of other measures for caring for those afflicted with the disease and stamping out the disease itself.

Dr. VINCENT Y. BOWDITCH, of Boston, followed with a detailed account of the work accomplished at the Massachusetts State Hospital for Consumptives at Rutland.

Dr. EDWARD R. BALDWIN, of Saranac Lake, gave a cheering report of the results of the climatic and sanatorium treatment of the disease in the Adirondacks. Since the institution at Saranac Lake was established fifteen years ago, 1,200 cases had been treated. Of these three-fourths were in an advanced stage of consumption, and only a fourth in an incipient stage. The number of patients in an incipient stage was however, continually increasing, and so better results were obtained every year. In the last two years one-third had been in the incipient stage, and the results were: Twenty-three per cent. were discharged cured; in 56 cases the disease was arrested, 19 per cent. were improved, and only two per cent. died. They were careful to distinguish between complete recoveries and cases in which the disease could only be said to have been arrested, because it was necessary to allow some time to elapse to see whether the improved symptoms continued. Inquiries, however, which were being made showed that a large proportion of those in whom the disease had been arrested would, in course of time, be properly added to the number who had been cured.

Dr. GEORGE BLUMER, of Albany, read a paper on the

INFECTIOUS CHARACTER OF TUBERCULOSIS AND THE PROGNOSIS OF INCIPIENT PULMONARY CONSUMPTION.

and Dr. ENOCH STODDARD, of Rochester, dealt with the subject from the point of view of the duty and interest of the State in preventing the spread of infection.

The Hon. HORACE WHITE, a member of the State Senate, heartily supported the proposed plans for taking charge of tuberculous patients, but the Hon. OTTO K. KELSEY, a member of the Assembly, while expressing his personal sympathy in the movement, pointed out difficulties of a practical character that stood in the way, and made it extremely improbable that the Legislature would see its way to grant the

desired appropriation. There were, the latter speaker observed, enormous demands on the State for education, the care of the insane, prisons, canals, and a variety of other things, and for it to take care of all the people suffering from tuberculosis in the State — their number being estimated at 60,000 — was altogether too serious a matter to be entered on lightly.

DR. JOHN H. PRIOR, of Buffalo, replying to the last speaker, quoted figures to show that tuberculosis was increasing, and that the disease, accountable as it was for between 12,000 and 13,000 deaths a year, constituted such a serious state of matters as to call imperatively for State control. He ridiculed the idea that the burdens of the State were so great that it could not provide the small appropriation asked for, the object of which he reminded the members of the Legislature was not to make provision for all the tuberculous patients, but only to establish an experimental sanatorium, in which incipient cases could be treated with the view of discovering the best way of checking the spread of the infection. Even on grounds of economy, he ventured to say, it would soon be found that the money had been wisely expended. A number of other speakers continued the discussion, the preponderance of the opinion expressed being in favor of joint action by the State and local authorities, the former to establish the experimental sanatorium, and the latter to provide hospitals for advanced cases, and also to lay down and enforce regulations for stopping the spread of the infection. Members of the medical profession were urged to agitate the question among their patients and acquaintances, so as to educate public opinion, and get pressure brought to bear on the Legislature that would compel it to take action.

SECOND DAY.

The second day's proceedings commenced with a visit to the new Albany Hospital, where clinical papers and reports were read as follows: "Catheterization of the Female Ureters," by Dr. Charles P. Noble, Philadelphia; "The Modern Urethroscope: its Value and Limitations," by Dr. W. K. Otis, New York; "A Unique Case in Obstetrics," by Dr. F. H. Parker, Auburn; and "Uterine Fibroids, complicated by Pregnancy," by Dr. W. F. Ford, Utica.

In general session, the first subject to engage attention was

HUMAN AND BOVINE ANTHRAX,

on which a paper was read by DR. FRANK W. ROSS, of Elmira.

DR. JAMES LAW, of Ithaca, then gave a contribution on

BOVINE TUBERCULOSIS.

DR. V. A. MOORE, of Ithaca, entered into details as to the

PREPARATION AND USE OF TUBERCULIN,

with remarks upon the knowledge at present possessed of the difference between human and bovine tuberculosis.

In the course of the discussion which followed, DR. JAMES K. CROOK, of New York, described the clinical experiments he had conducted with tuberculin on human subjects at the New York Post-Graduate Hospital. The tuberculin had been obtained from the Board of Health, and everything possible was done to

make the tests efficient, but the results were very unsatisfactory, and had quite discouraged him as to the utility of tuberculin in cases of human tuberculosis.

THE MEDICAL EXAMINER FOR LIFE INSURANCE AND HIS RESPONSIBILITIES

was the subject of a paper by DR. S. OAKLEY VANDER POEL, of New York, who showed that the medical officers of American insurance companies had been the first to commence the task of reducing physical disabilities and impairments to a scientific basis, the result being that now, instead of being compelled to reject a large proportion of the risks offered them, the companies were able to gauge the exact responsibility they were asked to undertake, and so know what to charge for the risk they assumed.

EXPERIENCE WITH THE ANGIOTRIEVE.

Under this title DR. J. RIDDLE GOFFE, of New York, gave an account of various instruments that had been used for controlling hemorrhages, and said that the instrument he now showed had been used by him with almost invariable success. It was remarkable in these respects that it was only necessary to apply it for two minutes, and it had the extraordinary pressure of 3,000 pounds.

A paper by DR. EDWARD B. DENCH, of New York, on the importance of early recognition of

ACUTE INFLAMMATION OF THE MIDDLE EAR

by the general practitioner, was afterwards read. The early and free incision of the drum was advised, and the use of ear-drops, such as oil and laudanum, as emphatically condemned.

THE PRESIDENT'S ANNIVERSARY ADDRESS.

DR. WILLIS G. MACDONALD, in delivering his address on

THE RELATION OF THE CLINICAL LABORATORY TO MODERN SURGERY,

said there was an impression that the work of the modern surgeon was easier than that of his predecessors. So it was, for surgery was now an art that was much more certain in its results than formerly; but this very fact increased the surgeon's responsibilities, because the loss of a patient would not be so readily overlooked. It was more than ever necessary to guard against everything liable to produce septic conditions, and in this connection it was advisable to have their instruments and apparatus frequently examined. The laboratory also was of great aid to the surgeon in the way of providing analyses of the blood, urine, etc.

DR. SAMUEL G. GANT, of New York, gave an exhibition of

RECTAL INSTRUMENTS.

DR. F. H. PARKER, of Auburn, described a

UNIQUE CASE IN OBSTETRICS,

in which a dead fetus was removed from a woman after having apparently been in the womb for two years, and a few days after its removal she was delivered of a fully developed and healthy child.

DR. ROSWELL PARK, of Buffalo, contributed the results of some further investigations he had made since the last meeting of the society into the cause of cancer. The information which was being collected

at the State Laboratory went far, he said, to confirm the opinion as to the parasitic nature of cancer.

Dr. GEORGE H. FOX, of New York, described the method by which it was now found possible to effect a complete cure of leprosy. He mentioned a number of cases, among them that of a gentleman who was now carrying on business as a merchant in New York, in which the most happy results had been obtained. While not ignoring the importance of chaulmoogra oil, he insisted strongly on the benefit that was imparted to patients by a cheerful prognosis.

SOME QUESTIONS ABOUT THE CARE OF THE HAIR

were discussed by Dr. GEORGE THOMAS JACKSON, of New York. Incidentally he advised against the custom of shaving the heads of patients in fever and other cases, the advantages being doubtful, and the results, especially to women, being much inconvenience and unnecessary annoyance. For the ordinary treatment of the hair, he recommended the use of a little pure pomade. There was no custom more absurd than that of singeing the hair.

Dr. ROBERT C. MYLES, of New York, contributed some remarks on the

SURGERY OF THE NASAL SEPTUM AND THE TUBERICAL BODIES,

illustrating the same with anatomical specimens.

At this point in the proceedings, the Rev. Drs. RAYMOND, President of Union University, and BULKLEY, editor of the *Christian Advocate*, were introduced, and papers of an interesting popular character were delivered, Dr. Raymond pleading for the requirement of a more liberal education of medical students, preparatory to their entrance on their purely professional studies, whilst Dr. Bulkley made a scathing exposure of the Christian Scientists and their subtle methods for imposing on the public. A suggestion by the latter that the medical profession should undertake the task of bringing all classes of quacks to justice called forth a protest from Dr. JACOBI, who remarked that the previous efforts it had made in this direction had been so unfortunate in their results as to constitute a serious warning against their attempting anything of the same kind again. The proposals of Dr. Raymond in regard to the more liberal education of medical students were endorsed by Dr. Jacobi and others, and a standing vote of thanks was given to both reverend gentlemen for their addresses.

Dr. A. M. PHELPS, of New York, exhibited a number of braces that were commonly used in the treatment of hip-joint diseases and among them the Phelps brace, a male child with the latter on his limb being shown, and the doctor giving ocular demonstration of the fact that he could, so to speak, play football with the boy without causing him the slightest pain.

Dr. JOHN O. LEE, of Rochester, read by title a paper on

FRACTURES OF THE WALLS OF THE MAXILLARY ANTRUM.

Dr. WILLIAM MABON, of Ogdensburg, read by title a paper on

SURGICAL OPERATIONS IN HOSPITALS FOR THE INSANE.

Dr. H. BEECKMAN DELATOUR, of Brooklyn, made a contribution to the surgery of the stomach, in which

he described a number of cases of gastrotomy and gastrectomy.

Dr. F. W. SEARS, of Syracuse, called attention to the large number of instances in which sepsis was caused by the neglect of proper precautions in puerperal cases.

THIRD DAY.

At the beginning of the third day's sitting a report was presented from the committee appointed to consider the feasibility of getting a law passed to provide for the registration of medical experts. The opposition of the legal profession to any legislation of the kind proposed was so pronounced that the committee did not see any prospect of any law of the kind desired being enacted, and therefore recommended that they should be discharged, a suggestion which it was agreed to act upon.

A motion was passed expressing approval of the experimental work being done by the cancer hospital at Buffalo, and providing for the presentation to the Legislature of a memorial asking that the appropriation be continued.

Dr. LUZERNE COVILLE, of Ithaca, presented a paper showing the

SHAPE OF THE SPLEEN AND ITS RELATION TO THE CHEST WALL AND ABDOMINAL VISCERA,

a subject on which, he remarked, the teaching of the text-books was vague and to a large extent contradictory.

Dr. I. S. STONE, of Washington, D. C., submitted a paper entitled

SUPRAVAGINAL HYSTEROMYOMECTOMY,

accompanied by a series of cases in which tumors had been removed from the uterus.

Dr. F. W. HIGGINS, of Cortland, read a paper on

ATRESIA OF THE VAGINA.

Dr. W. FREUDENTHAL, of New York, described a case in which cerebrospinal fluid was discharged through the nose.

Among the remaining papers, most of which were read by title, was one by Dr. THOMAS P. SCULLY, of Rome, dealing with

INGUINAL HERNIA.

and showing the comparative results of radical treatment by operation and treatment by injection. A larger percentage of cures by operation, he observed, could be claimed now than at any former period; but many persons preferred irrigations, and it was found that many cases could be successfully dealt with in this way.

Dr. A. M. PHELPS, in discussing the paper, referred to the large number of cases of relapse which he had been called upon to handle at the New York City Hospital, in consequence of the inefficient treatment elsewhere by means of irrigations and trusses.

The attendance at all the sessions was large, and great interest was displayed in all the business and social sessions. At the closing session of the Society the following officers were elected for the ensuing year: President, Dr. A. M. Phelps, of New York City; Vice-President, Dr. George Seymour, of Utica; Secretary, Dr. F. C. Curtis, of Albany; Treasurer, Dr. O. D. Ball, of Albany.

At the close of the programme, votes of thanks were passed to the retiring president and others, and the new President, DR. PUELLER, having been installed, made a few happy remarks in appreciation of the honor conferred on him, and promising his best endeavors to fill the chair with advantage to the Society.

In the course of their visit the delegates were accorded a reception by Governor Roosevelt at the State House, and there was also a grand dinner at the New Ten Eyck Hotel, the attendance at which was unusually large, and the speeches of more than ordinary interest.

Recent Literature.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Volume XVIII, "Syphilis and Leprosy." New York: William Wood & Company. 1899.

Two subjects, syphilis and leprosy, and three contributors occupy the whole of this volume of seven hundred and three pages of the "Twentieth Century Practice." The subject of Acquired Syphilis has been entrusted to Dr. E. Lang, professor of dermatology and syphilology at Vienna, the successor of Sigmund. A more competent person could hardly have been selected. In 1871, in his inaugural address as professor at the University of Vienna, Lang advanced the view that the syphilitic contagium must be a living organism, having the faculty of multiplying in healthy individuals, a view which he still maintains and explains thereby the pathological phenomena manifested by the disease process. At the same time, he distinctly recognizes that we have not yet acquired a clear knowledge of the character of the syphilitic contagium.

Lang holds that persons who have once had constitutional syphilis are rarely susceptible to a new infection, but there is no absolute immunity, and he states that he has almost every year occasion to observe cases of reinfection. He considers that clinical and experimental researches make it absolutely certain that a person does not become constitutionally diseased immediately after infection. In the matter of prophylaxis he is of the opinion that even the smallest lesion in a person who has had contact with a suspicious secretion should be carefully cauterized. If one can succeed in totally exising the initial lesion, the patient is frequently saved from an attack of constitutional syphilis—especially if this is practised before there is any enlargement of the inguinal glands. In regard to constitutional treatment, for general practical application, Lang seems to prefer inunction.

Lang's monograph occupies three hundred and sixty-nine pages, or more than half the whole volume. It is a worthy exposition of a most important subject, in which the author has deserved authority.

Dr. Jonathan Hutchinson contributes a short, terse article of twenty-seven pages on Inherited Syphilis. Hutchinson's position in regard to this subject is too well known to need further comment, but no one has a better right to form and to hold opinions upon it.

Dr. Prince A. Morrow, of New York, contributes the section, one hundred and seventy-nine pages, upon Leprosy, a subject which assumed additional interest for the inhabitants of this country when we made ourselves responsible for the Hawaiian group of islands. Dr. Morrow is a contagionist. As to the modes of contagion, he thinks it very probable that they are many, but that the precise manner in which the leprosy virus is transferred from one individual to another is unknown. He is, however, more than ever impressed with the conviction of the widespread prevalence of infection through the upper air passages, whilst admitting the error of supposing that there is any one exclusive mode of infection.

Interstitial Gingivitis, or So-called Pyorrhoea Alveolaris.

By EUGENE S. TALBOT, M.D., D.D.S., Professor of Dental and Oral Surgery, Northwestern University, Woman's Medical School. With 73 illustrations. Philadelphia: The S. S. White Dental Manufacturing Co. 1899.

The author devotes the first sixty pages of this exceedingly interesting book to the history of the disease and to the study of the histology and the microscopic anatomy of the jaws and the epithelial structures associated therewith. The author has evidently gone carefully over the literature of these subjects, and has selected the best for his readers' consideration. He has supplemented this with the results of his own observation and the reader is able to gain a clearer insight into the development of these parts than is accorded by many of the text-books on the subject. As to the uric-acid theory of this disease, the author says: "Uric acid when found is merely an expression of the uric-acid diathesis and is a coincidence." To support this view the author points to careful chemical examinations made in several thousand cases which gave only six per cent. in which uric acid could be observed. Attention is called to the excretion of large quantities of inorganic salts through the salivary glands, and to the irritation and inflammation which arises from this cause. This is especially true of children and is put down as one of the important causes of interstitial gingivitis. The author gives a careful list of predisposing and exciting causes of this disease, and brings to bear an overwhelming amount of evidence to support his views. He treats of the constitutional effects which may be produced, especially in the suppurative stages of the trouble, and gives careful attention to the prevention and cure of the disease. The book is a distinct addition to our knowledge of this subject and deserves the attention of both physicians and dentists.

General Pathology. By ERNST ZIEGLER, M.D. Translated from the ninth revised German edition. Edited by ALBERT H. BUCK, M.D., New York. New York: William Wood & Co. 1899.

The appearance of an English translation of this famous text-book cannot fail to be welcome to the English-speaking medical profession. In this, the ninth edition, the number of illustrations has been increased from 458 to 544. This adds greatly to the usefulness of the work.

The chapters on Retrograde Disturbances of Nutrition and Infiltration, and on Tumors show the greatest changes and alterations. The author divides the different kinds of degeneration which lead to the formation of hyaline products into four groups. These com-

prise (1) colloid and epithelial hyaline concretions; (2) pathological cornifications of epithelium; (3) amyloid degeneration of connective tissue and amyloid concretions; (4) the hyaline degenerations of connective tissues. Mucous degeneration is not included in these groups. The tumors are divided into three groups: (1) Tumors of the connective substances; (2) epithelial tumors, and (3) teratoid tumors and cysts. The group of the epithelial tumors is divided into two lesser groups; one containing the papillary epitheliomata, the adenomata and the cystadenomata, the other including the carcinomata and the cystocarcinomata. Regarding the etiology of tumors the author takes an agnostic position. He does not accept Ribbert's theory that the main cause of tumors is the separation of individual cells from their normal situations, nor does he accept the parasitic theory. The so-called infectious granulomata are not classed with the tumors.

The translation is the work of a number of collaborators and has been well done. The book is attractively printed and bound.

Encyclopedia Medica. Under the general editorship of CHALMERS WATSON, M.B., M.R.C.P.E. Volume I, Abdomen to Bone. New York: Longmans, Green & Co. 1899.

It is proposed to issue this encyclopedia in twelve octavo volumes to be published quarterly, each volume to have at least 500 pages. The purpose of the publication, as announced, is to furnish medical men with a work which, differing from all existing ones, would be a complete and authoritative medical and surgical library in itself — concise, practical, up to date, easily referred to and at a moderate cost.

The present volume has fifty-nine headings of subjects. The list of contributors exhibits many names well known within and beyond the United Kingdom. Among others we notice those of Dr. Dreschfeld, of Manchester, Dr. Clouston, of Edinburgh, Dr. Rolleston, Dr. Theodore Williams, Dr. Patrick Manson, Dr. Lauder-Brunton, of London, Dr. Ogston, of Aberdeen, Dr. Byrom Bramwell, of Edinburgh, Dr. Robert Saundby, of Birmingham. It is proposed to deal with subjects at a length proportionate to their importance. This volume contains 579 pages; its size and general appearance are most satisfactory.

Loveliness. A Story. By ELIZABETH STUART PHELPS. Boston and New York: Houghton, Mifflin & Co. 1899.

This story, appearing first in the *Atlantic Monthly*, has been republished in book form. It is clearly written for a purpose, that purpose being an attack on the practice of vivisection. Loveliness is the name of a dog, owned by a wholly abnormal child. The dog is stolen, and is rescued at the last moment, when about to be the subject of a vivisection experiment, and restored to its pining mistress. The details we omit, merely remarking that they are quite unnecessarily harrowing and misleading. Our criticism of the book lies in its mandarin sentimentality. A serious question, about which, no doubt, there may be a certain legitimate difference of opinion, is treated wholly from an emotional standpoint and hence the argument has absolutely no significance. May we not ask that the opponents of vivisection at least approach the discussion of it in a dignified manner?

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HUMAN VIVISECTION.

WE hear it said and see it written in certain quarters, that the use of animals for experimental research and the advancement of medical knowledge is but the stepping-stone or prelude to the use or further use of human beings for the same purposes. In fact this is one of the arguments or appeals to sensibilities freely put forth by antivivisectionist agitators to fire the hearts of their followers and to secure new converts among those who are disposed to listen to reason and argument. It is not a suggestion or an accusation which the profession can afford to treat lightly or with disdain, much as we might be disposed to do so in our own country at least. It must be treated seriously and with earnest searching of the heart.

With the seventh sons of seventh sons, with natural bone setters, with layers on of hands, with those pseudo-scientists who derive their powers from supernatural sources — in fact, with all that class of pretenders who would reap where they have not sown and gather where they have not strewn, who would draw knowledge from the vacuity of ignorance, it is idle to confer and to such we do not address ourselves. But there is a large class of thoughtful, conscientious, well-balanced people to whom the physiological laboratory and the clinical wards of a hospital are a source of misgiving and honest perplexity. Their sensibilities should be carefully considered and their hesitancy reassured. Doctors as a class, and the doctor as an individual, are not inhuman. They are in fact very human, or let us say humane, quite as much so as the average citizen; we are willing to go farther and affirm that we believe they are more so.

We do not believe that in this country, at all events, patients either in or out of hospitals are deliberately or knowingly treated by doctors with cruelty, with recklessness or thoughtlessness. We do believe that educated physicians are guided by the golden rule more constantly, and even exceed it without any reasonable hope of a retroactive benefit more frequently, than any other class in the community.

Their greatest happiness is in the increase of sound knowledge, and their greatest reward lies in a capacity for increased usefulness to their fellow-men. We believe it is generally recognized by the profession that zeal should stop short of indiscretion, and that a thirst for knowledge should stop short of curiosity.

The attitude of the violent antivivisectionist is much that of the Middle-Age persecutor of the anatomist. It is generally admitted to-day that anatomy must be studied upon the cadaver, and in the same way it is a reasonable proposition that the care and cure of the sick must be learned in presence of the sick. The sick themselves often profit by the necessarily more thorough study of their condition, and not a few are grateful for the opportunity to be of some service to mankind. There must inevitably be some first time for the administration of a new drug and some first occasion for the performance of a new operative measure. We believe, however, that in both these procedures the experiment, if such it is to be called, is hedged around with every possible precaution. The physician or surgeon who would resort to either at the cost of distress or danger to his patient, without a reasonable hope of averting some worse evil or without the consent of the patient, would not be supported in such action by his professional colleagues.

One has only to ask what would suffering humanity lose to-day without salicylic acid and without laparotomy.

Notwithstanding the almost universal recognition of the indispensableness of the sick for clinical teaching, the profession itself is constantly seeking new sources for the instruction of students to supplement the hospital ward and to minimize the repeated examination of the individual patient. In support of this assertion we would call attention to an article in the issue of the *JOURNAL* for January 11th of this year.

In general, we believe that our fellow-citizens in this country and in this community not only can have but will do well to have and to show confidence in their educated professional men, of whatever walk in life.

STATE CARE OF THE INSANE.

THE newly-created State Board of Insanity has presented to the Massachusetts Legislature its special report, as required by the acts of 1898, whereby the Board was directed to suggest "such method or methods as in its opinion will most effectually provide for the care and support of the insane poor who, under existing laws, are cared for by or supported at the expense of the cities and towns of the Commonwealth," including plans for the remedial treatment of the curable insane and for the care of the convalescent insane.

Including the School for Feeble-Minded, the epileptics, the drunkards and the 112 children in the hospital cottages, of whom 23 are feeble-minded and 89 epileptic, there are under the supervision of the Board:

(1) in the State institutions, including the criminal insane and insane criminals, 6,425 insane persons, of whom fully 90 per cent. may fairly be considered incurable; (2) in the Boston Insane Hospital 507; (3) in private hospitals 237; (4) in city or town alm-houses, 1,213; (5) at board in private families 224—in all 8,606.

During the last ten years the increase in the number of the insane in the State insane hospitals and in the Boston Hospital for the Insane has averaged 271,04 yearly.

With regard to the care of the acutely insane who are curable and of convalescents, the propositions of the Board will probably be universally commended by those competent to form an opinion, namely: (1) That the acutely insane should not be delayed in coming under the best medical care; (2) that they should not be compelled to suffer the exhaustion of a long journey to a distant hospital, nor to take unnecessary risk of detention in a station-house; (3) that they should not be removed too far from their friends.

The recommendations of the Board will generally be accepted as wise, regarding these curable insane, that provisions for their treatment be made in connection with the hospitals for the insane now in existence by securing small houses at such distances from the hospitals as may be deemed best; such cottages or houses could be built or bought or hired. Of course, the curable insane will continue to be treated in the private hospitals and by competent physicians, so far as their means can afford them, in private houses in suitable cases. But too large a number must be sent to the public hospitals, in the absence of sufficient provisions for the treatment of patients with small means in our one corporate hospital for the insane; and for them it is only simple justice to place them elsewhere than in institutions crowded with the chronic insane. The Board very properly desires more time to study the problem before committing itself for or against a recommendation of a new hospital for the curable insane.

For the care of the increasing number of the chronic insane, the Board recommends that 2,000 acres of land be bought for gradually developing a colony for the insane. This plan has already proved to be a success in France and Germany and this country; it has been adopted by the Massachusetts School for the Feeble-Minded, it will be part of the hospital for epileptics in this State and we hope that the recommendations of the Board in this respect, perhaps with some modifications, will commend themselves to the Massachusetts Legislature.

The Board evidently expects that a small number of the incurables who are harmless and not needing constant or frequent attention from physicians will be boarded out in private families, but in a community like that of New England the number must be limited, although that limit is not yet reached.

The Board advises that "as soon as may be after the first day of January, in the year 1904, the

State Board of Insanity shall transfer and remove all insane persons dependent upon public charity within the Commonwealth, who are not cared for in any hospital, asylum or receptacle maintained by the Commonwealth, to such hospital, asylum or receptacle, so maintained, as the said Board of Insanity may deem expedient." This provision involves the transfer of 5,607 insane persons who are now "cared for or supported at the expense of cities and towns," to be supported by the State—in round numbers, two-thirds of the insane under the supervision of the Board. There can be no doubt as to the soundness of the general statement of the Board that all of the insane must be cared for under conditions absolutely controlled by it, and if in institutions, only in such as are owned or controlled by the Commonwealth.

We believe that all the local almshouses containing insane inmates should at once be required to get licenses from the State Board of Insanity, provided their condition be approved by the Board or made conformable to the Board's requirements. Failing that, the inmates should be sent to some institution owned by the State. At the end of four years the license system could be given up, if the Board's plan is adopted.

This is a matter that interests not only Massachusetts but all the States of the Union, and some of the States, notably New York, have already taken steps in this direction.



CLINICAL INSTRUCTION IN SMALL SECTIONS.

ALL signs are pointing toward definite changes in medical teaching in the near future, and it is already easy to see in what direction one of these changes is likely to be made. The reaction from the merely didactic lecture has been extreme, due no doubt to the growing feeling that the preparation for the practice of medicine, to be adequate, must be at first hand from patient to student, rather than through the mediation of an instructor, however gifted he may be in the exposition of his subject. It has long been recognized that such direct contact between the student and the subject studied is desirable, but the difficulties in the way of bringing about the proposed results have been manifold and apparently insurmountable, because of the increasing numbers of students on the one hand and the relatively few available patients on the other. To give each student an opportunity to work out for himself the problems of diagnosis has seemed a practical impossibility, which time has tended to increase rather than diminish. Hence has arisen the so-called clinic to large classes, a very much more valuable exercise than a lecture without practical illustration, but still falling far short of the ideal of instruction, owing to the practical non-participation of the students. By degrees the demand has grown, until now it appears that means must be found to meet it, that the student, during his course of medical study, shall have the op-

portunity of working out for himself the questions and difficulties which individual cases present. This means section teaching, which again requires many patients and, what is of equal practical importance, many instructors.

We are glad of this opportunity to call attention to a paper by Dr. A. H. Wentworth, printed elsewhere in this issue, which opens the way to an application of the principle of section teaching in general, with particular reference to the needs and opportunities of the Harvard Medical School. A reading of the pages will show that Dr. Wentworth has worked out a careful scheme, which permits each student in a given class to examine for himself a large number of patients, suffering from a variety of diseases, and therefore to gain an insight into various affections from his own investigations. In other words, we have here a demonstration of the possible working of a system which is sufficiently comprehensive in its scope to be of actual value. It is hardly necessary to say that we are in complete agreement with Dr. Wentworth in his insistence that this is the right way to teach clinical medicine and clinical surgery. We are also in agreement with him in the opinion that the didactic lecture, as we have continually had occasion to urge, is not relegated to a subordinate place by this plan, but simply increased in importance and dignity. The student will need more than ever before to have the relations of the subject and its bearing upon other subjects put before him in concise and systematic form, and this it should be the function of the heads of departments to do, and do well, a much harder task than they have ordinarily been called upon to perform.

It is evident that the method of teaching in small sections will demand an increased teaching force. This must be met fairly before the plan can, by any possibility, succeed. To expect one teacher to do justice to a large number of students or to himself in such practical instruction is out of the question. To obtain good teachers in sufficient number is therefore absolutely demanded. This should not be difficult in any progressive medical community, where young men are eager to teach and to learn through teaching. Just here, in our opinion, lies one of the chief merits of the system, in that it is sure to make better teachers as well as better students. To teach half a dozen men well, exposed to their questions asked under no restraint, is a test of ability which the lecture at a distance does not entail.

Provided the ordeal be not too great for the patients and their interests be carefully safeguarded, we see no reason why Dr. Wentworth's scheme of rotation should not meet with complete success. Taken in connection with Mr. Cannon's plan of case teaching recently discussed in the *JOURNAL*, as a supplement to the almost inevitable deficiency of available patients, we certainly have here outlined a plan of systematic teaching, quite superior in practical usefulness to anything heretofore proposed.

DUST STORMS ON BOSTON'S BACK BAY.

THE Boston Society for Medical Improvement will devote its next meeting, Monday evening, February 19th, to a consideration of the dust nuisance, especially as manifested in the streets of Boston, and particularly in the streets of its principal residential districts. If things continue as they have been, those who move and try to have their being in that district must clothe themselves and their horses, too, in brown khaki and wear respirators of antiseptic construction. The trials to which our fellow-citizens are exposed in dry weather are only surpassed by those which afflict Thomas Atkins on the veldt or karroo of South Africa. Whether the remedy is to be found in asphalted streets or in some other treatment, we trust that the Improvement Society will determine. Various experts will lend their aid, some to show us bacteriologically the micro-organisms with which the internal and external economies of the indigenons are loaded up, and others to suggest how the Back Bay may be made uncomfortable for the dust instead of the dust making it uncomfortable for human beings. It is reported that for the benefit of strangers who may not have seen a Back Bay dust storm a moving picture of this phenomenon of no more than ordinary virulence will be projected upon the screen by the aid of the calcium light—a chromotographic dust storm.

It is also rumored that some statement will be made in regard to the usual disposition of the taxes collected for street watering. There will doubtless be a large attendance at this meeting, drawn thither as well by recollections of the past as by hopes for the future, by a sense of individual suffering as well as by a scientific zeal for the welfare of the human race, for which in a measure the members of the medical profession are trustees.

 MEDICAL NOTES.

PLAGUE.—A decree has been issued at Lisbon announcing that plague has disappeared from Oporto and that the quarantine of that port has been raised. Recent information from Honolulu shows that the plague situation there has greatly improved. Another regular officer of the Marine-Hospital Service, Dr. Sanford, has been sent to Honolulu to assist Dr. Carmichael, the officer stationed there. The city of Honolulu is assisting these officers in every possible way and has appropriated \$118,000, which is to be used for the erection of a filtration plant to ensure a pure water supply. The city has also made arrangements for the construction of a new drainage system. It is estimated that the expense incurred in connection with plague in Hawaii will not be under \$1,000,000. In Manila plague is reported as being on the increase, and is creating considerable excitement and alarm. It is still prevalent at Hong Kong.

THE NAVY MEDICAL CORPS.—It is reported that Secretary Long has prepared a bill designed to encourage men to enter the Medical Corps of the Navy,

where there are invariably more vacancies than candidates. The bill proposes to increase the rank of assistant surgeons (the grade that new men take on being commissioned) to that of junior lieutenant instead of continuing it at ensign, which it has been since the Civil War. This, it is hoped, will remove the objection regarding subordinate rank. Seven vacancies now exist for which a board is waiting at the New York Navy Yard to examine candidates. Any young doctor having good credentials may take this examination, and if he meets requirements the commission follows without the exercise of political or other influence.

A NEW METHOD OF GAS POISONING.—A fatal accident to the owner of a gas coin and slot machine was narrowly averted a few days since. The machine is designed to let into the house pipes a certain amount of gas for every silver twenty-five-cent piece dropped into the slot. The owner of the machine went to bed leaving the gas burning and when the gas was exhausted the light naturally went out; later a friend seeing that the gas was no longer burning dropped another coin in the slot, with the result that the gas escaped and nearly asphyxiated the owner of the machine. It might be wise to limit the application of the slot machine to less dangerous uses.

SMALL-POX IN NEW BRUNSWICK.—The New Brunswick Government officials are enforcing the health regulations in several counties in view of the outbreak of small-pox. The disease was brought to New Brunswick from the Province of Quebec, where a total of 280 cases have appeared up to February 7th. There are about 60 cases in New Brunswick, making about 340 in eastern Canada.

INFLUENZA EPIDEMIC IN MUNICH.—In Munich it is reported there are 60,000 cases of influenza, which has spread throughout Germany. In Berlin recently every bed in every hospital was occupied, and the hospital physicians are being severely taxed to properly care for their patients.

FAMINE IN RUSSIA.—The Imperial Bureau of Medical Affairs has issued a memorandum concerning the famine in the Government of Bessarabia, showing that \$200,000 has been assigned for the relief of distress in that district. Sixty-nine thousand men are without work.

MORTALITY IN BOMBAY.—The number of deaths in Bombay, February 6th, was unprecedented, with a total of 408. The situation is aggravated by the advent of famine refugees.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, February 14, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 82, scarlatina 56, measles 84, typhoid fever 5.

OFFICERS OF BOSTON CITY HOSPITAL ALUMNI ASSOCIATION.—At the annual meeting of this Association held February 6th, the following officers

were elected: Dr. John H. McCollom, President; Dr. Charles F. Withington, Vice-President; Dr. W. H. Robey, Jr., Secretary; Dr. W. H. Prescott, Treasurer; Dr. Paul Thorndike, member of the Executive Committee. At the annual dinner which followed the business meeting at Young's Hotel, about 80 members were present from different parts of the New England and other States. Dr. W. P. Bolles presided. The speakers were Mr. H. E. Bolles, who represented the legal profession, Drs. D. W. Cheever, J. G. Blake, George B. Shattuck, E. H. Bradford, C. J. Blake, Abner Post, J. H. McCollom. Dr. G. B. Henshaw, of Cambridge, read a poem.

ANNUAL MEETING OF THE CORPORATION OF THE MASSACHUSETTS GENERAL HOSPITAL.—The annual meeting was held February 6th. The election of officers resulted as follows: President, Charles H. Dalton; Vice-President, Francis C. Lowell; Treasurer, Franklin Haven; Secretary, Thomas B. Hall; Trustees on the part of the Corporation, Francis Blake, Edmund Dwight, Reginald Gray, Nathaniel Thayer, Henry P. Walcott, Samuel D. Warren, George Wigglesworth, Moses Williams. Four more trustees are to be appointed by the Commonwealth.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, February 19th, at 8 o'clock P. M. The subject of the "Street Dust Nuisance" will be discussed. Remarks are expected by Dr. Vincent Y. Bowditch, Dr. Samuel W. Langmaid, Dr. Clarence J. Blake, Clifford Richardson, Esq., of New York, Prof. William T. Sedgwick, Prof. C. Frank Allen, and other prominent gentlemen. Arthur K. Stone, M.D., Secretary.

BOSTON SOCIETY FOR MEDICAL SCIENCES.—At a meeting of the Society held Tuesday, February 6th, papers were presented by Dr. H. G. Beyer and Dr. H. C. Ernst. Dr. Beyer spoke of some recent researches on "The Relation between Mental Work and Physique," with the general conclusion that such a relation actually exists. Dr. Ernst gave an interesting account of the "History of the Microscope," illustrated by many lantern slides.

JANUARY MORTALITY STATISTICS OF NEWTON, MASS.—The mortality statistics of Newton for January give the total number of deaths at 15, and the death-rate for the month 19.57. During the month more than 100 cases of contagious disease were reported, a large proportion being diphtheria.

NEW YORK.

A CASE OF IMPORTANCE.—A life insurance case of considerable interest and importance has recently been decided in the courts. A suit brought to recover upon an insurance policy issued by the Metropolitan Life Insurance Company upon the life of one Patrick O'Farrell was dismissed on the first trial for breach of warranty in giving a false answer to the question, "Did any of the parents, grandparents, brothers or sisters of

the life proposed ever have consumption or any pulmonary or scrofulous disease?" To this question the medical examiner put down the answer, "No." It was afterwards ascertained that a brother and sister of decedent had died of consumption. A new trial was granted on appeal, the Second Appellate Division of the Supreme Court holding that the beneficiary might show that, although the insured gave a true answer to the question, the physician wrote it down incorrectly. On the second trial an agent of the company, who was present at the time when the medical examination was had, testified for the plaintiff to the effect that in reply to the question the insured stated that he "did not know." The medical examiner testified that he put down the answers as given by the insured correctly, and read them over after they were written down, when the insured signed the paper. A judgment for the plaintiff on the second trial, upon the verdict of a jury, has now been affirmed on appeal, the court holding that the insurer could not predicate a breach of warranty upon the falsity of the answer thus written by the medical examiner.

REPORTED RECOVERY FROM FRACTURED SPINE.—On February 6th, Bartholomew Moriarty, a hod carrier, sixty-five years old, was discharged as cured from St. Joseph's Hospital, Yonkers, where he had been under treatment for two months for a fracture of one of the cervical vertebrae. The fracture was clearly shown by x-ray examination and was the result of a fall from a building the last of October. He was at first treated by a private physician and appears to have made a partial recovery. Later, however, he began to suffer much pain and his left side became paralyzed from pressure on the spinal cord, and on December 8th, he presented himself at the Yonkers hospital, having hobbled in his disabled condition all the way from his home in Dobb's Ferry, a distance of five miles.

THE MOUNT SINAI HOSPITAL.—At the annual meeting of the managers of Mount Sinai Hospital, held January 28th, it was reported that \$531,682 (less a mortgage of \$80,000) had been paid for the plot of ground for the new hospital, and that the fund for the erection of the buildings now amounted to \$439,175. It was stated that in consequence of the advance in the price of materials the cost of these will be considerably greater than was anticipated. Of the 3,065 patients admitted during the year over 81 per cent. were free. The number of deaths was 408, against 325 in the previous year. The number of operations were 2,098, a considerably larger number than in any previous year. The total number of patients treated in the hospital, dispensary and district service was 36,731.

ANNUAL BULLETIN OF STATE BOARD OF HEALTH.—The annual bulletin of the State Board of Health shows that the number of deaths in the State in 1899 was 121,820, an excess of about 850 over those in 1898, and of 2,550 over the average of the past ten years. The mortality among children under five was

1,800 less than in 1898, and nearly 5,000 less than the average for ten years; 29 per cent. of the deaths occurring in those under five, against the average of 35 per cent. In the maritime district the deaths under five were 1,100 fewer than in 1898.

INFIRMARY FOR VASSAR COLLEGE.—Mrs. Caroline Atwater, a resident of Poughkeepsie and one of the alumnae of Vassar College, has doubled her original gift of money to the college for a new infirmary, on account of the great increase in the cost of building materials. Vassar, it is said, was the first college in the world to establish an infirmary of its own, having had one in the main dormitory ever since the original buildings were erected. The growth of the institution has rendered a separate infirmary building necessary, and the means for this are now supplied by Mrs. Atwater.

AN INAUGURAL ADDRESS.—On February 12th. Dr. Robert F. Weir delivered his inaugural address as president of the Medical Association of the Greater City of New York. In the scientific portion of it he took for his subject "The Formation of an Artificial Anus," and the paper was discussed by Drs. Robert Abbe, W. Gill Wylie, A. G. Gerster, Wm. B. De Garmo, Frank Hartley, and other well-known surgeons.

TWO CENTENARIANS.—Mrs. Mary Ann Matthieu, of Oswego, N. Y., died recently, aged one hundred years, eight months. Sagie Evans, an English gypsy who was held in great reverence by her tribe, died in her tent, near Elizabeth, N. J., last week, at the age of one hundred and six. She was born in Northamptonshire in 1794, and had lived all her life in tents.

TESTIMONIAL TO JOHN KELLY.—At a conference of the political friends of the late John Kelly, held February 7th, it was decided that a contemplated testimonial to his memory should take the form of a non-sectarian ward of ten beds in St. Vincent's Hospital. Such an endowment is estimated at \$30,000, and one-half of this amount has already been subscribed.

SOCIETY FOR INSTRUCTION IN FIRST AID TO THE INJURED.—The report of the Society for Instruction in First Aid to the Injured shows that since its establishment by the State Charities Aid Association, in 1882, 11,929 persons, including a considerable number of members of the Police and Fire Departments, have attended the Society's classes.

ALTERATIONS AT LONG ISLAND COLLEGE HOSPITAL.—Plans are being prepared for the erection of a new fire-proof building to replace the central section of the Long Island College Hospital in Brooklyn. The new structure is to be four stories high, and will cost about \$150,000.

CREMATIONS IN NEW YORK CITY.—The fact that a new cemetery is to be opened on Staten Island for the burial of the dead of Greater New York has brought out the other fact that out of the 60,000

people who annually die in the city, only 600 are cremated.

PAPER ON MEDICINE AND PHYSICIANS.—At the February meeting of the New York Historical Society, a paper was read by Dr. Sidney H. Catney, Jr., on "Medicine and Physicians in the City of New York in the Year 1800."

Miscellany.

ADDITIONS TO QUARANTINE REGULATIONS.

DEPARTMENT Circular No. 6 of the Marine-Hospital Service, makes various additions to the quarantine regulations of the United States and its dependencies, designed to prevent the introduction of the plague. Among the additions of special interest are the following:

Passengers should not be vaccinated at nor *en route* from ports or places infected with plague. Such vaccination increases the liability to plague infection, and, by inducing fever and swollen glands, tends to confuse diagnosis at the port of arrival. This operation must be performed at the port of arrival, and just prior to release from quarantine.

Baggage labelled and sealed by the consul or medical officer of the Marine-Hospital Service at a non-infected city may be admitted without disinfection, even though shipped through an infected port or locality, provided it arrives with the seal unbroken. Such baggage should be accompanied by a certificate of origin and non-exposure to infection.

Passengers coming from an infected or suspected locality and desiring to take passage at a non-infected port should be held fifteen days under observation before being allowed to embark; otherwise the ship and all on board will be considered by the quarantine officer at the port of arrival in the United States as coming from an infected port. Any baggage from such infected or suspected localities destined for shipment through a non-infected port must be disinfected prior to shipment.

In a port where plague prevails, the vessel should not tie up to the dock. No lines should be passed to the shore that might permit rats on board. Passengers and cargo should be lightered; the crew not be allowed ashore, and personal communication from shore to vessel shall be under medical supervision. A statement to this effect from a medical officer of the Marine-Hospital Service will have weight with the quarantine officer at the port of arrival in determining the questions of disinfection and time of detention.

Mammalian animals, such as dogs, cats, monkeys, mice, etc., which not infrequently accompany passengers as pets, should not be shipped from a plague infected or suspected port or place.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

THE Secretary-General of the Congress gives notice of the following reductions in rates:

(1) All the railway companies of France will grant to the members of the Congress a reduction of 50 per cent. upon round trip tickets as follows: Every member of the Congress will receive, upon application to the Secretary-General, a ticket which must be stamped at the railroad station where he enters France, upon paying the full price of a single trip to Paris. At Paris the member will have this ticket viséd in the

¹ Dr. A. Chanfard, 21, Rue de l'École de Médecine, Paris.

office of the Congress, and it will then serve as a return ticket without additional expense. The journey to Paris having been paid entirely, and the return trip being free, there is of course a 50 per cent. reduction. It goes without saying that in order to secure this, the return trip must be to the same point at which the original fare was paid.

(2) The French Line (La Compagnie Générale Transatlantique) will allow members of the Congress a reduction of 10 per cent. on tickets from New York.

(3) The Secretary-General has arranged to provide to early applicants a number of lodgings, including light and service, at the rate of five francs per day; and various agencies also advertise reduced rates for lodgings.

For further particulars and application blanks for membership, address Dr. H. B. Jacobs, Secretary American National Committee, 3 W. Franklin St., Baltimore, Md.

ACTING ASSISTANT SURGEONS IN THE PHILIPPINES.

SURGEON-GENERAL STERNBERG, United States Army, writes us that the Medical Department of the Army is now in need of some additional assistance in the Philippines, and it is desired that candidates for appointment as acting assistant surgeons will make application to the Surgeon-General of the Army. Applicants must be graduates of reputable medical colleges, who have had practical experience, since graduation, in hospitals or in private practice. Candidates between the ages of twenty-five and thirty-five are preferred. Candidates should forward with their application one or more letters from well-known professional men, giving testimony as to their character and qualifications. Appointments will not be made through political influence, and letters designed to produce political effect will injure rather than benefit the applicant. All applicants will be examined as to their physical and professional qualifications for service in the Philippines before they are given a contract. Contracts are made for one year, with the understanding that the approved candidate will remain in service for a longer period if his services are required.

METEOROLOGICAL RECORD

For the week ending February 3d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...28	30.23	30	41	19	64	91	78	S.	E.	6	12	C.	N.	.01
M...29	29.47	32	48	15	100	50	75	N.W.	W.	22	24	P.	P.	.73
T...30	29.88	33	33	13	74	67	79	W.	S.	8	8	O.	C.	
W...31	29.51	24	35	13	90	66	78	N.	W.	4	20	O.	C.	
T...1	29.75	13	19	7	73	48	60	S.W.	W.	18	15	C.	C.	
F...2	30.04	13	19	7	62	40	51	W.	W.	12	6	C.	C.	
S...3	30.20	20	28	12	63	45	54	W.	W.	10	10	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, FEBRUARY 3, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,550,053	1309	468	23.44	24.96	5.04	1.64	1.68
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	507	163	19.19	16.72	5.70	.95	.95
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	223	66	23.30	11.25	4.50	3.60	.90
Baltimore	506,389	198	69	41.31	25.50	5.10	—	1.02
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	65	33	20.02	32.34	3.08	1.54	4.62
Nashville	87,754	—	—	—	—	—	—	—
Nashville	65,165	—	—	—	—	—	—	—
Worcester	111,732	35	13	25.74	14.30	—	—	—
Fall River	103,142	31	11	22.54	22.54	—	2.86	—
Cambridge	92,520	29	8	6.88	6.88	—	—	—
Lowell	90,114	28	8	14.28	17.45	—	—	—
New Bedford	79,511	19	6	10.52	—	—	—	—
Lynn	68,218	20	3	5.00	2.00	—	—	—
Somerville	64,394	15	3	26.66	13.33	13.33	—	—
Lawrence	59,072	21	13	20.75	16.60	4.15	—	—
Springfield	58,266	22	2	15.38	19.23	—	—	—
Holyoke	44,510	11	4	18.18	9.09	—	—	—
Brookton	38,759	—	—	—	—	—	—	—
Salem	37,723	12	1	—	25.00	—	—	—
Malden	36,421	8	1	12.50	12.50	—	—	—
Chelsea	34,235	12	4	8.33	—	—	—	—
Haverhill	32,651	8	2	25.00	50.00	—	—	—
Gloucester	31,426	8	4	25.00	—	12.50	12.50	—
Fitchburg	30,523	5	1	20.00	—	—	—	—
Newton	30,461	16	4	18.75	12.50	12.50	—	—
Taunton	28,527	19	5	10.52	42.08	—	—	—
Everett	28,102	6	—	33.33	—	16.66	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	11	4	36.36	9.09	—	—	—
North Adams	21,583	10	4	10.00	20.00	—	—	—
Chicopee	18,316	3	—	66.66	—	33.33	—	—
Medford	17,190	7	1	—	—	—	—	—
Newburyport	15,036	3	2	—	—	—	—	—
Melrose	14,721	6	3	—	33.33	—	—	—

Deaths reported 2,677; under five years of age 903; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 552, acute lung diseases 554, diphtheria and croup 124, scarlet fever 38, measles 33, typhoid fever 23, diarrheal diseases 18, erysipelas 16, whooping-cough 16, cerebrospinal meningitis 10.

From typhoid fever New York 13, Philadelphia 6, Boston and Baltimore 2 each. From diarrheal diseases New York 8, Philadelphia, Baltimore and Fall River 2 each, Providence, Lawrence, Springfield and Taunton 1 each. From erysipelas New York 9, Philadelphia 4, Boston, Baltimore and Worcester 1 each. From whooping-cough New York 11, Boston 3, Baltimore and Lowell 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,290, for the week ending January 27th, the death-rate was 22.6. Deaths reported 5,025: acute diseases of the respiratory organs (London) 490, measles 123, whooping-cough 99, diphtheria 94, diarrhea 43, fever 35, scarlet fever 33, small-pox (Hull) 1.

The death-rates ranged from 8.9 in Cardiff to 30.7 in Preston; Birmingham 27.2, Bradford 24.9, Gateshead 26.7, Hull 28.0, Leeds 23.8, Liverpool 29.5, Manchester 23.8, Newcastle-on-Tyne 26.0, Nottingham 19.1, Sheffield 22.5, Swansea 15.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 10, 1900.

M. S. ELLIOTT, passed assistant surgeon, commissioned passed assistant surgeon from October 6, 1899.

J. A. HAWKE, medical director, commissioned medical director from September 24, 1899.

R. A. MARMON, medical director, commissioned medical director from October 23, 1899.

D. DICKINSON, medical director, commissioned medical director from November 11, 1899.

M. C. DRENNAN, medical director, commissioned medical director from February 5, 1900.

T. H. STREETS, medical inspector, commissioned medical inspector from April 16, 1899.

G. E. H. HARMON, medical inspector, commissioned medical inspector from November 11, 1899.

J. W. WAGNER, medical inspector, commissioned medical inspector from February 8, 1899.
 T. A. BERRYHILL, surgeon, commissioned surgeon from April 9, 1899.
 E. P. STONE, surgeon, commissioned surgeon from April 16, 1899.
 R. K. SMITH, passed assistant surgeon, commissioned passed assistant surgeon from April 3, 1899.
 R. S. BLAKEMAN, passed assistant surgeon, commissioned passed assistant surgeon from May 27, 1899.
 J. C. ROSENBLEUTH, passed assistant surgeon, commissioned passed assistant surgeon from October 14, 1899.
 G. W. COSTIGAN, passed assistant surgeon, commissioned passed assistant surgeon from February 8, 1900.
 G. H. BARBER, passed assistant surgeon, detached from the Naval Academy, February 10th, and ordered home and to be ready for orders to sea duty.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 8, 1900.

WASDIN, EUGENE, surgeon. On expiration of leave of absence to proceed to New York, N. Y., for orders. February 5, 1900.
 WERTENBAKER, C. P., passed assistant surgeon. To proceed to Martinsville, Va., for special temporary duty. February 7, 1900.
 AMESSE, J. W., assistant surgeon. To proceed to Cleveland, O., for temporary duty during the absence of Surgeon W. J. PATTUS, February 6, 1900.
 GIBSON, R. H., hospital steward. Relieved from duty at South Atlantic Quarantine Station, and directed to proceed to Gulf Quarantine Station, Miss., for duty and assignment to quarters. February 2, 1900.
 O'GORMAN, T. V., hospital steward. Relieved from duty at Gulf Quarantine Station, and directed to proceed to Louisville, Ky., for duty and assignment to quarters. February 2, 1900.
 MCKAY, N., hospital steward. Granted leave of absence for five days from January 29th. February 2, 1900.
 COMFORT, N. C., hospital steward. To report at Washington, D. C., for special temporary duty. February 2, 1900. To proceed to Manila, P. I., and report to Passed Assistant Surgeon J. C. PERRY, chief quarantine officer, for duty. February 7, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, February 21, 1900, at 8 P. M.
 At 8 o'clock: Dr. J. L. Morse will report "An Analysis of Fifty-one Cases of Pneumothorax."
 At 8 20 o'clock: Dr. R. W. Greenleaf will read a paper (postponed from the December meeting) entitled, "The Psychic Factor in Disease." The discussion will be opened by Dr. E. W. Taylor.
 J. BERGEN OGDEN, M.D., *Secretary*,
 Harvard Medical School, Boston.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. — The meeting of the Association in Richmond, Va., will be held May 8th, 9th, 10th, 11th, not May 1st, 2d, 3d, 4th, as heretofore announced. The change in date is made to enable members to attend the Congress of American Physicians and Surgeons in Washington, May 1st-4th.

By order of the Council,
 C. B. BUER, M.D., *Secretary*.

RECENT DEATHS.

WILLIAM V. RIGHTMORE, M.D., of Brooklyn, N. Y., died February 4th, at the age of thirty-six. He was a graduate of the Medical Department of the University of the City of New York in 1884.
 T. DANA FITZSIMMONS, M.D., of Brooklyn, N. Y., a graduate of the Long Island College Hospital, died on February 5th, aged twenty-five years.
 WILLIAM CARSEN, M.D., aged eighty-five, one of the oldest physicians in New Orleans, is dead. He was a native of Ireland and a graduate of the Royal College of Surgeons in London.
 A. J. BILLINGS, M.D., of Freedom, Me., died February 7th, at Belfast. He was seventy-four years of age, and had been active in public affairs for many years. He was State senator in 1866 and in 1897, and had served two terms as representative. He was a member of the Waldo County Medical Society and served in the Civil War.
 F. H. PETTINGILL, M.D., of Saxton's River, Vt., died last week. He was born in Grafton, attended Middlebury College, served in the Civil War, studied medicine at the University of Vermont, after the war, graduating from the Harvard Medical School in 1868.

BOOKS AND PAMPHLETS RECEIVED.

The New England Anti-vivisection Society Monthly, February, 1900.
 Dermatitis Gangrenosa Infantum. By H. Jakob Lippes, M.D. Reprint. 1900.
 A Case of Primary Tumor of the Optic Nerve. By F. Baller, Montreal, Can. 1899.
 The Old New York Hospital: An Historical Sketch. By D. B. St. John Roosa. Reprint. 1900.
 Rotators of the Femur and their Other Functions. By E. W. Thomas, M.D., Philadelphia. Reprint. 1899.
 The Bubonic Plague. By Walter Wynnan Surgeon-General, Marine-Hospital Service. Washington. 1900.
 The Operative Treatment of Uterine Fibroids. By F. A. Lockhart, M.B., C.M. (Edin.). Reprint. 1899.
 Experiments on Animals. By Stephen Paget. With an introduction by Lord Lister. London: T. Fisher Unwin.
 Report of One Hundred Consecutive Cases of Cataract Extraction. By Samuel Theobald, M.D., Baltimore, Md. Reprint. 1899.
 The Resuscitation of Animals "Poisoned" with Illuminating Gas: An Experimental Study. By Percival Walter Darrah, M.D. 1899.
 On the Significance of Bovine Tuberculosis and Its Eradication and Prevention in Canada. By George Adami, M.A., M.D. Reprint. 1899.
 On the Relation between Disease of the Kidney and Excretion of the Alloxuric Bodies. By C. F. Martin, B.A., M.D., Montreal, Can. Reprint. 1899.
 Care and Treatment of Epileptics. By William Pryor Lethworth, LL.D. Illustrated. New York and London: G. Putnam's Sons. The Knickerbocker Press. 1900.
 Enteroptosis and Its Relation to Functional Disturbances. A Case of Congenital Deficiency of Both Clavicles. By W. F. Hamilton, M.D., Montreal, Can. Reprints. 1899.
 The Principles of Treatment and their Applications in Practical Medicine. By J. Mitchell Bruce, M.A., M.D., F.R.C.P. Philadelphia and New York: Lea Bros. & Co. 1899.
 The Nervous System of the Child: Its Growth and Health in Education. By Francis Warner, M.D. (Lond.). F.R.C.P., F.R.C.S. (Eng.). New York: The Macmillan Co. 1900.
 A Consideration of the Various Forms of Non-malignant Ulceration of the Rectum. Some Practical Notes upon Diseases of the Rectum. By Lewis H. Adler, Jr., M.D., Philadelphia. Reprints. 1899.
 E. Brissaud: Leçons sur les Maladies Nerveuses, Deuxième Série (Hôpital Saint-Antoine). Recueilles et publiées par Henri Moïge. Avec 165 figures dans le texte. Paris: Masson et Cie, Editeurs. 1899.
 Practical Text-Book of Midwifery for Nurses and Students. By Robert Jardine, M.D., M.R.C.S. (Eng.), F.F.P. and S. (Glasg.). Illustrated. New York: The Macmillan Co. Edinburgh: William F. Clay. 1899.
 A Text-Book of Diseases of Women. By Charles B. Penrose, M.D., Ph.D., Professor of Gynecology in University of Pennsylvania. Illustrated, third edition, revised. Philadelphia: W. B. Saunders. 1900.
 The Climate of Colorado for Respiratory Diseases. The Tuberculin Test, and the Need of a More Complete Diagnosis of Tuberculosis. By Charles Denison, A.M., M.D., Deuver, Colo. Reprints. 1898-1900.
 Imperative Surgery, for the General Practitioner, the Specialist and the Recent Graduate. By Howard Lilenthal, M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.
 The Municipal Control of Prostitution in the United States: Some Opinions as to Methods Adapted to Municipal Care and Control of Prostitution and Venereal Diseases. By Isadore Dyer, Ph.B. (Yale), M.D. Reprint. 1899.
 Report on Observations made upon the Cattle at the Experimental Station at Outremont, P. Q., Recognized to be Tuberculous by the Tuberculin Test. By Prof. J. George Adami, M.A., M.D., and C. F. Martin, M.D. Ottawa. 1899.
 A Text-Book of Embryology for Students of Medicine. By John Clement Heisler, M.D., Professor of Anatomy in the Medico-Chirurgical College, Philadelphia. With 100 illustrations, 25 of them in colors. Philadelphia: W. B. Saunders. 1899.
 Manuel Pratique d'Hygiène à l'Usage des Médecins et des Etudiants. Par le Dr. Guiraud, Professeur d'Hygiène à la Faculté de Médecine de l'Université de Toulouse. Deuxième édition, revue et augmentée. Paris: G. Steinheil, Editeur. 1899.

Recherches sur les Matières Colorantes du Foie et de la Bile et sur le Fer Hépatique. Par MM. A. Dastre, Professeur de Physiologie à la Faculté des Sciences de Paris, et N. Floresco, Docteur ès-Sciences. Paris: G. Steinheil, Editeur. 1899.

The American Year-Book of Medicine and Surgery: being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery. By George M. Gould, M.D. In two volumes. Philadelphia: W. B. Saunders. 1900.

The Refraction of the Eye, including a Complete Treatise on Ophthalmometry, a Clinical Text-Book for Students and Practitioners. By A. Edward Davis, A.M., M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

The Treatment of Diseases of the Nervous System, a Manual for Practitioners. By Joseph Collins, M.D., Professor of Nervous and Mental Diseases in the New York Post-Graduate Medical School, etc. Illustrated. New York: William Wood & Co. 1900.

Pyorrhœa Alveolaris and its Relations to General Medicine. By John Fitzgerald, L.D.S., Dental Surgeon to the Italian Hospital and to the National Hospital for Diseases of the Heart and Paralysis, Soho Square. London: The Medical Publishing Co., Ltd. 1899.

Enlargement of the Prostate: Its Treatment and Radical Cure. By C. Mans-H Moullin, M.D. (Oxon.), F.R.C.S., Surgeon and Lecturer on Surgery at the London Hospital, etc. Second edition. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1899.

Herman Ludwig Ferdinand von Helmholtz. By John Gray McKendrick, M.D., LL.D., F.R.S.S.L. and E., Professor of Physiology in the University of Glasgow and Fellow of the Royal College of Physicians of Edinburgh. New York: Longmans, Green & Co. 1899.

Diseases of Women: A Treatise on the Principles and Practice of Gynecology for Students and Practitioners. By E. C. Dudley, A.M., M.D., Professor of Gynecology, etc. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co.

The Diseases of Children, Medical and Surgical. By Henry Ashby, M.D. (Lond.), F.R.C.P., and G. A. Wright, B.A., M.B. (Oxon.), F.R.C.S. (Eng.). Fourth edition, edited for American students by William Perry Northrup, A.M., M.D. London and Bombay: Longmans, Green & Co. 1900.

Manual of Clinical Chemistry. By Elias H. Bartley, B.S., M.D., Ph.G., Professor of Chemistry and Toxicology in the Long Island College Hospital; Dean and Professor of Organic Chemistry in the Brooklyn College of Pharmacy. Thirty-three illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

Raynaud's Disease (Local Syncope, Local Asphyxia, Symmetrical Gangrene), Its History, Causes, Symptoms, Morbid Relations, Pathology and Treatment. By Thomas Kirkpatrick Monro, M.A.; M.D., Physician to the Glasgow Royal Infirmary; Examiner in the University of Glasgow. Glasgow: James Maclehose & Sons. 1899.

A Manual of Modern Surgery: An Exposition of the Accepted Doctrines and Approved Operative Procedures of the Present Time for the use of Students and Practitioners. By John B. Roberts, A.M., M.D., Professor of Anatomy and Surgery, etc. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Lea's Series of Pocket Text-Books. Practice of Medicine: A Manual for Students and Practitioners. By George E. Malsbary, M.D., Assistant to the Chair of Practice, Medical College of Ohio, University of Cincinnati, etc. Series edited by Bern B. Gallaudet, M.D. Illustrated with 45 engravings. Philadelphia and New York: Lea Brothers & Co. 1899.

A Compend of the Diseases of the Eye and Refraction, including Treatment and Surgery. By George M. Gould, A.M., M.D., formerly Ophthalmologist to the Philadelphia Hospital, etc., and Walter L. Pyle, A.M., M.D., Assistant Surgeon to Wills Eye Hospital, Philadelphia, etc. Second edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co. 1899.

Saunders' Question Compend, No. 3. Essentials of Anatomy, including the Anatomy of the Viscera arranged in the Form of Questions and Answers, prepared especially for Students of Medicine. By Charles B. Nancrede, M.D. Sixth edition, thoroughly revised by Fred J. Brockway, M.D., Assistant Demonstrator of Anatomy, Columbia University, New York. Philadelphia: W. B. Saunders. 1899.

The Treatment of Wounds, Its Principles and Practice, General and Special. By Lewis Stephen Pildeer, A.M., M.D., Surgeon to the Methodist Episcopal Hospital in New York; late Passed Assistant Surgeon, U. S. Navy; Fellow of the American Surgical Association; Member of the Brooklyn Surgical Society; Honorary Member of the New York Surgical Society. With 142 wood engravings. New York: William Wood & Co. 1898.

A Manual of the Practice of Medicine, prepared especially for Students. By A. A. Stevens, A.M., M.D., Professor of Pathology in the Woman's Medical College of Pennsylvania; Lecturer on Terminology and Instructor in Physical Diagnosis in University of Pennsylvania, etc. Fifth edition, revised and enlarged. Illustrated. Philadelphia: W. B. Saunders. 1893.

Lea's Series of Pocket Text-Books. Materia Medica, Therapeutics, Medical Pharmacy, Prescription Writing and Medical Latin, a Manual for Students and Practitioners. By William Schleif, Ph.G., M.D., Instructor in Pharmacy in the University of Pennsylvania. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York, etc. Philadelphia and New York: Lea Brothers & Co. 1899.

Lea's Series of Pocket Text-Books. Diseases of Children: a Manual for Students and Practitioners. By George M. Tuttle, M.D., Attending Physician to St. Luke's Hospital, etc., St. Louis. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York, etc. Illustrated with five plates in color and monochrome. Philadelphia and New York: Lea Brothers & Co. 1899.

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Histology and Pathology, a Manual for Students and Practitioners. By John Benjamin Nichols, M.D., Demonstrator of Histology, Medical Department, Columbian University, Washington, D. C., and Frank Palmer Vale, M.D., Assistant in Pathology, University of Georgetown, Washington, D. C. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York, etc. Illustrated. Philadelphia and New York: Lea Brothers & Co.

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Original Articles.

THE UNITY OF THE ACUTE PSYCHOSES.¹

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SOME years ago I was called to see a young woman who had had a sudden nervous collapse one morning after breakfast. The history was unfortunately only too common. She had always been in delicate health. The family history showed some slight neurotic tendencies. She herself had had lateral curvature of the spine, slight in degree, and not important except that it had been made the occasion for exhausting treatment. She was possessed of the New England conscience to a high degree, unsanctified by a keen sense of humor or the power of relaxation. For a number of years there had been a source of worry in her family life, and she had been studying hard, working late at night, neglecting her meals, and hurrying from one end of the town to the other to attend lectures, concerts or operas, or to study in the libraries. A slight uterine disturbance had led to needless gynecological interference, which had had a bad effect upon her morbid conscientiousness. As a result of it all she had become very nervous and sleepless and had suffered much from intense pain in the head and spine. A change was advised, but scarcely had she started on her travels when she collapsed. This was followed by a long period of exhaustion and a gradual restoration to health. For a considerable period she had been brought in contact with a member of her family who had presented certain nervous phenomena, which had not been understood by the family physician, and thus she had been led to dread for herself an attack of insanity, so that she had implored her family never to send her away to an asylum. In addition, she had become profoundly depressed, and had the dominant idea of suicide, which, to a person of her morbid conscientiousness, seemed a horrible sin. At times she had sat sad and motionless, refusing to speak or even to look at any one, answering in monosyllables only after a direct question had been put to her several times. With all this there were no delusions, no hallucinations, no mental impairment, no confusion, except for an hour or two one night just after her collapse, when she struggled silently to get out of bed during a period of intense headache.

I have briefly outlined the case, not because it is in any way remarkable or because it presents any special difficulties or obscurities, but simply because it serves to introduce a question in the way of diagnosis. Is it a case of neurasthenia or of melancholia? She was both neurasthenic and melancholy, but was the melancholy sufficient to warrant the diagnosis of acute melancholia, or was it merely the melancholy which so often accompanies neurasthenia? Such profound depression is, of course, rare in neurasthenia, but more than half the neurasthenics complain of depression, and very few are persistently cheerful. It would be tedious to rehearse cases to show that in neurasthenia we may have all degrees of depression, until we find it as pronounced as in this patient. That is a fact which every neurologist knows from his own experience. The only question is at what point to draw the

line between the two. Having drawn the line, moreover, we must recognize all sorts of gradations in the degree of depression, blending almost imperceptibly into one another. The extremes may be clearly differentiated, but in this case, as in so many others, the line of demarcation is not sharp.

Whether this be melancholia or neurasthenia, however, we must admit that there are other cases of mental depression which differ markedly in their clinical aspect from this. I need not cite now illustrative cases of melancholia with stupor, where there are marked mental confusion, hallucinations, and mental impairment, with a comparatively sudden onset, and without so many profound neurasthenic symptoms; nor need I cite any illustrative cases of melancholia with systematized delusions, chronic course, active hallucinations, and slight mental impairment. Both types are familiar, and they differ fundamentally from the case I have already referred to. This case, as I have said, bears a close resemblance to cases of neurasthenia, while melancholia with systematized delusions bears an equally close relation to paranoia, and the melancholia with stupor stands in a third class, differing markedly from the other two. Are these three types one and the same disease, characterized by the affective state depression, or is depression merely a symptom, occurring in a variety of diseases? The latter seems the more rational answer. Melancholy is an affective state, which is the normal result of certain conditions. If a man knows that he is suffering from an incurable disease, that he has lost his property, that he has incurred disgrace, that he has lost those near and dear to him, he becomes naturally and inevitably depressed. If, owing to false information, he believes that these things have happened, he becomes equally depressed. If, owing to insane delusions, he believes that these things have happened, he still becomes equally depressed. The affective state is the result of certain pre-existing ideas: it is not necessarily a disease by itself.

The same may be said of the states of excitement so often seen. In many cases they are but the natural actions of the patient produced by his morbid ideas or delusions. If a man be exposed to imminent danger, he will assault the man who prevents his escape: if he be a king, he will punish the man who does not pay him due deference: he will behave in the same manner if he believes these things, even if his beliefs be unfounded or part of an insane delusion. There is much truth in Alt's recent assertion² that violent mania is an artefact, due to psychical sepsis in the hospital; that is, to defective management and unskillful treatment.

The idea that melancholia, one of the oldest recognized types of mental disease, which in the days of Robert Burton was regarded as one of the commonest and most universal forms of disease, is not a pathological entity, but an affective state occurring in several forms of disease, indicates something of the revolution that is taking place and the confusion that exists in our conceptions of mental disease. Mania, that other time-honored type, occupies a still more uncertain place. In spite of the frequency with which mania is diagnosticated in this country, as shown by asylum statistics, a large number of modern writers regard it as rare, and many question its existence. A similar contest is going on with regard to katatonia, whether

¹ Read before the American Neurological Association, June, 1899.² Monatschrift für Psychiatrie, June, 1897.

it is a disease by itself or merely a symptom complex. One school vigorously upholds the existence of an acute paranoia, whose existence is denied by another school. In the whole field of the acute psychoses there is questioning and uncertainty. If we compare the modern treatises on mental disease, excluding of course those which are merely imitations of some original writer's work, we will find that no two of them agree in the diseases which they describe.⁸ Each writer has his own list of diseases which he differentiates carefully from one another, and this list differs absolutely from the lists of other writers; but in no treatise on insanity are the distinguishing points as distinctive as could be desired, and nearly every writer admits that certain of his distinctive affections may sometimes be confounded.

This confusion is the natural result of the attempt to divide mental affections upon a symptomatic basis. Such a classification is, in certain states of our knowledge, inevitable, but eventually it must go the way of the etiological classifications. Even in diseases with definite physical symptoms such classifications are often misleading. Any man who has seen a dozen cases of brain tumor or tabes could divide them into several distinct types, if he were to classify according to their most striking symptoms. Of the three cardinal symptoms of tabes—lancinating pains, loss of knee-jerk and Argyll-Robertson pupil—only one is complained of by the patient, and the other two can be detected only by expert examination. Ataxia, gastric crises, blindness, joint affections, which may dominate the clinical picture, may all be absent. In the one form of mental disease, concerning which there is general agreement and which is described in substantially the same way and under the same name by every author, namely, general paralysis,—the clinical symptoms may vary widely, and, were we to classify by these alone, every man could describe a dozen different types from his own case books. If so many types may be distinguished when the symptoms are chiefly physical, may not as many and as unwarranted types be created when the symptoms are of a complex

³ I have cited from a few writers the various affections they describe which might fairly be classed among the acute psychoses. Ballet and Meynert do not give any complete classification. The various types are described under sixty-six different names:

Clouston: Simple melancholia, hypochondriacal melancholia, delusional melancholia, excited melancholia, resistive melancholia, convulsive melancholia, organic melancholia, suicidal and homicidal melancholia, simple mania, acute mania, delusional mania, ephemeral mania, homicidal mania, katatonia, melancholia attonita, primary dementia, 16.

Bevan Lewis: Depression, stupor, exaltation, fulminating psychoses, alcoholic insanity, insanity of puberty and adolescence, puerperal insanity, lactational insanity, climacteric insanity, 9.

Spitzka: Mania, melancholia, katatonia, transitory frenzy, stuporous insanity, primary confusional insanity, delirium grave, alcoholic insanity, 8.

Ballet: Mania, melancholia, confusion, acute delirium, 4.

Kirchhoff: Melancholia, mania, acute paranoia, confusion, primary dementia, toxic insanity, 6.

Kraepelin: Collapse delirium, acute confusion, acute dementia, febrile delirium, toxic delirium, dementia precox, katatonia, dementia paranoides, melancholia, 9.

Krafft-Ebing: Melancholia, passive melancholia, melancholia attonita, mania, frenzy, stupidity, 6.

Meynert: Melancholia, amentia, mania, 3.

Schüle: Melancholia, mania, severe mania, acute dementia, insanity of severe disease or intoxication, acute delirium, 6.

Ziehen: Mania, melancholia, stupidity, acute hallucinatory paranoia, acute simple paranoia, post-maniacal and post-melancholy stupor, post-neurasthenic hypochondriacal melancholia and paranoia, post-melancholic hypochondriacal paranoia, katatonia, alcoholic dementia, 12.

Agostini: Mania, simple melancholia with delirium, agitated melancholia, melancholia attonita, confusional amentia, stuporous amentia, acute delirium, syphilitic psychoses, pellagrous psychoses, alcoholic psychoses, morphinism, etc., katatonia, 13.

Morselli: Hebephrenia, climacteric insanity, simple mania, grave mania, simple melancholia, grave melancholia, stupidity, katatonia, acute delirium, toxic insanities, 10.

International: Acute mania, puerperal mania, acute melancholia, puerperal melancholia, primary dementia, toxic insanity, 6.

psychical nature? The appalling list of the phobias shows the possibilities and the evil of such classification.

This fallacy has been well brought out by Kraepelin in his criticism of the attempt to establish an acute paranoia, and especially of Ziehen's distinction between the simple and the hallucinatory forms. "In this," he says,⁴ "we meet with the plainest indication of the essential failure of our clinical psychiatry in the last decade, the purely symptomatic division of forms of disease resting upon *a priori* presumptions. The distinction which is regarded as fundamental between the disturbances of intellect and those of feeling is only psychological, not at all clinical. In actual disease types we see both tied up together in a wholly indistinguishable way. If this be not plain, try to group cases universally recognized as general paralysis according to the primary or secondary development of delusions. This plain example, from which the clinical comprehension of psychical disturbances will never learn anything, shows more than sufficiently that delusions and hallucinations are as inessential for the characterization of a clinical type as the appearance of depression or excitement. . . . In fact, the attempt thus far made to arrange the paranoia group by itself and separate it from other forms of insanity has invariably ended with the confession that mixed forms and transition forms predominate over the regular forms themselves and even run into the affective mental disturbances which are supposed to be essentially different. Thus the only basis of the present conception of paranoia, the artificial distinction between diseases of the intellect and diseases of the affective sphere, falls to pieces. There is no doubt that the hopelessness of coming to any clear conclusions in this way must bear a great part of the blame for the general repugnance toward the study of clinical psychiatric questions." A sound criticism, which Kraepelin himself has unfortunately not followed. General paralysis itself may present every important symptom in the entire list of psychiatric semeiology, depression, excitement, confusion, delusions, hallucinations, dementia.

The almost hopeless confusion which the effort to reconcile various opinions in regard to the so-called acute psychoses produces may naturally lead us to consider, if not to take refuge, in alcohol. The pathological changes produced in the cortical nerve cells by alcohol have, of late years, been carefully studied, and it is recognized that alcoholic poisoning causes degenerative changes in the cortical cell. In acute alcoholic poisoning, however, in the "simple drunk," we are familiar with various mental states. The intoxicated man may be verbose, jocose, lachrymose, morose, bellicose, or comatose. The mental conditions due to chronic alcoholic poisoning are also of various types. One of the most familiar forms is, of course, the ordinary delirium tremens,—an acute hallucinatory delirium with ideas of persecution, of short duration and often terminating fatally; a condition which, clinically, is not unlike acute delirium.

A short time ago I saw on the same day two patients who presented two other familiar types of mental disturbance due to alcohol. One was a young man of thirty-two who, for ten or twelve years, had indulged in alcohol to excess. The family history and previous history were not remarkable. Three months

⁴ Kraepelin: *Psychiatrie*, 5te Aufl., p. 655.

before he had had a light attack of "the horrors," lasting about a week; since that time he had had the delusion that his enemies were influencing him with an electric machine; that he could hear them talking about him, threatening to arrest and kill him. They knew his thoughts and everything which he did. Certain muscular twitchings, due perhaps to a very slight neuritis, were interpreted as taps from the electric influences; after which he heard his own name and the names of his enemies spoken. His enemies repeated everything he thought and told him they would kill him with electricity. Their suggestions were often indecent. He never had any hallucinations of sight. At times he recognized the voices as false, but more frequently they were real. In consequence of his persecutions he was depressed, irritable and unable to keep his mind upon his business, but there was no failure of memory or judgment, no confusion and no other mental impairment. After three weeks of total abstinence the delusions and hallucinations were much diminished.

On the same day I saw a woman of forty-four, possibly approaching the menopause, who had indulged very freely in alcohol. For three weeks she had had some bronchitis, with digestive disturbance and elevation of temperature, for which she entered the hospital. She was found to be very weak and tremulous and somewhat delirious, getting out of bed frequently at night, but never becoming especially violent. On account of her getting out of bed, restraint became necessary. On examination she was found to have a moderate degree of neuritis and to show very marked mental confusion and loss of memory. She gave the characteristic account of having made several visits to her friends outside during her two weeks' stay in the hospital, with circumstantial statements as to the events which had happened during those visits. There was much confusion as to dates and much of the time she was not certain where she was. After total abstinence from alcohol she improved so much that in the course of a month she was able to return to her friends.

In yet a fourth type, which is seen only in more advanced cases, there is still more marked dementia, great muscular weakness, more marked loss of memory and confusion, disturbances of speech and occasional convulsions, the whole suggesting general paralysis. The course is protracted, the prognosis grave and complete recovery is rare. In this last form we find edema and opacity of the pia, atrophy of the cortex and more marked atrophic changes in the cells and in the glia, the familiar "wet brain" of chronic alcoholism. Other forms might be described, and mixed and transition types exist.

In all these types of mental disturbance, — which clinically are distinct, if we disregard the transition forms, which spoil our classifications, — the etiology is the same, the anatomical changes differ only in degree, but the clinical aspect is widely different. Is it not fair to suppose, therefore, that the difference in the symptoms is due to the difference in the extent of the cortical changes or perhaps to a difference in their localization? In other diseases of the brain — hemorrhage, abscess, tumor — we know that the extent and location of the lesion are of much greater importance than the etiology or the precise anatomical nature. Is it not also probable that the different manifestations in general paralysis are dependent upon

the extent and localization of the changes in the cortex, excepting, of course, those manifestations clearly referable to changes in the spinal cord? The paralyzes and convulsions of general paralysis are probably to be referred to local changes, and although we cannot as yet accept Flechsig's speculation⁵ that disturbances of personality are due to changes in the anterior association centre, the clinical differences in the mental symptoms of general paralysis are more satisfactorily explained by differences in the part of the cortex affected and by differences in the extent of the degeneration than by any other causes. At any rate, both in alcoholism and in general paralysis it seems safe to claim that the degree of the dementia is dependent upon the number of cortical neurones that are put out of function; the rapidity with which the dementia develops depends upon the rapidity with which these neurones are affected by the morbid process; and the permanence of the dementia depends upon whether the neurones are wholly destroyed or are capable of repair. The study of the pathological changes in the cortex in the early and late stages of general paralysis establishes this point beyond dispute.

Let us now consider for a few moments the so-called acute psychoses. What they are it is hard to say, since, as I have said, the list varies with each treatise on psychiatry consulted. They would include, however, many of the cases now classed as acute mania, acute melancholia, acute dementia, dementia precox, katatonia, acute delirium, acute paranoia and acute confusional insanity. The pathology of these conditions is defective, and any satisfactory pathology in mental disturbances is at present wholly impossible, yet, in a few instances, an acute degeneration of the cortical neurones, occasionally in the severer cases associated with proliferation of the glia, has been found. These changes are not unlike those produced by certain poisons, such as alcohol, or those produced as a result of acute infectious processes. In fact, it is generally admitted that, with our present methods of research, it is impossible to detect from the anatomical differences in the affected cortical cells whether the degeneration be due to alcohol, other poisons, acute infection or acute mental disease.

Clinically, these psychoses resemble each other in that they often seem to be produced by toxic causes, that they may affect the healthy brain, that they are of comparatively rapid onset and that they may run a tolerably acute course. Furthermore, one cause may produce several different clinical types of psychosis. I have already referred to some of the varying conditions, with probably a similar pathological basis, produced by alcohol — acute delirium, acute delusional insanity, an acute confusional condition, and a more marked and more chronic form of dementia. As a result of child-bearing, or more probably of the acute infection associated with the puerperal state, we see various types of puerperal psychosis — mania, melancholia, and the acute hallucinatory confusional insanity so often confounded with mania. Manifestations of febrile delirium, when not associated, as it so often is, with alcoholic poisoning, show a similar variety in the mental symptoms. All these psychoses, moreover, show certain likenesses in their course; they may vary, of course, in severity, but we must admit that in all the so-called types of mental disease to which I have referred, even in katatonia and acute delirium,

⁵ Flechsig: *Gehirn und Seele*, 2te Aufl., p. 90.

recovery is possible. The cases which do not recover, however, either die of exhaustion, after a comparatively short illness, or they end in one of two ways — they either pass on to a more or less marked dementia or to a state associated with hallucinations and not very well systematized delusions, with considerable mental impairment. We may explain the course by imagining that the cell degeneration has in some cases been slight, and that a process of repair has followed, leading to a complete recovery. In other cases there may have been a sudden and widespread degeneration of many cortical cells, causing death; or there may have been a more complete degeneration of a greater or smaller number of cells, from which repair was impossible; and in case of the destruction of these cells, either mental impairment with delusions or a more complete dementia would be the inevitable result.

Many of these cases, if studied throughout their course, present various changes in their psychical manifestations. The old descriptions of mania and melancholia used to tell of the stages of depression or exaltation, respectively, preceding or following the period of excitement or depression that gave the name to the disease. This description may have been founded upon the cases of unrecognized circular insanity, but the fact remains that in so-called mania and melancholia, as well as in other affections, we may have various changes in the clinical picture — what Ziehen calls the polymorphous psychoses⁶ which often present a course beginning with depression, going on to excitement, then confusion, and finally dementia. Other cases may begin with vague delusions of persecution and hallucinations, which may be permanent or go on to more marked confusion and considerable dementia, and yet make a good recovery. Often the depression or excitement is merely a secondary condition, the consequence of delusions, fancied ill-treatment, the bad effects of environment in the violent ward of an asylum, and the like. In a very large number of cases of acute psychoses recent studies have shown the existence of marked mental confusion, going on to stupor. Meynert's exhaustive study of acute hallucinatory insanity — amentia⁷ — has caused an increasing tendency to put many cases under this one heading. It has absorbed many of the cases of acute mania, now regarded as a rare disease, it has taken in a few cases of melancholia, many of the cases of acute dementia and many of the cases of acute paranoia. Wernicke⁸ has recently admitted frankly that the majority of the acute psychoses should be classed under this head.

The conclusions to which these various facts tend is that in these acute psychoses we have to do, not with a variety of different diseases, but, after all, with one single affection, whose anatomical basis may be an acute degeneration of the cortical neurones, and — if we adopt Wernicke's suggestion⁹ (which seems to me the most sound one) that insanity is a disease of the association system — a degeneration which causes a greater loss of function in the association neurones of the cortex than in the neurones which belong to the projection system. This affection may vary in its severity and in its clinical manifestations. It is most frequently due to some toxic process (such as alcohol,

post-infectious toxins, or perhaps autotoxins), or to exhaustion (toxins of fatigue). It is often attended at the onset with some febrile disturbance; a slight rise is not uncommon in milder cases, and a marked rise is the rule in delirium grave. Under certain conditions (perhaps a marked virulence or a very large dose of the poison) the symptoms are of sudden onset, with states of active delirium which may speedily cause death by exhaustion. Under ordinary conditions, states of confusion or hallucinatory delusion are produced, which may remain through the course of the disease or which may go on more or less rapidly to dementia. If the changes be not too complete and too extensive, recovery may ensue, or, in some cases, recovery with some persistent mental defect. The variation in the clinical picture is due to the varying extent and severity of the morbid changes or perhaps to a varying localization.

Two other factors may modify the picture. The first is the period of life, about which has been much written, chiefly with the end of establishing new diseases, such as hebephrenia or climacteric insanity. The other is degeneracy. That acute psychoses may occur in the degenerate is obvious, but little has been done toward the study of the question how far degeneracy may modify the symptoms of a psychosis. Agostini¹⁰ is the only writer I recall who devotes a special chapter to the subject, based upon the researches of Magnan and Morselli. This is not surprising, for, with the confusion that prevails in the whole domain of the acute psychoses, any, even a slight, modification of the clinical type would probably be raised to the rank of an independent disease.

The periodic and circular forms of insanity add some support to the hypothesis advanced above. We may have a recurrence of the same clinical type — mania, melancholia, acute hallucinatory paranoia, acute simple paranoia — or we may have recurrence of different clinical types, usually mania and melancholia, but sometimes confusion or dementia. When the recurrence is in double form the two types do not necessarily alternate; there may be several attacks of excitement and then an attack of depression, as have been shown by some very interesting charts by Magnan¹¹ and confirmed by Ballet.¹² Of the pathogenesis of the periodic and circular forms of insanity we know nothing. If, however, the attacks be due to some agency of slow development, leading ultimately to an explosion, analogous to the epileptic attack, the same cause may produce excitement, confusion or hallucinatory delusions, according to the extent or location of the morbid changes.

Following out the hypothesis here advanced and returning to the case cited at the beginning of this paper, it seems justifiable to regard it as one of neurasthenia with marked depression; chronic delusional melancholia may be classed as paranoia, and melancholia with stupor as but one manifestation of this acute psychosis. Melancholia thus vanishes from our list of diseases, but the symptom melancholy remains, occurring in many affections and from varying causes, but secondary to pre-existing delusions or morbid ideas.

That such an hypothesis should be accepted, however, is hardly to be expected. That the etiological

⁶ Ziehen: *Psychiatrie*, p. 198.

⁷ Meynert: *Klinische Vorlesungen über Psychiatrie*, p. 33. Also *Jahrbücher für Psychiatrie*, ix, 1, 1889.

⁸ *Monatsschrift für Psychiatrie*, May, 1899, p. 392.

⁹ Wernicke: *Grundriss der Psychiatrie*, p. 5.

¹⁰ Agostini: *Manuale di Psichiatria*, p. 214.

¹¹ *Verhandl. d. X. internat. med. Cong.*, iv, 11.

¹² *Traité de Médecine*, vi, 1121.

factors may vary, giving rise to variations in the clinical type, is possible, but an etiological classification can hardly be sustained at the present time. Multiple neuritis, for example, may rise from many different causes — lead, alcohol or diphtheria — and the clinical differences between lead neuritis, alcoholic neuritis, and diphtheritic neuritis are more striking than between Kraepelin's amentia and his acute dementia, or between Ziehen's acute hallucinatory and acute simple paranoia; yet we recognize practically one morbid anatomical change as the basis of the symptoms in all the different forms of neuritis, varying in extent and distribution and varying in severity. Clinically, of course, the acute psychoses may vary markedly; the typical cases of mania, hallucinatory confusion and dementia precox are strikingly different; but there are many transitional forms, so that a sharp line of demarcation between them does not exist. Clinically there is a striking contrast between the mute, drooping patient with bulbar paralysis, the upper face sad and intelligent the lower face expressionless and imbecile, and the loquacious patient with wasted, flail-like arms of ordinary, progressive muscular atrophy; yet most neurologists now regard the two as manifestations of the same morbid process, differing only in the localization of the lesion. We can hardly distinguish moreover by the clinical course of the disease; many of these patients, we know, become rapidly demented, others recover completely; some die of exhaustion, others remain hopelessly insane, victims of marked delusions, yet not markedly demented. A similar distinction can be made with other diseases. Some diphtheria patients hardly seem sick, some die of suffocation, others die of vagus paralysis, others recover, apparently, to suffer later from paralysis of the pharynx, eyes and limbs.

It is therefore no argument against regarding the acute psychoses as one affection to say that the causes vary; that some get well, others die of exhaustion, others become chronically insane, and others become demented; that individual cases differ clinically, some being excited, others depressed, others filled with delusions, and others demented; or to argue that cases presenting certain symptoms turn out worse than others which present other symptoms, just as diphtheria with laryngeal symptoms is more fatal than diphtheria without. All these conditions may be of service in establishing different diseases, but they are all of uncertain value and they may be fallacious. The trend of opinion during the last decade seems to be more and more in the direction of regarding the acute psychoses as one. Mania and melancholia still keep their old-time position in the text-books, but the very existence of mania is threatened and its rarity generally admitted, except in those hospital reports which find one case of paranoia and ten general paralytics in 4,000 admissions. Meyner's amentia is assuming more and more the chief place among the acute psychoses. The hypothesis of the essential unity of the various psychoses on a pathological basis of acute degenerative changes in the cortical cells seems the most plausible solution of the many difficulties and obscurities that enwrap the question, a solution which I believe will be strengthened by further study.

This hypothetical pathology affords, also, certain useful suggestions in the way of treatment. If the disorder be due to acute degenerative changes in the

cortical neurones, the treatment would naturally be similar to that of other inflammatory disturbances in the brain — absolute rest, physical and mental, absence of noise, bright light and other mental stimuli, abundant feeding of not too stimulating a type, free elimination by the bowels and kidneys, and possibly in the more intense cases of toxic origin, bleeding, followed by saline injections. The benefits of the "bed treatment" of the acute psychoses are daily more and more recognized. To put such cases, dressed and on their feet, in the excited wards of an asylum is a tolerably wide departure from these principles of treatment. The results of home treatment, where isolation, rest in bed, absolute quiet and a sufficient nursing force can be obtained, show the superiority of such measures.

PSYCHOLOGY AND HEREDITY.¹

BY ROBERT MACDOUGALL, PH.D., CAMBRIDGE, MASS.,
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It is commonly said that the great movement which resulted in the creation of our whole system of historical sciences had its origin last century in the work of certain German scholars who began to study the words of their mother tongue in a different way from that of earlier grammarians. These men applied to their problem a concept of great note in contemporary scientific discussion, namely, that of descent with cumulative modifications, and asserted that the verbal forms in use among a people at any given period could be intelligently understood only as parts of an historical process. There are many shades of meaning in the use of a single term, many analogies of use in terms having only the barest structural resemblance, many common elements in forms of widely varying application, which, taken as they stand, present a perplexing confusion of structure and of use. But to take them thus, said these scholars, is to cut out a fragment of tissue from its common body of life, to isolate an organ from the organism which gives it meaning, a process fatal to the purpose of one who seeks to understand assimilation or teleology. The living signification of the word can be understood only in its connection with the whole vital process of change in the language. Every variety of form and every shade of meaning is the result of a process of growth and a starting point for new development. No term is ever an isolated phenomenon springing up out of the void and arbitrarily affixed to a certain concept; each is a member of a genetic group, and by means of the material preserved in written records, they tell us, the scholar may go back to primitive root forms where these now widely separated variants unite in a single stem with some fundamental signification; and setting out from this point he may trace the family history downward to its latest descendants, observing the points of divergence where new forms and new uses of the form arise, and the process of cumulative differentiations by which new types are established, until the whole complex furniture of a modern civilized tongue is understood and accounted for under one or two simple concepts.

This new point of view, which created modern philology, was immensely fruitful, and in a series of brilliant and successful attempts was applied to a

¹ Read at the meeting of the Boston Society for Medical Improvement, December 4, 1899.

great variety of materials, with a result adequately expressed only in the total body of present historical knowledge; it created modern science. This is true in all but one particular, namely, that the point of view was not a new one. The historical method is basal in the work of one whole group of men whose functions are invested with a dignity and regarded with a gratitude not accorded to any other body of students; I refer to your own profession, gentlemen. The physician has been an evolutionist from the beginning. His work is a consistent endeavor to account for the present process of change in a diseased body as the outcome of definable preceding conditions, as intelligible only in the light of its own history. The explanation of the disease is resolved into a description of its origin and development. The physician regards the pathological condition as part of an orderly natural process, as over against those theologians who conceive it under the absolutely non-historical concept of a spiritual discipline or punishment for sin. You, then, after a fashion, have led the way in the application of the concept of historical development to the explanation of natural phenomena, and you are continuously and vitally interested, as a matter of practical import if not from a theoretical point of view, in the problems of fixity and variation of type, of heredity and acquisition, which are still so eagerly debated by opposing schools, and which we are met to consider here to-night.

The problem is one of origins. Every existing organism presents certain relatively permanent structural forms and characteristic ways of acting, and the work of the historical student is "to probe the dark backward and abysm of time," and trace out the conditions under which they were acquired and the factors which contributed to their development. In the course of this investigation, when a certain complexity of structure has been reached, relative interruptions are found to occur in the continuity of these conditions, breaking up the vital series into successive groups. In the simplest forms of life these nodal points are much more obscure; the unitary cell propagates by simple division of its protoplasmic matter, the independent life of each part having direct physical continuity with that of the original undivided cell; the amoeboid organism on reaching a certain limit of increase in mass divides and becomes two individuals, each of which has indeed lost weight as compared with the initial cell group, but is materially as well as functionally identical with it; the same holds true of all those primitive forms of life which reproduce their species by any form of budding.² Both in the proliferation process of the cell and in the propagation of these multicellular protozoa, there exists a direct physical immortality which renders it misleading to speak of heredity as a source of individual variations. The physical continuity of the individual, as distinguished from that of its somatic units, is maintained from generation (admit the term) to generation, and the changes which take place must be viewed as occurring within the life of the organism, whether they result from the reactions which it makes upon its environment or derive from those unknown sources which, for lack of a descriptive term, have been called the *region of spontaneous variations*. In these primitive types of life the Lamarckian law is dominant, for each individual inherits

by direct appropriation the characteristics acquired during presegmentational periods.

But when we pass from such simple creatures to those more highly organized forms in which reproduction is sexual, the process, though still of the proliferation type, and maintaining a certain physical immortality, becomes exceedingly elaborate and complex. The successive stages of the individual are exceedingly unlike each other, presenting in the highest types such contrasts as that of the mature human organism with the simple protoplasmic cell from which it has been developed. In these types, moreover, very much of the final structural form, and indirectly therefore of the functional activities as well, is due to some kind of prepotency in the contribution of the original germ cell, — call it the formula of its assimilative activity, or what you will, — and not to the surrounding conditions under which the individual develops. It therefore becomes a matter of pressing theoretical importance, as well as of practical value, to keep these two factors of determination distinct from each other, and to delimit their provinces in the development of the concrete life of the individual.³

Some of these characteristics are manifestly acquired by the organism within its own individual life, such as the ability to speak or write a particular language, the roughened hands and knotted muscles of the field laborer, the chronic indigestion resulting from a diet of fatty and starchy substances, or the groups of associated ideas which form one's knowledge regarding any special topic; others are as clearly traceable to the pre-existing assimilative type of the germ cell itself, of which nature are the general body plan and the conformation of its constituent organs, coloration of the skin, facial angles, pigmentation of the eyes and hair, and the like; while a third ill-defined group of elements presents such obscurity of origin that its sources form the debatable ground of science. The problem, then, is to trace out, both on the side of the physical organism and on that of the subject of consciousness, the elements due to inheritance of ancestral traits on the one hand, and to the direct influence of the environment acting within the limits of the individual life on the other.⁴

But it is not enough simply to account for the structure of the existing organism by referring each of its elements to one or two sources, its heredity or its environment; account must be taken also of the fact that cumulative variations exist. By heredity is meant the reappearance in the offspring of the characteristics, physical or mental, of the parent. If, then, the environment change, the plastic individual will vary in so far as the new conditions require a different adaptation from that demanded of the parent, but every generation will present the same material upon which the pressure of life conditions is to be exerted. This is not found to be the case; the curve of adaptation mounts more rapidly than the immediate influence of the environment working upon an unmodified material will account for. Heredity is not fixed; the type changes as well as the individual. There is, therefore, a third factor to be considered, namely, the appearance and inheritance of adaptive variations.

The question, then, is of the origin of variations, concerning which two possible sources have been pointed out: firstly, it is said the progressive change

³ For general formulation see Brooks: *The Laws of Heredity*, 1883.

⁴ American Text-Book of Physiology; W. H. Howell (Editor), p. 931, ff.

² L. Landols: *Human Physiology*, p. 893, ff.

arises from the process of adaptation itself — the theory of the inheritance of acquired characteristics; and secondly, that it springs out of the dark — the theory of spontaneous variations. The first view is based upon the very manifest fact of adaptation within the individual life. As in the psychological world every experience leaves its mark behind it and the residual traces of all previous experiences enter into and determine the character of the present event, so the results of the life experience of past individuals enter into and determine the nature of their offspring. The effect of this past experience was represented in an adaptation to the environment. Therefore to the acquired aptitudes of the individual are to be added the inherited results of the adaptation of preceding individuals. The process is a cumulative one expressed in a racial adjustment in the form of an accelerated curve. This is the popular view. There is an almost fatal facility about its application. It *ought* to be so; practical postulates assert it; the whole common range of our moral education assumes its validity. The evidence, at first sight, is enormously in its favor; practically no variation can be pointed to which it can not be made to cover.

The contrasted view⁶ holds that acquirement is essentially a transient phenomenon, *intra-vital*, not *inter-vital*, affecting the individual only, not the race. The stock remains throughout uninfluenced by the acquired adaptations of the individual. Another source of variations must be sought. But there is none; heredity is the element of fixity, and all other real factors in the constitution of the individual are included under the term "environment." Variations, however, do appear. Whence? Out of the dark; they cannot be connected with any known sources, though favorable or unfavorable conditions for their appearance may be discovered. They are of the nature of sports or freaks and are hence called *spontaneous*. The phenomenon is an inter-vital one, the divergence from the ancestral type on the part of the offspring being independent of the acquired characteristics of the parents. The environment then acts simply as a selective agency, eliminating some and preserving others according as the sum of their variations renders them more or less fit to meet the conditions of life imposed upon the species.

Such a theory has to meet the very great difficulty that these spontaneous variations simulate completely the results of an inheritance of acquired characteristics. The trend of evolution being determined by the selective environment, the kind of spontaneous variations preserved by it are just such as would accumulate through the inheritance of training effects. The rudimentary wings of certain birds and insects native in the Oceanic islands is a case in point.⁶ Circumscribed in the range of their feeding grounds, unpersecuted by enemies and relieved from long migratory flights, the whole set of conditions under which the individual lives tends toward a disuse of these organs, and the decreased length and shrunken muscles of the wings are just such as would be brought about by the inheritance of those atrophic conditions which are found to result within the life of the individual from non-use of an organ. But these same enviroing conditions act-

ing purely as a selective agency upon variations spontaneously arising would tend toward the production of the same type through — to indicate one influence only — the destruction of such individuals as were led by their more developed wings into attempted migrations, or flights which brought them into the track of storms upon the open sea. The same ambiguity of evidence exists in regard to the thickened legs of domestic fowls, the shortened feet of pigeons, the blindness of cave animals, and a multitude of other facts⁷ including the traditional instance of use-inheritance in certain professional aptitudes and sensory divergencies characteristic of those engaged in hereditary crafts and occupations.⁸ A decisive argument in favor of the theory of sports would be afforded by instances in which the emergent variation was useless, clearly dissociated from the whole stream of life-serving activities in the individual and the race. The esthetic sense has been cited to this end, but its evidence is manifestly irrelevant, if for no other reason than its importance for sexual selection. The strongest argument in rebuttal of use-inheritance is perhaps the case of special adaptations in neuter insects, where there is no possibility of the transmission of characteristics acquired within the life of the individual, since the variety is a non-sexual, infertile one, from which the very fact of propagation is absent. Yet even for these staggering objections the Lamarekian finds a reply, and for the anomalous facts a place within his formula in the theory that the neuter insect is not a form in process of change, but a static type, originally produced through use-inheritance during a preneuter period, when transmission was an actual fact, and that further specialization ceased with the advent of infertility. Neuterness is interpreted as the last variation to appear, not a condition under which the adaptive changes themselves arose. The same difficulties thus lie in the way of those who deny and those who affirm use-inheritance, so that Weissmann admits that the whole force of his argument rests on the logical consistency of the hypothesis and not on any direct indubitable evidence.⁹

The appeal to residual structures and rudimentary functions, then, results only in a determination of the hereditary origin of these organs and activities in contrast with an acquisition within the life of the individual through his own purposeful reactions. Their presence has been of the utmost significance in establishing the fact of organic evolution and in tracing out the genetic connection of existing species,¹⁰ but no light is thereby thrown upon the nature of their origin. Yet though ineffective for the solution of these contemporary problems of biologic evolution, such phenomena are of decided interest and importance for a study of the processes involved in the evolution of consciousness, for here our knowledge is at a stage where the inquiry still centres upon the relative importance of the two factors as *vera causa* and is concerned with the delimitation of the provinces of heredity and of acquisition.

The problems which this field of investigation pre-

⁷ Darwin: *Variation of Animals and Plants under Domestication* (various places).

⁸ Darwin: *Descent of Man*, p. 33.

⁹ A. Weissmann: *The All-Sufficiency of Natural Selection*, *Contemporary Review*, August, April, 1893. "It is the only conceivable natural explanation of organisms regarded as adaptations to conditions." See also H. Spencer: *The Insufficiency of Natural Selection*, *Contemporary Review*, February, March, May, December, 1893; and his admission of insufficiency of evidence in *Factors of Organic Evolution*, pp. 24-28.

¹⁰ Romanes: *Evidences of Organic Evolution* (various places).

⁵ A. Weissmann: (1) *Essays upon Heredity and Kindred Biological Problems* (Transl.), I, 1889, II, 1892; (2) *The Germ Plasm* (Transl.), 1893; (3) *The Effect of External Influences upon Development* (Transl.), 1894.

⁶ Darwin: *Origin of Species*, chap. v, p. 128. W. P. Ball: *Effects of Use and Disuse*, p. 49, II.

sents are analogous to those of organic evolution, and the same methods are applied in both lines of inquiry. We seek to describe and account for the present concrete fact of individual conscious life. Leaving out of consideration the non-historical and unscientific category of miraculous gifts and divine revelation, the existing characteristics are referable to one of two sources: (1) the direct influence of the conditions under which the life is carried on; and (2) the inheritance by physical transmission of ancestral traits. I say inheritance by *physical transmission* because we shall find that mental inheritance of another kind exists as a *vera causa* of immense significance, and because the relation between the physical and mental aspects of development is a close but not complete parallelism. At a certain point in physical evolution, apparently as the concomitant of a particular complexity of structure, arises the phenomenon of consciousness. The determination of this point may be in dispute, but however decided, whether on the basis of the presence of that specific form known as a nervous system, or of the functions of assimilation and movement, from the point which marks that appearance onward through its whole range from the crudest sentience of ameboid life to the complex consciousness of humanity, the development has been a parallel one. In so far as mental life is conditioned directly on the presence of an inherited physical organism its character is predetermined. Our bodies are the same in all their main outlines as those of our forefathers; eyes, ears, skin and muscles are repeated, and our field of consciousness must therefore be one of visual, auditory and tactual perceptions and of motor reactions. Kind reproduces after its kind; our world is not that of the microscopic-eyed insect or the telescopic-eyed vulture; nor do we fly in the air, nor breathe the water, nor burrow, nor hibernate. The physical organism, that is, presents through successive generations a stable type of perceptive and reactive apparatus and therefore directly conditions the sensory material assimilated in the process of consciousness and the motor experiences in which its outgoing impulses are expressed.

Even this statement must be qualified. The *objects* of our world of consciousness are not given; what the inherited nervous structure makes possible is only the experience of pure sense qualities, red, hot, rough, sour and the like. The object must be constructed out of successive experiences through the co-operation of various sensory and motor elements. The fundamentally important fact in the world of our perceptive consciousness is this, that many elements of sense experience fuse together in the unity of one object perception. What is seen, felt or heard is not so much the sensation immediately present as the object of which it gives awareness. Perception, then, is not a primary function of the inherited structure; what is transmitted is a mere capacity for sensory stimulation whose mental coefficient presents a chaos of elements which are wrought up by the activity of consciousness into the syntheses of perception.¹¹

There is, however, a region of obscurity, as in the case of organic evolution, in which complex emotional processes and teleological attitudes are presented whose origin is still a debatable ground. Such are the so-called expressions of certain primitive moods of feeling, the frown of anger, the sneer of dislike and con-

tempt, the kiss of affection, which are interpreted on the one hand as a true expressive mechanism whose *raison d'être* is to make "manifest in the flesh" and communicable these qualitatively varying mental states; while on the other they are regarded as the residues of once useful reactions now fallen into desuetude; the frown prevents congestion of the optic blood-vessels during the anger fit, the sneer is an incipient unflinching of the teeth for coming battle, the kiss is a rarefied essence of a smacking of the lips which accompanied a far different treatment of its object from that which the kiss now implies.

Among such complexes of emotional and active attitudes we should expect the clearest evidence of inherited structure in those which are not correlated with any practical end, for wherever the feeling or action is such as the conditions of life themselves would naturally call into being, the old insurmountable ambiguity returns that the action of a selective environment upon variations spontaneously arising tends to the preservation of exactly the same kinds of activity as would be fostered in the process of individual adaptation to such an environment. For example, the complicated motor processes involved in walking have been interpreted as due not to a process of learning on the part of the child, but to a series of changes within the brain substance, independent of the environment, and of the nature of a ripening process. It would follow upon this that in the case of two infants manifesting simultaneously the first signs of reactional irritability to stimulation from contact between the soles of the feet and the earth, if one were artificially prevented from carrying out the motor impulse in actual attempts at walking, and so restrained during the whole period occupied by the other child in learning the function, it would be found at the end of that time as fully able as it to co-ordinate the motor impulses in the complex movements of walking.¹² The bodily organism has been carefully explored for such residual structures, and over two hundred rudimentary organs have been pointed out.

The muscles which control the movements of the ear, scalp and other portions of the skin of the body have so degenerated that in most human beings they are incapable of reacting, and in all they have ceased to be employed for the dislodgment of insect pests; while in the horse analogous muscles are used to sweep the flank or side clear of flies by one comprehensive vibration. The vermiform appendix, which in some animals forms an important member of the digestive system, is in man but a shrunken sac, notable only for the dangers which it holds for human life. The corner fold of the eye is a fragment of an apparatus identical with the nictitating membranes of birds, but now destitute of functioning power. The same holds true of the appearance of transient functions and also of the origin of many which are permanent. The probable dependence of the function of walking upon a ripening process in the brain centres is determined by the constitution of its inherited structure. To this may be added in further illustration the orderly representation in the development of voluntary movements within the individual human organism of successive phases of phylogenetic evolution. The earliest function of the fore-limbs in the development

¹¹ James: Principles of Psychology, vol. ii, chap. xix; Sully: The Human Mind, vol. i, 206, ff; Stout: Analytic Psychology vol. ii, p. 4, ff; or any standard book.

¹² James: Principles of Psychology, vol. ii, p. 406. Locomotion in calves, which begins within a few hours of birth, and in chicks follows at once upon their emergence from the shell, cannot be regarded as the result of a process of learning.

of life upon the earth was that of swimming; when a terrestrial mode of existence supplanted the earlier aquatic life, a new application of these members was made in grasping, pulling and holding on, and latest of all arose those complex forms of manipulation, involving independent use of the various fingers and the opposition of the thumb. The same succession of function forms is now manifested in the infantile development of motor activities; swimming movements appear first, those of grasping and pulling follow, and not until much later are the fingers used for touching objects or does the hand begin to make those beautiful and elaborate adjustments characteristic of mature life.¹³

The phenomena of the mental world, on the other hand, have barely been scrutinized from this point of view. Yet these rudimentary organs and functions of the soul surely exist, the echoes of the long past, survivals of uncouth activities and strange ancestors,

"Whose distant footsteps echo
Down the corridors of Time."

We need a paleontology of the soul, tracing its progressive adjustment to the changing environment, the sloughing of old, the acquisition of new functions and sentiments, with its consequent explanation of atavistic tendencies and facts of reversion, instinctive impulses unintelligible to ourselves, automatisms which now appear as monstrous and inexplicable twists of our nature, and all the cumbering rubbish of ancient forms and activities which no longer fulfil any useful function, but which because they have so long been ours we cannot shake off.

The trances of the child, insistent in the face of punishment, the unrest and aversion to settled modes of life which seize upon all of us at certain seasons, the curious impulses to vagrancy which appear at all ages and in all classes, driving their subjects forth into the wilderness, together with the whole tramp problem, point to the outcropping of some old migratory instinct in the human race whose purpose and even existence had been forgotten. Collecting manias of coins, stamps, hats, sticks, newspapers, and the like, and the various forms of pathological secretiveness met with among the insane, are interpretable as survivals from a period where the hoarding instinct was as important a function in the life of the human race as it now is in that of the squirrel and dog.

(To be continued.)

ON THE ADVISABILITY OF A MORE OR LESS GENERAL EXPLORATION OF THE ABDOMEN WHEN IT HAS BEEN OPENED FOR AN OPERATION.

BY JOHN HOMANS, M.D., BOSTON.,
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It has happened to me to discover very happily in several instances conditions and diseases entirely different from the one for which I had opened the abdomen, and it seems to me as wise as it is harmless to make a rapid examination of the abdominal organs other than those we are operating upon, when a favorable opportunity occurs. In this way I have three times removed gall-stones, whose presence was unsuspected,

¹³ A. A. Mumford: *Survival Movements in Human Infancy, Brain*, vol. 20, pp. 289-306 (1897).

and whose removal did more for the patient's recovery and perfect subsequent health than did the removal of the tumor for which the abdomen was opened. I do not mean to recommend the lengthening of short incisions in order to explore. If the incision has been made an inch and a half long for an appendectomy, or for the removal of an ovarian tumor, or for an easy cholecystotomy, I would not lengthen it, but if we have removed a good-sized pelvic tumor, or a kidney, or for any purpose have made an opening sufficiently large to get the hand into the abdominal cavity, I think it is a good plan, particularly where there are any unexplained symptoms of pain and discomfort, to put in the hand and explore, particularly in the region of the gall-bladder, stones in which give rise to a great variety of symptoms and make life a burden.

So in regard to the appendix, which is often found diseased in connection with salpingitis and sometimes adherent to the tube. It is not always easy to say which of the organs was originally diseased, nor to decide whether the appendicitis follows the affection of the Fallopian tube or whether the Fallopian tube was infected by the appendix.

As illustrations of the wisdom of the course I have been advocating I will relate briefly the following cases:

Mrs. B., thirty-eight, emaciated and anxious looking, was sent to me by Dr. Spofford of Cavendish, Vt., in March, 1895. Her symptoms were nausea for last eight years at various times, she not being able to eat and retain solid food for eight months. She had become very thin and was suffering much from pain and backache, and felt as if a string were tightly tied around her waist; she stooped in walking and moved with much pain and difficulty. She has been treated in various hospitals during the past seventeen years and her pains and aches have been considered reflex from her diseased pelvic organs. She has had two children; the youngest was seventeen years old. Her uterus was retroverted and fixed, the tubes and ovaries were enlarged, prolapsed and adherent. Her catamenia had appeared once in the last fifteen months. Her body was covered more or less by spots caused by scratching, but no pediculi were found.

Her stomach was washed out daily by Dr. Pease and she improved somewhat; her vomiting became less frequent, but her backache and pelvic pain and tenderness continued. On April 6, 1895, with great difficulty, a left adherent tubo-ovarian cyst was dug out. The hemorrhage was so persistent that I thought of tying the internal iliac artery, but I finally clamped all the bleeding points with five long clamps, which I left in the abdomen with their handles outside the abdominal walls. I then inserted my hand through the wound and felt of the gall-bladder, which I found full of stones. The wound between the umbilicus and pubes was then sewed up around the clamp handles and another incision was made parallel with the cartilages of the ribs, over the gall-bladder. Ninety-seven gall-stones were then removed. She vomited incessantly for a week, then improved and went home at the end of five weeks perfectly well and able to eat anything. She grew fat and strong and continued comfortable for more than a year.

In December, 1896, her old symptoms of vomiting and pain had returned, and I opened the gall-bladder again and removed seven calculi, which had formed around pieces of silk which had united the gall-bladder

to the peritoneum, just as alum crystallizes around a thread suspended in a hot saturated solution.

This case of recurrent gall-stones was published in the *Annals of Surgery*, with a colored plate showing the stones and ligatures, and was subsequently distributed as a reprint.

Mrs. M., forty-two years old, was brought to me in May, 1897, by Dr. Dibble, of St. Stephen, N. B. She had a lobulated abdominal tumor which was a sacculated right kidney filled with pus and calculi. This was removed by abdominal section and after its removal I inserted my hand and felt of the gall-bladder; it was full of stones. Without enlarging the incision the gall-bladder was opened and nine stones, varying in size from a No. 6 shot to a robin's egg, were removed. Another stone was impacted in the common duct but, after much manipulation, was finally worked up into the bladder. The remaining kidney worked beautifully, the wound healed by first intention except when the gall-bladder was draining, and the patient left the hospital perfectly well on the twenty-first day after the combined nephrectomy and cholecystotomy. Had I not made this manual exploration the patient would have gone home but half cured.

Mrs. D. was sent to me in March, 1899, by Dr. Witherlee of Castine, Maine. I found a fibroid tumor the size of a large orange, and to the irritation of this tumor was ascribed her digestive symptoms, which were quite severe. For three years she has been good for nothing and could hardly eat anything. Formerly she weighed 180 pounds and now weighs 124. On March 20, 1899, I removed the fibroid tumor, and then inserted my hand, passed it up to the hepatic region and found that the gall-bladder contained one large stone. The abdominal incision was lengthened upwards to a point two inches above the umbilicus, and the fundus of the gall-bladder was drawn through the wound and a stone one inch square was removed. The bladder was immediately sewn up and the wound closed without drainage. Her dyspeptic symptoms were much relieved by suggestions from Dr. E. G. Cutler, and she is now well and strong and can do and eat what she likes, and has nearly regained her former weight. Other cases could be cited, but it seems to me that those above narrated justify and, indeed, should compel exploration whenever feasible.

Clinical Department.

A CLINICAL STUDY OF HEROIN.

BY JAMES R. L. DALY, M.D.,

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A NEW agent in the treatment of cough, at present in wide use and attracting considerable attention in the medical world, is heroin. It is a derivative of morphine—the diacetic acid ester—and is a white crystalline powder, almost insoluble in water, but readily soluble in water to which a few drops of acetic or hydrochloric acid have been added. It possesses many advantages over morphine as a respiratory sedative, among which the following may be mentioned: (1) It prolongs respiration, and at the same time increases the volume of each inspiration, making it a remedy much to be desired in the treatment of cough; (2) it is not a hypnotic; (3) absence of dan-

ger of acquiring the habit; (4) it does not weaken the respiratory apparatus; (5) it does not cause unpleasant disturbance of the stomach or intestines; (6) it can be prescribed in cases in which heart complications occur without risk of any deleterious effect upon that organ; (7) the ratio of the therapeutic dose to the toxic dose is considerably smaller than that of morphine.

The following cases, taken at random from a clinical field of over 100 cases of pulmonary tuberculosis in all stages of the disease in this hospital, will best serve to illustrate the efficacy of the drug:

CASE I. A. B., male, age thirty-two, clerk, entered hospital with history of pain in left side, which began about four months before admission; night sweats; hacking cough, most troublesome at night, with markedly diminished secretion, and slight dyspnea at varying intervals during day and night. Physical examination revealed consolidation of upper lobe on left side, and of apex on right side. Mist. codeia, one drachm, three times daily and at midnight was administered, and continued for two weeks, but with little result. At the end of this period the codeine was stopped and heroin substituted in doses of one-twelfth grain three times daily and at midnight. In four days the cough began to lose its hacking character, and the secretion became more abundant; in about one week the cough could only be observed in the morning and evening, and remained sufficiently loose to render the patient very comfortable. No dyspnea was observed a week after the heroin was begun and breathing still remained free. Mean respiration during first twenty days in hospital, A. M., 29; P. M., 29 $\frac{3}{5}$. Mean respiration for twenty days following the first administration of heroin, A. M., 24 $\frac{6}{10}$; P. M., 25 $\frac{1}{10}$. For the night sweats the patient was given a pill of zinc oxide, two grains, with extract belladonna, three-tenths grain, for three nights without result. On the third night heroin was substituted for codeine, and on the second night following the sweats ceased.

CASE II. On admission the patient complained of severe and painful cough throughout the day and night; expectoration scanty, and obtained only after considerable effort. Physical examination showed both lungs involved with cavity in right middle lobe. The patient was given heroin, one-twelfth grain, three times daily at first, and shortly after the dose was increased to one-sixth grain. After one week of heroin the cough was diminished to a marked extent, and the pain heretofore associated with the cough had disappeared.

CASE III. Patient entered hospital complaining of "smothering sensation" in chest, with slight pain. Heroin, one-twelfth grain, three times daily and at midnight was administered, and in three days this "smothering" had disappeared, but not permanently, as the patient has since complained of it; but he says that it is not as severe or as lasting as before he was put on heroin. Of course, the cough which was present was greatly loosened, and this it was that gave the patient relief.

CASE IV. Patient entered hospital complaining of hard, dry and persistent cough, most troublesome towards evening. Expectoration scanty, and effort of coughing caused great pain in chest. The patient was given heroin, one-twelfth grain, and in three days the cough became soft, and expectoration became quite free. The pain in the chest had, of course, dis-

appeared with the hard cough. The patient remained very comfortable for a month, when heroin was discontinued, because I believed it to be the cause of a certain heavy feeling of which he complained. The cough, however, again became severe and hard, and heroin was repeated in the same dose as before. In three days the patient was freed from the distressing cough, and that "heaviness" has not returned. Mean respiration during period in which the patient was taking heroin, A. M., 24; P. M., 26. Respiration became more rapid while the patient was without the drug, averaging, A. M., 25 $\frac{3}{4}$; P. M., 27 $\frac{1}{4}$.

CASE V. Patient has been in hospital for some time. Complained of severe cough beginning about midnight and lasting until morning. Heroin, one-sixth grain, was administered every night at 10.30. The cough was absent on second night that heroin was administered, and has not since distressed the patient.

CASE VI. Patient complained of severe night sweats, and was given atropine, $\frac{1}{100}$ grain, for two nights without success; on the third night heroin, one-sixth grain, was given one-half hour after atropine, and sweats ceased.

CASE VII. J. F., male, age thirty-two, laborer. If any case can be said to be a striking example of the efficacy of a remedy this case is certainly that one. The patient entered the hospital with very slight but hard cough and a history of marked and constant night sweats. The latter had inconvenienced the patient for seven weeks previous to entrance, without an intermission of a single night. Mist. codeia, one drachm, three times daily, was administered for the cough, and an attempt was at once made to check the night sweats. Camphoric acid had been a favorite with me in the treatment of this symptom, and I accordingly gave 20 grains at bedtime, and repeated the same dose for four succeeding nights, but without result. Then atropine sulph. and ac. sulphuric aromat. were tried in the proportion of one-fiftieth of the former and 10 minims of the latter, but again without a favorable result. This was given for five nights. Atropine sulph. alone was tried in dose of one-fiftieth grain for a week; still no response. Next was tried a pill of zinc oxide, two grains, and extract belladonna, three-tenths grain, for five nights, and this, like the rest, failed. Pilocarpine was next tried in dose of $\frac{1}{100}$ grain, but it only increased the sweating. Next in order came warm baths, and then bathing with ac. sulphuric dilute, but these met the same fate as all the preceding. Then I decided to give the sweat glands a rest, and for a week nothing was administered for the sweating, and at the end of this time atropine sulph. was repeated in dose of one-fiftieth grain, but without result, until about the fifth night of the administration of the latter the codeia mixture was discontinued and heroin substituted in dose of one-twelfth grain three times daily. On the third night of the administration of the latter the sweats decreased to a great extent, and on the fourth night ceased altogether. The heroin had replaced the codeia mist., not because of the sweating but because of the hard cough, which did not improve; and since the patient had been taking the former the cough has loosened considerably, and he now experiences marked relief. I regard this case as typical, not of the curative effect of heroin on the night sweats, but rather of the quality of the drug to assist the ordinary anhydrotics when, given alone, they fail.

CASE VIII. Case of tubercular laryngitis. Patient complained of severe sore throat, which prevented deglutition. Pills of heroin, one-twelfth grain, were administered every three hours, and kept the throat in a condition of anesthesia for about one to two hours, rendering the patient fairly comfortable, and most of the time free from pain. It is unnecessary for me to mention that the patient was instructed to dissolve the pill slowly on his tongue. Two other marked cases of tubercular laryngitis were temporarily relieved by the administration of heroin in this manner.

These cases are fair samples of the results obtained by the administration of heroin. In almost every case in which it has been tried it has been of some service in the alleviation of cough, be that service ever so slight. Even the advanced cases have been to a certain extent relieved. I found, however, that the more favorable results were obtained in those cases in which the disease process had not advanced to too great an extent. In this class of cases the drug never failed to loosen a hard cough and produce free expectoration, giving marked relief from pain when present. I regard it as unequalled as a sedative in the treatment of cough of pulmonary tuberculosis, and venture to say, although I have not tested it in cases of cough in other pulmonary affections, that it will act equally well in such cases.

The smaller dose of one-twelfth grain is sufficient to afford relief in most cases, certainly in the milder or earlier ones, but in some instances it was found necessary to increase the dose to one-sixth grain, as after a time the smaller dose seemed to lose its effect upon the patient. Sometimes when heroin had been taken for a long time, it was found to be a good practice to stop it and give codeine, or some other sedative, for one week, and then renew the heroin at the end of this time. In this way the drug acted as well when renewed as in the beginning of the treatment. It is true, however, that heroin produces its effect for a much longer period than does any of the other sedatives used in this affection.

I said it was not a hypnotic, but the fact that it relieves the distressing cough which is often the cause of many sleepless nights, and thus ensures a natural sleep, obviating the necessity of using hypnotics, should not be overlooked.

I have very carefully watched the temperature charts for any evidence of its action as an antipyretic, but have been unable to find that it produces any effect whatever on the temperature. It certainly possesses no quality as a preventive or cure of the chills so persistently present in the later stages of tuberculosis. Like the respiration, the pulse is rendered fuller and slower. In 10 cases observed the mean pulse rate was reduced about four beats per minute: in one case the rate was reduced eight beats per minute. By its action upon respiration and its ability to relieve cough and promote excretion of secretory products, it manifests a decided effect upon the dyspnea.

I regard the influence of heroin on the night sweats as second only in importance to its influence as a sedative for the cough. In the cases cited its quality as an adjuvant to the ordinary remedies in checking the sweats is well marked. In six other cases favorable results were obtained in either checking or markedly decreasing the sweat by the administration of heroin in conjunction with one or another of the ordinary

anhydrotics. Its action in this particular is best appreciated after meeting failure in using the ordinary agent alone.

The cases of tubercular laryngitis mentioned are typical of its action as an analgesic in the treatment of the painful throats of this affection. In these cases it afforded considerable relief from pain for periods of about one to two hours following the administration of the pill.

In regard to its influence on respiration, I have carefully noted 19 cases, and have found that in each case the mean respiration *A. M.* and *P. M.* has been reduced from two to five, and in some cases as high as seven per minute.

No action on the intestines was observed, except, perhaps, a slight tendency to constipate if given in larger doses than one-twelfth grain. Of this, however, I will not be certain, as in the great majority of cases this action was not apparent. In some cases it has been noticed to cause a disturbance of the stomach. One patient complained that the drug caused considerable nausea shortly after taking, while with others the disturbance can best be described by using a term applied by a patient to the condition of his stomach after taking heroin—"squeamish." One complained of complete loss of appetite whenever he took the drug. In all, some disturbance was noted in five cases out of upwards of 70 patients taking the drug. I should add, however, that two of those who complained of disturbance of the stomach while taking heroin were later able to use it without noticing any ill effects. Another, and, in my opinion, the only real objection to heroin, is that in certain cases the larger dose of one-sixth grain was found to cause a feeling of heaviness during the day. To quote a patient, "I feel heavy and as though I want to sleep, but if I try to do so I find that I cannot." This was observed in four cases. The drug did not in any instance produce this effect when given in the smaller dose. But the chief use to which heroin can be put is as a sedative for the cough and to prevent the distressing and disagreeable stagnation of secretory products in the lungs, particularly in cases of pulmonary tuberculosis. No drug can compare with heroin in this particular. Cases that have come into the hospital with painful and almost constant cough, with inability to raise the sputum, resulting in fetid breath and more or less dyspnea, have been almost immediately relieved of pain, and the expectoration rendered freer, with decrease in the dyspnea, by the administration of heroin in doses of one-twelfth grain three times daily.

A CASE OF OLD SHOULDER DISLOCATION.

BY FRANK E. PECKHAM, M.D., PROVIDENCE, R. I.

The subject of old dislocations of the shoulder joint has been thoroughly worked up by Dr. F. B. Lund, who found 24 cases up to 1897, treated at the Boston City Hospital. The oldest case was one of one and one-half years' duration, treated by open incision and resection of capsule. The following case was so interesting to me that I venture to report it quite fully.

The patient, a girl of sixteen years, fell down stairs July 10, 1897, striking on the right shoulder. At that time there was pain and disability, but the dis-

location was not recognized and the treatment consisted of application of liniments, etc. Early in the year 1899 she was examined by a number of surgeons, all of whom advised against operation. In May, 1899, the patient came under my observation and care. At this time there was no motion in the joint, and the patient was able to do but very little work of any kind with her right arm, any attempt at using it causing considerable pain. I probably should not have operated, but the girl was extremely anxious to have something done, and her uncle and aunt, with whom she lived, also urgently solicited surgical interference; consequently, after having it distinctly understood that all that was promised was an "attempt" to do something, operation was undertaken. The reasons, therefore, for this operation were disability, pain when the arm was used very much and the demands of the patient and family that something be done. The disability was very marked; about all the girl could do was to wash dishes and this not very well, the motion being entirely scapular. A radiograph was obtained which showed a large gap below the acromion process, but whether a fracture existed could not be made out.

May 10, 1899, one year and ten months after the accident, operation was undertaken. Ether was the anesthetic, and the usual aseptic precautions were taken. The posterior surface of the shoulder was selected for the incision in order to avoid all difficulty with the large vessels and nerves. A circular flap was turned up, with its convexity downward exposing the muscles beneath. The deltoid, supraspinatus and teres minor muscles being divided, the capsule of the joint came immediately into view. This was stretched tightly downward, and on being divided the humeral head came into view just below the glenoid fossa, with the neck projecting diagonally forward, in a line perpendicularly downward from the coracoid process. The head of the humerus was attached to the neck of the scapula below the glenoid fossa, by what seemed to be bony tissue. This union was destroyed by chisel and mallet, and then the difficulty began. Finally, by a very broad and blunt periosteotome used as a lever under the anatomical neck and the assistant pushing up on the arm with all the force possible, it went into place. The shoulder was held in this position while capsule, divided muscles and the incision were sutured, dressing applied and shoulder bandaged with firm support under elbow.

After a few days, the shoulder was manipulated daily in order to preserve mobility if possible. This was done under chloroform two or three times, but motion gradually disappeared and all treatment ceased a little less than one month after operation, the head of the bone remaining firmly in its socket.

The three reasons for operation as stated above were disability, pain and the family demand. Treating these reasons in the reverse order, the family demands were satisfied. The pain has disappeared. The disability is much less with only scapular motion when the head of the bone is in its socket, than scapular motion with the humerus in the awkward position as described above. The patient can now not only wash dishes, but sweep, scrub floors, and, in fact, do about all the housework. Lastly, the patient and her family all feel that a great improvement has been obtained and are grateful for the relief.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

ENDOTHELIOMATA OF THE SKIN.

SPIEGLER,¹ of Vienna, reports several interesting instances of cutaneous tumors, which were remarkable both from their clinical appearances and histological findings. Certainly the clinical appearances, judging from the illustrations and description of the first case particularly, were, as Spiegler says, uncommon and striking. The first case was that of a man of sixty-six years of age, with good family history, who dated the beginning of his affection nearly forty years before, and who ascribed its beginning to an injury which he had received on the scalp, a tumor appearing at the site of the wound. Others were gradually added to this in the vicinity. When seen, the patient presented an extraordinary appearance, the front and sides of the scalp and both temples being covered with about forty tumors, from the size of a bean to that of an orange, somewhat resembling billiard balls. They were of firm consistency, covered partly with thin, smooth, adherent skin, which was in places superficially excoriated and ulcerated, and although forming a sort of hood by their connection with one another at the base, there was no real confluence. Besides these tumors, there were some small tumors the size of a pea, situated at the edge of the hair on the forehead, which were covered by an elastic pouch of skin and resembled fibroma molluscum. On the back there was a tumor the size of the fist, as well as a number of small nodules. All the tumors were removed surgically, and the defect supplied by skin grafting. Pieces from eight different tumors were examined histologically and identical appearances found in each. The tumor was found to be made up of collections of cells surrounded by a capsule and arranged in circles, ovals or ribbons, which in places extended nearly to the epidermis. The masses of cells often contained cavities which were filled with a structureless, homogeneous substance, staining pale red with eosin. The connective tissue between the cell masses and ribbons showed in places large lymph vessels. The cells which formed the peripheral part of the nests and ribbons had their long axis in the direction of the radius of the plane, and were of an epithelial appearance, whereas the nuclei of the cells in the interior of the masses presented a smaller round or polygonal form, and were less easily stained and quite irregular in their arrangement. All of the masses were surrounded by a narrow seam of homogeneous substance. In certain places capillaries were found with thickened wall, from which projected outward large cylindrical cells, arranged perpendicularly to the cell wall.

The second case was that of a daughter of the one just described, forty-four years of age, who presented six tumors of the scalp from the size of a pea to that of a bean, and one upon the temporal region, one of which had existed for ten years. Histologically they were exactly like those of the first case.

In the third case, that of a woman of forty-four, very numerous, closely aggregated tumors from the size of a pea to that of a hazel nut, corresponding in

appearance with those of the first case, covered the scalp, with bundles of short hair between the individual lesions. There were also a few tumors on the body. The same histological appearances were found in this case as in the two preceding.

On searching the literature, the writer has found several instances of tumors, affecting chiefly the scalp, where the clinical appearances closely resembled those of the three cases reported, and three of these are pictured in connection with his own cases. In one case, which is reproduced from Hutchinson's "Archives of Surgery," different individuals of the same family had been affected with tumors of the scalp, throughout three generations. In one case there was apparently a malignant change in the tumors.

Spiegler rejects the name perithelioma, proposed by Hildebrand and Kollaczek, and considers it was shown in his first case that the tumors were produced by a growth of the cells of the capillaries, the endothelial cells. They grow without further connection with the vessel wall, until they form the network of cell masses and ribbons. Therefore the name endothelioma is justified.

It is further remarked that it is curious in how many clinically different lesions these same histological appearances have been observed. Jarisch has maintained that the multiple benign epithelioma owes its origin to the growth of the endothelium of the vessels, and lesions similar to xanthoma planum, as well as a warty-looking tumor, have been found by Spiegler to possess this same histology. In conclusion, the fact that his first two cases were in father and daughter and that in Ancell's case tumors that were of presumably the same nature were observed in three generations in different members of the same family is adduced in support of an hereditary origin.

MALIGNANT TUMORS GROWING FROM SOFT NEVI.

Waelsch,² assistant at Pick's clinic in Prague, discusses the question of the relationship of tumors that grow from soft nevi, or "moles," to carcinoma. He relates the case of a woman of fifty-six years, who presented a tumor over the right shoulder blade that had made its appearance upon a nevus six months previously. She had lost much flesh and suffered from dizziness, headache and loss of appetite. The tumor was of moderately firm consistency, dark-blue color and fungous character, and in parts was ulcerated. About this tumor were a number of small nodules from the size of a pin's head to that of a pea. The glands upon the right side of the neck were enlarged, as were also the supraclavicular glands. In the left axilla was a large mass of enlarged glands. There were no symptoms that could be referred to the internal organs. During the patient's stay in the hospital the tumor increased in size and became more ulcerated, and the general cachexia increased. Histological examination showed that the tumor had its seat in the corium and consisted of round and elongated masses of cells which had every appearance of being derived from epithelial cells.

The second case was that of a man of forty, who had had on the skin of the abdomen a smooth dark brown spot for a great many years. A black verrucous growth had made its appearance here six months

¹ Spiegler: Archiv f. Derm. u. Syph., 18 9.

² Archiv f. Derm. u. Syph., 1899.

ago, which had progressed to its present size. It was sharply bounded from the sound skin, and had a papillary appearance, with fissures. In the left inguinal region the glands were enlarged and fused together to form a tumor. The growth upon the abdomen, as well as the glandular tumor, was excised. The microscope showed in the former, nests of epithelial cells and enormous quantities of pigment, and in places a direct connection could be traced between the cells of the tumor and those of the overlying epidermis. No pathological changes were found in the lymphatic glands.

The third case concerned a man of thirty, and the tumor had gradually grown from a nevus of the skin of the breast within three months. It was a fungous-looking growth attached to the skin by a pedicle, ulcerated on the surface, surrounded by small satellite tumors resembling mulberries or raspberries. There was not much pigmentation except on incision, when one-half of the base was seen to be deep black. Microscopically about the same appearances were noted as in the preceding cases.

The conclusion is therefore reached that in these cases we have to do with epithelial neoplasms, which have developed from pre-existing cell deposits of an epithelial nature, and which, in the appearance and arrangement of their cell elements, observe a perfect identity with the pathological soil from which they have sprung. In this connection no attempt is made to deny the possibility of the existence of true alveolar sarcomata but to emphasize, with Unna and Hodara, that those malignant tumors of alveolar arrangement which develop from soft nevi are to be expelled from the sarcomata and classed with the epithelial neoplasms. It is further contended that these tumors developing from embryonic cells afford a further argument in favor of Cohnheim's view of the etiology of tumors in general.

A MANIFESTATION OF LEPROSY ON THE SCALP.

Morrow³ speaks at the outset of the tendency of many dermatoses to select or to avoid certain localizations, and remarks that locality in this way furnishes often a valuable aid to diagnosis. Thus in the eruptive fevers, psoriasis and some forms of eczema much information may be offered from the seat of the affection. This is true also of leprosy in a marked degree. The tubercular forms of leprosy almost always make their first appearance on the face, hands or feet or about the ankles. The erythematous forms of tubercular leprosy are almost always transient in duration and often appear and disappear a number of times before the tubercular infiltration is produced. On the contrary, the erythematous appearances of the anesthetic form are usually permanent. The anterior surfaces of the body are usually the ones affected in the tubercular form, while the anesthetic affect the posterior surfaces. In a tubercular leper it will usually be found that the tubercles are most in evidence on the face, the front of the ears, the dorsum or forearms and hands, the anterolateral aspect of the thighs, the front of the knees and legs, and the dorsal aspect of the feet. In the anesthetic form the earlier spots may appear on the face and front and sides of the ankle, but later we find a predilection for the buttocks, the back of the shoulders, and the posterolateral aspects of the body generally.

No region of the body can be said to be absolutely free from leprosy lesions, yet in contrast to the face and limbs the trunk is comparatively immune. Hutchinson has no examples of portraits of leprosy lesions on the trunk, yet such cases occur in countries where the disease is endemic. The glans penis is usually spared, as well as the palms and soles, the region of the neck, and the temples. Almost all authorities state that the hairy scalp is absolutely free from lesions. There may be lesions on the face, forehead and at the roots of the hair, but here they cease, so that the hair of the head remains intact, while eyebrows and beard may have totally disappeared. Hebra and Vidal alone speak of the occurrence of tubercles and infiltrations on the hairy scalp as a great rarity.

Morrow relates the following case, where leprosy manifestations occurred in this unusual locality: The patient was a man of forty-seven, born in Bermuda. He had been a sailor and had visited many different parts of the world. He had first noticed a spot on the middle of the forehead sixteen years ago. This had gradually spread downward over the nose, cheek and upper lip, and had involved, also, the forehead and hairy scalp. He had had peculiar stinging sensations in the face for years, and of late some numbness. The eyelashes had disappeared, but the eyebrows remained. On the left side of the scalp the patch extended backward behind the ear to a point half-way between the ear and the occiput. The margin of the patch was the seat of hyperpigmentation. There were also two circular patches as large as the palm, one on the left deltoid region, and one on the lateral surface of the left leg, of eighteen months' duration, and a circular patch on the right foot. He had had twitching of the muscles of the toes and loss of feeling in the instep for over a year. The peroneal and ulnar nerves were enlarged. He had had sensations of numbness in his fingers and arms.

EXANTHEMATA IN GONORRHEA.

Buschke,⁴ Lesser's assistant in Berlin, has grouped together the various forms of cutaneous lesions that have been shown to accompany gonorrhoea. He remarks that the whole question of metastases in this disease has been placed on a more stable footing since the gonococcus has been demonstrated in the metastatic foci, and it has been shown that severe endocarditis and severe and frequent joint affections are due to this cause. Bennecke has asserted that gonorrhoea loses its simply local action much more easily than has been supposed, and that the micro-organisms, gaining access to the blood, are frequently the cause of metastatic complications. The manifestations on the side of the joints and tendons are the most frequent, next those of the heart, while those of the skin come last. Three cases are related, the first that of a man who developed in the course of a pretty chronic gonorrhoea pain in various joints, with effusion and an endocarditis. At the same time there appeared an eruption which was made up of superficial lesions of an urticarial character, and deeper infiltrations, similar to erythema nodosum. There was also an enlargement of the spleen and a rise of temperature. These symptoms appeared and disappeared several times, and it was thought probable that a new infection of the urethra was continually occurring from the dis-

³ Journal of Cutaneous and Genito-Urinary Diseases, January, 1900.

⁴ Archiv f. Derm. u. Syph., May, 1899.

cases of prostatic disease. Although it was considered that the skin affection was due to the gonorrhoea, and belonged with the other symptoms, it was admitted that a complication with erythema nodosum could not be absolutely ruled out.

In the second case, that of a woman, there was an acute gonorrhoea of the urethra, cervix and rectum, with the formation of a gonorrhoeal fistula. There appeared, in the acute stage, effusion into the joints of the feet and inflammatory nodules in the skin, similar to erythema nodosum. In the course of the affection a dry pericarditis developed without fever.

The third case concerned an epileptic, who had been taking bromide of potash continually. In the course of a gonorrhoea he developed painful nodules on the lower limbs accompanied by pains in the joints. The case is weakened perhaps by the fact that a drug capable of producing eruptions had been taken, but it is pointed out that the bromide rarely if ever produces this clinical form.

In none of these cases were gonococci found in the blood or in the skin lesions.

The eruptions that have been shown to follow gonorrhoea may be divided into four groups, simple erythema, eruptions like that of erythema nodosum, hemorrhagic and bullous dermatoses, and excessive cornification.

(1) *Simple erythema*.—The greater number of observations deal with this type, and it is probable that some of them are due to the balsams that have been given. Other cases are cited to show that an acute scarlatiniform erythema may occur in the course of a gonorrhoea, at a time when no balsamic drug has been administered, and that such drug may be given afterward, without producing any cutaneous manifestation. Such cases have induced some writers to believe that the greater part at least of the erythematous eruptions that have been attributed to the balsams are in reality produced by the gonorrhoeal infection. As a transitional form from the erythematous to the nodular, a case is related where in the course of a gonorrhoea an eruption partly scarlatiniform and partly urticarial occurred, when there had been no medicine taken internally. The only other possibility was that the effect might have been produced by the injections of sublimate solutions.

(2) *Urticaria and erythema nodosum*.—In this class belong the cases described by the writer in which the eruption took the form partly of superficial papular efflorescences, partly of cutaneous and subcutaneous nodules.

(3) *Hemorrhagic and bullous eruptions*.—In many of these cases there was also a complication with erythema. Vesicles and bullae or purpuric patches appeared over the body, sometimes accompanied by a rise of temperature, and in almost all instances by arthritic pain or effusion. In one case an endocarditis occurred at the same time.

(4) *Hyperkeratosis*.—This interesting condition has been observed as a sequel of gonorrhoea only in the last few years. In a case of Vidal's a gonorrhoea contracted in February was followed in April by the appearance of thick, horny accumulations on the right knee and later on the hands and feet, especially the palms and soles. In May there were arthritic symptoms. The hard, horny patches were later on quite symmetrically distributed over the whole body and some of the nails were lost. The affection lasted about

nine months. A fresh gonorrhoeal infection was followed by a similar eruption, running the same course. In a case of Jeanselme's the right hip and both knee-joints became swollen and painful a week after the appearance of a gonorrhoea. Three weeks after the rheumatic symptoms, horny plaques made their appearance on the dorsal surfaces of the toes, and also on the outer and inner borders of the feet. There were no inflammatory appearances at the base of the lesions. The affection lasted about six weeks. Jeanselme's theory was that some central nervous lesion was caused by the gonorrhoea which produced this symmetrical, trophic process. In a third case, of Chauffard's, there were two attacks of gonorrhoea accompanied by severe general symptoms, endocarditis, multiple arthritis, epididymitis and nephritis, and each of these attacks was accompanied by keratoses on the feet, back, penis and thigh. Microscopically there were inflammatory appearances in the papillae and hypertrophy and increased cornification in the epidermis.

Discussing the gonorrhoeal eruptions as a whole, Buschke calls attention to the multiformity of the manifestations, that is, erythema, papules, nodules like erythema nodosum, the formation of bullae, purpura, and exaggerated cornification. The eruption is not confined to particular localities, but may be anywhere, although the scalp is a part usually spared. The mucous membrane of the mouth, throat and eye are not spared in the very acute forms. The eruption develops very quickly, but is very variable in its further course. Sometimes, especially in the scarlatiniform variety, it may have entirely disappeared in twenty-four hours. Other eruptions may last for weeks and months, changing their type repeatedly. The temperature may or may not be raised, and the form of the eruption has no direct relation with the height of the temperature. The eruptions almost always appear in the acute stage of the affection, or, in long-standing chronic cases, in the acute exacerbations. There is almost always some metastatic complication, most frequently implication of the joints, while in a good number there are endo- and pericarditis and occasionally nephritis. In two cases there was enlargement of the spleen.

With regard to the pathogenesis of these eruptions, it is important at the start to exclude those affections that surely do not belong directly to the gonorrhoeal process. These are the secondary infections, where septic lesions are caused by the penetration of other micro-organisms in the mucous membrane that has been violated by the gonorrhoeal affection. In this way septic lesions of the heart and joints are produced, and also possibly septic eruptions, such as are met with in other septic affections, in the form of scarlatinal and hemorrhagic rashes. These may be excluded, as well as the drug eruptions, especially those from copaiba, cubebs and salicylic acid. In many individual cases it may be difficult to exclude the suspicion of a complication of some other affection with the gonorrhoea, for example, erythema nodosum in the cases of this type. Yet their independence is regarded as far more probable. The view that these eruptions are to be regarded as reflex appearances produced by irritative processes in the genito-urinary organs is favored by the experiments of Lewin, who was able to produce the same appearances by irritating the urethra with a sound. Similar experiments undertaken by Buschke on his first and third case

failed to produce any result. He believes that these eruptions are produced by the introduction of the gonorrhoeal poison into the circulation. With regard to the further question, whether they are produced by the direct action of the gonococci on the skin or by that of a toxin, as is probable in so many other affections, the latter view is considered the more probable. It is not possible to demonstrate the gonococcus in the cutaneous lesions, and this parasite has only been found in the skin where there was a direct connection with the gonorrhoeal mucous membrane. Experimental investigations have, on the other hand, contributed to the view that the toxins and proteins of the gonococcus may produce inflammation, as shown by the studies of Wassermann, Schäffer and Christmas. Buschke concludes that the gonorrhoeal exanthemata stand in direct etiological relationship to the gonorrhoeal virus.

THIOSINAMIN SOAPS AND PLASTERS.

In 1892 H. v. Hebra⁵ published the results of his observations on the treatment of lupus by subcutaneous injections of thiosinamin.⁶ Apart from the distinct impression it made on the active lupous process, he recorded also its remarkable action on the scar tissue, either that produced by cauterization or from spontaneous ulceration of the lupus. Ectropion, caused by the destructive action of the lupous process about the eyelids, was completely healed, and scars about the neck transformed into a pliant tissue. Several patients were shown who had completely recovered motion in joints that had been immovable from the contraction of surrounding scars. Since then thiosinamin injections have been advocated and used in cases of scleroderma, scars and keloid with good results.

Unna, encouraged by these results, determined to try the local action of thiosinamin on the epidermis. The drug is insoluble in water and the alcoholic solution is quite painful when injected under the skin, and for this reason, perhaps, has been less often tried. Unna has used it both as a soap in 5, 10 and 20 per cent. strength, and in combination with his plaster muslins. These applications were compared with those previously used by him (massage combined with mercurial plaster, salicylic acid-plaster muslin, etc.), and found to be far more effective. The plaster proved much more effective and unirritating than the soap, and was tried with success in fibrous tumors of various kinds, keloids, leprosy and syphilitic lesions, as well as in the scars from small-pox. In the latter case a mask of thiosinamin plaster muslin was worn during the night. Irritation and pain was not experienced from this method of application, as is the case with the injections. On parts of the body not covered with hair and protected by the clothing, a plaster worn permanently is most effective. On the face, hands and scalp it is better to use the soap, letting it dry on. In severe cases, affecting the face, the two methods may be combined, so that the plaster muslin is worn by night and the soap applied during the day. Thiosinamin soap may also be combined with former methods, such as massage and mercurial plasters, alternating the two procedures.

Unna alludes to the fact that practitioners generally regard the treatment of fibrous and cicatricial defor-

mities as well-nigh hopeless, and while this attitude is not taken by the dermatologist, thiosinamin must be welcomed as a distinct advance in the therapeutics of this condition.

THE "PHOTOTHERAPY" OF LUPUS.

Dr. Stephen MacKenzie, who had recently returned from a visit to Finsen's Lysinstitut in Copenhagen, gives his impressions of this method in the *British Journal of Dermatology* for November, 1899. He was in daily attendance at the institute for a week and was given every opportunity for observation. He saw in this time a large number of cases that were under treatment, and also of cases previously treated that presented themselves for inspection. About 400 cases in all had been treated up to that time, the larger number during the last two years. MacKenzie says he has formed a favorable opinion of the light treatment. He admits that the results were less favorable where the lupus nodules were deeply seated, owing to the difficulty of penetration of the light and the necessity of prolonging the treatment. In cases where the nodules were superficial the results were very good.

Up to the time of his visit the light treatment had been applied to, besides the skin, the lips, gums, hard palate, tongue, septum of the nose and, guardedly, to the eyelids. Other local caustics and the electrocautery were also applied, and MacKenzie's admission that he was impressed with the importance of frequently employing local measures to the mucous membranes is not especially strong evidence in favor of the light method. The degree of inflammation excited by the light method varies much with the individual. Usually it is slight and causes no pain, but sometimes there are vesicles and bullæ, and the inflammation is much less from sunlight than from the arc light. When the inflammation is severe the treatment may have to be suspended for a time. It is asserted that erysipelas occurs in some cases under treatment just as it does in some cases of lupus not under treatment. MacKenzie says it is difficult to say very much about recurrences, but he saw cases where there had been no recurrence after the treatment had been discontinued for from one to two years. Upon the whole, MacKenzie's paper does not present very strong evidence of the superiority of the light method over others. It is not equally suitable for all cases, and radical surgical methods are often the best. He regards it as far better, however, than curetting or the application of caustics, and he considers that it destroys simply the bacilli, not affecting the diseased or healthy tissues. The objections are the great length of time required, on the average, a daily session of from three to four months, and sometimes as long as twelve months, the expense and the number of attendants necessary; but none of these objections seems to prevent the large influx of patients from all parts of Europe. MacKenzie was sufficiently impressed with this method of treatment to advise its adoption at the London Hospital.

PLAGUE IN MANILA. — Out of a total of 51 cases of suspected bubonic plague reported, 42 have proved genuine and 32 deaths have resulted, half of them being Chinamen. Sanitary regulations are being enforced through a large corps of inspectors, under the superintendence of a health officer. Thirty of the inspectors are Chinamen.

⁵ Monatsheft. f. prak. dermat., Bd. xxix, p. 560.

⁶ Loc cit., Bd. xv, p. 337.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting Monday, December 4, 1899, Dr. R. H. FITZ in the chair.

Dr. CHARLES S. MINOT read a paper on

SCIENCE AND HEREDITY.

ROBERT MACDOUGALL, Ph.D., read a paper on

PSYCHOLOGY AND HEREDITY.¹

Dr. PUTNAM: I suppose all of us have but one feeling in regard to these very interesting addresses to which we have listened, namely, that we can add nothing to the illustration of the subject, but in what little we may say, express our appreciation of what we have heard. The physician, I think, whatever his branch of practice may be, is one to whom this question of heredity appeals perhaps more strongly than to any one in the community, in a practical sense, because to him the patient comes often with the spectre of a family disease in one or another form standing before him, and wishes to know what his chances are of falling a victim or escaping. If he can take a hopeful view the better the result of the influence he is likely to exert. From what we have heard to-night it seems to me all of us can take fresh courage, since the view is maintained, on the whole, that in spite of all the limitations that each individual brings into the world he comes in great measure untrammelled, and is at liberty, within certain limits, to develop as circumstances permit. It is evidently true from what has been said that acquired characteristics are not transmitted. The race moves slowly along, working out its tendencies, but a given individual, whatever his limitations may be, has a considerable chance of modifying his lot, a chance that perhaps his parents may not have had. The physician, it seems to me, stands as the guardian of the growing individual, and in great measure also as the person to whom the task falls of correcting the influences which society and environment exert. This enormous social force is being exerted all the time for good and evil, the physician appearing as go-between to recognize the possible beneficial influences and to make them more and more effective for good. Even the individuals whose power to develop is very limited because they are born as cranks or eccentrics of one or another sort may play a useful part. Although they may not be able to improve the race through their descendants, they can act in one or another direction to afford better opportunities for race development to reach their best goal.

Dr. KNAPP: I think in spite of the doubt which has been cast as to the possibilities of inheritance of acquired traits, we must as physicians recognize that there is something with which we are dealing, which, although it may not be actually the inheritance of acquired traits in the ancestry, is still a most important and fundamental fact. I think, for example, few of us can view a family who are victims of Friedreich's disease, or muscular dystrophy, without feeling there is a most powerful influence at work there which as yet we cannot fully explain. Yet, although Dr.

¹ See page 185 of the Journal.

Minot has shown very clearly the evidence against the inheritance of acquired traits, we must recognize something which I think Dr. Minot would fully agree to, but which he did not dwell upon, namely, that certain influences affecting the general nutrition of the parent can have the most fatal effect upon the condition, later in life, of the child. Binswanger, for instance, who has presented the theory of Weissmann in its relation to nervous diseases most clearly and forcibly, has contended that the alteration in the germ plasma may be inherited or acquired by such conditions as chronic intoxication, infection, constitutional disease or local injury in the neighborhood of the generative organs and may thus lead to profound weakness in the offspring, which is interpreted later in life by some form of disease—often in the form of nervous or mental disease. The doctrine of heredity, therefore, may lose a certain amount of its force by the interpretation of Weissmann, yet it acquires a still greater force by showing the necessity which we are under of guarding against any deterioration of the vital force in the parent in order to prevent disease in the offspring. There is one more fact which seems to me wholly inconsistent with Dr. MacDougall's idea of bringing all the members of the community to a high degree of cultivation by the environment which is brought around them. I think we are surrounded by hundreds of dismal failures of that theory, the efforts which are constantly made in this and other communities to waste \$5,000 educations on \$5.00 boys. We must recognize it is wholly impossible to bring the individual to a high state of cultivation by his environment unless he has the structural qualities in the brain, which as yet we know nothing about, which are dependent in part upon the fetal nutrition, in part upon various nutritive and other conditions of infancy, and possibly in part upon conditions which he derives from his ancestors.

Dr. MACDOUGALL: One remark in explanation of the statement which Dr. Knapp has questioned. What I had in mind was that practically no individual in the present kind of civilization that exists is able to live a primitive sort of life. He is surrounded with so much to develop him that he has to use appliances that others use and be presented with a vast amount of material which makes his life different from what would be led by the primitive man. It was in that regard I meant we brought them up to that mark.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.

J. W. COURTNEY, M.D., SECRETARY.

(Concluded from No. 7, p. 166.)

REGULAR meeting at the University Club, Thursday, October 19, 1899, Dr. R. T. EDES in the chair.

Dr. WEBBER: I notice it has been said two or three times that no influence has been noticed upon the mental condition of the patient, but I should like to suggest that any agent which will assist sleep, improve the appetite and the nutrition, while not perhaps showing a direct effect upon the mental condition of the patient, is a powerful means towards recovery, and in that way the packs must favor the restoration to health, though the immediate effect may not be seen in the improved mental condition or sudden improvement. It seems to me that in a good many instances benefit is not obtained, because the packs

are applied only occasionally; they are not applied near enough together to obtain the continuous benefit and good effect from their application; but, if instead of using them at the time of the excitement and when the patient had passed that omitting the packs, if they had been used continuously, as Dr. Abbott used them in a good many of his cases, better results very likely would have been obtained. I have noticed very good results from the wet pack in some cases, not especially of mental disease; and I think we have in the means of hydrotherapy an agent that is of very great value. I have been very much interested in the paper, and am glad to know of the use of wet packs in the asylum. There is one question I would like to ask: whether the patients who have recovered have made any reference to the wet pack; and whether they speak of its benefits as though they were conscious of any good effects from this treatment.

DR. ABBOTT: I don't think any of them were asked about it, and I don't remember that they spoke of it at all. In none of the cases that recovered had the packs been continued very long.

DR. PAGE: We had a case at Danvers that had been pronounced a case of dementia, a young man, and I think he was troubled with constipation, and the family was very much interested in the case. They came to the hospital frequently, and in order to satisfy them I took additional interest in that case, and I thought I would try this girdle treatment and bring about the crisis as I explained a while ago. I remember that I ordered for that young man a girdle, or wet pack around the body, perhaps ten inches wide around his bowels, and that that should be freshly soaked in cold water as often as it got dry. The constipation was cured; and, by the way, I have seen several cases of constipation cured in that way. I believe that there were no ulcers produced in that case, but in a few weeks the mental condition of the young man improved and went on so rapidly that he went home, and his friends were of course very much gratified, because they had been assured by the officer of the hospital that there was no hope of his recovery, that he had passed into a state of dementia; and I remember their coming to me when he went away and I advised them to occasionally put on that girdle. I thought it might help out possibly in some way, and told them if he got excited or disturbed—he was an excitable young man—to try the cold water treatment in that way. Whether or not he has remained well I have no information, but he did not come back to the hospital, and as the family lived within five miles of the hospital I am sure he would have drifted back if his mind had become disordered again. I would like to say also, in addition, I have seen repeatedly the results of a daily blood count where the douche treatment was used, and there would be an increased number of red cells regularly from day to day. Of course they were not manufactured as rapidly as they would appear, but brought into the circulation from some source, and I was told that the experience in the German Hospital in Philadelphia and also that in New York with this douche upon cases of neurasthenia was more satisfactory than any other treatment that had ever been adopted by the physicians who had tried it there, and I think they still use it at the Vanderbilt Clinic and at the German Hospital. As Dr. Webber says, if you can be sure you are improving the metabolism and equalizing the circulation,

you are doing all you can expect towards improving the mental condition, and if processes have not been set up beyond the reach of all medical help you ought to benefit them. I think Dr. Harrington is very much interested in this subject.

DR. HARRINGTON: I have been interested in this subject of hydrotherapy a long time, and some years ago while an assistant of Dr. Page in Danvers, we did something in that line in a crude sort of way, with some results. The douche-room which Dr. Page fitted up at Danvers two years ago for this purpose has been in constant use except when repairs were being made, and we have treated and are treating daily from 20 to 30 patients. The results in a general way are these: We have marked and rapid improvement in cases of alcoholism, particularly acute alcoholism; it seems to brace up the nervous system and the circulation better than anything else that I know of. And another class of cases in which we notice marked improvement, which has already been mentioned, are the anemias; they improve very rapidly, and the blood count shows the gain. Another class of cases are those in which there are vasomotor disturbances, where there are cold hands and feet and blueness of the extremities, where perhaps there is vasomotor paralysis. These cases will improve quite markedly and even with the first few applications there will be seen a change, marked change in circulation after the bath, but the unfavorable vasomotor condition may return again perhaps and will do so for days, but finally the nervous centres I believe are strengthened by this method of treatment. It is gratifying to know that these methods are being introduced and used more and are being more heard of and talked about by the medical profession. There is one thing that ought to be remembered, I think, and considerable stress laid upon it, namely, that water has its physiological action and its therapeutic indications just as much as any drug, and it cannot be used in any haphazard way and get the results that you wish to look for. At Danvers this past year we sent one of our physicians to New York, and he studied with Dr. Baruch and acquired all his methods and technique. Every case which now goes to the douche room for treatment is examined, that is, the record of the case is read by the physician and he sees what the physical examination was on admission, then he makes any further examination he may deem necessary, and every case is given a definite written prescription and the observations are made as carefully on every patient as time will allow. One thing that we observed as regards men and women, that men like the hydrotherapeutic treatment very much, but as a rule women do not; they object to it and we have to urge them oftentimes to go to the douche-room, and try to prevail upon them to do so, but still they object to it. With the apparatus we have to use water in a wide range of methods with varying temperatures and pressures and various forms of stream. I have not had a very extended experience with the cold pack personally, but I have seen instances in which motor excitement has seemed surely to be quieted and I was quite surprised that the doctor finds so many cases in which the same effect is reported. We had one case last winter which was very excited for days. The cold pack was tried persistently. This patient was also very much confused. The cold pack being used persistently in her case did seem to relieve her

mental confusion, at least her mental confusion cleared up a great deal and her motor excitement became markedly less. This case, however, did not recover. We have noticed very favorable results in insomnia during this past year by the use of sweaters, which Dr. Page alluded to. That is a very convenient method of applying a sort of cold pack.

DR. BALDWIN: In my private work I have had occasion to look after excited patients where there have been plenty of nurses, and where it has been necessary that there should be no restraint used to shock the feelings of the people at home. I have been for a number of years accustomed, when necessary, to use a wet pack for these patients. I have always been impressed with the wisdom of the man subject to attacks of depression, who, when he felt them coming on, used to draw a bath tub full of cold water and jump into it, and he remarked that he never came out with the same thoughts and feelings that he had when he went in. It seems to me aside from being a restraint that the wet pack, no matter how warm the sheets when you wring it out, acts in the same way, and it does have some effect to change the current of one's thoughts.

DR. BANCROFT: I should like to ask Dr. Harrington, who has apparently had some experience with the wet pack, and the more expensive and complicated apparatus as used now at Danvers, if he found any objection to patients taking the wet pack. I understand you met with a great deal of opposition from the women. We have tried the wet pack at Concord with the women almost exclusively and never found any objection from them to going into it, and yet you say they objected to the douche.

DR. HARRINGTON: They objected to going to the douche-room and taking the bath. I did not mean to be understood that they objected especially to the cold pack.

DR. BANCROFT: My experience has been that they rather liked it.

DR. HARRINGTON: We hear wails every day when the women come back from the douche-room, and they often beg not to be sent again.

DR. BANCROFT: It occurred to me whether it was not an argument in favor of the wet pack if the patients object to the more expensive apparatus and do not object to the wet pack; it is a question in my mind whether we do not get the same beneficial effects from the cheaper old-fashioned method of the sheet wrung out in cold water.

DR. HARRINGTON: You undoubtedly can get the therapeutic effects from various ways without any apparatus except sheets and blankets, bath tub and tin dippers.

DR. PAGE: I have seen patients in covered bath tubs in England and I thought it was the most forbidding form of restraint ever devised. I am told by Dr. Clouston, of Edinburgh, they have not employed this method for many years, since they had two persons die in the tub, probably owing to the fact that the water was allowed to get too warm and the patients fainted away. They were locked in like a person in the stocks. There was a big board over the bath tub, the neck fitting in the hole through the board.

DR. WORCESTER: There was considerable stir made in England, I think some two years ago, about a case in which a patient was kept in a wet pack for twenty-four hours, or more, continuously for disciplin-

ary purposes and died in it. It was in some private asylum.

DR. PAGE: This restraint was in the Holway Asylum. When I was there I saw a woman in the tub who begged me piteously to let her out and I wanted to do so, but the superintendent was with me and I didn't dare to. That was the hospital where a patient died subsequently in a pack, and an investigation was held by the commissioner of lunacy.

DR. ABBOTT: The prolonged baths I think are now used in Heidelberg and the cases in which they get most benefit are those of the maniacal phase of manic-depressive insanity; it is those cases in which we have had the best therapeutic results at Northampton.

In regard to the duration of packs, Dr. Page has spoken of not continuing them so long as three hours. Apart from the fact that patients are under constant observation for unfavorable symptoms, and none are found even after a pack has been continued four or five hours, provided it has been properly given, one investigator has found that after about two and a half to three hours there is evidence that toxins are eliminated; that is, the fluid wrung out from the sheets with which the patients have been wrapped is found to be toxic for small animals. Whether those results have been confirmed by further investigations I don't know. If packs are taken off at the end of an hour patients sometimes have to be wakened out of a sleep to remove them. The patients feel comfortable if the pack is properly applied, for so long a time as it has been thought best to continue them. These facts justify a prolonged application, even to four or five hours.

Whether the pack should lead up to colder applications, as Dr. Putnam suggests, depends partly upon the object to be accomplished by it. In most of the cases reported it was used for its quieting effect, and a brisk rubbing down after the pack to bring the glow to the skin was considered sufficient. If the pack had been given for the tonic effect on nutrition we should have given it for a shorter time and followed it by cold applications.

The first case of general paralysis on which we tried the wet packs at the McLean Hospital was one of such rapid exhaustion from refusal of food and constant activity and resistance that an almost certainly fatal result within twenty-four hours was predicted. A similar case, in which packs had not been tried, however, had died not long before, and that must be the one Dr. Tuttle has in mind. Packs were given and the patient began to eat at once; he improved from the very hour the first pack was applied. So with one of these cases of paresis on which they were tried at Northampton, only there they were not continued more than ten days, the immediate urgency having been relieved.

That the packs have more than a moral disciplinary effect and more than enhance the influence of the physician is shown by the fact that very few of these patients on whom we tried the packs would be as quiet three hours after restraint by camisole or being held by nurses as they are three hours after the pack; they would have been very much more resentful of such restraint and probably would have begun right away to use violence again. There is something more than moral effect, and it is this fact that justifies its use in these cases of excitement.

We cannot yet say that because nutrition, etc., are

improved by the packs they therefore exercise a curative effect on the psychosis. For example, in a chronic case of eight or ten years' standing that has violent outbreaks the latter may be markedly diminished and nutrition may be improved, but the psychosis is still there, delusions still persist, and there is no expectation that the patient will recover. It will be rather in the acute cases, like the maniacal phases of manic-depressive insanity or acute stages of dementia precox, that most benefit is to be expected.

A special room for hydrotherapeutic measures is desirable and even necessary for some modes of treatment, but I think it is a great advantage to have such simple measures that they can be used in the room where the patient is, rather than have the patient taken to another ward or another room. Where such measures are used as a means of introducing variety into the life of the patient there is a distinct indication for a special place, and many kinds of apparatus require a special room; but some of the results obtained by such expensive apparatus can also be secured by the use of the pack, which can be applied in any place without special apparatus. It is to these that I wished to call attention.

Recent Literature.

A Text-Book of Materia Medica, Therapeutics and Pharmacology. By GEORGE FRANK BUTLER, Ph.G., M.D., Professor of Materia Medica and Clinical Medicine in the College of Physicians and Surgeons, Medical Department of the University of Illinois, etc. Third edition, thoroughly revised. Philadelphia: W. B. Saunders. 1899.

A third edition in three years is proof that a book has merits and fills a need. The present volume contains 826 pages, excluding the indices. Following the introduction are definitions of pharmacology and therapeutics, with sections on the classification and administration of medicines, the untoward effects of drugs, and weights and measures.

Pharmaceutical preparations occupy some 80 pages. It seems to us a mistake to devote so much attention to this branch of the subject, especially in this instance, because the writer furnishes all and more than is needed for the student in his discussion of the individual drugs. As an example of this is iron, which consumes by the enumeration of its preparations more than 10 pages! Surely the sins of our forefathers are visited upon us. The therapeutics of to-day is simpler than ever, because it rests on a more rational basis. Why not give the student the benefit and write a simple book?

The drugs are divided into "disease medicines" and "symptom medicines"—a classification rather more unsatisfactory than usual. Why bitters should be considered disease medicine is hard to see.

Twenty-eight pages at the end of the book are devoted to prescription writing. It is certainly a sad commentary on the requirements for admission to our medical schools that it is deemed necessary by the author to decline "oliva" and "fluidus" in full.

The account of serum therapy is good. On page 144 hydrochloric acid is recommended for atonic dyspepsia; on page 164 alkalis are advised for the same condition. How much more advantage students

would derive from a résumé of gastric treatment based on the study of the secretions and the motility of the stomach than from these loose statements.

It is unfortunate that students also must learn the following: "The diluted hydrochloric acid is a valuable (!) internal remedy in the treatment of diphtheria, and during the course of fevers, particularly typhoid. As a routine treatment in the latter disease the author almost invariably gives hydrochloric acid in connection with pepsin, finding that it not only allays thirst and moistens the tongue, but exerts an antiseptic influence in the bowels (?), thereby lessening the danger of auto-infection(!?) and relapse (!?)."

There are some good things in the book, but the author owes it to his readers to rewrite much of the text.

The American Year-Book of Medicine and Surgery.

Being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, drawn from Journals, Monographs and Text-Books of the Leading American and Foreign Authors and Investigators. Collected and arranged, with critical editorial comments, under the editorial charge of GEORGE M. GOULD, M.D. Philadelphia: W. B. Saunders. 1900.

This well-known Year-Book is issued this year for the first time in two volumes, one on medicine, the other on surgery, without increase in cost. Each volume may be had separately if desired. The constant increase in medical literature has made this change necessary. The previous single volumes of this work already contained from 1,100 to 1,200 pages and were becoming unwieldy. These two volumes contain a little over 1,200 pages. The volume on medicine has about 100 pages more than the volume on surgery. Each volume has its own index.

The medical volume is divided into General Medicine, Pediatrics, Pathology, Nervous and Mental Diseases, Cutaneous Medicine, Materia Medica, Physiology and Legal Medicine, Hygiene, Chemistry, etc.

The surgical volume embraces General Surgery, Obstetrics, Gynecology, Orthopedic Surgery, Ophthalmology, Otology, Laryngology, Rhinology and Anatomy.

Some changes have been made in the editorial staff. Dr. Gould now has fifteen collaborators, among whom the different departments are divided up. The work as a whole is well and carefully done, the paper and type are excellent, and such illustrations as are given are good. There has been no effort to make it a picture-book.

These volumes would be a valuable addition to the physician's library.

MEMORIAL TO J. W. STICKLER, JR., M.D. — Mr. and Mrs. Joseph W. Stickler, of Orange, N. J., have offered \$40,000 to the Young Men's Christian Association of that city, for the erection of a new building as an additional memorial to their son, Dr. J. W. Stickler, Jr., who died last year, and who was the first president of the association. Plans of the memorial library building which, as previously announced, Mr. and Mrs. Stickler are to erect at a cost of \$40,000, have now been completed, and one of the rooms in it is to be devoted to the medical library of the deceased physician, for the use of medical students. Dr. Stickler's entire laboratory apparatus has been given by his widow to the Orange Memorial Hospital.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, FEBRUARY 22, 1900.

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.***SUBSCRIPTION TERMS:** \$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; \$6.50 per year for all foreign countries belonging to the Postal Union.*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.**All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.**Remittances should be made by money-order, draft or registered letter, payable to*DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.**ANNUAL REPORT OF HARVARD UNIVERSITY.**

As is natural, these reports grow in bulk with the growth of the University and this increase has of recent years been considerable. According to our usual custom, we shall try to pick out those points having an especial interest for the medical profession. The President tells us that "the common attainment of the degree of Bachelor of Arts in three years is certainly approaching. No specific legislation will be needed to accomplish this important change; for any young man of fair abilities can now procure the degree in three years without hurry or overwork, if he wishes to do so, or if his parents wish to have him. That this wish is felt by an increasing number of students and parents is demonstrable. . . . Within a time, comparatively short, the majority of those who enter the freshman class will come to college with the purpose of completing the requirements for the degree in three years. A large number of the present freshman class have already avowed that intention, and made their choice of studies accordingly." Anatomy, physiology and hygiene are now among the studies which may be presented in satisfaction of the requirements for admission to Harvard College. Putting these statements together, one sees some prospect of reconciling the possession of an A.B. degree with the increasing demands of the professional schools, and the possibility of entering upon an active career in the learned professions—these including to-day more than the three of our fathers—at a period of manhood not too advanced. All this is of especial interest to those seeking a medical training, the demands of which are now so exacting.

The extraordinarily low death-rate reported by the Dean of the College in successive years is very striking, and tends, as the President states, to show that college students are in reality a picked body of youth, physically, as well as mentally and morally. In the year 1895-96 four died out of 1,772; in 1896-97 four out of 1,754; in 1897-98 four out of 1,819, and in the year 1898-99 three out of 1,851.

The function of the medical visitor is now estab-

lished as a regular part of the college system, and tables are given showing the nature of the diseases which prevailed among the students in Cambridge in each month of the year and the number of days of illness in each month. The President believes that this office not only secures for the sick student earlier and better treatment than he would otherwise have, but also prevents serious sickness by providing the ignorant student who works to excess, drinks too much tea and coffee, sleeps too little, eats too much, or takes no exercise, with wholesome advice in good season. Dr. G. W. Fitz, who filled this office, did not desire reappointment at the end of his five years' service as an assistant professor last September.

In connection with this office of medical visitor and the duties inherent to it, we note the President's announcement of an endowment from an anonymous source of \$156,000, for the establishment of a professorship of hygiene; the object of the giver being "to provide the students of Harvard College with a medical friend competent to give them the best advice, winning in his nature, and devoting himself chiefly to the physical and moral welfare of the undergraduates at Cambridge. . . . He is not to be a teacher in the ordinary sense of the term, though he may lecture, and he is not to be professionally connected with the Medical School, though he will be free to undertake hospital service; neither should he have so much practice, whether in consultation or otherwise, that his attention should be much diverted from the body of undergraduates, and inasmuch as his salary under these conditions will be the greater part of his income, the giver of the fund desires that it accumulate until it yield a liberal salary, sufficient to attract to the position a man of high quality."

"This gift," the President remarks, "is one of the most interesting which the University has lately received, and one likely to do much good, first, by informing the prevailing ignorance concerning the means of bodily health; secondly, by checking or preventing reckless exposure to moral and physical evils, and thirdly, by arresting incipient injury through wise and seasonable advice."

The following extract is given from the agreement in regard to this professorship of hygiene:

"To apply the said fund so soon as the income thereof shall be large enough in the judgment of said Corporation for a permanent foundation for the liberal maintenance in the undergraduate department of said College of a full professorship of hygiene.

"The holder of such professorship shall be a regularly educated physician of marked ability and industry and of a temperament likely to enable him to elicit readily the confidence of young men. His duty shall include an earnest personal interest in the physical welfare of the undergraduates and an intimate personal intercourse with them so far as this can be had without officiousness on his part, to the end that he may proffer advice in a spirit of friendliness and be easily approached by such of them as desire his counsel.

"It shall be the duty of the professor, both by advice and by personal interest, to encourage especially open-air exercise and sports, and to take a particular care that undergraduates of sedentary and studious habits be made acquainted with the importance of physical recreation."

The importance now attributed to this sort of academic supervision is well illustrated by the recent discussion as to its birthplace among the colleges, just as the cities of Greece disputed the honor of the birthplace of Homer.

We have elsewhere and previously considered most of the especial points in this report having reference to the Medical School. In regard to one of the most important changes the President says:

"The results of the experiment of massing all the lectures and laboratory exercises in a fundamental subject into a half-year, and keeping the whole time of the student during that period occupied with two subjects will be of interest not only in the Medical Department, but in many other departments of the University. The preliminary work in preparing this plan was done by a committee of the Medical Faculty called the Committee on Medical Education, and the same Committee has under consideration a rearrangement of the work of the third and fourth years. The changes in the programme of the first two years have already gone into effect, and are giving great satisfaction." A definite judgment upon this experiment can hardly be passed until the results of the second examinations in the studies of the first years have been determined.

There has been an increase during the last five years in the percentage of college graduates among the new matriculants of the school; but in the year under review the percentage of new matriculants who held a degree in arts, letters or science was only 42.66 per cent. After the current year, the entering class is to be composed exclusively of college or scientific school graduates.

Notwithstanding numerous changes in the interior of its present building, the Medical School urgently needs more lecture room and more laboratory room. This need must either be met radically by moving the whole school to some other site and erecting new buildings, or temporarily by finding accommodation for some departments outside the present buildings.

The Dental School, though prosperous, and, partly because it is prosperous, having an income exceeding its expenses, is in the same position with regard to its home. The difficulty here is increased by the fact that the Dental School does not own its building and the building is liable to be sold. All this means money and a good deal of it.

The close connection between the Dental School and the Medical School, at least during the first year of instruction, makes it important, the President thinks, that when a new building can be erected for the Dental School it should be placed close to the Medical School, or at least close to that part of the

Medical School in which the instruction of the first year is given. On the other hand, for the sake of patients for clinical instruction, it is very important for the Dental School to be in the centre of a populous neighborhood.

The Corporation during the year determined on another large use of the Pierce bequest—this time for the promotion of instruction in comparative medicine, but in three separate sums, \$100,000 as the foundation of a new professorship to bear his name, \$100,000 for a medical laboratory building to bear his name, and \$100,000 as an endowment for the laboratory. The details of this appropriation await the advice of the Faculty of Medicine. The ultimate disposition of the Calvin Ellis bequest apparently still remains to be determined.

As a matter of some general interest, we note that the Corporation has voted that it is not prepared to admit women to the instruction of the Law School.

MUD AND DUST IN WINTER.

AN occasional snow-storm should not, in the least, abate our interest in the question of dust and its menace to health, which has of late particularly agitated this community. Experience has shown that a considerable part of the New England winter is likely to be without sufficient snow to prevent the accumulation and dissemination of dust. In spite of the comparatively heavy fall of snow we have just experienced, the irrepressible dust has still actually on the same day been much in evidence on one of the main streets of this city, due merely to the fact that after the snow was blown off a certain area of the street, the underlying dust found again its opportunity. Whatever the final remedy for the nuisance may prove to be, it is sufficiently evident that we cannot depend upon the caprices of the weather alone, in the shape of opportune rain or snow storms. We must find some means of actually getting rid of the dust, and of the conditions which make possible its accumulation.

Clearly we are not alone in our faultfinding, for in a current issue of our contemporary the *Medical Press*, a vigorous protest is raised against mud as the progenitor of dust, and hence equally to be avoided. Thankful as we should have been during the last months for mud in any amount, we should not forget, as our contemporary points out, that mud always represents the possibility of dust, and that our watering carts in summer and our rains or snows in winter are merely palliative and not curative. We should in some way get at the source of the difficulty by insisting on absolutely clean streets. In the meantime the following suggestions of the *Medical Press* are apt and interesting:

"The part played by mud in the hidden and various ways of disease production will doubtless be one day laid bare by some curious apostle of science. Meanwhile there are certain points about mud that

are clear to the man in the street. Its distribution by the splash of passing vehicles covers a much wider field than folk usually recognize. Spots of mud thus projected may often be seen adhering to house-fronts at a height of several feet above the top of the ground-floor windows. Dry mud, be it remembered, is on the way to become dust, to be blown hither and thither with its host of microbes, good, bad and indifferent. 'The bacteriology of street mud'—who will undertake that investigation, laborious, well-nigh boundless, fascinating, complexly balling, and yet fraught with vast potentialities for the good of man. The average citizen, however, knows little and cares less for the bugbears of bacteriology; he is more concerned for the safety of his clean collar, the polish of his silk hat, the sheen of his shoes, and the untarnished splendor of his raiment beneath the spatterings of a muddy day in the city. Where the mud comes from is a mystery in the case of smooth impermeable pavements. It is certainly greatly lessened in amount when asphalt, concrete, or wooden roadways replace the time-honored macadam. Judging from the signs of the times, it seems likely that in a not distant future sanitary authorities will learn to take a deep interest in the matter of city mud in relation to the public health."

To those of us who have taken the trouble to watch the methods of the city employé in his street-cleaning attempt, it is not difficult to see why we still have mud and therefore dust. After a rain-storm, for example, a small army of men may be seen scraping a portion of the mud into small piles, which are then in part thrown into carts. From the remainder dust is made which again is heaped by nonchalant workmen into piles, which in turn, if any wind be blowing, are thrown rather into the surrounding air than into the carts ready to receive them. In short, quite apart from the question of pavement, our streets are not properly cleaned. We certainly need better pavements, but we also require a consistent and painstaking effort on the part of the authorities to take measures, clearly within their power, toward the furtherance of adequate street cleaning.

CASES OF RASH AFTER ENEMATA.

IN the *Glasgow Medical Journal* for September, 1899, Dr. T. K. Monro, of Glasgow, calls attention to the fact that, although the observation is not new, it is true that cutaneous eruptions may be produced by enemata, and that this has escaped mention in most dermatological text-books. The writer thinks that this eruption has often been wrongly attributed to a surgical operation or to an anesthetic, and that some cases of so-called surgical and puerperal scarlatina are due to enemata. Also many cases have been attributed to the action of drugs that really belong in this class.

All the cases that the writer has been able to collect are in the English language, and all but one are

found in British literature. In only one case, that of a boy of eleven years, was a male affected; in 26 others besides the six reported by him, the patients were females. Barford and Gardner, who have published the largest number of cases, were gynecologists. Three of the cases were in patients suffering from gastric ulcer. Habitual constipation seems to be a condition common to the greater number of cases, and to account for the greater prevalence in the female sex. The eruption may occur in patients who have previously used enemata without any such effect, and subsequent enemata may or may not act in the same way. Usually the interval between the injection and the appearance of the eruption is about twelve hours, but it may be as long as twenty-four, or as short as two hours, and the eruption's average duration is two or three days. In type the eruption is either scarlatiniform, morbilliform, or urticarial of the small type. Occasionally, these forms may be combined. The seats of predilection are the buttocks and thighs, and the face, but any portion of the body may be invaded. Slight changes in the temperature and in the pulse have been noticed, and occasionally there is redness of the tongue and fauces. Constitutional symptoms are usually wanting. There may be considerable burning and itching. The eruption occurs only after enemata of large size, never after glycerine or nutrient enemata.

It has been generally assumed that the cause of the eruption is fecal absorption, which is partly excreted by the skin and causes the rash. Morgan, in 1895, suggested that it was due to a particular kind of soap, and Gardner, that it was often produced by the use of hard yellow soap. Others have stated that the eruption follows three to four per cent. of the enemata, and that it is common also after a strong aperient in chronic constipation. The writer asserts that experience has shown that soft and not hard soaps ought to be used in enemata. Six new cases are described.

In the first case, that of a woman of twenty-five, who was being treated for hemorrhage from gastric ulcer, the patient had had for about a week before the appearance of the rash nutrient suppositories, and enemata of milk, eggs and beef tea. She had also had laxative enemata of soap and warm water, and, on one occasion, of castor oil every two or three days. Dilute hydrocyanic acid and chloroform water were the only drugs employed. The eruption was an erythema not sharply bounded, in some places distinctly elevated, affecting the face very slightly, well marked on the right upper arm and forearm and on the thighs, slight on the hands and legs.

In the second case, that of a woman of twenty-two, an eruption of a morbilliform character appeared about twenty-four hours after an enema of soap and water. The eruption was very pruritic, and was most marked on the trunk, although later it was actively present on the arms and legs. It is admitted that in this case the administration of chlorodyne at the same time, as the enema renders the etiology somewhat doubtful.

In the third case, the day after several enemata of

soap and water had been given for pain in the bowels, there appeared a diffuse erythema of the face and hand. Morphia had been given hypodermatically the night before the eruption appeared.

The fourth case was that of a governess, who had after an enema (and the administration of chloroform) a general scarlatiniform eruption accompanied by fever. There was some redness of the fauces, but the tongue was not characteristic of scarlet fever. At the end of three days, when the patient was last seen, the eruption had practically gone from the extremities, but was well marked on the hips and thigh.

In the fifth case, a woman of twenty-two was in the beginning of her second week of typhoid fever. Twelve hours after an enema of hot water with soap and castor oil she was awakened by itching of the arms, neck and face, and the next morning there was a pretty general urticaria present. The same result followed a second enema, while a third one was not succeeded by any eruption. This patient had previously used enemata of soap and water without any cutaneous disturbance.

The last case, one of gastric ulcer, developed an itchy, papular eruption on the face, hands and thighs, a few hours after an enema of water, soap and castor oil. This eruption extended rapidly over the whole body. A second enema a few days later was followed by the same appearances.

THE LIMIT IS REACHED.

We have long looked somewhat askance at the growing tendency toward the coining of new medical terms. The unfortunate gall-bladder and liver region has suffered most severely at the hands of the anastomosing and resecting surgeon, who has seen fit to burden with a new name each new operation. We stoutly maintain, however, that the limit has been reached when such words as the following are thrust upon us. A distinguished surgeon writes, "I report this case because it suggested a new operation, hepaticocholecystostcholecystenterostomy, or hepaticocholecystostenterostomy." If our opinion were asked we should choose the second alternative, since it comprises thirty-one instead of forty letters, but we should much prefer to be spared either, even granting the necessity of a slight circumlocution in arriving at the meaning. When a word is unpronounceable it should be inadmissible in any well organized language, and these, we urge, are pronounceable, if at all, only after strenuous practice. Let us at least stop here.

MEDICAL NOTES.

STATISTICS REGARDING ILLNESS AT HARVARD UNIVERSITY.—We learn that objection has been made to a note published in our issue of January 25th, on "Illness at Harvard University during the year 1898-99." After quoting certain facts we said, "The

value of statistics of this sort is not altogether apparent." Our meaning naturally was that from a medical standpoint such statistics are of small value, owing to the relative fewness of the observations, and to the method of classification used. We are now informed that the analysis of the students' illness has been made solely for the purpose of determining Harvard's need of an infirmary and of making that need definite. We are completely in sympathy with all efforts toward the establishment of such an infirmary, as previously indicated in our editorial columns, and have no desire to criticize means directed to that end.

PRACTICAL GUIDE TO THE DESTRUCTION OF MOSQUITOES.—The Liverpool School of Tropical Diseases, according to the *British Medical Journal*, has just issued a pamphlet entitled "Instructions for the Prevention of Malarial Fever for the Use of Residents in Malarious Places." Within the compass of fourteen pages it sets forth in concise terms which cannot fail to be understood facts of practical importance concerning the parasitic nature of malarial infection, its connection with a special kind of mosquito, and the means which hold out the best hopes of ridding a house or a neighborhood of these insects and of the malaria which they are believed to convey.

LAWS REGARDING TUBERCULIN.—Illinois farmers and stockmen are agitating changes in the laws regarding the tuberculin test for tuberculosis in cattle, and their compulsory enforcement. A report which was recently submitted at a mass meeting in Chicago summed up all the disadvantages of the tuberculin test as it is at present applied. The report was adopted and also a resolution to the effect that the chairman of the meeting appoint a standing committee of five, to whom all facts, experiences and complaints with reference to tuberculosis in cattle might be communicated.

YELLOW FEVER ON SANTOS STEAMER.—It is reported that a steamer recently arrived in New York from Santos had on board two cases of yellow fever during the voyage. A fireman died of the disease and was buried at sea, and the other has been removed to an isolation hospital. The vessel's cargo is being held, subject to action by the health authorities.

STATISTICS FROM PUERTO RICO.—The consolidated report of the Board of Charities of Puerto Rico, for the week ending January 27, 1900, gives the following statistics: The total population of the island is 956,779. Of these 80,642 are classed as indigent; 3,857 as sick; 669,425 rations were issued, and 9,076 men were working for food alone.

INSANE SOLDIERS.—During the last three months it is reported that nearly 250 soldiers with mental disease have been sent across the continent, and it is said that over 200 more will soon arrive at San Francisco from Manila. In nearly all cases the men are said to be violently insane.

A LAW REGARDING ICE.—Acting on the advice of the Council of Hygiene, the prefect of police in

Paris, it is said, has decided that ice sellers must sell ice of two definitely distinct kinds. These must be ticketed as ice for eating purposes and ice for industrial purposes, the former being obtained from spring or sterilized water.

HAVANA BOARD OF HEALTH. — An Havana Board of Health, consisting of six Cuban physicians, has been organized by General Ludlow. The chief surgeon and chief sanitary officer of the Department of Havana are members *ex officio* of the Board.

SIR MICHAEL FOSTER, M. P. — Sir Michael Foster has been elected as an Independent Unionist, by a very handsome vote, to represent the University of London in Parliament. He replaces Sir John Lubbock, who was a Liberal Unionist.

HOSPITAL SHIP "MISSOURI." — The hospital ship *Missouri*, now in service in the Pacific, is said to be both unseaworthy and unsanitary. An investigation into the condition of the vessel will be made.

BEQUEST TO A HOSPITAL. — It is reported that James Walker, of Wilmington, N. C., is to provide the City Hospital of that city with a building to cost \$30,000.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the six days ending at noon, February 20, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 93, scarlatina 38, measles 61, typhoid fever 3.

VACCINATION IN CONNECTICUT; DEATH CERTIFICATES. — According to the Bulletin of the Connecticut State Board of Health, Connecticut has been remarkably exempt from small-pox in view of its widespread prevalence in many other States. This is attributed to vaccination, which is more general in this State than in most other States, although it is not compulsory. Since the Bulletin was issued, Dr. Lindsley, Secretary of the Board of Health, has had letters from town health officers, stating that in their respective towns vaccination had been of late years much neglected. He points out the possible dangers of an epidemic in those towns and says: "Vaccination is a public duty for the protection of the whole community, as well as a private obligation for self-preservation, which none have the right to neglect." Dr. Lindsley further writes in this report that the new form of death certificates has blank spaces after the words year, month and day, to give the exact date of death. Of course the blundering genius has seized his opportunity. It is astonishing to what extent human ingenuity can invent wrong ways of filling out a blank form of certificate. This time the blunderer completely defeats the purpose of the certificate by writing the day of the week instead of the day of the month, thus: Year, 1900; month, January; day, Tuesday. Query, which Tuesday? There were five in January. Registrars who issue burial permits on such certificates, and there are several of them, ought

to have their names published in the *Journal of Statistics*.

THE WILLARD HOSPITAL. — It was one of the wishes of Miss Frances Willard to establish a hospital for the care and treatment of dipsomania. After careful deliberation a corporation has been formed under the laws of Massachusetts, to be known as the Willard Hospital Corporation. A country place having suitable buildings and extensive grounds with pleasant surroundings, located within fifteen miles of Boston, has been selected, and the directors are now endeavoring to raise the necessary funds to establish and maintain such an institution.

MEDFORD SCHOOLS REOPEN. — The Tufts and Lincoln Schools in South Medford have been reopened, after being closed for two weeks on account of the prevalence of diphtheria and scarlet fever. Since the schools were closed the buildings have been thoroughly fumigated and the plumbing carefully overhauled. The books which were used by children who have since been ill with scarlet fever or diphtheria have been burned.

THE SHARON SANITARIUM. — A performance was given February 15th at the Tremont Theatre for the benefit of the Sharon Sanitarium, in which various well-known actors and actresses took part, among whom were Mrs. Agnes Booth-Schoffel and John Drew.

HOSPITAL FOR PEABODY, MASS. — Land has been purchased in Peabody, for the purpose of establishing a hospital. The tract comprises 114,500 square feet.

NEW YORK.

AWARD OF PRIZES, TENEMENT HOUSE EXHIBITION. — The jury of award in the prize competition at the Tenement House Exhibition, in assigning the award in the case of the third prize for tenement house plans, found that three of the plans submitted were of equal merit, and as the amount of this prize was but \$100, a purse of \$225 was made up, to be divided equally among the three competitors. It is stated that the committee of the Charity Organization Society having charge of the exhibition has already received offers from builders to construct several buildings after the best plans submitted. One of the notable models exhibited represents in miniature the most populous block in New York, between 61st and 62d Streets, on the west side of the city, where 4,000 human beings live. Of the 2,639 rooms in the houses, only 1,198 have windows facing the outer air, and there is not a bath tub in the block.

ANNUAL REPORT, MANHATTAN EYE AND EAR HOSPITAL. — The thirtieth annual report of the Board of Directors of the Manhattan Eye and Ear Hospital states that during the past year 1,407 applicants were refused treatment because it appeared that they ought to pay. For some time past doubtful cases have been referred to the Charity Organization Society for investigation, and during the year 120 cases were so re-

ferred. An extract from the law having for its object the correction of the abuse of medical charity which was passed by the Legislature last year is now printed on the back of each card, so that no one applying at the hospital can claim ignorance of the law. The report states that the C. R. Agnew Memorial Fund now amounts to \$21,217, and that \$5,000 has been received from Miss Helen Gould for the endowment of a free bed.

THE OFFICE OF CORONER. — At a meeting of the Society of Medical Jurisprudence held February 12th, Dr. Hamilton Williams read a paper on "The Coroner's Physician at Work," in the course of which he argued against the abolition of the coroner's office. Drs. Doulin and Weston, also coroner's physicians, spoke of the onerous and exacting work and the inadequate payment of the position. They thought that the number of coroners' physicians should be increased. At present there are but four for the entire Borough of Manhattan, and they believed that there should be one for every 200,000 of the population. Dr. H. R. Purdy spoke strongly in favor of doing away with the coroner's office, expressing the opinion that the work now done by the latter could be better accomplished by experts appointed by the Board of Health.

ANNUAL REPORT, DEMILT DISPENSARY. — In the forty-ninth annual report of the Demilt Dispensary it is stated that the success of the dispensary baths for working people, which increased from 17,089 in 1897 to 37,236 in 1899, has been a source of gratification to the managers, the baths having proved a great boon to many persons who have no bathing facilities whatever in their tenements and who gladly avail themselves of the benefits offered.

Miscellanea.

A MODEL TENEMENT HOUSE EXHIBITION.

A MODEL tenement house exhibition, which is to last for two weeks, under the auspices of the Tenement House Committee of the Charity Organization Society, was opened on February 10th, with addresses by Frederick W. Holls, Chairman of the Committee, Governor Roosevelt, Dr. E. R. L. Gould and others. Over three hundred plans of model tenements have been submitted by architects in competition for the prizes offered, and the exhibition includes models, plans, maps, charts and tables of statistics, showing existing conditions in New York tenement houses, model tenements in various cities of the world, lodging houses, suburban dwellings for the poor, health conditions, poverty conditions, and agencies for betterment. According to the statement of the Committee, there are at present over 44,000 tenements within the limits of the old city of New York (prior to the consolidation of 1898), and new tenements are now being erected at the rate of about 2,000 a year. These are, in many respects, worse than the old buildings erected thirty years ago. They are, in some instances, badly constructed, and so planned that many rooms depend for their light and air entirely upon long, narrow, dark "air shafts," which, instead of giving light and air,

are merely stagnant wells, emitting foul odors and disease. Under the present law, the Committee states, in a block covered with flat houses only 10 feet need be left open in the rear of each lot, and a like 10 feet on the rear of the lot on the next street would give a space of but 20 feet for both rows of houses. The other 15 per cent. of area required to be left open by the law is taken up in the space allowed for the air shaft, which is usually five feet wide and about 60 feet long, closed at both ends; and this dismal, Egyptian-like well hole must, if the apartment houses be five stories in height, as the majority are, furnish light and air to 50 inside rooms, usually used as sleeping apartments. A marked contrast to this condition of affairs is presented by the Riverside model tenements, which are so constructed that in the centre of the blocks are large courts measuring 150 by 250 feet, which are fitted up as playgrounds for the children. All the rooms are well supplied with light and air, and in the Riverside Court a band plays on summer evenings. Notwithstanding all the expenditure, the owner is realizing five per cent. on his investment. In his remarks the Governor gave assurance that any bills having for their object the betterment of existing conditions in the homes of the working classes would meet with hearty co-operation at Albany, and Dr. Gould, who is president of the City and Suburban Homes Company, in speaking upon the commercial side of the question, showed that model tenements pay from four and one-half to six and seven per cent. on the money invested.

A LECTURE ON SURGICAL SPLINTING.

ON Wednesday, February 14th, a clinical lecture on the subject of "Surgical Splinting" was delivered by Dr. Edward A. Tracy, of Boston, before the New York School of Clinical Medicine. The lecturer treated his subject from a purely practical point of view, and illustrated by demonstration a method of splinting found advantageous in the treatment of fractures and joint injuries and diseases. The use of manufactured splints was condemned, they being but a poor makeshift for the skill which the surgeon should have at his fingers' end. Such splints require padding and this renders nugatory their fixative properties. Normal limbs are not alike, and the idea of making them conform to the shape of a ready-made splint is not surgical.

A word was spoken about the plaster-of-Paris treatment of fractures, and it was urged that when this method be employed the necessary care should be taken to prevent its harmful results, so frequently manifest in practice from lack of such precautions.

The lecturer devoted considerable time to describing the method of moulding splints directly upon the patient, and emphasized the use of wood-plastic material for the purpose. Its advantages are its strength, porosity, lightness, durability and cheapness. Four easily constructed splints were described, a splint for the wrist, one for the shoulder, one for fixation of the knee-joint, and one for leg fractures. When speaking of the wrist splint he referred to its important use in the treatment of Colles's fracture. The subject of Colles's fracture was enlarged upon and the desirability of following Moullin's advice to practise early passive motion of the fingers and wrist-joint insisted upon.

A PLAGUE LABORATORY.

THE St. Petersburg Institute of Experimental Medicine has, according to the *Medical Press*, just completed the construction of a laboratory for the study of plague and the preparation of anti-plague serum which is probably unique of its kind. The building is situated within the fortress of Cronstadt, and is surrounded by water on all sides so that it is completely isolated. It is provided with stabling for twelve horses, and apartments for the staff and the assistants; there is even an isolation ward for the reception of any of the employes who may be unfortunate enough to contract the disease. It is self-lighted by electricity and communication with the mainland is secured by a small steam launch. No doubt the lamentable catastrophe at Vienna which startled the scientific world a few months since suggested these elaborate precautions. Such a laboratory is indeed as potentially dangerous in its way as a powder magazine, possibly even more so, because there still exists the theoretical risk of the conveyance of infection. It would, however, be difficult to suggest any further precaution short of condemning the staff to perpetual banishment on their island.

ANTONIO MACEO'S SKULL.

THE *Revista de Medicina y Cirujia* of Havana publishes an "anthropological study," by Dr. Montalvo, Dr. de la Torre and Dr. Montane, of the skull of the Cuban patriot, Antonio Maceo. The most noteworthy point is the existence of an interparietal, or, as it is sometimes termed, an "inca" bone, from the theory that it was universal amongst, and distinctive of, the old Peruvian race. This, however, was shown by Anouteline to be erroneous, for after examining many thousands of skulls in various museums he found the bone in only 6.8 per cent. in Peruvians, in 1.5 per cent. in negroes, and in 1.3 per cent. in Americans. Maceo was, of course, of mixed race. The general character of the cranium approximates to that of the white race and indicates a man of remarkable capacity. The rest of the skeleton inclines more to the negro type and shows that he must have been a man of Herculean strength.

Correspondence.

A CENTENARIAN.

CLAREMONT, N. H., February 13, 1900.

MR. EDITOR:—I have been a subscriber to the *Boston Medical and Surgical Journal* for more than forty years. Recently I have seen reported several centenarians in the *JOURNAL*. I send you another centenarian and you can do what you think best with it.

Nathaniel B. Cross, born in New Salem, N. H., February 13, 1800. He is one hundred years of age to-day; eyesight sufficiently good to enable him to walk several miles about the streets daily; step very elastic; very erect; weight, one hundred and thirty-five pounds; has not taken liquor nor used tobacco for fifty years; he has no organic diseases; intellect clear; hearing excellent; sings; no tremor in voice. Mr. Cross resides in Claremont, N. H., with his daughter, Mrs. Babcock.

Yours truly,

A. R. CUMMINGS, M.D.

METEOROLOGICAL RECORD

For the week ending February 10th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	
S...4	29.99	34	48	20	64	81	72	S.	S.	8	9	O.	R.
M...5	29.46	37	47	27	96	56	76	N.W.	N.W.	20	24	R.	C.
T...6	30.06	31	39	23	48	66	57	S.W.	W.	7	12	O.	C.
W...7	30.36	31	37	25	68	73	70	N.	S.	6	5	C.	C.
T...8	30.12	36	30	33	86	98	92	S.E.	E.	12	11	O.	R.
F...9	30.14	38	43	31	96	85	90	S.E.	N.W.	20	14	R.	O.
S...10	30.28	32	36	29	61	52	56	N.	N.E.	11	6	O.	O.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☁ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 10, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.	
New York	3,654,594	1481	495	24.06	22.47	1.19	1.61	2.73	
Chicago	1,619,226	—	—	—	—	—	—	—	
Philadelphia	1,266,832	—	—	—	—	—	—	—	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	215	71	28.78	15.18	6.44	3.64	4.6	
Baltimore	506,389	231	68	15.91	21.04	2.15	—	—	
Cincinnati	405,000	—	—	—	—	—	—	—	
Cleveland	350,000	—	—	—	—	—	—	—	
Pittsburg	305,000	114	50	24.36	16.53	1.74	2.61	.87	
Washington	277,000	122	32	5.67	23.49	1.62	.81	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	38	23	45.46	56.28	8.04	—	10.72	
Nashville	87,754	34	11	5.88	35.28	—	—	—	
Charleston	65,185	35	10	2.85	5.70	—	—	—	
Worcester	111,732	50	19	14.00	12.00	4.00	—	—	
Fall River	103,142	34	16	8.2	29.40	—	—	—	
Cambridge	92,520	18	9	—	22.22	—	—	—	
Lowell	90,114	28	12	—	25.00	—	—	—	
New Bedford	70,511	22	9	12.45	24.90	—	—	—	
Lynn	63,218	—	—	—	—	—	—	—	
Somerville	64,394	11	1	18.18	—	—	—	—	
Lawrence	59,072	25	8	12.00	4.00	4.00	—	—	
Springfield	58,209	14	4	28.56	21.42	7.14	7.14	7.14	
Holyoke	44,510	15	6	26.66	13.33	6.66	—	—	
Brockton	38,759	13	1	15.38	30.76	7.69	—	—	
Salem	37,723	9	3	—	33.33	—	—	—	
Malden	36,421	10	2	10.00	20.00	—	—	—	
Chelsea	34,225	17	1	29.40	—	—	—	—	
Haverhill	32,651	6	1	33.33	16.66	—	—	—	
Gloucester	31,426	10	2	40.00	—	—	—	—	
Pitchburg	30,523	10	5	—	50.00	—	—	—	
Newton	30,461	10	1	30.00	—	—	—	—	
Taunton	28,527	13	4	7.69	15.38	—	—	—	
Everett	28,102	6	—	16.66	50.00	—	—	—	
Quincy	24,578	5	1	20.00	—	—	—	—	
Pittsfield	23,421	—	—	—	—	—	—	—	
Waltham	22,791	4	—	25.00	25.00	—	—	—	
North Adams	21,553	3	1	33.33	—	—	—	—	
Chicopee	18,316	6	4	16.66	—	16.66	—	—	
Medford	17,190	16	5	43.75	18.75	6.25	—	—	
Newburyport	15,036	3	1	33.33	—	33.33	—	—	
Melrose	14,721	6	3	16.66	—	16.66	—	—	

Deaths reported 2,649; under five years of age 887; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 582, acute lung diseases 552, consumption 279, diphtheria and croup 103, measles 49, diarrheal diseases 32, scarlet fever 32, typhoid fever 28, whooping-cough 24, erysipelas 23, cerebrospinal meningitis 11. From scarlet fever New York 23, Boston 8, Pittsburg and Springfield 1 each. From typhoid fever New York and Pittsburg 10 each, Boston 3, Malden and Washington 2 each, Baltimore 1. From whooping-cough New York 17, Boston, Pittsburg and Providence 2 each, Baltimore 1. From erysipelas New York

12, Boston 2, Baltimore, Somerville, Lawrence and Taunton 1 each. From cerebrospinal meningitis New York 5, Boston, Baltimore, Worcester, Gloucester, Newton and Medford 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending February 3d, the death-rate was 21.2. Deaths reported 4,719: acute diseases of the respiratory organs (London) 432, whooping-cough 121, diphtheria 110, measles 83, diarrhea 40, fever 38, scarlet fever 33, small-pox (Hull) 2.

The death-rates ranged from 12.6 in Derby to 35.4 in Sunderland: Birmingham 25.0, Bradford 19.5, Cardiff 15.6, Gateshead 19.1, Hull 25.8, Leeds 23.1, Liverpool 28.5, London 19.6, Manchester 25.7, Newcastle-on-Tyne 22.0, Nottingham 18.3, Portsmouth 16.6, Salford 26.2, Swansea 15.3, West Ham 14.4, Wolverhampton 31.4.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 17, 1900.

M. H. SIMONS, medical inspector, commissioned medical inspector from September 24, 1899.

H. WELLS, medical inspector, commissioned medical inspector from January 15, 1900.

M. H. SIMONS, medical inspector, detached from the Naval Recruiting Rendezvous, New Orleans, La., and ordered to the "Philadelphia" as fleet surgeon.

T. H. STREETS, medical inspector, detached from the "Philadelphia" as fleet surgeon, on reporting of relief, and ordered to the New York Navy Yard.

J. C. ROSENBLEUTH, passed assistant surgeon, ordered to the Naval Recruiting Rendezvous, New Orleans, La.

H. N. T. HARRIS, surgeon, commissioned surgeon from October 21, 1899.

KARL OHENSOERG, assistant surgeon, appointed from January 27, 1900.

G. L. BARBER, passed assistant surgeon, ordered to the "Kearsarge," February 20, 1900.

D. G. BEEBE, assistant surgeon, detached from the "Petrel" and ordered to Port Isabella.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 15, 1900.

CARTER, H. R., surgeon. Upon expiration of leave of absence to report at Washington, D. C., for special temporary duty. February 13, 1900.

GLENNAN, A. H., surgeon. To proceed to Mobile, Ala., as inspector of unserviceable property. February 9, 1900. To proceed to Searcy, Ark., for special temporary duty. February 15, 1900.

MCINTOSH, W. P., surgeon. To proceed to Pensacola, Fla., for special temporary duty. February 9, 1900.

ROSENAU, M. J., passed assistant surgeon. To proceed to Philadelphia, Pa., for special temporary duty. February 9, 1900.

CUMMING, H. S., passed assistant surgeon. Granted leave of absence for fourteen days from February 21st. February 9, 1900.

TABB, S. K., assistant surgeon. Granted extension of leave of absence for fourteen days on account of sickness. February 14, 1900.

BURFORD, HUGH, acting assistant surgeon. Granted leave of absence for two weeks from February 15th. February 10, 1900.

KEYES, J. M., acting assistant surgeon. Granted leave of absence for sixty days from January 15th. February 10, 1900.

MONCURE, J. A., acting assistant surgeon. Relieved from duty at Gulf Quarantine and directed to proceed to South Atlantic Quarantine Station for duty and assignment to quarters. February 15, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, February 28, 1900, at 8 P. M.

Papers: Dr. C. G. Cumston, "The Pathology and Symptomatology of Acute Pelvic Suppuration in Women and Treatment by Vaginal Colpotomy."

Dr. E. H. Stevens, of Cambridge: "Parturition Complicated with Suppurating Fibroids."

Dr. E. S. Boland: "Immediate Repair of Perineal Tears."

R. A. KINGMAN, M.D., *Chairman*.

C. H. HARE, M.D., *Secretary*,

285 Marlborough Street.

INTERNATIONAL CONGRESS OF MEDICAL ELECTROLOGY AND RADIOLOGY.—At the request of the French Society of Electrotherapy and Radiology, the International Congress of Medical Electrology and Radiology, the initiative of which it has taken, is connected to the International Congress of 1900. This Congress will take place in Paris from the 27th of July to the 1st of August, 1900. All inquiries for further information must be

forwarded to Prof. E. Doumer, General Secretary, 57 Rue Nicolas-Leblanc, Lille. Adhesions are to be sent to Dr. Moutier, 11 Rue de Miromesnil, Paris.

PROF. E. DOUMER, *General Secretary*.

UNIVERSITY OF PENNSYLVANIA MEDICAL CLASS OF '75.

The Executive Committee of the Society of Alumni has appointed the undersigned to endeavor to secure a reunion of the Class of '75 at the coming Commencement in June. Members of the Medical Class of 1875 who may see this are requested to send at once to me their present addresses and some brief account of their doings since graduation. As many as possible of the class are urged to be prepared to come to a social gathering to celebrate its twenty-fifth anniversary.

CHARLES W. DULLES, 4101 Walnut St., Philadelphia.

RECENT DEATHS

WILLIAM HENRY HOWE HASTINGS, M.D., M.M.S.S., died in Boston, February 16, 1900.

WOOLSEY HOPKINS, M.D., of New York, one of the assistant surgeons of the aural department of the Manhattan Eye and Ear Hospital, died on February 14th, of pneumonia. He was a graduate of the College of Physicians and Surgeons, New York, and thirty-five years of age.

EDWARD LORENZO HOLMES, M.D., former president of Rush Medical College, Chicago, died in Chicago, February 11th. He was born January 28, 1828, at Dedham, Mass., was educated at Harvard College and the Harvard Medical School, and was thereafter an interne at the Massachusetts General Hospital. His main work later in life was with the specialties of eye and ear.

BOOKS AND PAMPHLETS RECEIVED.

Mountain Fever. By E. Stuver, M.D., Fort Collins, Col. Reprint. 1899.

Ueber Ichthyolvasogen bei Gelenkaffectionen. Von Prof. Dr. G. Edlefsen in Hamburg.

Annual Reports of the President and the Treasurer of Harvard College, 1898-99. Cambridge. 1900.

The Phonographic Record of Clinical Teaching and Medical Science, Vol. VI, No. 2, February, 1900.

The Minor Surgery of the Nose and Throat. By George L. Richards, M.D., Fall River, Mass. Reprint. 1899.

Bad-Nauheim: seine Kurmittel, Indicationen und Erfolge. Verfasst vom Verein der Aerzte zu Bad-Nauheim. 1899.

Le Lesioni Traumatiche dei Centri Nervosi. Memoria, Onorata del Premio Riberi pel 1898. Roma: Presso Il Giornale Medico. 1900.

The National Recognition of Eye-Strain Reflexes. By George M. Gould, M.D., and Helen Murphy, M.D., Philadelphia, Pa. Reprint. 1899.

Gynecology, a Manual for Students and Practitioners. By Montgomery A. Crockett, M.D. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Golden Rules of Physiology. By Walker Hall, M.B., Ch.B. (Vict.), and Ackworth Menzies, M.D., C.M. (Edin.). No. VI. Bristol: John Wright & Co. London: Simpkins, Marshall, Hamilton, Kent & Co., Ltd.

The International Text-Book of Surgery. By American and British authors. Edited by J. Collins Warren, M.D., LL.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. I. Illustrated. Philadelphia: W. B. Saunders. 1900.

Nervous and Mental Diseases, a Manual for Students and Practitioners. By Chas. S. Potts, M.D., Instructor in Nervous Diseases. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

International Clinics: a Quarterly of Clinical Lectures on Medicine, Neurology, Surgery, Gynecology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otolaryngology and Dermatology, etc. By professors and lecturers in the leading medical colleges of the United States, Germany, Austria, France, Great Britain and Canada. Edited by Judson Daland, M.D., Philadelphia. Vol. IV, Ninth Series. Philadelphia: J. B. Lippincott Co. 1900.

Retinitis Pigmentosa without the Characteristic Pigmentation, a Report of Two Cases. The Duties and the Dangers of Organization in the Nursing Profession. Concerning Corpuscular Phosnes and Aposes. A Fallacy of the Rest-Cure Treatment. Habit-Disease and the Tobacco-Habit. Massage and the Relief of Eye-Strain in the Treatment of Glaucoma. Medical Paleography. The Esthetic Relations of Medicine and Life. The Story and Lessons of an Unknown Hero's Life. By George M. Gould, M.D., Philadelphia. Reprints. 1897-99.

Original Articles.

VIVISECTION IN HARVARD MEDICAL SCHOOL.—A REPLY.

BY JAMES J. PUTNAM, M.D., BOSTON,

Professor of Diseases of the Nervous System, Harvard University.

It is well known that a bill to restrict experimentation on living animals was brought before the Massachusetts Legislature several years ago and was rejected after a number of full and impartial hearings, in which the attempt was vainly made to show that abuses existed in the work of our higher educational institutions. This year the same effort is being renewed, and should be opposed, not only by professional investigators but also by physicians and laymen who are conscious of the debt that the community owes to those who labor in the important fields of physiology and experimental pathology.

One of the most liberal of the supporters of the previous movement, Dr. Lellingwell, has recently distributed again, in pamphlet form, under the caption "Does Science Need Secrecy?"¹ a letter originally published in the *Boston Transcript* of September 28, 1895, as a reply to one by Professor Porter, of the Harvard Medical School, which had appeared two days before, and in it he makes a number of statements which should not be allowed to pass without notice, the more so because the fact is ignored that some of them had already been publicly shown to be erroneous. It seems to be as inevitable as it is unfortunate that the discussion should become public, — unfortunate, because so many persons in the community have shown themselves, again and again, ignorant of the value of the ends which are sought, and therefore unable to recognize how amply they justify the means that are used to gain them.

My objection to Dr. Lellingwell's pamphlet is not that it is critical but that it is unjust. It is an attempt to make it appear that men intentionally deceive who do not intentionally deceive; that men are cruel who are not cruel; that systems are in vogue which are not in vogue; that suffering is inflicted which is not inflicted; that the practical results of physiological research are of trivial value, whereas without them the splendid edifice of medical science could never have been built. The "practical" physicians who are so proud of the fact that they have exchanged the ignorant and brutal empiricism of the past for treatment based on a relatively accurate knowledge of the body in disease and health owe that knowledge, to an extent they often fail to realize, to the discoveries of these men, which have been incorporated like the "water of crystallization" into the working forces of the medical art.

It must not be forgotten by those who hold that it is wholly wrong to seek knowledge through experimentation on living animals (though we may make them suffer pain for our protection, our sport, our convenience, and our food), that Dr. Lellingwell is himself an avowed supporter of such experiments.

He says² "As a physician, I have never been able to go to the extreme of denouncing all experimentation upon animals whatever, even though from first to last no pain be felt. Between the total abolition of

all sacrifice of animal life for scientific purposes demanded by many humanitarians and that absolute freedom to inflict torture without restraint claimed by some physiologists, there must be a middle ground." In another place he says,³ "I am not an antivivisectionist, for I believe in the practice, when it is rigidly guarded against all abuses, limited to useful ends, and subject to public criticism and the supervision of the law."

No physiologist, so far as I know, claims freedom to "inflict torture" either with or without restraint: so that the main difference between Dr. Lellingwell's position and that of his colleagues with whom he disagrees is that he thinks the best safeguards against abuse, and the best way of limiting experimentation to "useful ends," to be "public criticism and the supervision of the law," while we trust far more in the character, traditions and training of the men who have this serious and important work in charge. If Dr. Lellingwell were only carrying out, as a practical physiologist, the carefully guarded experiments which he sanctions, he would be more ready to see the value of this latter guarantee, and less ready to endorse by implication the accusations of cruelty which he knows his pamphlet will lead the thoughtless public to bring against these men, in spite of their honorable records. Do these recitals, which, to those who read them, paint a scene of horror, really help the untrained reader to form a fairer judgment?

"Judge the people by their actions,
Is a rule we often get;
Judge the actions by the people,
Is a nobler maxim yet."

—JAMES FREEMAN CLARKE.

If there is any subject that public-spirited men should treat soberly and dispassionately at the present day it is surely this subject. For every one must admit that within the past fifty years there has been a vast and rapid change in sentiment throughout the civilized world with regard to the infliction of pain; and that now and then the new wave takes on the character of an inundation. The bare mention of "abuses" in prisons, in asylums, in schools, in army discipline, excites a rush of indignation based on vague pictures of the days, not so long distant, when prisoners and witnesses were put to torture, and knowledge was conveyed at the rod's end, and lupaties were chained and punished. For this reason it is easy for leaders of reform, if they are willing to use such methods, to change a noble and useful sentiment into an hysterical and indiscriminating passion. And this is what is done when in the reckless determination to enlist public sentiment it is made to appear that the methods used by the most humane American physiologists are no better than those used by the least humane European physiologists; or that the customs which marked the research of half a century ago are the customs of to-day; or when by any means an uninformed public is encouraged to believe that our medical schools are dens of iniquity. Those who write upon these subjects are bound to hold themselves responsible not only for the words they use, but for the ~~scuse~~ sense, so far as they can foretell it, in which their words will be taken.

It is not easy to realize, until one looks at the matter closely, what a powerful and even unreasonable influence this feeling has become. Anglo-Saxon communities are peculiarly affected by it, and the public

³ Reply to Dr. Porter, p. 21.¹ Fifteenth thousand. Does Science Need Secrecy? A reply to Professor Porter and others of Harvard Medical School, by Albert Lellingwell, M.D., Cambridge, Mass.; with statement concerning Vivisection, by Prof. W. T. Porter.² Leaflet, Does Vivisection Need Concealment?

has therein a stronger guarantee against physiological cruelty than any law could secure. Most of us approve of taking the life of animals for food, but even this is permitted only with the tacit understanding that the details shall be kept from our shrinking sight and ears. This is a pardonable sort of cowardice, but other forms are less pardonable.

It must indeed be admitted that indifference to others' pain is to be found everywhere, even in every home. But it is daily becoming rarer, and there is no country in the world where it is so rare as in ours. Let no one suppose that the flood of modern compassionateness and sensitiveness to the suffering of man and animals has left untouched the students and teachers of physiology. Inhuman physiologists would be as glad as any one could be, no doubt, to see the abolition of cruelty and the abolition of pain. But they are in better position than most persons to realize that their labors tend to the abolition of pain, both of men and animals, by increasing our knowledge of the conditions which underlie health and disease.

For my own part, although not a physiologist, I have been for more than twenty-five years a frequent, and at times a constant, visitor at the Harvard physiological laboratory, and familiar with the men who have raised it to its present position of usefulness, and the contrast between the impressions which I have received and those suggested by Dr. Leffingwell's pamphlet is so striking that I feel bound to testify to the untruthfulness of the picture which the latter draws.

No one would assert that in a quarter of a century there have been no instances of thoughtlessness, or that nothing has been done which has given cause for regret. Yet no unprejudiced observer could see a year's work at the laboratory without being compelled to admit, after due study of the conditions, that he had seen no evidence of real abuses, excesses, cruelty, or even of any considerable suffering. More and more effort has been made to increase the comfort of the animals, and they are now cared for in commodious quarters, and are removed from influences, such as solitary confinement, which might excite vague impressions of danger. They live as comfortably as those kept in well-regulated menageries or circuses.

I know, also, from conversation with Professor Bowditch, that he has studiously avoided, for many years, the class of experiments referred to by Dr. Porter in his letter as being distinctively "painful, and yet needing to be done without anesthetics."

It is obvious that the best sources of information as to the amount of pain suffered by animals used for the purposes of experimentation are the hospitals where men and animals receive surgical treatment; for the operations done by the surgeon are closely parallel, so far as the infliction of pain is concerned, to those done by the physiologist. Any unprejudiced person who will visit such a hospital will find that signs of severe pain are rare, and that the animals suffer much less than men. I do not, of course, refer to the suffering from the diseases for which the operations are done, but only to that which the operations induce.

Operations on the internal organs usually cause but little pain, so that, for example, as I have learned by personal inquiry, no anesthetic is needed, from first to last, for the removal of the ovaries from the mare, or other large animals, unless temporarily, if the skin has to be cut. Horses' teeth are usually pulled without an anesthetic, and I am told by a prominent veterinary sur-

geon that although this operation takes a relatively long time and requires the use of great force, yet the horse is so little affected by it that he instantly afterwards begins to eat, as if nothing had happened. This is worth remembering in connection with incidents like that reported by Dr. Bowditch in his address.⁴

Where operations requiring an anesthetic are to be done upon horses, chloral is commonly chosen, instead of ether, because of the struggling which the latter induces, and it is found that when a large dose of chloral is given the animal may sleep quietly through the entire period.

The operations of surgery are closely parallel to those of physiology, but the surgeon has few or no critics because the community understands and sympathizes with his aims. It excites no denial when the statement is made that patients suffer but little after even severe operations. Let it be assumed, however, for argument's sake, that this sympathy did not exist, and let the reader consider whether a description like the following would aid or would hinder him in the formation of a just opinion. "Of what use is it that you, the self-interested surgeon, tell us that the struggles of your half-etherized patient at the first plunge of the knife, the turgid and purple face, the groans and cries, are not indications of pain? You cannot persuade us that after these terrible mutilations of the deeper organs and cavities of the body, in which blood flows in torrents; this tearing out of the sensitive nerves of the face; these deep sections and lacerations of the brain and spinal cord; this crushing and scraping of diseased bones; that after these prolonged abominations the patient wakes in comparative comfort and indifference. We will not believe that the surgical wards of a hospital are habitually the abodes of cheerfulness; that the brain and most of the internal organs are nearly devoid of sensitiveness; that patients who have had injuries of the head involving serious destruction of the delicate mechanism of the parts within, or complete destruction of the spinal cord, may lie wholly conscious yet practically without pain, and not needing any anesthetic." Yet these statements are true, and it is also true that the work of the surgeon is the analogue and the counterpart of the work of the physiologist, but with the difference that the surgeon deals with the most sensitive and highly organized animal known, while the physiologist deals with those far lower in the scale of capacity for pain.

Let us look a little more closely at some of the special reasons that made it seem to Dr. Leffingwell so necessary to bring these charges against our teachers and our college.

I. He says (page 10): "In the first place Professor Porter does not well when he denies (as he seems to do) that the practice of experimentation upon living animals has ever led to abuse."

Dr. Porter's letter contains no such denial. It would have been an idle and uncalled-for statement, and one such as no one would think of making, even for surgery. Dr. Porter's letter was written to defend the experimentation which he and the Harvard Medical School represent from the terrible abuse which had been poured upon it, and if any reader doubts whether he was not within the mark in speak-

⁴ At the annual meeting of the Massachusetts Medical Society in 1896, Prof. H. P. Bowditch gave an address on *The Advancement of Medicine by Research*, which was printed in the *Boston Medical and Surgical Journal* for June 11 and 18, 1896, and can now be obtained, with appendix, in pamphlet form.

ing of the "long-drawn lists of atrocities that never existed," let him study the records of the hearings before our own Legislature; let him even read Dr. Leflingwell's own pamphlet, and see if he thinks the expression overdrawn.

II. In the next section grave distrust is expressed as to the truth of Dr. Porter's words (reiterated by Dr. Bowditch at the legislative hearings) as to the work at the Harvard laboratory being done "within open doors," and the counter statement is made that "no feudal castle of the Middle Ages was ever more rigidly guarded against the entrance of an enemy than physiological laboratories are secured against the admission of unwelcome visitors." As a matter of fact, the agents of the Society for Prevention of Cruelty to Animals have several times called and witnessed experiments, with Dr. Bowditch's full consent, and he authorizes me to say that any one who applies in a spirit of serious inquiry will be welcome in the future as in the past.

Possibly some reader of Dr. Bigelow's address of 1871, of which such liberal use is made, may think that through him they obtain a real look behind the closed doors of the Harvard laboratory, and for that reason I pause to call attention to the fact that when this address was delivered the Harvard laboratory did not exist, and that Dr. Bigelow's knowledge of vivisection was derived entirely from acquaintance with the French methods of half a century ago. To him, however, at least, the doors of our laboratory were surely never closed, and yet it is not known that either in private or public he ever made a protest against its establishment or its development, or uttered an unfavorable criticism of any act done within its walls. Moreover, this laboratory was established at a time when Dr. Bigelow was the most influential member of the Faculty, and it could hardly have been established without his consent. Thousands of students, since that day, have passed through the Medical School, with full power to know every detail of the work of the physiological laboratory, and no one of them has been found ready to endorse any charge of wanton cruelty, or the other statements contained in Dr. Bigelow's address.

III. In the name of scientific accuracy, Dr. Porter is taken to task for his statement that through the discovery of the tetanus antitoxin tetanus is taken out of the list of incurable diseases. Dr. Leflingwell points out that many patients with tetanus used to recover before this discovery was made, and that even in spite of it many now die. Both of these facts are too well known to have needed restatement by either writer, and Dr. Porter's remark, in the sense in which it was obviously written and in which any candid reader would understand it, is certainly correct. Before the use of tetanus antitoxin a great many patients with tetanus recovered, it is true, but the physician stood almost helpless. He could sometimes mitigate the symptoms a little by narcotics, and could help sustain the patient's strength, and that was all. But with the discovery of antitoxin the treatment of this terrible disease entered on a new phase. Henceforth, and for the first time, the disease could be met by a rational weapon, and the actual accomplishment, though far less, when Dr. Porter wrote, than it is now, seemed even then the earnest of a far greater accomplishment in the future. The "disease" had been shown not to be "incurable," and the demonstra-

tion was one to call for grateful rejoicing. Dr. Leflingwell's criticism appears all the more unwarrantable when it is remembered that Dr. Porter obviously referred to the antitoxin of tetanus only as one of various agents by which physicians, under the lead of the experimental physiologists and pathologists, are now able to make some head against contagious disease. He might equally well have chosen the diphtheria antitoxin for his example, and would then have had a more impressive array of statistics to drive his argument home. Virtually, however, the two cases are parallel. Many patients with diphtheria used to recover; some still die in spite of antitoxin; and there are not wanting authorities who could be cited as disbelieving in the new treatment, by any one that wished to minimize its importance. Yet there is now a great flood of testimony to its value, prominent among which is that from the contagious wards of our City Hospital.

Under IV and V, Dr. Leflingwell deals with the question of "anesthetics" and "narcotics," and denies the justice of the claim which Dr. Porter makes, that animals are kept from suffering any considerable⁵ pain, by such means, when operated on at the Medical School. Here, again, the difficulty of securing from any large number of people the same consideration for the physiologists' view that is accorded freely to the arguments of its opponents is so great as to justify a special appeal to those who would be fair to let careful thought and study precede judgment. The argument is that ether and chloroform are the only true "anesthetics"; opium and chloral being "narcotics, which excite a degree of torpor, though they do not prevent pain"; while curare only paralyzes movement and does not affect sensibility at all.

These statements contain truth, yet not the whole truth, nor do they show that Dr. Porter's remarks, if taken in the sense in which they were obviously intended, are untrue.

Curare, to begin with, does, in large doses paralyze the sensory nerve-endings,⁶ and is likely, even in smaller doses, to blunt their excitability.

Apart from this, however, I have Dr. Bowditch's authority for saying that curare is rarely employed nowadays⁷ at our laboratory, except in conjunction with other anesthetics, or where a non-painful experiment was to be done which would nevertheless be interfered with by accidental movements.

The object of giving the curare is obviously misunderstood by Dr. Leflingwell and those who write in his mood. The very mention of the word excites indignation, and it is generally believed that it would never be used but to prevent the struggles of an animal in pain. This sentiment finds expression, among other places, on page 4, where he discusses the statement originally made, I believe, by Ludwig, and cited by Mosso in the biography of his great teacher, to the effect that many experiments would be made impossible by the occurrence of pain.⁸ Dr. Leflingwell rejoins that it is not the pain which interferes with the

⁵ I insert the last two words as expressing more accurately what I believe to have been Dr. Porter's meaning, and as, at any rate, illustrating my own.

⁶ See, for example, T. Lauder Brunton's *Pharmacology, Therapeutics and Materia Medica*.

⁷ Mention was made in the earlier part of the paper of a class of experiments which are not now made.

⁸ I do not quote the exact expressions used, partly because I have not had access to the original, but mainly because I am not undertaking to defend Mosso but simply trying to explain a physiological misunderstanding.

experiment, but the movements which the pain excites, and says: "What the Italian physiologist might truthfully have written was this: 'It is an error to believe that physiological experiments requiring the aid of delicate instruments can be performed upon an animal which is not made incapable of muscular effort.'"

This is not at all what either Ludwig or Mosso meant. It was not the movements, but the pain as such, reacting, as pain always does, on the delicate mechanisms of respiration and blood pressure, and the heart's action, which, if present, would have seriously interfered with the careful study of those important functions, and any one who chooses to look into the matter will find this to be the case. The occurrence of pain would have been fatal, likewise, to the success of some of Dr. Porter's experiments on the respiratory nerves, which Dr. Leflingwell criticises.

When curare is used after or during etherization, as in some of the experiments cited, it is because the painful parts of the operation are only at the beginning. For the later stages it is only necessary to use some means of preventing the movements which the animal would make involuntarily or spontaneously on coming out of ether, and which would render the desired observations impossible.

V. It is necessary to turn next to the consideration of the kindred and yet different question, namely, whether it is true that a fundamental difference exists between "anesthetics" (ether and chloroform) and "narcotics" (morphine and chloral), using the terms in Dr. Leflingwell's sense.

The best answer is that it is a matter of common knowledge that both morphine and chloral relieve pains of every sort, and they would unquestionably be "used by the surgeon" for operations, if ether and chloroform were not, for obvious reasons, better adapted to that special purpose.

Dr. Leflingwell insists, on the basis of his citations, that narcotized animals continue to feel. I wish it to be understood, however, that, even if this be true, to feel is not necessarily to suffer. A hypnotized person, to whom it has been successfully "suggested" that the pricking or cutting of his skin will not cause pain, may "feel" what is done to him but he does not "suffer." Similarly, when a person is even heavily poisoned by morphine, so that he is wholly indifferent to most excitations, an especially powerful stimulus will excite a momentary jerk or movement of resistance, quite sufficient to show that his muscles are not paralyzed and that his nerves still conduct impressions. On the other hand, his whole demeanor and his testimony after recovery prove that he was incapable of "suffering."

A few words must be said about the *dose* of chloral used by Dr. Porter. It is certainly the case that rabbits can bear a much larger dose than one-tenth gramme without death, but it must not be forgotten that this quantity would be equivalent to something like sixty or seventy-five grains for an adult man, assuming that a man weighs about forty or fifty times as much as a rabbit. This would be a huge dose, and although rabbits are undoubtedly relatively less sensitive than men to this drug, yet a grain and a half is not for them an insignificant quantity.

Under Section VI, Dr. Leflingwell cites a portion of the details of experiments by Drs. Ott, Walton, Hooper, Ellis, Bowditch and Porter, to controvert the statement

which the latter made about "painless experiments." I stated, at the beginning of this paper, that experiments wholly without anesthetics, or only with curare,⁹ are not now made at our laboratory, and have not been made for many years, and for this reason I omit the discussion of Dr. Ott's investigations, the more so that I have had no opportunity to talk with their author about them.

On pages 16 and 17, Dr. Leflingwell cites the details of an experiment by Dr. Bowditch upon nerves, to show its painful character, though a moment's further reading might have shown him that the nerve was in each case severed from the brain, so that the "stimulation" of it was no more felt by the animal than the stimulation of an amputated limb would be felt by the patient from whom it came. The "curare" in this case was given not to prevent the struggles of a victim in pain, but to eliminate involuntary or spontaneous movements such as any animal, in pain or not, might make, and to prevent the nerve stimulation from causing muscular contractions which would have interfered with the observations on the circulation of the blood.

In Dr. Porter's experiments, also, it was the *peripheral* end of the phrenic nerve which was "seized and torn out of the chest," and before this was done the nerve had been rendered insensitive and incapable of conducting impressions of any kind, even if it were not a fact that the phrenic nerve is a nerve of motion and probably conducts no sensations of pain at all. Dr. Leflingwell might easily have ascertained that the "struggling denoted by the stars," did not occur at the moments when the supposed-to-be painful excitations were made, but corresponded to movements not associated with the excitations at all. He might have found, what Dr. Porter assures me was the case, that in the experiment with regard to which it was not stated that anesthetics were used, they were used as in the other experiments. Any physiologist, any reader, indeed, not seeking merely to find a new point of attack, would draw this obvious inference, or would have written to ask Dr. Porter with regard to the facts.

By similar inquiries Dr. Leflingwell would have found that Dr. Walton's experiments¹⁰ caused but little pain, as surgical experience proves, and that they were undertaken to show that the surgeon, in removing the epiglottis, which sometimes must be done, can save his patient from serious difficulty in swallowing if he takes pains to limit his incision within a certain anatomical line which Dr. Walton points out on the basis of his experiments. Had he investigated further he would not have shown such ungenerous readiness to describe in detail Dr. Bowditch's "clamp," and couple therewith the suggestion that its use indicated the falsity of the statement that anesthetics were habitually employed, since then, he thinks, it could not be needed, for he would have found that it was primarily used as the best means of furthering the production and maintenance of etherization, and, next, as a convenient method for holding in a given position the fully etherized animal.

I shall not follow Dr. Leflingwell into further discussion of the details of these experiments. It is unfitting to paint such pictures for a public untrained

⁹ Except as explained above.

¹⁰ This statement is authorized by Dr. Bowditch, who conducted the investigation with Dr. Walton.

to estimate either the pain suffered or the good accomplished. Those who wish can find them where they are given, with no attempt at concealment, in the physiological literature of the world. Indeed, if the word of men so respected as Dr. Bowditch and Dr. Porter be no longer to be believed, and parties must be formed among the public, representing the two sides of this discussion, it would be desirable that every one who means to form an opinion should read these descriptions carefully and for themselves, not in extracts as part of a revolting picture painted by an unfriendly critic. We appeal, however, to right-minded persons who undertake this task and who value their own opinions and do not wish their consciences laden with the reproach of having helped to check a movement which exists not to increase but to diminish the sum of suffering in the world, to withhold their judgments until they have truly studied the subject of animal pain on the one hand and the position of physiology as a means of promoting the happiness of men and animals on the other. They may profitably begin by reading carefully a book published in London in 1883, called "Physiological Cruelty," from which Dr. Bowditch quoted in his admirable address before the Massachusetts Medical Society in 1896.

I have studiously avoided, in this paper, attacking Dr. Leflingwell's motives in any way that he could consider unjust. I accuse him of nothing but the thoughtlessness of fanaticism and ignorance. But to this charge he certainly is open when he uses the following statement for the sake of making it appear that the late Dr. F. H. Hooper was inhumane in his experimental work: "If one desires to see the picture of a dog 'thoroughly etherized or chloralized,' fastened immovably, its throat cut, and its larynx dissected out and tied up with a string—an experiment from the physiological laboratory of Harvard Medical School—let him consult one of Dr. Hooper's papers."

It is easy to imagine that this picture should excite such a feeling of horror among the ignorant as to deprive them of the power of judgment, but how it serves the interests of truth and fairness is not clear.

Is it possible that Dr. Leflingwell does not know that these animals, being under the effects of ether, felt these manipulations hardly more than a block of stone? Is it possible he does not know that practically the same operation, the removal of the larynx, and others far more likely to be painful, are done by the surgeon and without causing pain? What did he expect to be the effect of the remark that the larynx was "tied up with a string"? It was absolutely necessary for the experiment, and it certainly did not hurt the animal, but the reference to it as certainly did excite a feeling of unreasoning indignation against Dr. Hooper, such as it might have been thought that Dr. Leflingwell would have been glad to see eliminated from this discussion.

It may surprise those whose only acquaintance with Dr. Hooper has been through this reference to hear that he was a man of extremely kindly instincts and exceedingly fond of the animals most used for these experiments, one or more of them being his almost constant companions.¹¹ His keen interest in laryn-

gology, fostered and guided by his physiological studies, had made him a leader in clinical work of the most practical kind. The day will surely come when the painful disease of which he died will yield its secrets to the researches of the pathologists and the biologists. May America not be behindhand in contributing to this great work!

It is difficult to believe that any thoughtful and liberal-minded person can suppose physiology to be able to thrive without the opportunity of verifying hypotheses by experimentation on living animals; or practical medicine to be able to thrive without physiology. It is only by painful and laborious effort that medicine can succeed in reclaiming for health the vast domain of disease, and no auxiliary can be spared that might make this conquest swifter or surer.

We do not want to see our medical schools reduced to third-rate institutions because unable either to teach adequately the first elements of medical knowledge, or to secure the only teachers who are worth having, the teachers who are likewise investigators. We do not want to see American research strangled or given over to inferior men, nor do we wish to see restrictions imposed which annoy without materially restricting.

Those of us who have been interested in noting what physiology has done for practical medicine, and in attempting to gauge fairly the amount of the pain to animals which this sort of research involves, believe that we can see the difficulties which laymen find in forming opinions, and can appreciate and admire the humane feelings which prejudice them against the physiologists. But we believe that they are laboring under serious misconceptions as regards the facts at stake. It is easy for them to understand the arguments of those who think that experimentation upon animals is wrong and painful; it is difficult for them, if they have not specially studied the subject, to appreciate the arguments for the other side. Every one is ready to assume, as a safe principle, and in the interests of humanity, that a manipulation which causes pain to a man causes the same pain to an animal, forgetting or overlooking the fact that the best criteria of real suffering are exhaustion, prostration of nerve force, incapacity for immediate exhibition of the usual appetite, the usual power of enjoyment, the usual interest in familiar occupations, and that, judged by these standards, vast numbers of acts from which men would suffer cause but little inconvenience to animals lower in the scale.

So, again, when the value of such experimentation is under discussion, it is easy for the untrained to appreciate the arguments of those who say that little or no good comes of it all, and practically impossible for them to recognize what is accomplished, unless they are willing to devote themselves with unbiased minds to a careful investigation of the question. And this they should feel bound to do before they lend their names and influence to help cripple a means of study which multitudes of men whom they must respect tell them has been of vast service to mankind.

The demand is often and naturally made that definite results of practical value should be pointed out as immediately flowing from each given series of experiments, and when it is replied that this is not always possible, the motive of "curiosity" is liberally suggested. But let any fair-minded person go to the laboratories of chemistry, or of physics, or to the as-

¹¹ Ludwig, also, who was Dr. Bowditch's teacher, and whom I had the privilege of knowing, not only won by his character and kindness the affectionate devotion of a host of friends and pupils, but earned the gratitude of his townspeople for many acts of public spirit, among which was the instituting of reforms in the treatment of horses.

tronomical observatories, and transfer his demand there, and he will perceive how irrational it was to have made it at all. How often does a single series of experiments in those departments lead to a brilliant discovery? Yet how few great discoveries would ever have been made but for the silent and patient investigations into minor problems that to the untrained observer often seem trivial and irrelevant. Let the motive be called "curiosity" if one chooses, but with distinct recognition of the fact that the "curiosity" of the man whose mind is filled with knowledge, and whose instincts are keen to divine the part that his work will play in the final structure, is one of the greatest forces of progress.

Many of these investigations, in every department, seem to turn out blind alleys, and to end for the moment in nothing. It is inevitable that this should be so, until men have infinitely greater powers than now wherewith to fathom the vast unknown. But discovery comes by study and only so, and many a failure, conscientiously interpreted, proves to be the fingerpost to an important truth. The splendid generalizations, like that with regard to the germ theory of disease, through which the practice of surgery and medicine has been revolutionized, are, to the lay mind, the most obvious triumphs of experimental research. But he who seeks out the sources from which practical medicine really derives its strength will be amazed to find that there are many other achievements just as important as these, though of a different order.

The difficulties in the way of medical progress are so great that practical physicians are under a constant temptation to cease trying to surmount them, and to let themselves degenerate into routine practitioners, or pure empiricists. Even the great geniuses would more often lead us astray, as they have repeatedly done in the past, were it not that the experimentalist is ever at hand to apply the touchstone of criticism or hold up the torch of inspiration and guidance. If the expression "A power behind the throne" was ever justified, it is justified as expressing the relation of experimental physiology and pathology to practical medicine.

It is obviously important that all this experimentation should be conducted according to the most humane sentiments of our day, but also in such a manner that each observation shall yield its due share of benefit, and not be wasted. Surely the best means of securing the observance of these conditions is to support our institutions of learning so that they can secure teachers and investigators with wisdom to desire the highest knowledge, and powers trained to find the surest path to reach it, and characters which would make them incapable of inhumanity. Many a person who is now trying to invent some ingenious method for hampering and hedging the work of the physiologist would recall with a feeling of shame how much suffering and calamity was brought upon this country during our Civil War by the attempts to rule the generals from Washington, and by the foolish clamor of those who wished the struggle abandoned because their narrow vision only let them see the present distress that it entailed. The war against disease is like any other war, and can only be carried on successfully with trained generals, supported by public opinion, and allowed to choose their own methods.

Is it legitimate to use experimentation upon living

animals for the purposes of teaching as well as for the purposes of research?¹² There are many persons who would answer this question in the negative. But let it be remembered, on the one hand, that the students of to-day are the teachers and investigators of to-morrow; and, on the other hand, that even as fitting themselves to be physicians, the knowledge that they derive from actually seeing an experiment is of a wholly different order from that which they derive from hearing about it. Here, also, it is a question of how to make experimentation bear its fullest fruit. It should, of course, be remembered that, so far as warm-blooded animals are concerned, they are always in a state of anesthesia, and incapable of suffering considerable pain when the demonstrations are being made.

The study of medicine and physiology is no child's play. It is a serious business, and a good medical school should see to it that the men whom they graduate realize to the full the responsibilities and problems with which they are to come in contact. If they do this better for having had an important truth driven home by an ocular demonstration upon a narcotized animal, then the demonstration was worth making. The charge that students become hardened to suffering in this way is as baseless as the similar charge occasionally brought against surgeons.

It has not seemed possible, or desirable, to attempt in this paper to enter exhaustively into all the questions that suggest themselves to the mind in connection with this controversy; my main object has been to bear witness to what I have seen. I should like, however, to state that in my opinion the position of those who strive for "total prohibition" is hardly more unreasonable than that of those who, like Dr. Leflingwell, have temporarily joined hands with the total prohibitionists, but really wish only to see annoying restrictions imposed upon men hitherto trusted in all things.

The injustice of legislation like that now in force in England, which admits that experimentation on living animals is justifiable, but attempts to substitute for the conscience and knowledge of the trained investigator the judgment of men no better or wiser than himself and infinitely less well equipped for estimating the probable value of his work, recalls the prolonged attempt to establish a censorship of printing, against which Milton wrote, in 1644, his eloquent protest, "Areopagitica: Defense of the Liberty of Unlicensed Printing." I recommend to every lover of liberty and progress the reading of his manly and invigorating plea.

CHRISTIAN SCIENCE IN MARYLAND.—A bill is now before the State Legislature of Maryland restricting the practice of medicine to duly qualified physicians, and providing that "any person shall be regarded as practising medicine within the meaning of this act who shall attempt to heal, operate on, or prescribe for any ailment of another." A public hearing held last week brought out a large number of Christian Science remonstrants. The wording of the bill is perhaps rather too comprehensive, though it will no doubt tend to suppress the practice of Christian Science.

¹² I do not refer, of course, in what follows, to the question of demonstrations in high and grammar schools, which have already, and very properly, been forbidden by law.

STRICTURE OF THE URETER A POSSIBLE RESULT OF LACERATION OF THE CERVIX UTERI, AND URETEROVAGINAL FISTULA A RESULT OF TRACHELORRHAPHY.¹

BY E. C. DUDLEY, M.D., CHICAGO, ILL.

FOR purposes of illustration I offer the following history of a case. All details not belonging to the subjects under discussion are purposely omitted. The patient was thirty-seven years of age and married. The oldest child was twenty-one and the youngest one and a half years of age. Date of first consultation was March 29, 1899.

Subjective symptoms.—In addition to the usual symptoms of menorrhagia, mucopurulent uterine secretions, dysmenorrhea, vesical irritation, headache and nervousness, the patient, since the birth of the first child, twenty-one years before, had suffered from pain referred to the left inguinal region; this pain was of variable intensity, always annoying, often quite severe, and was the chief and significant subjective symptom.

Examination.—Examination of the pelvic organs, in so far as it relates to this discussion, gave the following results: Uterus symmetrically enlarged from endometritis and metritis, the canal measuring three and a half inches in length. Position of uterus normal. Bilateral laceration, great circular enlargement, cystic degeneration, erosion and eversion of the cervix uteri. The cervical laceration on the left side was extreme; it had extended far into the vaginal wall and parametria and had healed by much cicatrization. The perineum was lacerated to the sphincter ani muscle. Uterine appendages normal.

Operative treatment.—April 20, 1899. The cervix uteri and perineum were closed. The operation on the cervix was that of Emmet, as modified by Schroeder, and involved the resection of considerable tissue from the thickened lips. The denuded surfaces at numerous points were quite hemorrhagic, so that both in the cervix and perineum some difficulty was experienced in the control of hemorrhage.

Nine days after the operation there suddenly appeared dangerous hemorrhage from the vagina, and my interne, unable to find me, called one of my colleagues, who promptly etherized the patient, and by the introduction of sutures under the bleeding points, close to the uterus, arrested the hemorrhage, and, as I think, saved the patient's life. Two days later urine began to pass voluntarily through the vagina. Further observation, however, showed that a part of it also passed normally and voluntarily through the urethra. This led to the suspicion that one of the ureters was probably discharging urine directly into the vagina and the other into the bladder. Examination of the vagina by means of Sims's speculum showed at the line of union to the left of the cervix where the laceration had been most extensive an occasional spurt of the urine. The attempt, however, to pass a ureteral bougie from this point failed. Dr. Kolischer, who has great skill in electrocystoscopy, kindly saw the patient with me at this time. He distended the bladder with water and by means of a Casper cystoscope readily passed a bougie into the right ureter. The left ureter, however, was occluded, so that the smallest bougie would only pass about five-

eighths of an inch inside the ureteral orifice. The diagnosis was now established of a ureterovaginal fistula of traumatic origin on the left side and of obliteration of that part of the ureter situated below the fistula. It was evident that one of the sutures or ligatures, either at the time of the original operation or at the time of the hemorrhage, had been passed around this ureter and had slowly cut it off or had so transfixed the ureteral wall as to open it. One week after the hemorrhage the sutures were removed. During the following four weeks the nurse reported that the discharge of urine through the vagina was not constant. Urine apparently accumulated in the ureter and pelvis of the kidneys and was discharged at intervals. Upon speculum examination about three weeks after the hemorrhage, the injured part of the vagina being exposed for thirty minutes, no urine was seen to escape. The patient, however, reported that urine had sometimes been retained for three or four hours and had then escaped in considerable quantities through the vagina.

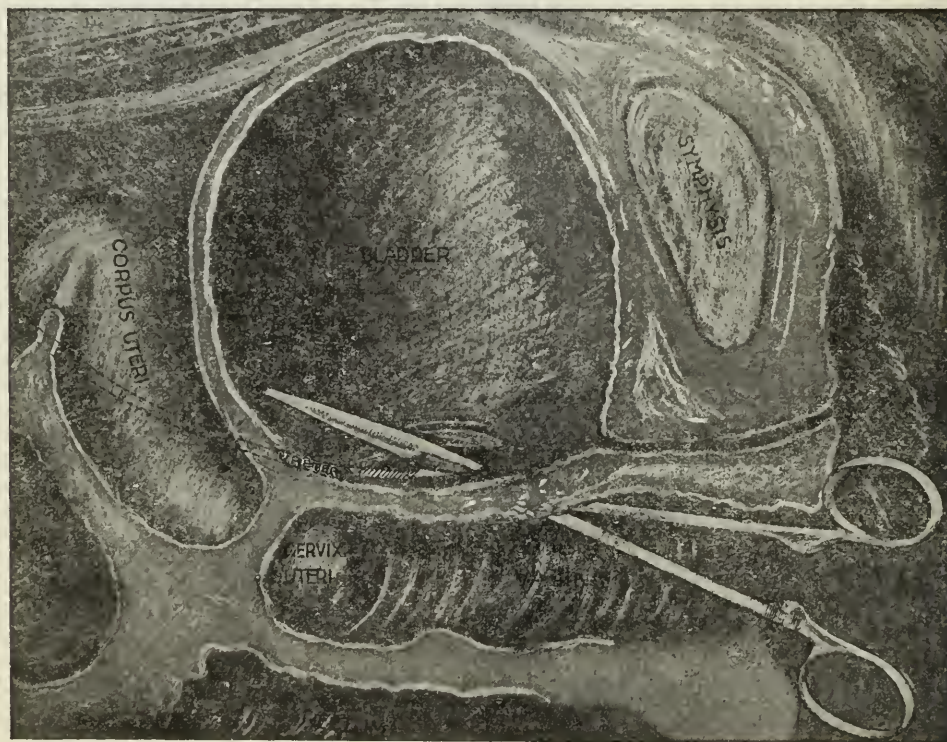
On the 2d of June, thirty-five days after the hemorrhage, with the purpose of performing some operation to re-establish a free communication between the injured ureter and the bladder, I again etherized the patient. For more than three-quarters of an hour with uterine tenacula and a fine probe I sought in vain for the point where the ureter opened into the vagina. No urine came through to mark this point, and even after some rather extensive dissection with the scissors I was unable to locate the fistula, nor was I able to make out the ureter by palpation. Finally, however, a little spurt of urine appeared just to the left of the cervix uteri, but I was unable at this point to pass even a very fine probe. Each attempt only resulted in the making of a false passage—a thing difficult to avoid under such conditions. I then made a colpocystotomy, cutting with the scissors through the vesicovaginal wall in the median line and in the long axis of the vagina just in front of the cervix. The vesicovaginal fistula thus made was an inch long. The upper extremity of it terminated close to the anterior wall of the cervix uteri. With a pair of straight scissors I then extended the incision upward and to the left as nearly as could be estimated to the point whence the urine had escaped. The object was if possible to convert the ureterovaginal fistula into a ureterovesicovaginal fistula; so that the ureter should open, not into the vagina, but into the margin of a vesicovaginal fistula. After another long search I again failed to find the fistulous opening into the ureter, until it was located by another spurt of urine, but the opening was too small to admit even a very fine probe and therefore could not be entered. I then still further enlarged the vesicovaginal fistula in a direction to the left of the uterus, and by good fortune opened into a very much dilated ureter, from which immediately there gushed two or three ounces of pent-up urine. The dilatation explains the fact that I had been unable to locate this ureter by palpation. A bougie passed without obstruction to the kidney thereby proved the absence of any constriction above.

The situation being now much simplified the following procedures were adopted: The bladder mucosa was stitched to the vaginal mucosa all around the artificial vesicovaginal fistula. In this way the exposed surfaces were covered and hemorrhage controlled. A hemostatic forceps, with handles about four inches

¹ Read by invitation before the Boston Obstetrical Society, December 19, 1899.

long and with slender jaws about an inch long, was passed into the vagina and through the fistula. The forcep jaws were then passed, one into the ureter and the other into the bladder, so that the forceps when locked included in their bite, ureteral wall, bladder wall and the connective tissue between. In this way the lower extremity of the cut-off ureter was clamped into close relations with the bladder. The expectation was that the structures within the bite of the forceps would be destroyed by pressure necrosis, and that a wide free ureterovesical opening would be established at a point somewhat distant from the artificial opening into the bladder, and that in this way the case would become one of uncomplicated vesicovaginal fistula. The forceps came off in about three days, and twelve days later the vesicovaginal fistula was closed by suture in the ordinary way. At the time of this operation the new ureteral orifice

clamped by pressure forceps. In these cases, however, the ureteral openings were much nearer to the trigone, and the lower extremity of the injured ureter therefore was quite close to the bladder mucosa. In the case just reported the distance and amount of tissue between the bladder and ureter was so great that it could hardly have been divided with the scissors without danger of uncontrollable hemorrhage or of the exposure of broad surfaces to reunite, or to cicatrize and contract, or to suppurate. These difficulties were obviated by clamping the ureter into close contact with the bladder so that when the forceps came off, the exposed surfaces left by the necrosis would, owing to the compression, be of small extent. The compression forceps used in this way, therefore, may make the operation practicable in those regions where the tissue between the ureter and the bladder is too abundant to be safely divided by scissors. Howard Kelly,



was found to be perfectly open and very patent. The subsequent history was uncomplicated, union was complete and in a short time the patient was discharged cured. In a letter written about six months after the final operation the patient reported entire freedom from the pain in the left inguinal region from which she had suffered, and which had made her a semi-invalid for twenty years. I regret that the ureter was not explored before the operation, and that it has not been practicable to obtain measurements of it since.

My experience in the surgical treatment of ureterovaginal fistula is limited to only two other cases, one traumatic and one congenital. In these two cases I operated at St. Luke's Hospital, Chicago, seven or eight years ago. The operative treatment in each was like that just described, except the ureteral and vesical walls were divided by scissors instead of being

in his recent book, describes an operation of switching the ureter into the bladder through an artificial vesicovaginal fistula. I have proposed the operation just described in the hope that it will give the greatest security against subsequent stricture at the new ureteral orifice.

Traumatic ureterovaginal fistula as a result of trachelorrhaphy is rare, but as a result of vaginal hysterectomy and other vaginal sections is not of infrequent occurrence. The operation above described is applicable to the condition, whatever the cause, whether traumatic or congenital. The alternatives to the operation are well known and need not be described. To open the abdomen, sever the ureter and insert it into the bladder wall is an operation of great difficulty and danger and sometimes of only transient value. The same may be said of dissecting or stripping the bladder from the pelvic wall, finding the

ureter and inserting it into the bladder without invading the peritoneal cavity. The utilization of vaginal mucosa in a plastic operation for the purpose of diverting the urine from the vagina to the bladder usually results in failure of union, or, later, in cicatricial contraction and consequent stricture at the ureteral orifice. Switching the ureter into the intestine or into the opposite ureter are both questionable procedures.

As a corollary to the case just described I now bring before you an observation that, if well founded, may prove to have some practical significance. It is probable in this case that the laceration having extended into the parametria had torn the structures around the ureter. There may also have been injurious pressure of the presenting part of the child against the ureter. Such lacerated tissues would necessarily heal by cicatrization and contraction, and the cicatrix thus formed would draw the bruised ureter towards the uterus, compress it and so give rise to obstruction both from stricture and from kinking. This mechanism will account for the facts of the case. The contracting cicatricial tissue extending from the cervix uteri around the ureter would necessarily draw the ureter into closer proximity to the uterus, where a deep suture applied for closure of the cervix or to control bleeding would be apt to injure it and by compression would cause a narrowing of the lumen of that part lying within its grasp. In this case the stricture extended at least a half-inch on either side of the ureteral fistula. It was evidently this constricted portion of the ureter that was caught by the needle and cut off or penetrated by the suture.

It would be quite impossible, without further observation, to estimate the proportion of cases in which laceration of the cervix uteri causes stricture or kinking of the ureter. In this connection, however, every gynecologist may revert to a class of cases not small, in which there is extensive laceration of the cervix uteri on one or both sides, usually on the left, and in which the localized pain on the corresponding side of the pelvis is not readily accounted for by palpable lesions, such as disease of the uterine appendages or of the appendix vermiformis. The continued pain in such cases dates from the puerperium, is always out of proportion to the palpable pelvic lesions and is not relieved in the slightest degree by the repair of the cervix. As I look back over an experience of more than twenty years I recall many such cases; the one just reported apparently belongs to this class.

But why, one may ask, if the ureter is often drawn by cicatricial contraction close to the uterus, is it not more frequently injured by operations on the cervix? The answer is that if the sutures of trachelorrhaphy were not usually introduced close to the uterus or very superficially in the vaginal wall more cases of ureterovaginal fistula would probably be reported. This case was very hemorrhagic and therefore required exceptionally deep sutures to control the bleeding. In view of the facts already set forth I desire to submit two questions, as follows:

Question I: In all cases of extensive laceration of the cervix uteri, in which the localized pain is not accounted for by palpable lesions, should we not pass a series of graduated ureteral bougies on the side corresponding to the laceration? This would be for the purpose of measuring the calibre of the ureter and of locating a possible stricture. The principles of ex-

amination would be similar to those of measuring the calibre of the male urethra in the diagnosis of stricture.

Question II: In a case of ureteral stricture due to laceration of the cervix uteri, or to any other cause, and situated within the range of a vaginal operation, would not one be warranted in opening the bladder and then proceeding, as in the case reported, to establish a new ureteral orifice? In other words, should not that condition which in this case was the result of an accident be deliberately reproduced in similar cases?

My own answer to these questions would be in the affirmative.

THE RELATIVE HUMIDITY OF OUR HOUSES IN WINTER.

BY ROBERT DE C. WARD, CAMBRIDGE, MASS.,
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IN discussing with my classes in climatology the various ways in which climatic conditions affect man, I have been accustomed to point out that the climate which we have been able to produce inside of our modern houses is an extremely artificial one. We shut out the winds, and live in an atmosphere which is prevailingly calm. We keep out rain, snow, sleet and hail, and thus spend most of our time where there is no precipitation of any sort. In summer we are able to keep the air in our houses cooler than that outside by closing windows and blinds, and by means of artificial ventilation. In winter our houses are heated, and we live in an atmosphere which is many degrees warmer, and very much drier, than that out of doors. This dryness of the air indoors in winter I have been in the habit of comparing with that of deserts, although I have never used any numerical data in making this comparison. In view of the importance of this matter from a physiological point of view, and also because of my desire to present my students with humidity data obtained by actual observation indoors, I have recently made a short series of simple observations along these lines, which may have some interest for the readers of the JOURNAL.

These observations were made in my study by means of one of H. J. Green's ordinary sling psychrometers. The room in question is heated by hot air, from an ordinary hot-air furnace, provided with the usual small — ridiculously small — evaporating pan. Inside the register there is a vessel holding a little more than half a litre of water. This pan has to be filled about once a day, although the rapidity of evaporation depends so directly upon the amount of heat from the furnace that the time needed to evaporate the water varies considerably. Observations were made during three weeks of last November (November 3d–23d), from two to five times daily, as opportunity offered. The hours of observation necessarily varied. Each record included the readings of wet and dry bulb thermometers, and a note as to the condition of the weather outside; the amount of ventilation by means of the windows; the degree of heat coming from the furnace, and the amount of water in the evaporating pan inside the register.

A summary of the mean daily temperatures and relative humidities indoors and outdoors is given in the following table. In the case of the data for the outside air the readings were taken from the sheets of the Richard thermograph and hygrograph at the Har-

vard College Observatory, the hours to which the individual readings correspond being the same as those at which the observations were made indoors. These means for the outside air are therefore not the true means for the day, but they serve for the purposes of the present comparison:

Date.	No. of Observations.	Inside Air.		Outside Air.	
		Mean Temperature.	Mean Relative Humidity.	Mean Temperature.	Mean Relative Humidity.
November 3.	5	69°	24 per cent.	55°	66 per cent.
" 4.	5	71°	39 "	42°	69 "
" 5.	5	71°	39 "	43°	64 "
" 6.	4	69°	29 "	39°	68 "
" 7.	5	68°	32 "	39°	63 "
" 8.	5	71°	31 "	44°	69 "
" 9.	4	69°	32 "	42°	69 "
" 10.	3	67°	35 "	47°	60 "
" 11.	4	64°	33 "	28°	77 "
" 12.	3	64°	30 "	23°	70 "
" 13.	4	67°	24 "	22°	51 "
" 14.	3	67°	26 "	25°	75 "
" 15.	3	71°	31 "	28°	91 "
" 16.	4	72°	29 "	36°	68 "
" 17.	2	68°	27 "	24°	66 "
" 18.	2	68°	31 "	28°	90 "
" 19.	3	71°	40 "	42°	87 "
" 20.	3	70°	28 "	39°	69 "
" 21.	4	69°	25 "	41°	70 "
" 22.	4	71°	30 "	46°	77 "
" 23.	3	72°	26 "	43°	72 "
Means.		69°	30 per cent.	36°	71 per cent.

Summarizing the complete tables, which are omitted here for lack of space, we have the following results:

Maximum relative humidity, 45 per cent.; recorded November 4th, at 8 A. M. It had been raining during the night, the outside air was very damp, with an easterly wind blowing. The window was partly open and there was but little heat coming from the furnace. The relative humidity outdoors was 92 per cent. These conditions, of damp air outside, open window and small furnace fire, were clearly favorable for giving a high degree of relative humidity indoors. The humidity indoors at noon of this same day was also 45 per cent. The weather at that time was beginning to clear, with the wind gradually veering towards northwest. The window was still open.

Minimum relative humidity, 21 per cent.; recorded November 23d, at 10 P. M. Weather clear; northwest wind, moderate; windows shut and good supply of heat from the furnace. The relative humidity outdoors was 68 per cent.

Maximum relative humidity for a whole day, 40 per cent.; recorded November 19th. The day was overcast, damp and rainy, window open throughout the day and moderate heat from furnace. The relative humidity outdoors averaged 87 per cent, which was exceeded on two days only, namely, November 15th, with 91 per cent., and November 18th, with 90 per cent.

Minimum relative humidity for a whole day, 24 per cent.; recorded November 13th. The day was clear and cold, with a moderate to brisk northwest wind. The windows were shut most of the day and the temperature of the room averaged 67 per cent. The relative humidity outside on this day averaged 51 per cent., which was the minimum for any whole day during the period of observation.

The mean relative humidity indoors for the whole

period was 30 per cent. Nine days had a relative humidity between 24 per cent. and 29 per cent.; ten had between 30 per cent. and 35 per cent., and two between 36 per cent. and 40 per cent. It will be seen by reference to the table that the mean relative humidity of the outside air during the same period was 71 per cent., or 41 per cent. in excess of that indoors.

The relative humidity in a room is clearly the resultant of several variables, among which are the temperature and humidity outdoors, the amount of heat coming from the furnace, the amount of evaporation from the evaporating pans, the extent to which the room receives the outside air through the open windows, etc. Probably the varying amounts of moisture absorbed and given off by the furnishings of a room also come into play, as suggested by Dr. Henry J. Barnes. It was hoped, as one result of the present study, to be able to determine roughly the relative importance of some of these different factors, especially of the effect of varying amounts of water evaporated from the evaporating pans, but this was found to be impossible, under the conditions of the investigation. It appears, nevertheless, from an examination of the data, that the relation between the relative humidity of the air outside and inside is fairly close, increasing relative humidity outside being closely followed by increasing humidity indoors, and *vice versa*. The weather conditions during which the absolute maximum of 45 per cent. and the daily maximum of 40 per cent. were noted were, as has been seen, precisely such as would have led one to expect high humidity indoors. On the other hand, the northwest wind with its dry, clear weather, which prevailed when the daily mean of 24 per cent. occurred, naturally preceded and accompanied low relative humidity indoors. These same relations appear distinctly on a good many of the days during which the observations were made.

In one case (November 4th) a change of wind from southeast to northwest, accompanied by clearing weather, was closely followed by a decrease in relative humidity of 34 per cent. outdoors and of 6 per cent. indoors. In another case (November 11th) a change of wind to the east, with rain, brought a rise in relative humidity of 15 per cent. outside and of 6 per cent. indoors. On a third occasion (November 12th), when a rainy day was followed by a clearing day with northwest wind, the relative humidity fell steadily from 32 per cent. at 8 A. M., to 30 per cent. at noon and 28 per cent. at 6 P. M., the decreasing humidity keeping pace with the decreasing cloudiness and increasing velocity of the dry northwest wind. The relative humidity outside fell from 78 per cent. at the first observation to 69 per cent. at the second and 63 per cent. at the third. The windows were closed at the time of all the above changes.

Now, the interesting question is: How did the relative humidity indoors compare with that of other places outdoors? It has been seen that the mean relative humidity in Cambridge during the twenty-one days of observation was 71 per cent., this value being based on the readings of the Richard hygrometer at the same hours as those at which the psychrometer observations were made indoors. The mean relative humidity in Boston for the year 1899 was 69 per cent., and for the month of November, 1899, 68.8 per cent., as kindly reported to me by Mr. J. W. Smith, local forecast official of the United States Weather Bureau in Boston. The lowest mean annual relative humidity

ties in the United States are those for the Weather Bureau stations in the dry southwest. Yuma, Ariz., has a mean annual relative humidity of 42.9 per cent., with a mean monthly minimum of 31.7 per cent. in June. Santa Fé, N. M., has a mean annual of 44.8 per cent., with a mean monthly minimum of 28.7 per cent. in June. Pueblo, Col., has a mean annual of 46.2 per cent., with a mean monthly minimum of 37.6 per cent. in April. Death Valley, Cal., was found to have a mean relative humidity of 23 per cent. during five months (May-September) of the year 1891, when a temporary meteorological station was maintained there by the United States Weather Bureau. During this same period the mean temperature was 94°. In the dry interior of the great Eurasian continent we find the following relative humidities: South-western Siberia and Western Turkestan have a mean of 45-50 per cent. in July. Yarkand, in Eastern Turkestan, has a July mean of 47 per cent. In the arid region in the neighborhood of the Sea of Aral, Nukuss (lat. 42.5° N., long. 59.6° E.), has a June mean of 46 per cent., and a 2 p. m. June mean of 19 per cent. Petro-Alexandrowsk, a degree and a half east of Nukuss, in the desert (lat. 41.5° N., long. 61.1° E.), has a mean of 34 per cent. in June. Kasalinsk (lat. 45.8° N., long. 62.1° E.) has a mean of 45 per cent. in July. The air is still drier in the deserts nearer the equator. Ghadames, in Tripoli, has 27 per cent. in July, and 33 per cent. in August, and the Kufra Oasis has 27 per cent. in August, with a 3 p. m. August mean of 17 per cent., and 33 per cent. in September. In the Punjab and Northwestern India, Lahore has 31 per cent. and Agra has 36 per cent. in May.

These examples show clearly enough that the atmosphere of the room in which the observations above referred to were made was, and is, drier than that of many desert regions. That so dry an atmosphere is not healthy, especially in our winter climate, there is no need of an argument to show—certainly not in a medical journal. This low relative humidity means excessive evaporation from skin, lungs and respiratory passages. Furthermore, the strain which is put upon the body in the rapid adjustment which it has to make when we go out from the high temperatures and the desert aridity of our houses in winter into a temperature it may be 70°, 80° or 90° lower, and a relative humidity of 70 per cent. to 100 per cent., is a greater one than we ought to repeat day after day, and many times a day.

The present methods of heating our houses are wretchedly inadequate from the point of view of supplying sufficient moisture. Undoubtedly, the relative humidity of the air coming from an ordinary furnace may be somewhat increased by increasing the size or the number of the evaporating pans in the furnace, or by placing pans of water on or, better still, within the registers. As to the precise amount of increase in the relative humidity as the result of either of these methods, I am not as yet able to give any definite results.

After I had begun the observations whose discussion forms the subject of this paper I received from Dr. Henry J. Barnes, of Boston, a copy of an article by him entitled "The Arid Atmosphere of Our Houses in Winter," published in the *Transactions of the American Public Health Association* for 1898.

The relative humidity of Dr. Barnes's office, as determined by observations, with the Mason hygrometer, during seven days in January, 1896, was 27 per cent., while that of the outside air was 73 per cent. This humidity accords closely with that of 30 per cent. found in my study. Dr. Barnes's office was heated by hot-air furnace, with water tank in furnace evaporating from one to two pails daily. In Dr. Barnes's paper mention is also made of the results of humidity observations within other buildings in Boston. These results are here tabulated for purposes of comparison.

Place and Time.	How Heated.	Mean Relative Humidity Indoors.	Mean Relative Humidity Outdoors.
City Hospital, 7 days, December, 1878.	Indirect steam.	29 per cent.	71 per cent.
Office of Dr. Barnes, 7 days, January, 1896.	Hot-air furnace.	27 "	73 "
Office of Dr. Ayer, 10 days, February, 1896.	Indirect steam.	36 "	70 "
Women's Hospital, 8 days, February, 1896.	Indirect steam.	24 "	71 "
City Hospital, 12 days, February and March, 1896.	Indirect steam.	38 "	74 "
Means.		31 per cent.	71 per cent.

The mean relative humidity indoors derived from these five sets of observations was 31 per cent., which is one per cent. higher than the mean obtained by me in my study. The mean relative humidity outdoors was 71 per cent., which corresponds to the outside humidity during my observations. By means of his "humidifier," which is placed over the register of a hot-air furnace in his office, Dr. Barnes has been able to obtain a mean relative humidity of 53 per cent. This humidifier evaporates on the average 4½ quarts of water daily, and Dr. Barnes has found that with this higher relative humidity his office is comfortable at a temperature of about 65°, whereas, without the artificial supply of moisture, a temperature of 70° to 71° was necessary to make the room comfortable. I am indebted to Dr. Barnes for a reprint of his interesting paper, as well as for references to other writers on this same subject.

PSYCHOLOGY AND HEREDITY.¹

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(Concluded from No. 8, p. 189.)

MANKIND is beset as well in mature life as in the years of childhood by a host of fears, of which the majority have no ground or explanation in the nature of external circumstances. The fear of strangers—needless in our day of regulated society—the fear of beasts, eliminated as a practical factor by the destruction of wild animals; the fear of the dark, deeper than the tales of ill-advised nursemaids or pranks of foolish playfellows, and often ineradicable even in mature life, and the fear of open spaces, both of which point to a sometime existence when the shades were full of terror and the menace of the plain was to be avoided only by skulking in the thicket,—these, together with the thick cloud of still more monstrous fears with which the alienist must deal, the automa-

¹ Read at the meeting of the Boston Society for Medical Improvement, December 4, 1899.

tisms of childhood and youth, habits of stepping on particular flags of the pavement and avoiding cracks, counting and dividing manias, are forms of activity which stand apart from the purposeful stream of our conscious life and find no explanation in the facts of its present environment, but which become intelligible and significant in the light of a theory which views them as residual functions of the soul, which exist now because at one period they were active and fully developed responses to an environment which has since passed away.¹⁴ These pathological feelings and abnormal forms of activity are doubtless of the instinct type, and their appearance is probably due to a process of ripening in the brain in virtue of which it becomes super-irritable to particular kinds of stimulation at successive periods in its development. The fact of conscious experience is thus made the correlate of a specific process of change in the nervous substance.

But the courses run by the physical and mental evolution of the human individual are not wholly parallel and synchronous, and I wish to point out several important aspects of this discrepancy.¹⁵ In the first place, there is a difference in the amount of directive control which can be exercised over the distribution of nourishment during the formative periods of two life processes. The type of the physical individual is practically fixed by the close of the embryonic development. During the plastic antenatal period the changes which the organism undergoes are great and sweeping. The general conformation of body structure and its system of functions pass in successive stages through type after type of the taxonomic series,¹⁶ and concomitantly with these changes the distribution of nutriment to the transient structures varies according as they are nascent or atrophied. But this distribution of nourishment in unequal ratios to the permanent and transient tissues is neither under human control nor determined by a changing environment, but is due to a pre-existing hereditary disposition to a particular direction of development. It is impossible to control the supply of nutriment to particular parts of the growing organism on account of the intermediation of a transforming and administering agent in the mother's body, and were this obstacle removed there would remain the more fundamental one that the same chemical elements and compounds are distributed throughout the whole extent of the organism, and that therefore the withdrawal of any element or group of elements from the food supplied would be represented by a reduction of the total vitality or a disturbance of the general functioning instead of being confined to specific organs or tissues, for the effective agent of distribution lies in the hereditary constitution of the organism itself.

In the psychic individual, on the contrary, the process of growth, instead of being protected from disturbances of a pre-established equilibrium, is dependent upon the irregular stimulation of a changing environment, which is to a great extent directly controllable by human agencies. The life of consciousness begins with the independent physical existence of the individual. Whatever be the earlier strivings of sentience

in the embryo, the change of conditions at birth is so tremendous, the new environment so significant for all subsequent activity, that we rightly call this the birth of the soul. Structurally and functionally the whole complex system of psychological activities up to this point was an existence *in potentia*, consisting of an aptitude or tendency to perceive and react in a specific way under any given conditions, and the realization of these implicit capacities stands in an intimate relation to the world in which the organism is placed. For we must recognize two essential factors in the development of the concrete consciousness, namely, an internal impulse to react and an external something upon which reaction shall take place. Fit nourishment in the shape of a suitable environment must be provided if any given form of activity is to become part of the individual life, for the inner factor is not a full-blossomed habit or function, but only a propensity to act in a specific way when the right conditions for its discharge are found. To transform the instinctive tendency into an established function, it is absolutely necessary that the complete reaction demanded by the impulse just struggling into life should be successfully carried through. Feed the instinct, it thrives; starve it, it dies. This is illustrated in the changed habits of birds and beasts kept in captivity.¹⁷

The psychic individual therefore stands in a decidedly different relation to the changing conditions of life from that which the physical organism presents. His development may be quickened, directed or retarded by manipulation of surrounding conditions. For as a matter of fact this environment is neither a stable one nor one in which the changes are presented fortuitously or independent of human control. The relation of nourishment to specific structural and functional development is known, and the supply can be, and customarily is, unequally distributed for the purpose of fostering or repressing the various propensities which manifest themselves. We have therefore to acknowledge the reality of a world of design within the psychological life and the direction of its process of change in subservience to ideal ends. This agency, however, produces nothing; its function is purely selective, controlling the process only by supplying material for the desirable impulse to react upon, and withholding it from the undesirable. "There is a happy moment," says James, "for fixing skill in drawing, for making boys collectors in natural history, and presently dissectors and botanists; then for initiating them into the harmonies of mechanics and the wonders of physical and chemical law. . . . If a boy grows up alone at the age of games and sports, and learns neither to play ball, nor row, nor sail, nor ride, nor skate, nor fish, nor shoot, probably he will be sedentary to the end of his days; and, though the best of opportunities be afforded him for learning these things later, it is a hundred to one that he will pass them by and shrink back from the effort of taking those necessary first steps the prospect of which, at an earlier age, would have filled him with delight."¹⁸ This directive and inhibitive control of the environment reaches its chiefest significance in the ethical life, for the fundamental fact of moral training lies in the reinforcement of the good impulse by affording it every possible occasion for functioning upon the fullest and richest material,

¹⁴ Stanley Hall: A Study of Fears, *American Journal of Psychology*, viii (2), pp. 147-249, 1897.

¹⁵ For an ingenious presentation of the theory of heredity from its psychological side, see Henry B. Orr: A Theory of Development and Heredity, New York, 1893.

¹⁶ Landois: *Human Physiology*, p. 948.

¹⁷ James: *Principles of Psychology*, vol. II, 398, ff. See also chapter on Habit, vol. I, 122-7.

¹⁸ *Loc. cit.*, vol. II, p. 401.

and the elimination or repression of the evil by a literal process of starvation.¹⁹

But, further, there is a positive side to this process in which also it differs from that of organic evolution. The physical individual is given practically complete at birth; there are no further organs to be added, few new structures to develop later. The withdrawal of nourishment from any one part is then a reduction in the total sum of elements making up the individual. If a limb be found so that circulation ceases, growth is arrested, the member atrophies, and the body is mutilated; it is just so much withdrawn from a limited sum.

Both physically and mentally men are bundles of life, all roughly of the same size; they have the same assimilative and reproductive functions, have like perceptive apparatus, and make similar reactions; each can realize only a certain number of activities, possess a certain limited store of knowledge, and set of interests knit up in his life. But these do not represent all the inherited tendencies which his nature contains. The individual is potentially, that is, as a transmitting agent in the chain of life development, immensely more than he can actually become. This has been expressed by the term pre-potency. Eyes, hair, features, color sensitiveness and color blindness, traits and gifts of mind characteristic of the grandparent may appear in the grandchildren after skipping over the intervening generation. Here we must suppose the trait to have existed in that link in some form as a transmissible and developable tendency. It may be that we should say the individual represents all the possibilities of all his ancestors. Though only one color of eyes, which we may call the dominant tendency in that individual, can be physically realized, yet all are there — blueness, grayness and blackness — as transmissible tendencies, which may find a theatre of realization in some future generation. When the characteristic has been submerged a sufficient length of time, its reappearance will be amidst modified forms and new habits, as is illustrated in the occurrence of atavistic traits and reversions to more primitive forms of body structure, of feelings, of instincts, and the like, which are presented in the course of certain diseases, and by the patients in our hospitals for the insane.²⁰

Now, this pre-potency, which, with the exceptions just mentioned, has already ceased at birth to be a real, physical pre-potency, continues to be a living factor in the psychic development, and presents a field where the process of structuring can be directly modified and controlled. The fact should lead to a broad hopefulness in our educational activities and impress upon us the need of providing means and opportunity for the development of the child in all desirable directions whether these represent the actual endowment of the parent or not. Our conception of the possibilities of education are vastly different if we regard the child as the reproduction of his parents, limited in his aptitudes strictly to those which their lives have presented, or conceive him to be the exponent of a stock of which both parents and offspring, as concrete individuals, are but incidental offshoots, drawing their characteristics alike from the common

well of inheritance, of whose contents each life can bring to the surface but a few meagre drops.

The psychical individual, therefore, is in a much more intimate fashion the outcome of his environment than is the physical. And to this must be added the presence of a wholly new and immensely insignificant factor in so far as concerns the kind of thing which the individual consciousness is to become as over against the kind of stock to which it may belong. This is the reality of the inheritance of acquired characteristics in the world of consciousness. The fact of cumulative heredity through the transmission of the results of use and disuse needs but to be indicated. The sum of the father's acquisition is transferred to the child not by any devious or obscure process, laying the whole matter open to doubt, but by direct and immediate communication. Our knowledge is neither inherited nor acquired; it is socially transmitted, and we who stand in the foremost files of time are indeed heirs of all the ages. But the path of transmission has completely changed, a new form of heredity here makes its appearance: for the acquired characters instead of being stored in the organism are laid up in the environment and transmitted through it. In song and story, in oral tradition and printed book, in pictures scratched and woven and painted, in temple and tomb, in implements and clothing, in weapons of war and instruments of precision, in systems of science and philosophy and religion, are treasured up the results of the struggles and conquests of our forefathers over their physical and spiritual environment, and we are inheritors of their wisdom profiting by every item of their winnings. The process of evolution in the individual organism is directly conditioned by the nature of the world in which it exists. Adaptation cannot outrun the environment. The organism may present as many variations as you please fitted to survive under conditions which in the plan of the universe are to be realized next century or next aeon, but it is none the less unfit for the present and is as subject to elimination as is one fitted to conditions gone by a thousand ages or utterly non-existent. The environment sets the pace, and the process of organic adjustment always lags a step behind the process of change therein. Now in the psychological individual this pace is tremendously increased. For here man creates his own environment, which consists, through all its significant sweep, of the stored-up results of past activities. Under this increased pressure, therefore, we should expect a great acceleration in the process of adaptive change. In one regard at least this expectation is justified. In the individual life produced under these new conditions, the type manifests an amazingly successful adaptation. It is only occasionally that the force of this fact pushes in upon us and we realize how greatly in the conscious life the process of evolution is foreshortened. The things we see and handle and do, our pleasures and our pains, the practical activities of our life and its intellectual interests, the procession of events in the world, yet about us and of images in our own consciousness, are inconceivably different from those of the primitive man. We have done away with his whole intellectual heavens and earth, and though the physical laws under which he existed still endure, as well as all the grander features and processes of the world, yet in their psychological values as objects of reaction, as motives for the will, the transformation has been no less great than in the

¹⁹ R. Schäfer: Die Vererbung: Ein Capitel aus einer zukunfftigen psychologischen Einleitung in die Pädagogik. Berlin, 1895.

²⁰ Chief among facts of latent heredity are those of secondary sexual characteristics. See Darwin: Variation of Animals and Plants under Domestication, vol. II (second edition), 1892; and Galton: Natural Inheritance, p. 134.

realm of imagination and belief. And this holds true not of a few favored individuals alone, but of the race as a whole whenever these new conditions are imposed upon it. You will note that the genius does not represent this crest in the wave of development; he is a sport, a variation not accounted for by any environment definable by us.

But the further question remains as to the security of this advance, the stability of the latest type developed. Transformation of the individual may not affect the stock itself. The high degree of specialization presented may be wholly dependent upon this exceedingly artificial environment, that is, an environment which is composed not of elements resulting from a natural process of objective change, but consisting of the products of transformation within the individual organism itself — a subjectively objective environment. The wild flavor may still be there, though continually suppressed in the individual by the presence of these secondary selective conditions, and may be ready the moment these conditions are broken down to assert itself in a reversion to more primitive, savage forms.

I think this statement of the case is true. The variety which we call the scholar, the man of culture, the scientist, is a highly unstable type insecurely maintained upon a foundation of more primitive attitudes which represents the fundamentally real type still. In so far as the conditions which determine the nature of the present concrete individual life consist in these accumulated results of acquired characteristics stored in the environment and transmitted by social heredity, they are transient and directly ineffective for racial variation. They form only a scaffolding about the life. I do not believe that the effects of intellectual training, or artistic culture, or acquired manual dexterity, or business sagacity, in so far as they are training effects and not spontaneous variations, are reproduced in the form of permanent variations of type.

But indirectly this artificial structure does affect the racial adaptation in that it is a pre-potent agent of selection over and above those which the untransformed environment presents, and therefore fosters the preservation of those variations which lie in the direction of its own change. In so far as those sports arise which we call the saint, the genius, the man of feeling, this environment tends to preserve them, but by a purely selective, not a productive, activity. Here, indeed, lies the great significance of the Weissmannian-Spencerian debate. Our interest in it is at heart a psychological one and no other. Not only does the moral aspect of the problem touch us more closely than the physical, but the facts in the latter case are much less ambiguous than in the former, for the physically bad stock tends toward elimination, the physically good toward survival. But such an easy optimism is by no means possible on the spiritual side. The morally bad stock shows no less fecundity than the good. The idle, the shiftless, the dull, as perhaps also the criminal, propagate more rapidly than the rest of the race, rather than less so, if for no other reason than that the restraints upon marriage are much less rigidly observed by them than by the more highly selected members of society. The moral problem is absolutely different according as we hold to one or the other of these two views. For the Spencerian training is of more than individual value; the effects of use and disuse are inherited, and the cumulative re-

sults of right thinking and right living in the end convert bad stock into good stock. Restraint, discipline, the conformance to a higher life, are fundamentally hopeful, since the process of moral training tends to supersede itself by effecting an adaptation of the race as a whole. Under the Weissmannian concept there is no hope and no end to the process; its labors are Sisyphean, for the effects of training are transient and individual. The bad stock is no more got rid of by discipline and culture than are the impurities of a river by filtration of the water on the part of those living below the source of pollution. We are presented with a complete realization of the Calvinistic doctrine of predestination to good and evil. The units of good and evil under the former concept are individual impulses within the single human consciousness; moral progress is the selection and preservation of the right and good aptitude and the elimination of the evil; the selective agent is the individual human personality; and the result is a purgation and transformation of human society through the moral culture of that personality itself. Under the latter concept these individual human consciousnesses themselves are the units of good and evil among which selection is to be made; moral training is indeed still endlessly valuable so far as the single human subject of it is concerned, but racial progress can be made only by preservation or destruction of the good and evil souls themselves; and the agent of selection is no longer conceivably the individual — the function of control and direction must lie in the hands of that human society which is itself in process of transformation. If this be the true nature of the process,—

“So careful of the type it seems,
So careless of the single life,”—

I leave it to you to consider what readjustment of attitude must be made, what reconstruction of one's whole conception of responsibility and duty toward oneself and the world at large.

Clinical Department.

PERINEPHRITIC ABSCESS INVOLVING THE APPENDIX.

BY HUGH WILLIAMS, M.D., BOSTON,

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THE patient, a young man of twenty-four, was brought to the Massachusetts General Hospital, May 1, 1899, during the service of Dr. M. H. Richardson, and was operated upon by Dr. J. G. Mumford. The man was sent in with the diagnosis of appendicitis by his attending physician.

The patient's previous history was good, and he stated that he had always enjoyed good health up to the time of his present illness. He was a well-developed and well-nourished man, and gave the following history: About ten days previous to his entrance to the hospital, he had been taken with pain in the abdomen and back — not localized, and coming on suddenly. The next day he had headache, felt weak and nauseated, and vomited soon after, and since then, up to the time of his entrance, he had been unable to retain anything on his stomach. The pain, which had continued from the first, had been getting more severe,

and was now localized, extending from the umbilicus to the right loin and into the back. The bowels had been constipated. His physician stated that there was high fever during the first few days of the illness, but that since then it had gradually fallen to normal, and had remained so since. The urine was said to have been high colored and diminished in amount, but no chemical examination had been made of it previous to his entrance.

The general condition of the patient was fair, with a temperature of 98.6°, pulse 84, and respiration 18. The abdomen was generally but only slightly distended. There was marked rigidity of the abdominal muscles on the right side. A large mass could be palpated in the right loin, but its limits could not be followed out on account of the extreme tenderness. The dulness on percussion was continuous with the liver dulness above, and extended below to the anterior superior iliac spine. There was dulness in the flank, extending forward to just external to the border of the right rectus muscle. Rectal examination was negative. The blood count showed 14,000 white corpuscles. There was no evidence of edema anywhere, and the examination of the heart and lungs was negative. The diagnosis of appendix abscess was made.

The patient was prepared for immediate operation, and under ether a mass could be readily palpated, extending from the costal margin to below the anterior superior iliac spine. An incision about four inches long was made along the border of the right rectus muscle, the general peritoneal cavity opened, and the intestines walled off with gauze from the mass, which was then opened, evacuating several ounces of foul-smelling pus. Three small pieces of tissue were then removed from the abscess cavity, each piece about the size of the terminal phalanx of the little finger, which on section, macroscopically, looked like renal tissue, but whether they came from the kidney proper in a condition of extreme lobulation or were supernumerary kidneys was not determined. No part of the appendix was found. The abscess cavity was then washed out, and gauze wicks inserted. The patient was in very poor condition at the end of the operation, but reacted well to stimulation.

On the third day after operation, the discharge from the wound had a strong urinous odor. On the ninth day a fecal fistula was found in one of the loops of bowel presenting in the wound, and besides this fecal discharge there was a discharge of a thin fluid, having a distinct odor of urine from the upper part of the wound. A few days after this the patient began having pain in the rectum, and at times severe rectal tenesmus, and at the same time his temperature shot up. Rectal examination showed a large fluctuating and tender mass on the right side of the pelvis. This was aspirated on the sixteenth day after operation and a considerable amount of pus evacuated, giving immediate relief, the temperature falling to normal the following day. There was no longer any urinous discharge from the wound at this time, but the fecal fistula had increased in size. The wound was otherwise clean and healthy looking and granulating up rapidly. The twenty-four-hour amount of urine, which had been steadily increasing, was now normal. The general condition of the patient had meanwhile rapidly improved, and a firm cicatrix having formed about the fecal fistula, he was again operated upon for its closure by Dr. S. J. Mixer on the 22d of June.

In this operation, a stump of the appendix, about one inch long, was found lying to the right of the cecum. It was surrounded by a mass of firm adhesions, showing that it must have been either involved in the previous abscess, or that it was its primary cause. The right kidney was carefully examined and found to be apparently normal in every respect, and not lobulated, showing that in all probability the kidney tissue removed at the first operation was of supernumerary origin. The adhesions having been freed, and the opening in the bowel closed, a small gauze wick was inserted, and the abdominal wound closed. The patient made an uninterrupted recovery, the wound having entirely closed three weeks after operation.

The microscopical examination of the pieces of tissue removed at the first operation showed them to be renal tissue, part of which showed replacement with granulation tissue, as if forming the wall of an abscess cavity. The pathological diagnosis was, "a destructive suppurative inflammation of the kidney of rather long standing."

Repeated examinations of the urine showed it in every case to have been normal. This seemed to be another reason for considering the kidney tissue removed of supernumerary origin, and the right kidney itself to be normal. Whether the abscess was primarily due to inflammation about the kidney or about the appendix could only be settled by the pathological report, which stated that the inflammation about the kidney was of rather long standing. If we take this view, we can then consider the appendix to have become secondarily involved, and that at the time of its involvement the acute symptoms began.

Medical Progress.

REPORT ON ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D., AND E. G. BRACKETT, M.D., BOSTON.

CONGENITAL FLEXION OF THE KNEE.

M. PHOCAS¹ reports six cases of this rare condition, one with an account of the dissected leg, and reviews the previously recorded cases. The cause of this condition, in which extension at the knee beyond a right angle is impossible, is obscure. It occurs usually in the children of primiparae. Other deformities may also be present, as flexion or adduction of the thigh, knock knee, and very commonly club foot. The so-called "scars" often attributed to amniotic adhesions are common. Anatomically there is a sharp anterior bowing of the femur near the epiphyseal line, and obliquity of the upper surface of the tibia, sometimes a displacement outwards or an absence of the patella, and possibly a deformed head of the fibula. In addition to these bony changes all the soft parts on the back of the leg are contracted, ligaments, muscles, fasciae, and skin. Treatment should be directed to a gradual stretching and correction by manipulation and appropriate apparatus or by immediate osteotomy and tenotomy.

ACQUIRED DEFORMITIES OF THE TOES.

M. Kirmisson² suggests that, in addition to im-

¹ Revue d'Orthopédie, January, 1899, p. 14.

² Loc. cit., March, 1899, p. 133.

proper shoes, there are many causes for hallux valgus and allied deformities of the toes. He mentions particularly rheumatism, alcoholism, various diseases of the nervous system, defects of ossification, and a congenital predisposition in certain cases.

SUDDEN DISLOCATION SECONDARY TO ACUTE DISEASE.³

Of 81 cases of this rare complication 32 followed typhoid, 24 followed acute articular rheumatism, 13 followed scarlet fever, and the remainder variola, gonorrhoea, grippe, erysipelas, and "eruptive fever." He reviews different theories which have been presented to explain the pathological conditions and occurrence of this form of dislocation, and particularly that of the hyarthrosis of the joint by Petit, and that of the muscular action by Verneuil, and considers these at length, particularly in regard to the fallacies of the theories and more especially in regard to that of Petit, that of the hyarthrosis, which has received the most support, and is regarded by the modern writers, among whom are Keene, as the probable one; and third, the theory of the combined forms of the hyarthrosis and muscular action. The hip-joint is almost invariably the one involved, although in rare cases the knee, shoulder, or other joints may be affected. It occurs usually in young patients of either sex during convalescence, and is characterized by the absence or slight extent of any bony or cartilaginous changes. When associated with such changes tuberculosis must be considered. The accident is probably due to a combination of causes, chief among them being the long continuance of faulty positions, the weakening and stretching of certain muscles and ligaments, the distention of the capsule by effusion. In this condition any slight reflex muscular spasm may cause a dislocation. The accident usually produces no symptoms other than the characteristic deformity, although it may cause great pain, or, again, relieve pre-existing pain. Epiphyseal separation is to be excluded. Reduction under anesthesia is usually easy, especially if done promptly. Kirnisson recommends the following manoeuvres: First, complete flexion with persistent adduction, to be followed by circumduction; then with the leg abducted, semiflexed and rotated outward, the head will slip quietly into place. If manipulation fails continued extension and, if necessary, tenotomy should be tried. After reduction the leg should be held in the abducted position with extension, if necessary. Excision or osteotomy may be necessary in immediate cases.

SUDDEN DISLOCATION IN HIP DISEASE.⁴

These rare accidents, comparable in some respects to dislocation after acute diseases, occur usually early in the course of the disease, before extensive destruction of the joint surfaces has occurred, and usually without suppuration. They are very different from the slowly progressive luxation due to erosion of the femoral head and acetabulum as the result of prolonged disease. Owing to the slight joint changes reduction under an anesthetic is usually possible and permanent.

ERRORS IN SKIAGRAPHS.

Hoffmeister⁵ calls attention to the difficulty of

determining the meaning of the Röntgen ray pictures, and considers that it is necessary in order to get a correct opinion of an x-ray picture to have correct data in order to know what the proper projections of the portion of the body were. This is particularly true of skiagrams of the pelvis, and it is necessary in these to have the position of the lamp, the body, and the plate accurately given.

CONGENITAL SCOLIOSIS.⁶

The author quotes the statement of Coville that one case of scoliosis was to be found in 1,015 newborn children. He himself mentions two cases, one after a forceps delivery and where death followed pneumonia. The pathological specimen showed a left convex dorsolumbar curve, with a right cervicodorsal convex curve, with marked rotation and without any change in the vertebrae. The curve he considers to be the result of compression *in utero*.

SCIATIC SCOLIOSIS.

Denuce⁷ reviews the various opinions which have been advanced in regard to the causation and development of this deformity following painful affection of the sciatic nerve, and states the ground for his own belief that this condition first seen does not exist. The distinction made is more or less of a technical one, but is of value in that it is a careful check on the sometimes hasty grouping of cases on superficial resemblance. He lays stress on the recognition of the necessary condition in true scoliosis, in the existence of the deviation of the spinal column, and greater or less permanency of the deformity. In many of the cases so classed, he thinks that there existed previously a scoliosis, exaggerated temporarily by the distorted position, and many of the others being cases of sacro-iliac disease, the common symptoms of which is considered in the article in detail. It concludes that, (1) sciatic scoliosis does not exist; (2) that sciatica, like any painful affection of the leg, tends to the assumption of a malposition of the trunk in leaning toward the affected side and a corresponding depression of the pelvis, and results from the effort to maintain the equilibrium, but this position is not permanent, may be reversed, and does not constitute true scoliosis; (3) the existence of a more or less fixed lumbar spine, and lateral inclination of the trunk, with a sciatica, should lead one to suspect the primary condition to be a sacro-iliac disease.

CONGENITAL SPASTIC PARALYSIS.

Hoffa⁸ considers that the origin of this affection is an intrameningeal or an intracerebral hemorrhage, most frequently caused by a difficult birth, and causing an injury to the neurons of the motor tract. This lesion is manifested not in a complete interruption, but in an injury of the function. As a rule, the extensors and abductors are weaker than the flexors and adductors. Treatment consists in increasing the energy of the cortical motor neurons, and diminishing the activity of the peripheral neurons. The first must be developed by massage, gymnastics and resistant movements. Tenotomy and tenectomy are indicated in the stiff muscles, followed by fixation.

⁶ Hirschberger: *Zeitschrift für orthopedische Chirurgie*, Band vii, p. 129.

⁷ *Revue d'Orthopédie*, September, 1889.

⁸ *Munich Medical Volk*, 1898.

³ Degez: *Revue d'Orthopédie*, January, 1899, p. 44.

⁴ Kirnisson: *Revue d'Orthopédie*, January, 1899, p. 26.

⁵ Hoffmeister: *Beiträge zur klinischen Chirurgie*, Band xxi, H. 3.

THE PATHOLOGY OF CEREBRAL PARALYSIS IN CHILDREN.

Schmless⁹ had the opportunity to observe two children who presented this condition at an early age, one being fourteen days old, and the other three weeks. In these instances the characteristics seen in older children were well marked, pointing to a congenital origin of all cases of this class. In a few older cases a lengthening of the ligamentum patella was observed, a result of the exaggerated flexed position, in the opinion of the writer. The treatment recommended is that of tenotomy of the tendo Achillis, with forcible correction and flexion in a plaster bandage, with massage later, and the use of apparatus where it is necessary.

CEREBRAL PARALYSIS OF CHILDREN.

Bocker¹⁰ classifies cervical paralysis as follows: (1) That affecting the lower extremities only, true Little's disease; (2) those affecting the upper extremities also, with cervical disturbance as well; (3) cases where there is athetosis present as a prominent symptom; and (4) where there is cerebral hemorrhage. The prognosis he considers bad in the second class. Cases of the first class are most favorable from an orthopedic point of view. Massage of both the weak and the spastic muscles may accomplish a good deal, but tenotomy or tenectomy is of more benefit, followed by massage, exercise and apparatus. Athetosis is to be handled by massage and gymnastics twice a day, carried on for six months. In cerebral hemiplegia the treatment is much the same as far as the legs are concerned. For the arm, a transplantation of tendons is of service. Transplantation of tendons is also of use in some foot cases, bending of the bone due to inflammatory softening.

THE SURGICAL TREATMENT OF CONGENITAL SPASTIC PARALYSIS.

Lorenz¹¹ recommends for treatment tenotomy or tenectomy in the severer cases, followed by fixation in an over-corrected position. In the severe cases of spasm of the adductors he has resected the obturator nerves. The after-treatment he considers of the utmost importance. This consists of massage, gymnastics and faradization. Treatment by orthopedic apparatus is not found of assistance.

OPERATIVE TREATMENT OF RADIAL PARALYSIS AND TENDON TRANSPLANTATION IN SPASTIC PARALYSIS.

Franke¹² describes a number of operations on the upper extremity. The tendon of the extensor carpi radialis longus was shortened, and with the end forcibly thrown back, the central end of the divided tendon of an active flexor carpi ulnaris was sewn into the tendon of the extensor communis digitorum. The result of the operation was very good. Arthrodesis of the shoulder-joint was done in one instance to prevent the inward rotation of the arm. The author is of the opinion that there is no incurable radial paralysis. In spastic paralysis the author combines tendon transplantation, tendon lengthening, and tendon shortening.

⁹ Zeitschrift für orthopedische Chirurgie, Band vi, H. 1, p. 1.

¹⁰ Loc cit., Band vii, p. 102.

¹¹ Wiener klinische Rundschau, 1897.

¹² Archiv für klin. Chirurgie, Band ivli, H. 4.

TENDON TRANSFERENCES.¹³

The author advises this procedure not only in cases of infantile paralysis, but also in cases of cerebral paralysis. An examination before operation should be made by voluntary innervation of the muscles, and by electric testing. Where some doubt remains it is better to make the incisions long enough to see the lower ends of the muscles, and in that way determine on their quality. It is best not to transplant the active muscle or its tendon, but to transplant the peripheral end of the paralyzed muscle on to the sound one, or split the tendon of the sound muscle and attach to the useless tendon. It is found necessary to lengthen tendons as well as to transplant. The question of the re-establishment of co-ordination seems not to be settled as yet. Practically, however, good results are obtained even from transplanting antagonist muscles. The following transferences are reported:

(1) The outer half of the tendo Achillis to the tibialis anticus in a traumatic case, without great gain.

(2) The flexor carpi ulnaris to a paralyzed extensor communis digitorum in cervical paralysis, with a shortening of the extensor carpi radialis. A second operation was performed, transplanting a paralyzed triceps into the deltoid, with a good result from both transplantations.

(3) A tenotomy of the adductors and hamstrings and later a transplantation of a half of the tendo Achillis to the paralytic extensor communis, with an excellent result.

(4) Ischioparalysis following attempt at violent reduction in double congenital hip with a perineal paralysis remaining, and a transplantation of the outer half of the tendo Achillis to the tibialis anticus: a good result.

(5) A paralysis equinovarus with a transfer of half of the tendo Achillis to the tibialis anticus: a good result.

(6) In cervical paralysis, shortening of the extensor carpi radialis, with good result.

(7) Infantile paralysis with dropping of the toes: transference of half of the tendo Achillis to the tibialis anticus; improvement of gait followed and voluntary dorsal flexion possible, but the foot was drawn out.

(8) Infantile equinus. The transference of the tendon of the tibialis anticus to the extensor communis digitorum; almost perfect result.

(9) Transference of the tendon of the rectus femoris, which was cut across and the peripheral portion was transplanted on the sartorius; little benefit resulting.

(10) Cervical paralysis of the musculospiral group; the extensor carpi radialis was shortened, with an excellent result.

(11) Infantile equinovarus with paralysis and contraction. The tendo Achillis was split and lengthened; the tendon of the extensor digitorum was exposed and the peripheral end cut, and the cut peroneus longus and tibialis were fastened to it. The deformity was corrected, but no active dorsal flexion followed.

(12) Paralysis equinovarus; shortening of the tibi-

¹³ Goeltz: Zeitschrift für orthopedische Chirurgie, Band vii, H. 1, p. 54.

alis anticus; the tendo Achillis split and fastened to the peroneus longus; good improvement followed.

(13) Flexion of the knee in an equinovarus from infantile paralysis. The tendo Achillis was split and a half of it sewn to the extensor communis digitorum brevis, with a good result.

(14) Infantile paralysis with contraction on the right and left side. On the right side the peripheral end of the peroneus longus was fastened to the tendo Achillis, and the same was done with the peroneus brevis; the tibialis anticus was shortened; on the left side only the tibialis anticus was shortened. The result was good position for both feet and active movements.

(15) Paralysis following fracture of the elbow. The extensor carpi radialis was shortened. The flexor carpi ulnaris was freed and fastened to the extensor communis digitorum. The result was a remarkably good one.

(16) An infantile flat foot. The tibialis posticus was shortened and a half of the tendo Achillis fastened to the tibialis anticus. The result was useful, but there was a tendency to over-correction.

(17) Paralytic valgus. The peroneus longus was cut and carried beneath the tendo Achillis and fastened to the tendon of the paralytic tibialis posticus. The result was fairly good.

(18) Infantile paralysis with the equinovarus. Half of the tendo Achillis was fastened to the paralyzed peroneus and the tibialis anticus was shortened. Good position followed, but no active movement.

(19) Paralysis of all the calf muscles and part of the quadriceps with an equinus position. Tibialis anticus was shortened and the position was improved.

A thorough asepsis is important as well as a correction before the operation. A definite plan is to be laid out on the basis of an examination of the limb, and either a transference of the active muscle to the tendon of the paralyzed muscle or *vice versa* is to be done according to the case. The contracted tendon is either to be cut or plastic lengthening done. The limb is to be fixed in a plaster-of-Paris bandage after the operation and allowed to get up in from one to two weeks. Plaster is to be worn four to eight weeks in all, and an apparatus is used afterwards, or a rubber band fastened by adhesive plaster to the upper part and to the shoe at the lower. Massage, electricity, and active movements are important; pure passive motion is of less value and can usually be omitted.

TRIGGER FINGER IN THE GERMAN ARMY.

Schulte¹⁴ describes nine cases, five observed by him. In four cases an enlargement of the size of a pea could be felt in the affected hand; in one, a roughness easily noticed. This unevenness was to be observed in the portion of the hand between the line of the fingers and the middle of the hand, and was most noticeable at the point of check motion, disappearing in the middle point of the hand when the obstruction was overcome. The check was always seen in the direction of extension of the fingers and not the reverse. Schulte made a number of experiments on the cadaver, sewing pieces of sponge on the surface of the flexor tendons. This produced a difficulty in motion, but did not give the characteristic jerk. When, however, a thread of silk of medium thickness was knotted,

the characteristic jerk and snap were observed. After careful dissection Schulte could determine that the check to the entrance of the knot was as the tendon played into the strong ligamentous arch, forming the sheath of the tendon. When this was cut the motion was easy.

CONTRACTION OF THE HIP-JOINT AND ANCHYLOSIS.

Blencke¹⁵ pays special attention to the correction of the shortening by an oblique subtrochanteric osteotomy, correcting the shortening by a practical lengthening of from five to 11 centimetres. He mentions a case of Landerer where a practical shortening of 16 centimetres was reduced to two and one-half centimetres. He mentions that slight amount of motion may be obtained after excision and after pelvi-trochanteric osteotomy of Lorenz, by interposing a muscular layer between the cut bone.

OBLIQUE TROCHANTERIC OSTEOTOMY.

Berger¹⁶ recommends for correction of the deformity following hip disease an oblique osteotomy. Phocas¹⁷ prefers the linear osteotomy. Nelaton also employs an oblique osteotomy, though he recommends that this procedure should not be undertaken until three months after an attempt to loosen the head of the femur by force.

AMBULATORY APPARATUS FOR HIP DISEASE.

Wieting¹⁸ recommends suspending the patient and applying a short trunk hose of felt similar in shape to bathing drawers, with the addition of traction on the leg by adhesive plaster straps. A plaster spica is next applied, with especial care to make it firm and well fitting beneath the tuberosity and as far down as the knee. A steel pattern with side irons, with notched cross pieces on the top, is fitted on the plaster bandage and secured in place by the bandage. When this is done, the extension straps are transferred from the pulley to the side irons and fastened to secure proper dragging. He claims that in this way a better fitting apparatus to the pelvis is given than if the same dressing is applied in the horizontal position.

B. Scharf¹⁹ states that a number of published cases are quoted, but many of these, in his opinion, result from osteomyelitis, which he regards as much more common than the literature would indicate. He reports three cases of his own and considers that the causes may be (1) osteoporosis accompanying osteomyelitis or accompanying tuberculosis, and (2) interference with the epiphyseal growth at one side of the epiphyseal junction, and (3) a rarefying osteitis following operation due to trauma.

ORTHOPEDIC APPARATUS.

Dollinger²⁰ claims that in tubercular disease of the hip-joint distraction and fixation are to be considered as the hygienic conditions favorable to cure. Traction in bed not only distracts but fixes. The relief from pain, however, he considers to be due rather to the fixation than to the distraction. Traction is of service in correcting deformed positions of the joint, but for the correction of deformity, the author prefers

¹⁵ Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, 1899, p. 279.

¹⁶ Revue d'Orthopédie, 1898.

¹⁷ Loc. cit., No. 5.

¹⁸ Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, p. 219.

¹⁹ Loc. cit., Band vii, p. 29.

²⁰ Loc. cit., p. 1.

¹⁴ Deutsche militärärztliche Zeitschrift, 1897.

gentle manual correction with repeated plaster-of-Paris bandage fixation, changed every three or four days. In affections of the spine head support is applied in all diseases above the seventh and eighth dorsal. At night the patient sleeps on a half shell of copper moulded over a plaster mould on a plaster jacket. In the daytime a plaster bivalve apparatus is used with a head support when necessary. In low lumbar disease a corset made of a light frame of metal with cross pieces in front over the chest, reaching from the upper part of the sternum to the pelvis, without pressure over the abdomen; and in the back a light frame on either side enclosing a lower central portion. For hip disease there are two forms of hip splint used, a short fixing thigh and pelvis apparatus and a long perineal crutch. In poor patients a plaster spica is used. In affections of the knee a fixation apparatus is used, but the perineal crutch is not. In fixations of the ankle-joint, a leather and metal support is applied with an arrangement by which the weight is borne upon tibial tuberosities, the heel being slightly raised.

RESECTION OF THE SACRO-ILIAC SYNCHONDROSIS.

Heyden²¹ reports on the operative treatment of inflammation of these articulations, especially in tubercular affection. Twenty-eight cases were operated upon by Schäder, the affected portion being removed by chisel. Of these 28, 11 were healed, three improved, 11 died, and one remained unhealed.

CHANGES IN THE VERTEBRÆ IN POTT'S DISEASE.

Menard²² in an exhaustive study of specimens calls attention to the folly of speaking of a cure in Pott's disease after any short course of treatment. Study of sections shows foci capable of setting up active disease, where in the uncut specimen there seems complete consolidation. The number of vertebral bodies involved in a knuckle is seldom realized. The number, always at least as many as the spinous processes in the knuckle, may be six or eight without preventing the contact of the anterior edges of the vertebral bodies just above and below the diseased area. Thus the deformity is angular in front only; posteriorly the spinous processes are arranged like the ribs of a fan, while above and below in the compensatory curves the reverse may be true. The length of the knuckle varies with the number of bodies involved; the sharpness with the completeness of the folding forward, which may be only moderate even in cases of long standing, particularly in the dorsal region, owing to the ribs, but which is apt to be most extensive in the upper dorsal region. In the cervical region the pedicles and transverse processes may hinder the folding forward. A sequestrum may also hinder the infolding.

The mechanism of the deformity varies considerably. As a rule in the dorsal and lumbar regions the upper segment slips backward on the lower, then as the bending forward increases the bodies of the upper segment press on the lower and themselves ulcerate. Finally the upper segment settles forward. In certain cases lateral subluxation may occur, but the reason for this is not evident. While the bending forward may lead to a certain amount of ulceration of

the bodies from pressure, and thus cause an increase in the deformity, it must not be forgotten that very often the disease progresses entirely independently of pressure, and that the destruction of the bodies considerably precedes the kyphosis. In connection with the relatively prominent dorsal and relatively small lumbar knuckles, the difference in the sizes of the bodies in each region is suggestive.

While usually the most extensive disease occurs in improperly treated cases, this is not always true. Patients may live with a remarkable amount of destruction, even of ten or eleven bodies. In certain cases in old people there may be a superficial subperiosteal erosion of the bodies for a long distance above or below the focus. In young people double foci are more apt to be found, which may later unite. While consolidation is going on in one place, the disease may be extending in another. It is not at all rare to find tuberculous disease of other joint bones or viscera associated with Pott's disease.

Coincident with the destruction of the bodies certain changes occur in the posterior arcs. The firm spinous processes are very rarely diseased, the pedicles which are nearer the bodies and made up of more spongy bone may be involved by the extension of the disease. The articular processes become the fulcrum, by which the vertebræ are in contact. The top of one articular process presses upon the middle of that above. Thickening and ulceration of the cartilages follow as a result of the abnormal pressure. Bony contact and ultimately bony union may occur, which may in time extend to the laminae and spinous processes. Meantime, owing to the loss of the anterior attachments, there is a slipping backward and settling of the posterior area. This is greatest in the lumbar, where the laminae are not closely applied, and least in the dorsal regions, and is most marked at the base of the knuckle. In cases of long standing there may be atrophy from vertical pressure and, possibly owing to trophic changes, diminution in the length of the laminae and spinous processes.

The calibre of the bony canal is rarely, and even then only slightly, diminished. Paraplegia may result from pressure of an abscess backward into the canal, inflammatory thickening or edema behind the dura, pachymeningitis, pressure by debris or by a sequestrum. The part played by the sharp bend is not proved. Laminectomy is generally useless, while the drainage of an abscess spontaneously or by a costo-transversectomy may relieve a paraplegia. A forcible reduction may either increase or relieve a paraplegia.

For repair, arrest of progress and absorption of residue are essentials. The production of new bone is insignificant usually, and thus differs from the conditions in a fracture. New bone practically never fills up a cavity. Bony union occurs only in areas of abnormal pressure and follows no regular laws, except that it usually precedes healing, begins in the posterior area, and is but slight and irregular anteriorly as a rule. New bone may be formed from the periosteum anteriorly and may unite the bodies at the anterior angle, bridge over a cavity or form along a sinus. Apparently mixed infection through a sinus aids bone formation, and may thus aid consolidation and the arrest of the disease. Ankylosis between the bodies is more fibrous than osseous and amid the partially fused masses are usually small foci of disease.

²¹ Inaugural Dissertation, Bonn., 1898.

²² Revue d'Orthopédie, May, July, September, 1899, vol. x, Nos. 3, 4, 5.

CARLOT'S METHOD OF REDUCTION OF DEFORMITY IN
POTT'S DISEASE.

Carlot²³ reports the case of a girl three years of age who died of scarlet fever five months after the reduction. There was an abscess found at autopsy, extending backward and forward, penetrating the pericardium. There was no bone retraction at the point of deformity. He is not in favor of Carlot's attempt at union of the spinous processes after cutting away the prominent spines. He is of the opinion that Carlot's more favorable results than those obtained by other surgeons may be due to over-violence on the part of the latter.

THE ANATOMY OF CONGENITAL DISLOCATION OF
THE HIP.

Hinsberg²⁴ describes the anatomical appearances in a case of congenital dislocation of the hip in a woman seventy years of age. The dislocation was double, and the woman in life had the characteristic gait. The thighs were adducted, and the spine presented marked lordosis. The patient was active as a child, but in the last years of her life she was confined to her bed. The muscular system showed characteristic changes. The gluteus medius was weak, pale, and fatty degenerated in its greater portion, but the anterior portion was fairly well developed. The gluteus minimus was pale and atrophic; the curve of the pyriform muscle horizontal, and in this muscle, as well as in the obturator internus, the contractile tissue was small, while the tendinous portion was well developed. The gemelli were more muscular; the obturator externus and quadratus femoris were well developed. The iliac psoas muscle showed peculiar changes. The internal iliac was reduced to a small number of muscular fibres not sufficient to cover the iliac bone; the psoas, however, presented a certain number of not very strong muscular bands. The alterations in the shape of the pelvis were not as great as would be supposed, the diameters being practically normal. The plane of the pelvis was altered to such a degree that it was vertical, the symphysis pubis being horizontal. The ends of the femora were greatly changed, and were not the same on both sides; on the right the head had almost entirely disappeared; the neck was short and not easily distinguishable. The trochanter was well developed. On the left the trochanter major was weaker, and the head and the neck were the same as on the right but with more marked alterations. The tip of the trochanter major was somewhat drawn inward. The alterations in the capsule were very marked, to such an extent that the capsule had become thickened and the part which lay between the head of the femur and the acetabulum had been transformed into a thick band which surrounded its upper portion, the top of the femur being attached between the neck and the greater trochanter. The capsule was universally thickened, and the ligamentum teres was absent. The capsule had been transformed into a strong ligament surrounding the trunk to the neck of the femur. A false capsule had been formed about the head and the neck, or more properly speaking, a space covered by tissues from the gluteus medius and minimus. There was no trace of any socket. The bony structure of the femur was altered in such a way that the osseous fibres which

normally pass to the head, strengthening this portion of the bone, were abnormally developed on the direction of the trochanter, with an increase of spongy bone in the direction of the head.

THE BLOODLESS METHOD OF TREATMENT OF CON-
GENITAL DISLOCATION OF THE HIP.

M. Kirmisson²⁵ reviews the articles of Koelliker²⁶ and Lorenz.²⁷ He agrees with Koelliker that the method usually does not really reduce the dislocation, but simply transposes the femoral head into a position near the acetabulum, securing thus a joint functionally more useful. Koelliker thus obtained two cures, 45 transpositions, and 11 failures. Kirmisson reiterates the views expressed in his "Traité des Maladies Chirurgicales d'Origine Congenitale." He admits that the functional result may be improved by the attempt at a bloodless reduction, but does not agree with Lorenz that a true reduction occurs. The operation is, except in rare cases, palliative only. Lorenz's own dissections show that a true reduction is usually impossible.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of December 19, 1899, the President, DR. A. WORCESTER, in the chair.

DR. C. M. GREEN showed a

FIBROID TUMOR OF THE UTERUS APPARENTLY IN A STATE OF INCIPIENT MALIGNANT DEGENERATION.

DR. E. C. DUDLEY, of Chicago, read by invitation a paper entitled

STRICTURE OF THE URETER A POSSIBLE RESULT OF LACERATION OF THE CERVIX UTERI, AND URETEROVAGINAL FISTULA A RESULT OF TRACHELORRHAPHY.¹

DR. EDWARD REYNOLDS: This paper is one that opens up fields of thought. The idea is a new one. I agree with the reader that the only way in which the ureter could have been injured was that it was drawn into reach by cicatricial contraction. Ordinarily it is too far off to be reached by any stitch that would be likely to be put into the cervix. I am inclined to think that in the reader's case the bougie was quite as likely stopped by the cicatrix as by the stitch. I have seen several cases in which the ureter was very close to the cervix indeed, though I never happened to notice whether in those cases the cervix was especially badly torn. I have been struck by the ingenuity displayed by Dr. Dudley in closing the fistula. The question however arises in my mind whether there might not be some danger in leaving so patulous an orifice to the ureter, in view of possible ascending infection. The only time I have had to build an orifice to a ureter was in a case in which in removing papillary growths in the bladder I was forced to remove the ostium of the ureter, and had to stitch its edge in such a manner as to bring the pout-

¹ See page 215 of the Journal.

²³ Heusner: Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, 1899, p. 248.

²⁴ Loc. cit., H. 1, p. 86.

²⁵ Revue d'Orthopédie, March, 1899, p. 153.

²⁶ Centralblatt für Chirurgie, October 22, 1898.

²⁷ Wiener klin. Wochschr., December 1, 1898.

ing mouth of the cut ureter into the bladder. Cystoscopic examination a few weeks later showed an apparently normal orifice. The orifice of the ureter is normally somewhat smaller than its tube; only an 8 or 9 French bougie will pass, while the ureter above will take a 15.

DR. M. H. RICHARDSON: Looking at the matter from an anatomical point of view, the ureters have much the same relation to the cervix as the common carotids have to the trachea, and are correspondingly liable to be injured. Traumatic lesions of the ureter should, however, be avoided by selecting methods of operation which permit you to see just what you are doing; there is no need of putting in a catheter to see where the ureter is; it is perfectly easy to find it in the course of an abdominal hysterectomy, for instance, by a little dissection. Tie and clamp only what you recognize and you will not injure the ureter. Personally I have never happened to see a wounded ureter. Every year I demonstrate to the students the various methods of dealing with them, some of which, as, for instance, the insertion of a wounded ureter into the bladder, are very beautiful procedures. While *a priori*, the possibility of a tear in the ureter coming from a laceration of the cervix would seem rather remote, further consideration does not make it seem so entirely impossible. I do not, however, think that the ureter could be torn as long as it is in easily distensible tissues, but if it is imbedded in a mass of inflammatory exudate such a tear might arise. I do not see just how it could be included in a stitch through the cervix. It would seem to me that in Dr. Dudley's case the suture passed to control the bleeding was far more likely the cause.

DR. ENGELMANN: The important lesson to be deduced from a case like this is of course the effect of laceration upon the position of the ureter. I have seen the ureters displaced by pressure of tumors and also cases in which I thought lacerations of the cervix were the cause. I should think cicatricial drawing down might be a real condition, and of course pain resulting from that would not be helped in any way by restoring the cervix.

DR. J. G. BLAKE: In looking up this subject the only reference I could find was that Emmet speaks of displacement of the ureter as being possibly caused by inflammatory changes. This case is certainly unique, and we should thank Dr. Dudley for having called our attention to a possible explanation of our failure to relieve symptoms in certain cases of restoration of the cervix.

DR. DUDLEY: Undoubtedly stricture of the ureter may arise from traumatism, due to pressure by the child or from cicatricial contraction or from other causes which have nothing to do with parturition. I think we have little to fear from the suggestion of Dr. Reynolds that the ureter may remain too patulous and that it may therefore furnish a ready avenue for the passage of infection toward the kidney. I would more fear too much contraction at the ureterovesical orifice. In this case I was glad enough to have succeeded to re-establishment of the current of urine into the bladder. I really gave little thought to the possibility of an excessively large ureteral orifice. In this case there has been since the operation no indication of an ascending infection. Perhaps nature would establish a valve-like protection. As already stated, the lumen of the ureter is narrower at the vesical orifice

than higher up. In this respect the ureter is like other ducts. The structures, however, surrounding the orifice are so elastic that they would readily stretch to the diameter of an instrument that would be large enough to measure the calibre of the ureter above. The chief purpose served by the operation on the cervix in this case was merely to disclose the stricture. I would especially emphasize the fact that there may be other cases like this one in which the operation of trachelorrhaphy would not fulfil the essential indication.

Recent Literature.

Hermann Ludwig Ferdinand von Helmholtz. By JOHN GRAY MCKENDRICK, M.D., LL.D., F.R.S.S.L. and E., Professor of Physiology in the University of Glasgow, and Fellow of the Royal College of Physicians of Edinburgh. Pp. 299. New York: Longmans, Green & Co. 1899.

This compact and attractively bound volume is one of a series on the masters of medicine, several of which have already appeared. The book is a summary of the life and scientific achievement of one of the greatest men of the nineteenth century, a man whose influence has been felt in many fields of research. Helmholtz's private life was of the simplest character and uneventful in other respects than scientific endeavor. He was from his earliest years a profound and absorbed student, and found little time or opportunity for travel. Beyond visits to England and one late in life to America, his life was passed in the studious atmosphere of German universities.

The writer of this comprehensive biography has done well in describing in outline the various scientific achievements of Helmholtz, even at the risk of detracting somewhat from the popular interest in his pages. This difficult task has been successfully accomplished, and we have in the sketch presented us a highly appreciative account, reduced to the smallest possible space, of the great scientist. The book is interesting throughout, in spite of many necessary technical details. A somewhat incomplete index and a bibliography, chiefly of the writings of Helmholtz, concludes the volume.

Bacteriology in Medicine and Surgery. By WILLIAM HALLOCK PARK, M.D., Associate Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc. New York and Philadelphia: Lea Brothers & Co.

This book is designed to be a text-book of bacteriology for students and also to be of use to physicians and health officers. The technical side of bacteriology is not extensively treated, for the book is not regarded as a laboratory manual. Special attention has been given to such subjects as the chemical changes produced by bacteria, infection, immunity, serum therapy and the diagnostic value of bacteriological cultures. Considerable space is allotted to the consideration of disinfectants and to other subjects such as interest officers of health boards. The book as a whole is by no means a thorough one, but it will probably be of some use to the class of readers to whom it is addressed.

The following errors or special defects have met our notice: On page 28 Hansen's name is misspelled.

On page 30 Canon is erroneously credited with a part in the discovery of the bacillus of influenza. The gonococcus is stated to be frequently capable of growth in the peritoneal cavity. This statement gives the impression that the organism is frequently found in that situation. As a matter of fact, cases of peritonitis in which the gonococcus has been demonstrated beyond question are extremely few. Its supposed frequent invasion of the peritoneum is largely the result of speculation and inference. The section dealing with the correction of the reaction of culture media by titration is very obscure and needs revision. The statement that smegma bacilli have never been identified in other parts of the body except in the neighborhood of the genitals is open to question, inasmuch as they are reported to have been observed in cases of gangrene of the lung. On page 378 what is apparently a misprint reads that two cubic centimetres of culture media are sufficient for each tube.

The book contains numerous reproductions of new photomicrographs of bacteria. These are for the most part disappointing, and are inferior to the well-known reproductions from Fränkel and Pfeiffer's "Photographic Atlas of Bacteria."

The book is attractively printed and bound, and contains 680 odd pages, with an index.

Refraction, and How to Refract. By JAMES THORINGTON, A.M., M.D. Pp. 301. Philadelphia: P. Blakiston's Son & Co. 1900.

This handy octavo volume is the result of a series of lectures delivered by Dr. Thorington to former pupils. The subject is treated systematically in twelve chapters that contain two hundred or more illustrations, some of them being in colors. Although this little book was intended for students' use, the practical ophthalmologist may find profit in its perusal. The sections allotted to retinoscopy and muscles are to be commended, and the chapter which explains the adjusting of frames, although more directly related to the mechanical part of the art, will certainly interest even the casual reader. There is a decided preference given to atropine as a cycloplegic over homatropine and some of the other more quickly acting and more ephemeral remedies. The many formulae which are frequently brought into the text serve very well to elucidate the problems therein presented. There is a very good index, and the presswork is excellent.

Crockett's Gynecology. A Pocket Text-Book of Diseases of Women. By MONTGOMERY A. CROCKETT, A.B., M.D., Adjunct Professor of Obstetrics and Clinical Gynecology, Medical Department of the University of Buffalo, N. Y. Philadelphia and New York: Lea Brothers & Co. 1900.

This book has been handsomely put out by the publishers. The binding is attractive, the paper good, the type and illustrations neat. The latter, which are not profusely used, are mostly copied from recent text-books, notably Dudley's. The author has undertaken the very difficult task of condensing the subject matter of the larger text-books into 350 small pages, making but little other alteration of the material in the process, and has performed his task well. The book seems to be an excellent specimen of this type of work.

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SANATORIA FOR TUBERCULOSIS, AND PROPHYLAXIS.

No one subject is of more practical and absorbing interest, alike to the physician and sanitarian, than that of tuberculosis. The reproach so often raised against us that we are making no practical advance in the treatment of many diseases does not apply here. Tuberculosis is being treated rationally and successfully, and a beginning has certainly been made toward its ultimate extermination. This has been brought about, first, by the recognition of the underlying specific cause of the disease, and secondly, by painstaking care in its treatment when actually developed. Legislatures have come to recognize the necessity of hospitals devoted to the care of tuberculous patients, and we may look forward to the rapid increase of such institutions in the future. With this progress, rightly regarded as an achievement of great magnitude, we must not forget that, after all, the causes of tuberculosis lie far behind the bacteria, in those conditions which induce susceptibility, whether through hereditary transmission or, probably even more important, through unhygienic modes of life. We certainly need hospitals for consumptives, and a great many of them, but what we need still more is the extermination of the breeding places of tuberculosis, which exist in every one of our large cities, and are a constant menace to health. The ultimate problem is not to be solved by the hospital, but by the prevention of the conditions which make the hospital necessary. The housing of the poor becomes, therefore, of paramount importance, for it is in the tenement districts that we may look for the centres of disease: The recent agitation in New York regarding tenement house construction, and the conferences held relating to these public questions, will, no doubt, strike at the root of the evil. At the recently held tenement house exhibition, a model representing the most populous block in New York City was shown, where 4,000 persons live. Of the 2,639 rooms in the houses, only 1,198 have windows facing the outer air, and there is not a bathtub in the block.

This is undoubtedly a type of the place where reform should begin if disease is not to gain a firm foothold.

In a short paper on "Sanatoria for Consumptives" in the *St. Louis Courier of Medicine*, January, 1900, Dr. Beverley Robinson, of New York, makes certain vigorous statements which are well worth our attention. He says, in part, speaking of tuberculosis:

"Take the poor in our large cities and towns; are they not the ones most frequently affected, and for whose welfare we should be most concerned, since they are in much larger number? Let our legislatures, then, see to it that in the tenements the air supply is sufficient and good, let sunlight penetrate dark, ill-smelling rooms, let cleanliness be obligatory. Enforce proper oversight of food and water supply, and soon, very soon, tuberculosis will diminish very greatly. . . . Now, then, should we build sanatoria throughout our land, equip them with every modern improvement, make a large outlay of private or public funds, only after a shorter or longer period of rest, nursing, medical care, to send back these same persons either cured, improved, stationary or worse, to conditions and surroundings which are the source and origin, in my judgment, far more of the widespread pest of humanity than the *microbe*, whose inoffensiveness is demonstrable when the causes which breed it and make it important cease to exist? The microbial theory of disease is very well as a working basis for our sanitary corps, for our practitioners and even our surgeons, because everywhere it is recognized it makes *purity* through *cleanliness*. But when we lose sight of other great and important facts of medicine — old, and older than our civilization — it dwarfs the intelligence and leads to sad departures from common sense and logical deductions."

This is wholesome advice. It means no disparagement of the hospital for tuberculous patients, which we shall probably always continue to need, but it forces upon us the conviction, which we are sometimes inclined to forget, that natural means of combating disease are better than artificial ones, and that in fresh air and sunlight and cleanliness we have the strongest allies against disease in general, and particularly against tuberculosis.

SOME ANTIVIVISECTION "ARGUMENTS."

A LETTER of more than usual effrontery has appeared in a recent issue of a much read Boston evening paper, from the pen of J. M. Greene, Treasurer New England Antivivisection Society. After easily disposing of certain arguments raised by Mr. Olmsted's recent letter in the same newspaper, on the ground of Mr. Olmsted's ignorance of the subject, he proceeds to expose a degree of ignorance on his own part which is quite inconceivable, and which we are convinced can be of no benefit even to an unreasonable cause. We quote in part:

"Now, I beg to suggest that if you possessed that acquaintance with the subject which you now dis-

claim, you would not attach so much importance to the experiments you mention. You would then know that they are carried on by specialists as a commercial enterprise throughout the world, and the 'serum' products 'boomed' and sold at an enormous price without the slightest regard to their actual value. You would know that such experiments on consumption by Professor Koch were an absolute failure, and that there is no sign at present of any improvement in that direction. You would know that the 'plague serum' of Haffkine in the East was a fiasco, that the treatment was in many cases attended by an increase of the disease, and that the disease is now spreading. You would remember that such experiments on yellow fever (during which human beings in Montevideo, S. A., were deliberately poisoned to death by Professor Sanarelli, inasmuch as experiments on the lower animals were found to be inadequate) have been empty of results, the 'bacillus' even of the disease not yet being secured. You would be aware of the fact that Behring's diphtheria antitoxin, so much vaunted and advertised, is as colossal a fraud as has yet been imposed upon a suffering public; that the only virtue in said antitoxin resides in the carbolic acid in which it is preserved; that carbolic acid in water alone produces better results without the injurious effects upon the vital organs often caused by the serum."

And why should we be asked to bow down to the authority of Mr. Herbert Spencer in a matter relating to the serum treatment of disease? These "arguments" are beyond our comprehension.

MEDICAL NOTES.

ANOTHER EXTRAORDINARY LAW SUIT.—A decision of unusual interest has been handed down from the Illinois State Supreme Court. The suit was against a Chicago hospital, brought by an infant, in which it was sought to recover damages to the extent of \$50,000 for injuries sustained by the plaintiff before his birth. Shortly before the birth of the child the mother was in St. Luke's Hospital, and while being transferred from one floor to another her leg was caught in the elevator and crushed. When her child was born his left foot, left side and left leg were paralyzed and deformed. The mother brought suit for the child. A general demurrer to the declaration was sustained by the Supreme Court on the ground that at the time of the accident the child could not be credited as a separate being, capable of sustaining an action independent of the mother. "If an action can be maintained," the Court says, "it necessarily follows that an infant may maintain an action against its own mother for prenatal injuries." In such a case it would likewise appear necessary to establish beyond question the fact that the injury to the child was actually due to the accident to the mother, and was not a coincidence merely. In this instance the latter hypothesis would appear the more reasonable.

REVIVAL OF AN "INDEX MEDICUS." — It is announced that beginning with February 15, 1900, a publication devoted to an International Bibliography of the Medical Sciences will appear monthly, on the general plan of the now discontinued American *Index Medicus*. The undertaking is under the auspices of the Institut de Bibliographie of Paris. Each number will comprise about 80 pages, appearing the fifteenth of each month, and containing an international bibliography of the preceding month. Letters, communications, books, etc., should be addressed *franco* to M. le Dr. Marcel Baudouin, editor-in-chief, at the Institut de Bibliographie, 93, Boulevard Saint Germain, Paris.

FAMINE AND PLAGUE IN INDIA.—It is reported that over 61,000,000 persons in India are affected by the prevailing famine, while only about 4,000,000 are receiving relief. In spite of these facts the death-rate through the affected district of 550,000 square miles is decreasing. The Indian Government has issued a resolution approving Professor Haffkine's anti-plague inoculation, and the viceroy, Lord Curzon, is advocating its use.

A STATUE OF HAHNEMANN.—A bill has recently passed Congress appropriating \$4,000 for the pedestal for a statue of Hahnemann, to be erected in Washington by the homeopathic physicians of the United States, and authorizing the selection of a site for this statue on a public reservation.

PLAGUE REPORTED AT HILO.—The War Department has received news reporting the presence of plague at Hilo. This is the only Hawaiian port at which American vessels have stopped since plague broke out at Honolulu.

FAMILY PHYSICIANS IN MONTANA.—Queer family physicians they have in Montana. The testimony in the senatorial bribery case indicates that some of them spell themselves heelers.—*Herald*.

AGED ONE HUNDRED AND FOUR.—Rev. Booker Fox, of Ottumwa, Iowa, an evangelist, died recently, aged one hundred and four. He was born at Nashville, Tenn., in 1796.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the eight days ending at noon, February 28, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 106, scarlatina 52, measles 58, typhoid fever 9.

AID FOR THE WEST END NURSERY.—The result of a recent fair in aid of the West End Nursery and Infants' Hospital resulted in the receipt of \$5,450.

A BEQUEST TO A HOSPITAL.—Through the will of the late Benjamin Sweetser the New England Hospital for Women and Children receives \$2,000.

DECREASE OF DISEASE IN BOSTON.—Last week the health of the city was better than it had been for a long time; encouraging health reports were received from all parts of the State of Massachusetts. There was a large decrease in the number of cases of diph-

theria and scarlet fever, and there is ample room at the City Hospital for the proper isolation of all cases which come under the observation of the Board of Health. The number of deaths reported for the week is 227 as against 255 the corresponding week last year, showing a decrease of 28 deaths, and making the death-rate for the week 21.3. The number of cases and deaths from infectious diseases is as follows: Diphtheria, 76 cases, 9 deaths; scarlatina, 43 cases, 5 deaths; typhoid fever, 3 cases, no deaths; measles, 47 cases, 1 death. The deaths from consumption were 27; pneumonia, 42, and heart disease, 27.

NEW YORK.

A QUESTION OF JURISDICTION.—The authorities of New York having claimed the right, under the charter of the city, to inspect the buildings of the State hospitals for the insane located within the city limits and to direct the manner of construction of new buildings for such hospitals, the Attorney-General has now decided that the city has no such jurisdiction. The opinion was requested by State Architect Heins, in view of demands made by the City Police Department to inspect and license boilers to be operated at the Manhattan State Hospital on Ward's Island, and by the Buildings Department of the city to supervise the erection of an ice-house at the Long Island State Hospital at Flatbush. Attorney-General Davies, in his opinion, denies that there is anything in any provision of the charter conferring such jurisdiction, and claims that the right of the State to manage and control the State hospitals, free from interference or supervision of the city of New York, is an attribute of sovereignty which has not been relinquished or in the slightest degree bestowed upon the city, so far as pertains to this matter. In support of this opinion he cites the fact that under an act of 1896 the State specially permitted peace officers to exercise their authority upon the hospital grounds and premises, thus in effect declaring the principle that local jurisdiction over lands owned or under the control of the State are excluded from municipal supervision, unless a special permit or privilege therefor is provided by the State.

ANNUAL REPORT, STATE BOARD CHARITIES.—The State Board of Charities submitted its annual report to the Legislature on February 19th. Generally speaking, the board finds that the conditions among the dependent poor have improved during the year. The Kings County Almshouse and Hospital, in Brooklyn, are condemned as inadequate and in bad sanitary condition. The establishment of a State hospital and of municipal hospitals for consumptives is recommended. The present Commissioner of the Department of Charities in New York City, and the efficiency of the institutions under his control, receive high commendation. There is also warm praise for the Craig Colony for Epileptics, where additional accommodations are asked for. In regard to the law enacted last year for the prevention of the abuse of

medical charity, the report says: "The operation of the law as observed by the department has already had the effect to abolish that misnomer, the private dispensary. It had long been the custom for physicians practising among the poor, especially in the Borough of Manhattan, New York City, to conduct their East-side offices under the name of this or that dispensary. The law, however, makes clear the intention to limit the use of the word dispensary or its equivalent to the operation of a charitable enterprise. A second result is the withdrawal from the dispensaries of that class of persons who, able to pay for medical treatment, prefer to do so rather than to sign application cards.

THE TENEMENT HOUSE QUESTION.—The Tenement House Exhibition closed on February 24th, and on every evening during its last week there were conferences and public discussions in the rooms where it was held. The series was opened by Lawrence Veiller, Secretary of the Tenement House Committee of the Charity Organization Society, who made an address on "The Exhibition and its Meaning." The exhibition, he said, had been prepared for the purpose of stimulating interest in the tenement house problem by placing before the public in concrete form a clear and comprehensive statement of existing conditions, so that intelligent action might be taken to remedy them. The solution of the problem, he thought, lay along three distinct lines: (1) Through the enactment of wise restrictive legislation; (2) through the building of model tenement houses as commercial enterprises; (3) through the improvement and proper management of existing old tenements and the condemnation of buildings unfit for habitation.

OPPOSITION TO A SMALL-POX HOSPITAL.—Two cases of small-pox having appeared in New Rochelle, Westchester County, the Board of Health promptly bought an acre of land a short distance outside of the city and proceeded to erect a frame isolation hospital. The neighboring farmers, however, were so strongly opposed to having the pest-house in their vicinity, that they forced the carpenters who were engaged on it to desist from work, and it was not until the aid of the police department had been secured that the building could be completed.

QUADRUPLETS.—The wife of a German grocer living on East Fourth Street recently had four children at a birth, three of whom were males. All four were born alive, but they were quite small, weighing only about two pounds each, and only survived for a few hours. The mother, who on a previous occasion gave birth to twins, is reported as doing well.

ARMY NOTES.

PLAGUE.—A report has recently been received from Major Taylor, chief surgeon in the Hawaiian Islands, concerning the prevalence of bubonic plague in Honolulu. Up to January 22d there had been a total of 46 cases, with 40 deaths. The whole town

has been districted and each house is inspected twice daily and the condition of the inmates noted. During the burning of a portion of Chinatown, the flames got beyond control and destroyed nearly all the district, rendering about 4,000 Chinese and natives homeless. It is apprehended, while the destruction of the native quarter was providential, that during the confusion incident to the conflagration, much household property was removed to widely scattered points, and that new foci of infection have thus been created. While no cases of plague have occurred among the United States troops at Honolulu, a temporary hospital has been established in readiness for a possible outbreak, and a detention camp for suspects has been provided. The hospital is excellently located, is abundantly equipped for any emergency and has an ample *personnel* of nurses and hospital-corps men.

VITAL STATISTICS OF HAVANA FOR 1899.—A report on the vital statistics of Havana for the year 1899 shows that in an estimated population of 220,000, there were 8,153 deaths from all causes; 1,163 of these being due to enteritis and 1,307 to tuberculosis. Yellow fever occupies a relatively low position on the list, only 103 deaths having resulted from this disease. Leprosy was the cause of 11 deaths. The number of contagious and infectious diseases of all kinds reported amounted to 6,442; of which 284 were yellow fever. The births during the year numbered 4,181, of which 1,516 were illegitimate.

INSANE SOLDIERS.—Newspaper statements having been made to the effect that about 500 soldiers serving in and around Manila had become insane and had been returned to the United States in this condition, an official investigation has been made as to the truth of these statements. It has been found that since the outbreak of the war with Spain, a total of 223 men have been committed to the Government Hospital for the Insane by the Secretary of War, of which 129 have since been discharged. Of the total number of 223, only 37 men served in the Philippines, and of these 11 have been discharged as cured.

INCREASE IN ARMY MEDICAL CORPS.—It is understood that the bill proposed by Surgeon-General Sternberg for a much needed increase in the Army Medical Corps has received the full support of the Secretary of War, and will soon come up for Congressional action.

Miscellany.

THE TENEMENT HOUSE AND TUBERCULOSIS.

At one of the conferences at the recent Tenement House Exhibition in New York, Dr. S. H. Knopf read a paper on "The Tenements and Tuberculosis." The disease, he said, is an endemic of the tenement house. The cases are far more numerous than the reports to the Board of Health show, and the tuberculous invalid who is up and supporting his family is perhaps the greatest danger to the community. So long as the

present laws governing the building of tenements exist, so long will special hospitals continue to be daily recipients of cases created anew. While the establishment of sanatoria will be of great service, the most important factor in solving the tuberculosis problem will be the proper housing of the poor. With modern tenement houses, under adequate management, the danger from tuberculosis, as from other infectious diseases, would be reduced to a minimum.

At the last conference Jacob Riis, author of "How the Other Half Lives," was the principal speaker. In the course of his remarks he said: "We are not struggling with a problem peculiar to New York. The battle is an old one, and exists in every country. Human greed is still potent for harm, and the tenement house evil is a greater menace to a republic than to a monarchy. I thank God that we are at last talking about souls in tenement houses, and not about so many soulless creatures that only exist to pay rent. In 1857 the people first awoke to the fact that poorly ventilated tenements and bad plumbing caused disease. The committee sent down by the Legislature to make an investigation found that the infant mortality was something frightful to think of, and it reported that the condition of the tenements was chiefly responsible for the trouble, and that poverty should not be compelled to commit suicide by living in houses put up by conscienceless builders. Ten years later another legislative committee found that of 18,582 tenements in New York, 52 per cent. were dangerous to the lives of the persons residing in them and detrimental to the health of the entire city. Moreover, in 32 per cent. of this number the trouble arose purely from overcrowding and neglect of ordinary sanitary precautions by the landlord. Both of these committees laid down lines to overcome the evil. One of the suggestions was that tenements should be licensed to hold a certain number of persons and that the landlord should be held rigidly accountable for any excess of that number. There are now some 40,000 tenements, and if each of them had to pay a license fee of \$2.00 a year, the sum realized would be sufficient to pay the entire expense of maintaining the sanitary police, which does nothing else but see that landlords obey the law. It is interesting that, whereas the committees came down to find out what was the matter with the people, they reported that the trouble was entirely with the tenements. The people were better than their houses. Our fight is for the American home. Without homes there is no family, no manhood, no patriotism. The way out of the difficulty is to arouse the public conscience and keep it aroused. The builder should be compelled to realize that he is his brother's keeper. He would not be allowed to murder his brother with a knife—he should not be permitted to murder him by cutting off his air and sunlight."

DETERMINATION OF SEX AT WILL.

THIS ever interesting question has a new expositor in Dr. J. Griffith Davis, who writes in the current number of the *New York Medical Journal* her theories and deductions. Her idea is based on observation and to a certain extent on experiment among the lower animals, which have left her with certain perfectly definite convictions. The whole matter, to her mind, rests upon the exact time, in relation to menstruation, that impregnation takes place, or as she

much more euphemistically puts it, upon the date at which a "guest is invited." Guests invited from three days before to about eight days after the menstrual period are likely to be girls, whereas those invited from the tenth to the fifteenth days are almost sure to be boys.

The ninth day is a doubtful time, in which two guests may arrive—twins—or, if but one, that one may be of either sex, but usually having characteristic attributes of the other sex. The success of this plan in practice evidently demands a painstaking oversight of the sexual life of the parents, and much discriminating self-denial in offering hospitality to guests. Interesting as the facts may be, we see some slight difficulty in putting the plan into active operation among members of the human family.

Obituary.

W. H. H. HASTINGS, M.D.

DR. W. H. H. HASTINGS died suddenly in Boston, after a brief illness, February 16th. He was about sixty years of age, and graduated from the Harvard Medical School in the class of 1868. He was successful as a practitioner of medicine, had a good practice and his patients were much attached to him. It was, however, as Superintendent of the Boston Dispensary that he was best known. His life work was in connection with this old and most useful institution. He served as superintendent for twenty-four years, and his official relations to the Dispensary covered at least a quarter of its existence. Its present commodious home was erected under his supervision, and its departments and staff of medical attendants have been constantly and judiciously increased during his tenure of office. To-day the medical staff of the Boston Dispensary consists of not less than seventy members. Although appointments rested with the Board of Managers, the selection of candidates was largely in the hands of the superintendent, and this responsibility was almost invariably discharged by Dr. Hastings with excellent judgment and discretion. In the advice which he was called upon to give, and the general administration of his office, the balance was kept adjusted between the zealous enthusiasm of young professional men and the wholesome conservatism of a managing board, so that the sick poor profited by the best to be had both from the medical and business men of this community.

Dr. Hastings combined firmness with sweetness of character in just proportions. The work which he did in Boston will be no better done, whoever his successor may be.

Correspondence.

STREET PAVING IN BOSTON.

BOSTON, February 25, 1900.

MR. EDITOR:—At a meeting of the Medical Improvement Society, on February 19th, the evils of dusty streets were described, and the remedy proposed of asphaltting the entire Back Bay district. A number of papers were read upon the irritating and inflammatory effects of dust, and an account given of its possibilities as a conveyor of infection.

It would have been interesting in this connection to have had some information as to whether during the past winter any marked increase of disease had been noticed among the classes most exposed to dust, such as the hackmen, postmen and outdoor laborers of the Back Bay. After the medical papers a gentleman who is, I believe, a

constructor of asphalt roadways read an essay on "Asphalt and its Merits as a Pavement." Two or three other gentlemen, who spoke as experts, seemed to favor asphalt.

Apparently there had been no arrangement made for a statement of the disadvantages of asphalt paving, or for the merits of any other kind of roadway. For instance, there is a company in Philadelphia which constructs brick pavements. There is a specimen of this on Arlington St., which certainly does not seem to have worn very well, yet it would have been desirable to have had a representative of the company to explain its claims for consideration. Presumably, he could have pointed out some of the disadvantages of asphalt. The brick pavement has certainly two merits, one that it affords some foothold for horses, and the other that it will bear any amount of water, which asphalt will not. Granting, however, that Beacon St., which has become a street for heavy traffic, and Marlborough St., which is somewhat in the same category, would be benefited by asphalt surfacing, it does not follow it would be necessary to carry this over the rest of the Back Bay. As far as the inhabitants of the above streets are concerned, they get very little dust from the south. When the wind is in that quarter it generally rains. Our great dust-storms are caused by the northwest winds.

There is a dusty area towards the west to which all our Back Bay streets lead, where the northwest wind has full play and will have until this region is built up. For Beacon St. and Marlborough St. dwellers to complain that they would get dust from Commonwealth Ave. finds its historic parallel in the accusation of the wolf against the lamb. The terrible heat in summer from a large district covered with asphalt, which would affect the comfort of the whole city, and its injurious effect upon the eyes are self-evident. It may also be mentioned that while asphalt diminishes the noise of wheels of heavy teams, it makes a ringing sound when struck by horses' shoes which is very annoying to many, and would to that extent be harmful to nervous invalids.

As regards Commonwealth Ave., for which I am principally concerned, it should continue a macadamized park road. Asphalt is, under certain conditions, which occur more frequently in the winter, very unsafe for travel, and there should be at least one road out of the city that could be used at all times. With proper care and proper watering, which it has not had, it could be made comfortably free from dust; and when we speak of proper care, this applies to all roadways. Asphalt must be kept scrupulously clean, else its quality as a non-absorbent renders it a menace to health instead of an advantage. Proper care may be promised and provided for, yet with the geographical position of our streets and the usual municipal manner of care-taking, it is more than probable that this cleanliness would prove to be an iridescent dream. I fear that this communication is reaching too great a length, but in view of what I have already stated, it seems to me that the Society did not approach the subject in exactly a judicial way. None of the above objections were put forth, presumably because every one had made up his mind beforehand. The writer, though not fully prepared, was strongly tempted to make some remarks, but when the opportunity came, the lateness of the hour and the unanimity of the audience determined him to simply utter a few words of protest against this sweeping scheme of asphaltizing the whole residential portion of the Back Bay.

Very truly yours,
S.

[The "two or three other gentlemen" referred to by the writer were: Dr. S. H. Durgin, Chairman of the Boston Board of Health, C. Frank Allen, Esq., Professor of Railroad Engineering in the Massachusetts Institute of Technology, and W. E. McClintock, Esq., Instructor in Highway Engineering in the Lawrence Scientific School of Harvard University, also connected with the Massachusetts Commission for State Highways.

As additional disinterested testimony we reproduce replies received in answer to a circular letter sent out by Dr. Henry O. Marey in 1894.¹ They represent, purposely,

¹ Sanitation in Street Pavement. Reprint, 1895.

several of our larger cities in widely varying latitudes with marked variations of climate:

CHIEF SANITARY INSPECTOR'S OFFICE,
ATLANTA, GA., July 23, 1894.

DEAR SIR:—Your letter of July 20th to hand, and in reply will state that I consider the "asphalt paving" the prettiest paving for your avenues in Boston; it is easily kept clean, is noiseless, and would give entire satisfaction. Any further information I will gladly furnish.

Very respectfully,
THOS. E. VEAL,
Chief Inspector.

CITY SURVEYOR'S OFFICE,
MONTREAL, CAN., July 23, 1894.

DEAR SIR:—I am in receipt of your letter of July 20th, asking me for my opinion as to the best pavement to be used for a residential street with light traffic thereon. I would certainly recommend Trinidad asphalt. We have had Trinidad asphalt laid by the Warren Scharff Co., of New York, and it has stood this climate for seven years with heavy traffic.

Yours truly,
P. W. ST. GEORGE,
City Surveyor

OFFICE OF CITY ENGINEER,
SAVANNAH, GA., July 23, 1894.

DEAR SIR:—Your note of July 20th came to hand and contents noted. The city of Savannah has a great many streets paved with asphalt, and it gives entire satisfaction. The Warren Scharff Paving Co. has done most of our work. It stands heavy traffic as well as light.

I am yours respectfully,
JOHN FITZGERALD,
Superintendent of Streets.

DEPARTMENT OF PUBLIC WORKS,
CHICAGO, July 23, 1894.

DEAR SIR:—Your favor of July 20th, relative to asphalt pavement received. We have 16.65 miles of sheet asphalt streets in this city. This class of improvement when well laid has given general satisfaction on resident streets in this city. Dearborn Avenue, which was improved with asphalt eleven years ago, has just been repaired at an expense to the city of \$570. It is now in as perfect condition as it was when originally completed.

Yours very truly,
JOHN MCCARTHY,
Superintendent of Streets.

DEPARTMENT OF PUBLIC WORKS, COMMISSIONER'S OFFICE,
NO. 31 CHAMBERS STREET, NEW YORK, July 24, 1894.

DEAR SIR:—In answer to your inquiry of July 20th, regarding experience in this city with asphalt pavements, I beg to say that the experience of the last six years has shown good asphalt to be the very best pavement for residential streets and on streets used for pleasure driving, provided the grades are not too steep; that is, not to exceed 4 in 100. It has many advantages over macadam or stone, in being noiseless, impervious to liquid filth, easy to keep clean, and about one-fourth less expensive to maintain. We have now in this city fifty-five miles of asphalt pavement, nearly all in private residential and tenement house districts.

Very respectfully,
MICHAEL T. DALY,
Commissioner of Public Works.

STREET DEPARTMENT, STREET COMMISSIONER'S OFFICE,
ST. LOUIS, MO., July 24, 1894.

DEAR SIR:—Answering your favor of July 20th, would say we have a little over nine miles of asphaltum streets in St. Louis, and they are giving entire satisfaction to the tax-payers. We have not confined the use of asphaltum streets to light traffic alone, as we have roadways here paved with that material over which from 5,000 to 7,000 vehicles pass daily with loads of from 1,000 to 10,000 pounds. Personally and officially I am in favor of asphalt for paving all classes of streets.

Very respectfully,
M. J. MURPHY,
Street Commissioner.

[Ed.]

METEOROLOGICAL RECORD

For the week ending February 17th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'thr.*		Rainfall in inches.	
	Daily mean.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S...11	30.29	33	37	29	89	90	90	N.	N.	12	7	N.	O.	
M...12	30.38	37	40	34	100	96	98	N.E.	E.	4	15	R.	J.	.03
T...13	29.71	48	60	35	96	72	84	S.E.	W.	21	15	R.	C.	1.50
W...14	31.07	34	40	29	62	39	50	W.	W.	24	17	C.	C.	
T...15	29.91	38	47	29	54	56	55	S.W.	S.W.	8	16	O.	C.	
F...16	30.05	25	29	21	58	37	48	N.W.	N.W.	12	8	O.	F.	
S...17	29.95	18	29	21	55	96	76	N.	N.E.	10	10	O.	M.	.08

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, FEBRUARY 17, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,574	1447	489	21.70	25.76	.25	3.78	1.47
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	503	163	20.00	24.00	2.80	5.40	1.40
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	226	64	25.08	20.24	—	5.24	—
Baltimore	506,389	220	83	16.65	9.00	.45	3.15	—
Cincinnati	465,900	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	115	41	31.32	13.92	10.44	3.48	1.74
Washington	277,000	98	36	20.00	15.00	2.00	3.00	1.00
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	86	31	27.4	24.36	1.16	1.16	9.28
Nashville	87,764	32	8	12.52	25.04	—	—	3.13
Charleston	65,165	35	13	14.39	17.16	—	—	—
Worcester	111,732	40	15	12.50	27.50	—	2.50	—
Fall River	103,142	24	16	7.14	14.28	—	—	—
Cambridge	92,520	24	12	12.48	37.44	—	12.4	—
Lowell	90,114	32	8	12.50	12.50	—	3.13	—
New Bedford	70,511	25	11	—	25.00	—	—	—
Lynn	68,218	22	7	24.90	12.45	4.15	4.15	—
Somerville	64,394	25	8	8.00	20.00	4.00	—	—
Lawrence	59,072	17	11	23.52	29.40	—	—	—
Springfield	58,266	21	4	23.80	4.76	—	4.76	—
Holyoke	44,510	9	5	11.11	—	11.11	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	18	4	11.11	5.55	—	—	—
Malden	36,421	6	2	16.66	—	—	—	—
Chelsea	34,235	14	2	21.42	—	—	7.14	—
Haverhill	32,651	8	1	12.50	12.50	—	—	—
Gloucester	31,426	11	3	36.36	—	—	9.09	—
Fitchburg	30,523	6	3	—	—	—	—	—
Newton	30,461	11	2	9.19	9.09	—	—	—
Taunton	28,527	9	1	22.22	11.11	—	—	—
Everett	28,102	5	3	40.00	—	20.00	20.00	—
Quincy	24,578	7	3	—	42.84	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	6	1	—	33.33	—	—	—
North Adams	21,583	8	2	12.50	—	—	12.50	—
Chicopee	18,316	5	2	20.00	—	—	—	—
Medford	17,190	6	—	—	—	—	—	—
Newburyport	15,036	6	1	16.66	33.33	—	—	—
Melrose	14,721	1	—	—	—	—	—	—

Deaths reported 3,140; under five years of age 1,059; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 652, acute lung diseases 705, consumption 235, diphtheria and croup 120, typhoid fever 41, measles 41, scarlet fever 41, diarrheal diseases 24, whooping-cough 21, erysipelas 15, cerebrospinal meningitis 14.

From scarlet fever New York 21, Boston 12, Philadelphia 3, Baltimore 2, Pittsburg, Washington and Malden 1 each. From diarrheal diseases New York 12, Philadelphia and Baltimore 3 each, Pittsburg and Charleston 2 each, Boston and Salem 1 each. From whooping-cough New York 13, Baltimore 2, Philadelphia, Boston, Pittsburg, Washington, Charleston and Lawrence 1 each. From erysipelas New York 8, Pittsburg and Providence 2 each, Philadelphia, Boston and Baltimore 1 each. From cerebrospinal meningitis New York 10, Worcester 2, Boston and Baltimore 1 each.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 24, 1900.

R. WAGGENER, pharmacist, granted sick leave for four months.

J. R. MURPHY, assistant surgeon, appointed assistant surgeon. KARL OHNESORG, assistant surgeon, ordered to temporary duty at the Naval Academy.

W. G. FARWELL, medical director, commissioned medical director from January 22, 1900.

D. N. BERTOLETE, medical inspector, commissioned medical inspector from January 22, 1900.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 22, 1900.

MEAD, F. W., surgeon. Granted leave of absence for seven days from February 26th. February 19, 1900.

CARTER, H. R., surgeon. To proceed to Havana, Cuba, and resume duties as quarantine officer. February 17, 1900.

GUIERAS, G. M., passed assistant surgeon. Upon being relieved by Surgeon H. R. CARTER, to proceed to Matanzas, Cuba, and resume duties as quarantine officer. February 17, 1900.

PERRY, J. C., passed assistant surgeon. Detailed as chief quarantine officer of the Philippine Islands, and quarantine officer at the port of Manila. January 18, 1900.

ROSENAU, M. J., passed assistant surgeon. Detailed to attend the meeting of the Medico-Legal Society at New York, N. Y., February 21st and 22d. February 19, 1900.

EDSON, E. R., assistant surgeon. Relieved from duty at the Reedy Island Quarantine Station, and directed to proceed to the Gulf Quarantine Station for duty and assignment to quarters. February 17, 1900.

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, March 5th, at 8 o'clock.

Subject: "Some Advances in Medical Instruction."
Prof. Wm. T. Councilman: "The Course in Pathology at the Harvard Medical School."

Dr. Herbert L. Burrell: "The Case System in Surgery."

Dr. Arthur H. Wentworth: "Section Teaching."

Mr. W. B. Cannon: "The Case System."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

THE SANDER PRIZE.

Rules for competition for the Gold Medal of the value of \$100, dedicated by Mr. Euno Sander, of St. Louis, for the best paper on Military Surgery, presented at the Annual Meeting of the Association of Military Surgeons of the United States.

1. Competition to be open to all members of the Association.

2. Each competitor shall send three copies of his essay, in a sealed envelope, to the Secretary, Lieut.-Col. Chas. Adams, Central Music Hall, Chicago, Ill., on or before April 15, 1900.

The essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the essay, followed by a figure corresponding with the number of pages of the manuscript. A sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address shall accompany the essay. This envelope to be opened in the meeting of the Association after the decision of the Committee on the Prize Essay has been received.

3. The Committee will designate the essay worthy of the prize, and also in their order of merit those deserving of honorable mention. Should the Committee deem proper, it may recommend neither prize nor honorable mention.

4. The successful paper shall be published in the *Transactions of the Association*.

COL. N. SENN, Surgeon-General, I. N. G.

MAJ. A. C. GIRARD, Surgeon, U. S. A.

CAPT. GEO. W. WOODS, Medical Director, U. S. N.
Committee.

RECENT DEATHS.

EDWARD AUGUSTUS PERKINS, M.D., M.M.S.S., died in Boston, February 20, 1900, aged seventy-two years.

GEORGE MORRILL FRENCH, M.D., M.M.S.S., of Malden, died at Suncook, N. H., February 23, 1900, aged forty-five years. Dr. French was born at Sandown, N. H., and received his medical education at the Harvard Medical School. He had practised medicine about fifteen years at Malden. He is survived by a widow, a son and a daughter.

EDWARD F. MARTIN, M.D., who for twenty years was connected with the New York City Board of Health and who had recently been appointed Chief Food Inspector, died at his home at Elmhurst, Long Island, on February 24th, from Bright's disease. He was forty-four years of age.

JOSEPH M. CREAMER, M.D., of Brooklyn, New York, died on February 23d at the age of forty-six. In 1892 he was elected coroner, and served for three years. He was a son of Dr. Joseph F. Creamer, a well-known surgeon who died about six years ago.

SAMUEL R. FORMAN, M.D., of Jersey City, N. J., died on February 19th, from Bright's disease. He was a graduate of Princeton University and of the College of Physicians and Surgeons, New York, and was sixty-four years old.

BOOKS AND PAMPHLETS RECEIVED.

The Surgical Aspects of the Modern Small-Bore Projectile. By August Schachner, M.D., Louisville, Ky. Reprint. 1900.

Proceedings of the American Medico-Psychological Association at the Fifty-fifth Annual Meeting, held in New York, May 23-26, 1899.

Original Articles.

REMARKS ON THE INFLUENCE OF TECHNIQUE UPON THE RESULTS OF CLOSURE OF WOUNDS OF THE ABDOMINAL WALL.¹

BY CHARLES P. NOBLE, M.D.,

Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia.

It is my intention this evening to bring before you a number of points in the technique of the closure of wounds of the abdominal wall, and to report my own experience therewith as a contribution to what I hope may prove a valuable discussion upon these subjects.

There are a number of methods advocated for the closure of the wound in celiotomy cases. What may be called the classical method is that in which interrupted through-and-through sutures of non-absorbable suture material are employed. Silk, silver wire and silkworm gut have been advocated at various times. This method was universally employed by our predecessors, and probably to-day it is the method which has the greatest number of adherents. The advantages of the method consist in the rapidity with which the wound may be closed, and the comparative simplicity of the technique. The objections to the method are the relative frequency of hernia following its employment, and the relatively high percentage of wound infection and stitch-hole abscesses. I shall assume that these statements do not require statistical proof. Hernia is most frequent in the case of fat subjects and in those in which drainage has been employed—especially gauze drainage. The reasons for this are anatomical and self-evident. In thin subjects, when the suturing is carefully done, it is feasible to approximate with relative accuracy the component structures of the abdominal wall, restoring these structures approximately to their normal status. When drainage is employed, this is at once prevented at the site of the drainage opening. In fat subjects the mechanical difficulties of applying the sutures bring about the same result, and the component structures of the abdominal wall are not accurately approximated, and more especially the continuity of the aponeurosis of the transverse muscles is not restored. For this reason, in my judgment, this method of closing the abdominal wound should be reserved for the small class of cases in which drainage is necessary, and another limited class of cases in which, owing to the general condition of the patient, the saving of even a few minutes in the duration of the operation is of importance. It is my opinion that the explanation of the relative frequency of stitch-hole abscesses, when this method of closure is adopted, is that in order to close the abdominal wound with a single row of sutures, it is frequently necessary to tie these sutures under tension. In this way the circulation is interfered with, the vitality of the tissues is lowered, and any germs which may be present, whether the skin cocci or other, have a favorable field for action.

The foregoing considerations caused me to abandon through-and-through sutures in 1892, and since that time tier sutures have been employed as a routine method. The character of the suture material and the method of its employment have been changed sev-

eral times. From May, 1892, until January, 1897, a row of interrupted silkworm-gut sutures was buried at the level of the aponeurosis, uniting the aponeurosis, recti muscles and peritoneum; and a second row of interrupted silkworm-gut sutures was employed to unite the skin and subcutaneous fat. Subsequent to January, 1897, the peritoneum and recti muscles were united with continuous catgut sutures, and the aponeurosis of the transverse muscles was united with a modified mattress suture (Fig. 1) after the method detailed in the paper entitled "A New Method of Suturing the Abdominal Wound in Celiotomy."²

The results which were obtained by these methods were carefully recorded and reported to the American Gynecological Society at its meeting in Boston, in 1898.³ The report embraced 472 cases, of which 10 suppurred, or two per cent. There were two post-operation hernias—one in the cases which suppurred, or 10 per cent., and one in the 462 cases in which primary union was obtained, or one-fifth of one per cent.

The results obtained by these methods both from the standpoint of the avoidance of hernia and from that of wound suppuration were eminently satisfactory. Silkworm gut as a buried permanent suture is undoubtedly an admirable suture material, provided it is aseptic and placed in an aseptic wound. This conclusion is not the result of a few experiments conducted over a limited period of time, but of ample experience extending over a number of years. I am quite aware that it has been controverted by other reporters, and that it is the current belief that perhaps 10 per cent. of buried silkworm-gut sutures will either immediately or remotely give rise to suppuration and require removal. In contradistinction to this received opinion, it can be stated, that of the thousands of sutures buried in the foregoing series of cases, in not a single case has a single suture ever required removal, provided the wound healed by primary union, and that the number of cases to which these buried sutures required removal was limited to 10 in which suppuration of the wound took place immediately after operation. I think it well to emphasize this point for future reference.

I would call attention to the following points as requisite to obtain satisfactory results with the use of silkworm gut as a buried suture: (1) That rigid asepsis be maintained in all the details of the operation, especially as to the hands of the operator and his assistants; (2) that light weight silkworm gut be employed; (3) that the sutures be tied without tension; (4) that the knot be made with three ties and then the ends cut off short, so that as small a foreign body shall be left for encapsulation as is feasible.

My confidence in the value of silkworm gut as a permanent suture is such, that although it is no longer employed in my routine abdominal work, it is still used to meet certain conditions. In all nephrorrhaphies three silkworm-gut sutures are used to fasten the kidney to the muscles of the loin. In all inguinal hernia operations at least one silkworm-gut mattress suture is used to close the internal ring of the inguinal canal; and in all femoral hernia operations the hernial opening under Poupart's ligament is closed with buried silkworm gut. In none of the hernia operations has

² American Journal of Obstetrics, vol. xxxv, No. 4, 1897.

¹ Read before the Obstetrical Society of Boston, November 21, 1899.

³ Shall Absorbable or Non-absorbable Ligatures and Sutures be Employed, etc. Medical News, October 15, 1898; Transactions American Gynecological Society, 1898.

suppuration occurred, and in but a single nephrorrhaphy, of the date, March, 1896.

There are two legitimate objections which can be urged against the employment of silkworm gut as a buried permanent suture: (1) The use of interrupted sutures in closing wounds by the tier method requires a longer time than that of the continuous suture; (2) in the course of time pressure atrophy caused by the inclusion of tissue in the grasp of the suture may possibly lessen the strength of the abdominal wall. Neither of these objections is of a radical nature, but they had some effect in influencing me in at least temporarily abandoning the routine use of silkworm gut.

In May, 1898, I adopted the use of catgut exclusively for the closure of the abdominal wound, and since that date celiotomy wounds have been closed in the following manner: (1) The peritoneum is closed with fine cunol catgut (Fig. II); (2) the aponeurotic

through the aponeurosis of the left side as in the Lembert intestinal suture; and again from below upward through the aponeurosis of the right side, and so on till the end of the wound is reached, when a single knot completes the closure of the muscles and fascia (Fig. III).

The subcutaneous fat is then closed with a continuous catgut suture in one or more layers, using fine catgut. The skin is next closed by the intracuticular stitch with fine catgut.

In carrying out the technique scrupulous care is given to the following points: All bleeding vessels are controlled either by forei-pressure or catgut ligature; the wound is washed repeatedly with salt solution as layer after layer is closed, with the purpose of removing blood clots if present, and with the further object of washing away in part or in whole any germs which may have found lodgment in the wound; care

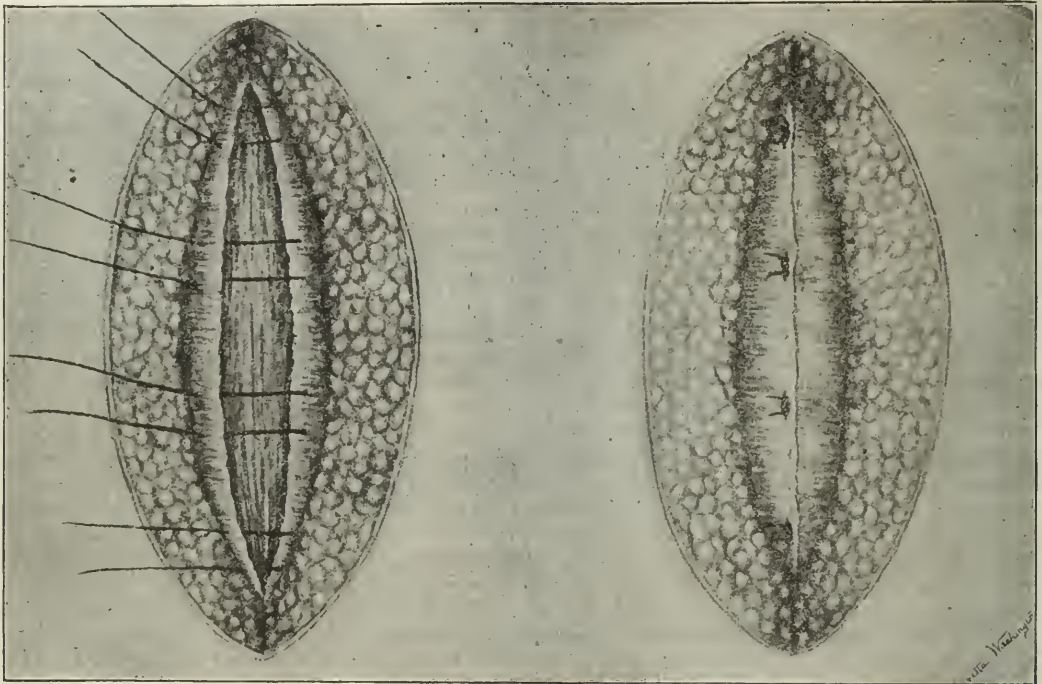


FIG. I. Closure of the aponeurosis with the modified mattress suture.

sheath of one rectus muscle (the right) is then separated from the muscle by blunt dissection, thus baring the under surface of the aponeurosis. The upper surface of the aponeurotic sheath of the left rectus muscle is then dissected clear of fat with a knife, with the object of suturing the under surface of the right aponeurosis upon the upper surface of the opposite aponeurosis. The suturing is then begun by passing the needle armed with medium chromicized catgut (sterilized by the cunol method) through the aponeurosis of the rectus muscle of the left side of the wound, and thereafter by continuous suture closing the rectus muscle until the opposite end of the wound is reached. The needle is then brought from below upward, through the aponeurosis upon the left side of the wound. The aponeurotic layer is then closed by passing the needle from below upwards through the aponeurosis upon the right side; then passing it

is taken to avoid tension in drawing upon the sutures, so as not to interfere with the circulation. I was never able to appreciate the logic of those advocating the so-called dry method in dealing with wounds. By this method it always seemed to me that if the wound were infected, the more it was rubbed with dry gauze, the more thoroughly the infecting germs were rubbed into the tissues, and the greater the chances of subsequent inflammation and suppuration. The reverse of this is true when wounds are carefully and freely washed with salt solution.

Before giving the results which have been obtained by this method of closing the abdominal wound, it will be well to discuss a few points which are directly connected with these results. The abdominal wall is prepared by giving the patient a warm tub bath on the two days previous to the operation, care being taken to wash well the abdominal wall with soap and water.

When there are special reasons for extra cleansing, such as the recent use of mustard plasters or liniments, additional washings are employed and the

ally been absorbed by this time, so that the dressing consists in picking off the knots and applying a fresh dressing.

One of the most important details in securing asepsis is the method employed in sterilizing the hands. It is universally agreed that in an absolute sense this is impossible, but with a proper technique this can be approximated. The permanganate of potash — oxalic-acid method of disinfection has been employed in the hospital of which I have charge for the past fourteen years, and constantly during the ten years of which I have had charge. The method in use is as follows: Operations are done in the morning, before either the operator or his assistants have soiled their hands. This is perhaps the most important individual point in the technique. Fifteen minutes is the time limit for scrubbing and disinfecting the hands. Green soap and a stiff brush are employed for about seven minutes, then the subungual spaces are cleaned with a sterilized wooden cleaner. The hands are again scrubbed with green soap and a brush, and are rinsed free from soap. The hands are then washed in alcohol, using gauze to scrub about the finger ends. To wash off the alcohol they are immersed in bichloride solution, 1-1,000, then in saturated oxalic-acid solution, and finally in saturated permanganate-of-potash solution. This process is then reversed. If the hands are put directly from the alcohol bath into the permanganate-of-potash solution, a reaction takes place, resulting in a sticky deposit upon the hands, which it is difficult to remove. The hands are now washed in

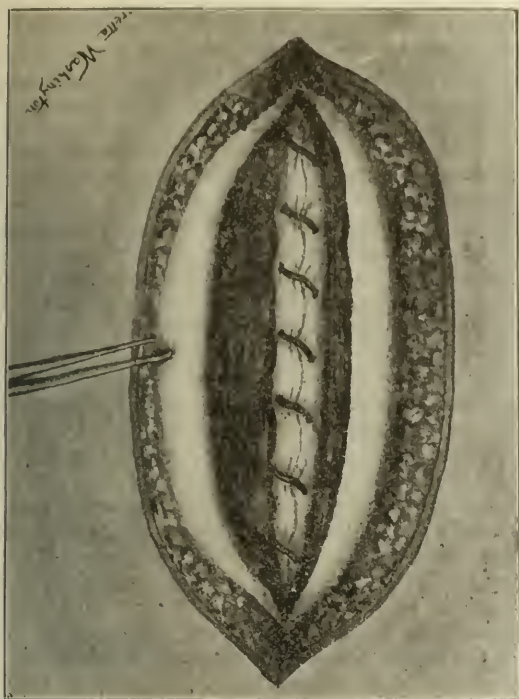


FIG. II. Showing (a) closure of the peritoneum with continuous catgut suture; (b) the borders of the (divided) rectus muscle; (c) the left aponeurosis freed from the layer of fat; the right aponeurosis separated from the rectus muscle and reflected.

scrubbing brush is used. On the morning of the operation, after a full bath, the abdomen is scrubbed with soap and water, the pubic hair is shaved, and the abdominal wall is then carefully cleansed with ether, alcohol and bichloride solution. A towel saturated in bichloride solution, 1-2,000, is applied over the region of operation and held in place by a bandage. When the patient is upon the operating table, the field of operation is again cleaned with ether, alcohol and bichloride solution. After the conclusion of the operation, the abdominal wall is again washed with bichloride solution and a number of layers of gauze rung out of bichloride solution, 1-2,000, is applied in its moist state over the wound; cotton is applied over this, and the dressing is held in place with sticking plaster, which dressing is not disturbed for a week. This method has been employed for ten years, and has given such uniformly satisfactory results that its details have never been varied. The adhesive plasters are used solely with the purpose of keeping the dressing in place and not to support the abdominal wound. When long adhesive plasters are used, they are very uncomfortable for the patient, especially if the abdomen becomes much distended with gas. The chief function of the adhesive plaster is to keep the wound covered with the dressing. I am satisfied that many wounds are infected and suppurate because of the neglect of this precaution. The wound is dressed for the first time from the sixth to the eighth day. The fine catgut employed to close the skin has usu-

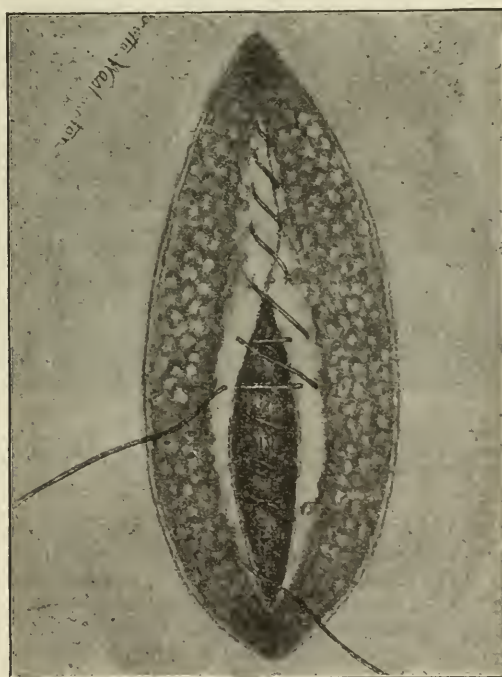


FIG. III. Showing (a) the wound in the rectus closed with continuous catgut suture; (b) closure of the aponeurosis by superimposing the right aponeurosis upon the left and suturing it with special form of continuous catgut suture.

sterilized lime water, and then in sterilized water. For the past year, after this has been done, rubber gloves, which have been boiled for fifteen minutes,

are put on. This method gives approximately perfect results, so far as wound infection is concerned.

The methods employed in the performance of the Alexander operation are very similar to those used in dealing with the ordinary celiotomy wound. March 2d of the current year I reported my experience with this operation before the Philadelphia Obstetrical Society.⁴ At this time 62 operations had been performed. Since that date there have been six additional cases, making a total of 68. The teachings of Edebohls have influenced me largely in this operation, corrected of course by the results of my own experience. So far as their influence upon the healing of wounds is concerned, I think it only necessary to emphasize the following points: All hemorrhage is

Edebohls, with the exception that instead of merely approximating the divided edges of the aponeurosis of the external oblique, that one layer of the aponeurosis is superimposed upon the other and there sutured, as is the case with the median celiotomy incision. The Edebohls technique after the drawing out of the round ligaments consists essentially in the performance of a Bassini hernia operation, the round ligaments being embraced in the sutures which unite the internal oblique muscles to Poupart's ligaments (Fig. IV). This, I believe, is the reason for the absence of post-operative hernias when this technique is employed. This sequel has been entirely absent in my own cases.

Suppuration has occurred in but one of the above series of Alexander operations, and in this case it was limited to the subcutaneous fat. Infection took place in this case, I am satisfied, through the efforts at cleansing the vulvar region after the performance of the Alexander operation, preliminary to the repair of a complete tear of the perineum. It is frequently stated that the pubic region and the groin are especially prone to suppuration. This experience and the fact that in none of my operations for inguinal or femoral hernia has suppuration occurred make me confident that suppuration is not due to the region involved, but to faulty technique on the part of the surgeon, or what is more usually the case, the failure to apply a fixed dressing. This is a point of such importance as to be worthy of emphasis. The double spica bandage which is commonly employed by surgeons to retain the dressings in place is objectionable unless removed after twenty-four or forty-eight hours, because it is inevitable that the bandages about the inner surfaces of the thighs will become soiled when the bladder and bowels are evacuated. For the Alexander operation the same dressing is used that is employed for the median celiotomy wound, with the exception that in addition to the transverse adhesive straps, others are placed around the inner surface of the thighs, then from within outward, and below upward across the lower portion of the abdominal dressing, the outer end of the straps being applied to the posterior surface of the pelvis. These straps keep the dressing from slipping up and exposing the lower ends of the pubic wounds. The nurse has instructions to watch these straps and the dressing. If the straps become loosened, fresh ones are applied, and if the dressing is soiled, the wound is immediately freshly dressed.

From May 28, 1898, to October 10, 1899, 224 celiotomies and Alexander operations have been performed in which the tier method of suturing the wound was employed. In this series of cases catgut only was used. Herniotomies have not been included in this list, and operations in which through-and-through sutures have been employed have been excluded. Two celiotomy wounds and one Alexander operation wound suppurated, or 1.3 per cent. In addition, there was a failure of union at a small point in the skin in three cases. In one patient, a fat woman, the wound was torn open through the fatty layer by the patient turning on her side. The edges of the wound were brought together by adhesive plaster, and healing occurred without suppuration. In one patient, during a violent fit of vomiting on the fourth day, the wound burst open, allowing the escape of several feet of intestine. The intestine was washed off, the wound reclosed, and healing by primary union was obtained.

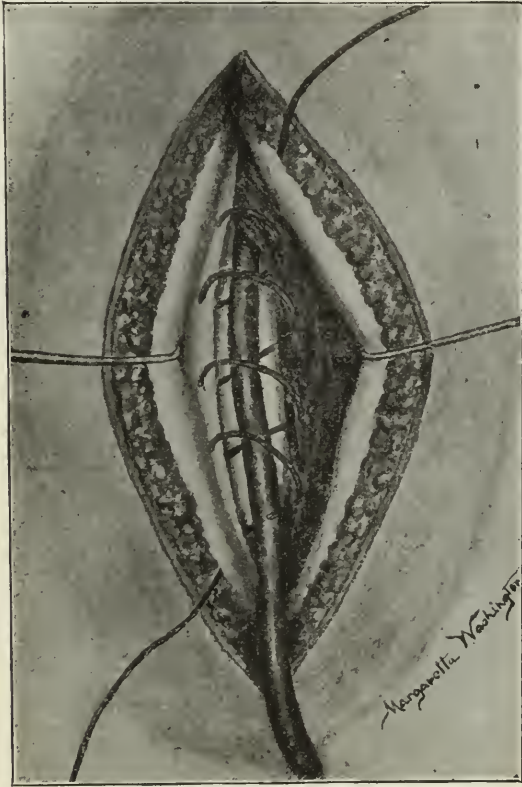


FIG. IV. Showing (a) suturing of the internal oblique and round ligament to Poupart's ligament; (b) the aponeurosis of the external oblique reflected and ready for suturing.

arrested either by forcible pressure or catgut ligature, so that there is no opportunity for the collection of blood in the wound after its closure. Special care is exercised not to draw the sutures too tight, especially those which embrace the ligamentous structures of the abdominal wall and the round ligament. The circulation in these structures after operation is not good, and tightly-placed sutures would necessarily result in strangulation and probably in suppuration.

It is not my purpose to go into details concerning the technique of Alexander's operation. Any one interested in this is referred to the above paper. In general I have followed the technique laid down by

⁴ Alexander's Operation, American Gynecological and Obstetrical Journal, May, 1899.

In one case a post-operative intraperitoneal abscess discharged through the abdominal wound some weeks after operation. In two cases of tubercular peritonitis primary union was obtained, but the chronicized catgut suture caused suppuration about six weeks after operation, and was subsequently discharged. One case of hernia is known to have occurred in the above series of cases, and in a second case a hernia has appeared about an inch above the incision. The case of this hernia is a long-standing diastasis of the recti muscles following pregnancy.

In comparing the results secured with buried silkworm gut as contrasted with the exclusive use of catgut, the record is perhaps rather in favor of the silkworm gut, although the discrepancy is not great. The very distressing accident of the eventration of the intestines on the fourth day would not have occurred had silkworm gut been used as a buried suture, nor do I believe it will often occur with the present method of suturing. The patient was one having an especially vigorous muscular system to produce the powerful intra-abdominal pressure which burst open the wound, and the probabilities are that the continuous suture which closed the rectus muscle was cut by the needle when closing the aponeurotic layer—an accident which might well happen. This is the only accident of the kind which has happened in my experience, no matter what method of suturing was employed.

Delayed suppuration in two patients who were operated upon for tubercular peritonitis is interesting as showing that the process of encapsulation, or the gradual process of absorption of chronicized catgut, does not take place so readily in persons of reduced vitality. In these two patients the catgut acted as a foreign body and produced suppuration, presumably without infection, as suppuration did not take place until at least six weeks after operation. I feel quite satisfied that it is much easier for the tissues to encapsulate a fine silkworm-gut suture than it is to absorb a medium-sized chronicized catgut suture.

The foregoing report warrants the conclusion that in celiotomy wounds which can be closed without drainage suppuration can be reduced to two per cent. or less, and that post-operative ventral hernia can be reduced to a fraction of one per cent.

As the paper has been very discursive, I would suggest the following points for discussion: (1) The histological basis of the various methods of suturing wounds of the abdominal wall; (2) the relative advantages of different suture materials; (3) the relative advantages of different methods of closing wounds of the abdominal wall; (4) methods of suturing in Alexander's operation; (5) sterilization of the hands; (6) the use of rubber gloves as a preventive of wound infection.

In conclusion, it is only left for me to express my appreciation of the honor you have conferred upon me in inviting me to address your Society this evening, and to thank you for your attention.

WOMEN MEDICAL STUDENTS IN PARIS.—There are, according to the *Medical Press*, 129 female medical students at Paris, of whom 91 are Russians, 29 French, five Roumanians, two Germans, one Swiss, and one British. In Paris, women are placed absolutely on the same footing as men.

ABSTRACT OF PAPER ON "FURTHER EXPERIENCE WITH THE OPERATIVE TREATMENT OF ANTEFLEXION."¹

BY W. L. BURRAGE, M.D., BOSTON.

Two years ago the writer read before the Obstetrical Society a paper on "Division of the Uterosacral Ligaments and Suspensio Uteri for Immobile Retro-position with Anteflexion," in which he reported nine cases treated by curetting, division of the uterosacral ligaments through an abdominal incision and suspensio uteri.

In the present paper he reviews his private notes of all operations performed for anteflexion, 92 cases, analyzes the remote results and announces his conclusions.

Retro-position with anteflexion is defined anew. It is a uterus situated as a whole in the back of the pelvis, that is to say, close to the sacrum, and flexed forward, the flexure being in the body of the organ, in the neck, or in both. The tissues of the uterus at the angle of flexure may be so firm, so altered in consistency by disease that the uterus cannot be straightened (pathological anteflexion), or they may be soft and more nearly normal, and in this case the uterus may be restored to its natural form (congenital or, more properly, puerile anteflexion). A condition of anteflexion is normally found in the little girl, but it is not present in the fetus, therefore we should speak of puerile rather than congenital anteflexion. The uterus which is anteflexed is generally retro-positioned also and its mobility limited. Shortening of the uterosacral ligaments has been heretofore too generally overlooked by writers on this subject. An anteflexed uterus held in the back of the pelvis close to the wall of the sacrum cannot be straightened because there is no room for the backward excursion of the cervix. The posterior attachments of the uterus limiting its mobility must first be divided.

Anteflexion would seem to be a persistence of a puerile status due to arrest of development coupled with inflammatory action in the uterosacral ligaments and uterine tissues. The source of the inflammation is not clear. Uterine discharges dammed up at the internal os by the flexure at that point and forced through the tubes into the peritoneal cavity, and the passage of hardened fecal masses through the rectum between the uterosacral ligaments, have been suggested as causes. An increase of intra-abdominal pressure from tight lacing or from a chronic accumulation of gas in the intestines, and acting on the posterior face of the body of the uterus, undoubtedly contributes to the formation of anteflexion in certain cases.

The uterosacral ligaments are described in the anatomies as consisting of muscular and cellular tissue and folds of peritoneum. They extend from the pelvic wall near the second piece of the sacrum on either side, and come together on the posterior surface of the uterus at about the level of the internal os in the form of a V. In testing the size and strength of these ligaments in the class of cases under discussion by the bimanual touch and in dividing them, both through an abdominal incision and through a vaginal incision in the cul-de-sac, it is often astonishing to find them so thick and their structure so tough and unyielding. They are ligaments indeed, and it is plain why ventral

¹ Read before the Obstetrical Society of Boston, November 21, 1899.

suspension of the uterus is a failure where these shortened ligaments are ignored. No artificial ligamentous attachment of the uterus to the anterior abdominal wall can hope to equal the pull of these strong posterior guys.

Traces of past inflammatory action in Douglas's cul-de-sac may be observed in some patients in the form of wrinkling and thickening of the peritoneum over and about the ligaments, and in an irregular course of the ligaments.

Retroposition with antelexion is a common disease in the experience of the writer, 10 per cent. of all of his private cases having been so diagnosed. B. S. Schultze has described this as occurring frequently. It most commonly causes distressing symptoms in young women under thirty years of age, and they suffer from dysmenorrhea, scanty and irregular menstruation and an upsetting of the balance of the nervous system, together with a certain amount of deterioration of the general health. Palliative treatment with drugs and with local measures for depletion of the uterine organs should be given a trial. Stem pessaries are dangerous and other pessaries are useless. Local treatment over a prolonged period of time is not to be counselled in a majority of young unmarried women.

The 92 cases are analyzed with reference to a straightening of the flexure in the uterus, which was marked in every instance, and as regards the curing of dysmenorrhea, the common symptom.

Thirty-six cases treated by curetting and by massage to the shortened uterosacral ligaments where necessary: Twelve of the 20 cases heard from were relieved of dysmenorrhea as a result of the operation, and eight were not relieved. Most of these cases were treated by thorough dilatation and curetting and irrigation of the uterine cavity with salt solution, then drying with gauze and swabbing with pure carbolic acid. It was not noted that the uterus was permanently straightened in any case, although in most instances a previously tight canal remained patulous several months after the operation.

Six cases curetted and massaged and an Alexander operation done at the same sitting: In two the results were unknown. In the remaining four the uterus was straight or very slightly flexed. The dysmenorrhea was relieved in three, unrelieved in one.

Twelve cases of curetting and division of the shortened uterosacral ligaments through an incision in the vagina (colpotomy): Results unknown in four; uterus straight in four; relieved of dysmenorrhea, three; unrelieved, five.

Four cases of curetting and cutting the uterosacral ligaments by colpotomy and an Alexander operation: Results unknown in two, the other two were relieved. One of the latter became pregnant and the other had an antelexed uterus two years after.

Six cases of curetting and E. C. Dudley's operation on the cervix: Uterus straight in five, flexed in one; three relieved, two not relieved, and had subsequent abdominal operations with relief. The sixth case had fungous endometritis and complained only of menorrhagia. The uterosacral ligaments were not appreciably shortened in these six cases.

One case of curetting and amputation of the cervix and one case of curetting, Dudley's operation and division of the uterosacral ligaments through the abdominal incision and suspensio uteri are too recent to

give results. One case of evacuation of a pelvic abscess behind an acutely antelexed uterus was of interest, because when the abscess cavity had closed the uterus was perfectly straight.

Three cases of curetting and removal of both tubes and ovaries for extensive disease, followed by suspensio uteri after cutting the uterosacral ligaments: Uterus flexed in all.

Twenty-two cases of curetting, division of the uterosacral ligaments through the abdominal wound and suspensio uteri: Immediate results show uterus perfectly straight in six, slightly flexed in 13, and three still in hospital; remote results in 13, uterus straight in four, slightly flexed in six, and sharply flexed in three; dysmenorrhea relieved in nine.

As a result of his experience in the operative treatment of antelexion the writer lays down the following rules for his guidance in these cases:

(1) In antelexion without ovarian or tubal disease, and free from shortened uterosacral ligaments or posterior adhesions, dilatation, curetting and Dudley's operation or amputation of the cervix, with a preference for the former.

(2) In antelexion with retroposition and shortened uterosacral ligaments or posterior adhesions, and without ovarian or tubal disease, dilatation, curetting and division of the uterosacral ligaments or adhesions by colpotomy and Dudley's operation or amputation of the cervix, with a preference for the former. Amputation of the cervix is a useful operation where the cervix is very long and also where there is extensive erosion of the crown of the cervix. In married women in both of the foregoing classes dilatation and curetting without other operation are sufficient, because pregnancy will usually straighten the uterus and stretch the ligaments and adhesions. Should pregnancy not supervene within a number of months, and should the symptoms persist, another curetting and Dudley's operation, with or without division of the ligaments, may be done.

(3) In antelexion, with or without retroposition, having ovarian or tubal disease, dilatation, curetting, Dudley's operation, and suspensio uteri, the uterosacral ligaments being divided through the abdominal wound if they are shortened and whatever may be necessary done to the ovaries and tubes.

THE GASTRO-INTESTINAL TRACT IN NERVOUS DISEASE.

BY F. SAVARY PEARCE, M.D.,

Instructor in Physical Diagnosis, University of Pennsylvania; Physician to the Medical Dispensary, St. Agnes' Hospital, Philadelphia.

THE intimate relation between the central nervous system, organs, and functions of the body especially, cannot be too forcibly emphasized. Stress is to be laid upon the oblivion existing through the inexact knowledge of the anatomic relation between the cerebrospinal, or system of animal life, so-called, and the ganglia sympathetica, or system of organic life, as we know it to be, and especially the inexact understanding of the anatomy of these most delicate ganglia and nerve fibres and of their intricate inosculations; that is, of the sympathetic fibres about the important organs of the body. Recent anatomical and physiological experimentation, now being pursued through the aid of vivi-

section, is proving more and more the wonderful rôle played by the "abdominal brain," as some anatomists have dignified the ganglia of this to be. Bearing in mind the wonderful controlling influence of the sympathetic nervous system, as shown by the preservation of life under profound anesthesia, the justice of styling these ganglia subconscious brains is the more appreciated; and the wonderful influences even then of its reflexes upon important centres, as respiration, the writer has recently had demonstrated to him in a male, aged thirty years, whom he had operated on for fissure *in ano*. While under profound etherization the respirations could be controlled (inhibited) by wide dilatation of the sigmoid flexure by means of a long bivalve speculum. Perhaps one great reason why the sympathetic system has not been given enough import in practical medicine and therapeutics is because morbid conditions of the same, as in health, do not give rise to any painful sensation, and, therefore, when pain *does* occur it is directly of cerebrospinal origin. We very often, therefore, fail to seek the real reflex primogenisis of morbid states presenting symptoms for relief. In another place¹ we have emphasized the importance of considering the sympathetic system's influence in the causation of neurasthenia through disturbance of the reproductive organs—a subject that has been widely discussed and must be accepted as proven. While similarly, of course, co-relation of the great laboratory of the body through the sympathetic to the cerebrospinal axis, both physiologically and pathologically, needs no scientific advocate to further establish it, yet specific cases bearing upon gastro-intestinal disorders and nervous disease may prove of some value for obtaining a more widespread recognition and a proper therapeutics of the less manifest diseases of the nervous system which still *do* have the same pathogenesis. Admitting the difficulty of ascertaining cause or effect frequently, even where there is evident co-relation between nervous disease and gastro-intestinal disorders, the point we wish to consider *especially* is to determine *how many* cases are relieved by *treatment* of the primary or secondary gastro-intestinal state; and more scientifically to seek out given cases of nervous disease greatly aggravated by the intestinal trouble, or, indeed, entirely caused by it. This leads back to the broad study of heredity and conditions of environment, and much clinical experience. In a paper with Dr. Wharton Sinkler, on "Family Diseases,"² we drew conclusions that heredity could be considered from a statistical review of a large number of cases (16,500) as one or more in 80; although, if the most accurate history of our cases could be obtained, much higher.

Savill (1899), in his recent monograph on "Neurasthenia," adds zest to investigation of these allied nervous states of the human body.

Impetus in the study of aberrations of kidney excretion—not an index of renal disease, however—was first given the writer through making the urinalyses in a large number of cases of nervous diseases in the practices of Drs. S. Weir Mitchell and John K. Mitchell. The results of uric-acid findings have been published, and while indican is tested for in almost all cases we have not up to this time made careful analysis of its possible import in nervous disease.

The whole subject of irritation and auto-intoxication, *per se*, as causal factors of disease of the nervous system is most intricate in its exact determination for the therapeutic point of view, which is our *most to be desired* knowledge. For instance, in a case of large ovarian tumor, as reported by Beyea³ recently, to my mind, the glycosuria was due to irritation of the glyco-genic centre in turn *preventing* metabolism. The diabetes here disappeared after removal of the tumor.

FOURTEEN DETAILED CASES AS BASIS OF THIS STUDY.

CASE I. M. B., female, age twenty-two years; married, one child living; no miscarriages; reported March 19, 1898, suffering with what she styled splitting headaches for about three months, worse toward evening and the dark hours. The headaches had begun with constipation, which, when first seen, was very troublesome. She suffered from anorexia, insomnia and exhaustion, tongue was slimy, coated and flabby, tooth indented, pulse 120 per minute, heart weak, no murmur. We could find no ocular or aural cause for the head symptoms. She was placed on a liquid diet, given blue mass, gr. v, at bedtime for several days, and tonic of tr. nucis vomicæ and soda bicarb. before meals, and semi-rest treatment was enjoined. Improvement followed immediately. At the end of two months she considered herself a well woman, having no head symptoms, and the bowels remaining in normal condition.

CASE II. J. J., reported April 2, 1898; male, age fifty-three years, shoemaker, alcoholic,—following exposure awoke with pain in arms and down left leg, accompanied by numbness in left side of the body. He never had had acute rheumatism. With the incipency of the pain described he had had an attack of gastritis, followed by lienteric alvine dejections of the gastric fermentation. Antiseptic treatment to the intestinal tract dissipated the pain and subjective numbness within twenty-four hours. Although this patient complained of dulness of vision for a week after the attack, to our mind the case presented a complex of alcoholic depression, to which was added intoxication from ptomaine poisoning. In the history it was ascertained that the amount of alcohol he had taken previous to this attack had produced little or no impression on the nervous system. The peculiarity in this case was the objective and subjective coldness of the left arm, leg and entire left side of trunk, probably showing disturbance of the caloric centres unilateral in the higher nervous system. At the end of two months the man seemed back to normal health in all ways—perhaps some of hemichoreic movements may be excited by the unstable neurons later in the case.

CASE III. R. I., reported May 28, 1898; female, age forty years; Hebrew; five children living, three dead; complained of *dull vertex headache*, periodic about once in three months, lasting several days, accompanied by insomnia; no rheumatism; no other pains complained of; bowels said to be regular; urine high-colored, *contained indican in excess*; appetite fitful. She is a plethoric woman, heart is feeble; however, no organic lesions can be found excepting great relaxation of the abdomen and dilatation of the intestinal tract and fermenting contents. The use of magnesium sulphate to thorough cleansing of the intestinal tract, with occasional use of acetanilid, caffeine and camphor monobromate as a nerve depressant, together with massage of the abdomen and restricted diet, and occasionally high flushings of the colon with lime-water solution, produced immediate permanent improvement.

CASE IV. M. G., reported July 2, 1898; female, age thirty-five years; single; complains of general nervousness and nerve tire, easily exhausted, with considerable vertical headache, growing worse toward evening; suffered from indigestion; eructations of sour stomach contents; bowels are moved daily, although there is constant feeling of tightness through the abdominal content, with distention. This woman's diet was cut down to liquids largely, and nux and

¹ Neurasthenia: Its Co-relation with Pathology of the Female Organs, with H. D. Beyea, M.D., *Annals of Gynecology and Pediatrics*, September, 1898.

² *Journal of the American Medical Association*, February 10, 1900.

³ *College of Physicians of Philadelphia, Section on Medicine*, December, 1899.

soda mixture was given before meals, with very rapid relief of general nervous state and headache. Five-drop doses of strong acid nitrohydrochlor. were continued for one month.

CASE V. J. S., reported August 6, 1898; male, age twenty-nine years; no history of nervous disease in family; complains of pain in head in occipital region, lasting one week, *completely incapacitating* him for work. There is no history of specific disease; kidneys are normal, his physique being powerful; gave a history of extreme constipation for some months, and was a great meat eater. The only pathological state of the urine was of excessive indican. He was put on restricted diet and given sodium salicylate, gr. x., t. i. d. Within a month this man got perfectly well of the toxic headache, considered to be due to potamine intoxication aggravated by excessive proteid diet.

CASE VI. C. K., reported December 3, 1898; female, age thirty-nine years; married, eleven children, six living, others died of marasmus. Patient complains of frontal headache for the past two weeks, which comes on in the morning and disappears in the afternoon; also complains of vague pains in extremities and of *general nervousness*. Headaches begin about 9 A. M. and last to 4 P. M. Correcting a hyperacidity of the stomach with mild daily catharsis very much relieved her condition at the end of four weeks — that is, the headaches did not last so long, but seemed quite as severe in their several hours' duration. This woman seemed entirely well two months after beginning treatment. During the summer of 1898 she relapsed into the same condition of intestinal indigestion, with *indicanuria*, to again be entirely relieved in the fall by a mixture of charcoal, gentian and sodium bromide. Again, having had a relapse, living as she does in poor hygienic surroundings, each time has been relieved by intestinal antiseptics. It should be said there were no other causes to be found; menstruation was normal, and the eyes presented no error of refraction.

CASE VII. N. D., reported March 25, 1899; widow, age thirty years; two children, living and well; no miscarriages; has been very constipated for some weeks; her head began to distress her much across the frontal region, beginning several weeks before reporting for treatment. *Pain is of dull nature*, gradually growing worse toward evening. This patient was much improved by the use of bromide and gentian, and after full correction of intestinal torpidity the headaches entirely disappeared. I take it that the absorption of ptomaines from the intestinal tract, and of the improperly eliminated metabolites of the system passing through the sensitive dura mater were the exciting cause of the cephalic distress (lymphostasis).

CASE VIII. M. P., reported April 11, 1899; female, age sixty-five years; complaining of pain in the lower lumbar region and general feeling of tire, accompanied by violent wind dyspepsia, and labelled "disturbed metabolism." Under the use of gentian, nux and soda mixture, with the limitation of diet to milk and proteids, and with the stimulating effect of the static current down the spine, she was entirely relieved in two and a half months of the general toxic state. The association of dyspepsia and rheumatism seem to be proven in such a hybrid case as this one. We have no doubt that many cases of rheumatism are precipitated by catching cold, since the retention theory of the genesis of a "cold" would tend to show the disturbance of metabolism acting through the nervous system, and would be sufficient cause for the rheumatic state. Some form of organism *may* be the determining factor of acute rheumatic fever, and may also be a potent cause. Certainly the subject of rheumatism is still in a state of theoretic speculation. Nervous origin is, undoubtedly, a large basic cause in this disease so closely allied to the conditions of waste product pains of disturbed metabolism; for the nervous system must control the proper absorption and elimination of leucomaines, etc., in health and disease.

CASE IX. L. L. (private), reported May 11, 1898; female, age thirty-five years; for three years has been suffering from excessive nervousness associated with ex-

treme constipation, bloating of the stomach and wind dyspepsia; *urine contained a large amount of indican*; her sleep was much disturbed with vague distress in the head, much aggravated when bowels were not relieved by cathartics. Use of bromide of soda in moderate doses, with trional as an hypnotic, much improved her "general nervousness." But it was not until full relief of the gastro-intestinal condition, after several months in treatment by means of regulated diet, massage to the abdomen, special as well as general, and the use of salol as an intestinal antiseptic, that she began to gain flesh and lose permanently the general nervous condition she had been in so long. The difficulty in such a case as this is to trace the *post hoc* in the vicious circle undoubtedly set up; and yet we feel that, clinically, restoration of health was largely influenced by correcting the function of the digestive tract.

CASE X. F. S., reported to the Howard Hospital service of Dr. J. Madison Taylor, July 14, 1897; female, age seventeen years, single; came to us at the nervous clinic, having been referred from the medical clinic on account of what was diagnosed as toxic headaches, the ordinary methods of relief having failed. As the girl came into the room she gave a peculiar sigh, due to a forced inspiration, and fell on a chair unconscious, frothing at the mouth, in clonic and then tonic spasm of the entire musculature. She was profoundly unconscious, and pallid in the attack, and was dazed for half an hour after recovery. It was then learned she had five of these seizures within a year. She was particularly waxy in appearance, and there was acne over the forehead and nose. She complained pretty constantly of frontal headaches, was extremely constipated, and suffered much from epigastric distress, although the trio of signs of epigastric ulcer were eliminated. The girl complained of tenesmus and general abdominal distress, much increased at the time of attempted defecation. The skin eruption seemed to be aggravated, and to spread in a more generalized hyperemia about ten o'clock in the mornings, increasing to acne about three o'clock, when small white vesicles came out over the face and neck, this more acute syndrome of epidermic disorder again abating toward night. The patient was first put on a tonic, and the case studied carefully from day to day. It was soon found she complained of general muscular soreness without any real rheumatism. We now put her on small doses of potassium iodide and sodium salicylate, and began to pay special attention to the bowel condition, as examination of the urine revealed large quantities of indican present. High enemata were resorted to, by the use of the long rectal tube, adding glycerine to the alkaline solution of soap. It was four months before any approaching normality of the intestinal tract was obtained, and with it the appetite improved, persistent acne was bettered, while the transient erythroderma had entirely disappeared. The patient was now put upon iron in moderate doses (Blaud's pill, gr. v, t. i. d.), and the various laxatives used, as the great torpidity required frequent changes of cathartics to produce any effective results. It should be said no stricture of the lower intestine could be made out. While the girl complained constantly of stomach distress, since the headaches were better and no eye lesions or other cause having been found for them, we felt we were on the right track. During the following year the patient had but one epileptic seizure; the blood count ran up from the original anemic condition of 3,200,000 red blood corpuscles to 4,800,000 red blood corpuscles, and while iron could not be taken for many weeks at a time, the ability to digest food through the use of caroid and other digestants favored homogenesis. The patient has had *no epileptic seizure for twenty-two months*, and seems at the present writing to be about well, so much so that she was married on December 13, 1899. The urine analysis *failed to detect indican* at the present time, and the gastro-intestinal function is entirely normal.

CASE XI. A. L., single, age fifty-two years, always a delicate, refined woman, was sent to me by Dr. Stewart, of Allegheny, January, 1899, suffering from tormenting headaches not of a migraine type, but being constant, dull, and

splitting in character all over the cranium. She has been violently constipated for *twenty years*, but paid little or no attention to it; doing with little food; having generalized swelling of the face, hands, and lips at times in the mornings when she was at her work. The urine was normal save for much indican present. She frequently "threw off" quantities of bile. There is some tenderness over the liver, and gastric irritability, with gastropnoxis. She is in extreme neurasthenia. Climacteric established at fifty years of age, but did not seem to influence headaches, constipation, nor her generally poor metabolism. She was placed on high enemas, free use of cascara and abdominal and general massage, occasional lavage, and trophionine as a tissue builder. Improvement was slow but steady. Her eyes were not in any way causative of headaches, being simply presbyopic and fully corrected. After six months she had become very well indeed. I saw her in Allegheny on December 22, 1899, after a two days' headache, apparently precipitated by constipation, with high pulse tension, which by digestants we are with some success treating. The use of molasses in this case will precipitate headaches the next day, I take it, due to fermentation thus set up.

CASE XII. C. S., age fifty years, business man in large responsibilities for years, with an original weak constitution, — nervous. Has had gastritis off and on for twenty-five years. Has been treated with great benefit on several occasions by the late Dr. William Pepper and by Dr. Wharton Sinkler, the latter gentleman placing the patient on semi-rest treatment, sulphocarbolate of zinc and the exhilarating effect of hydrotherapeutics at the Infirmary for Nervous Diseases. At this time the total acidity of the stomach was four per cent., and showing slow digestion in the lavage fluid drawn off two and one-quarter hours after a test meal. There was no albumin or glucose in the urine, but an excess of uric-acid crystals. The man also had irritating piles, removed by the surgeon. His bowels became regular, and abdominal distress largely disappeared. He gained much in weight, and after a number of weeks' treatment went back to Ohio immensely improved, May, 1899. While in Ohio, December 24th, I was called to see him; found all signs of returning neurasthenia, gastric atony, and *indicanuria*. He had lost much flesh. Was belching continuously. Attack said to be due to cold. Blistering over stomach was now resorted to, and the toxic condition of the urine treated by salol. The patient has improved some up to date, and *indicanuria* has disappeared. Undoubtedly in this case auto-intoxication plays a rôle in semeiology.

CASE XIII is that of a female, age seventeen years, white, single, suffering one year from atonic dyspepsia and persistent supra-orbital neuralgia for six months. She is of bilious temperament. Cardiac arrhythmia prominent. Gastro-intestinal therapy cured in one month the head pains.

CASE XIV. Anna G., German, single, age twenty-six years, reported to my clinic at St. Agnes' Hospital, November 9, 1899, suffering from constipation since sixteen years of age, frontal headache, aene, and lethargy. The latter two symptoms were always worse in the morning, and recovered some from them as she forced herself out of doors or to her work. Is always worse after a hearty meal, when she has a sense of sinking. Bowels are moved daily, but she has a sense of insufficient evacuation always. Stomach is dilated down to the umbilicus. *Indicanuria* marked. Indigestion is always made worse by worry or overwork. If she catches cold the bowels are always made more costive. Brouimia and evidences of slight catarrhal gastritis. She was put on restricted diet, given sodium phosphate one drachm before breakfast, acid nitrohydrochlor. dil. gt. x. a. c. with a tonic. This girl has very rapidly convalesced from her miserable condition, and is happy in the zest for work.

A sister is undergoing such a therapeutic régime with good effect.

This case shows the *mixed* class we have styled, — that is, when neurasthenia and auto-intoxication exist

contemporaneously. The combined neural upbuilding with intestinal antiseptics and hygiene we feel are equally responsible for the great improvement up to date. Such a case as this might be termed one for the neurologist or for the gastrologist, if we look not broadly on the medical horizon.

Conclusions.—From the foregoing clinical study it seems pretty clearly demonstrated to the writer that we have three classes of disease in which the nervous system is more or less intimately influenced by gastro-intestinal disorder and usually of a toxic nature.

(1) (*a*) Neurasthenic states, general or in localized areas of distribution (most common); (*b*) where organic changes are present in the nerve cells (sclerosis). Both of these influences certainly lower resisting power and cause improper distribution of nerve force to the gastro-intestinal tract. This leads to dilatation and perversion of the enteric secretions, thus giving rise to fermentations of the stomach contents, etc., products of which are reabsorbed, further disturbing the metabolism and aggravating the symptoms of neural disorder.

(2) Cases where long-continued gastro-enteritis causes organic change in the mucosa and gastro-intestinal glands, including the liver and pancreas, of course — thus making the primal point of disease an irritating fermentation, with the elaborations of toxins. These, with the hyperacid secretions, especially of the stomach content, are in part absorbed into the system, producing a constant auto-intoxication, as would excessive tobacco or any other poison, — thus intoxicating through the blood the central nervous system until we have finally, in slow process, asthenia set up in the neurons, immervation of the gastro-intestinal tract at that moment being perverted through the efferent, specialized, and trophic nerve twigs.

(3) There must be a mixed class of cases in which neurasthenia, so-called, or organic nervous diseases are associated, *pari passu*, with disorders of digestion of a functional or organic nature. Admitting the difficulty of determining when (1) and (2) exist — even when the cause and effect certainly do maintain — for this reason it seems logical to state that a large number of cases placed in the *third* category belong by right to the preceding *two* subdivisions. The more close histories of our cases we secure, the more exact clinical studies made of symptoms and signs in the individual case, together with careful analyses of the secretions and excretions of the body, thus utilizing the associated import of such phenomena as *indicanuria* for indices, will the better results be obtained in *treatment*. So, also, will such closer observation in the direction noted more surely place the association of neural and somatic diseases out of the less intricate classification we have termed *mixed*. The individual case study as to heredity, diathesis, or temperament, must needs be broadly taken into account. There does seem to be the greatest reason to assume the *acid*, *neutral*, and *alkaline* temperaments, with their predispositions and peculiar immunities, in drawing any conclusions of the case.

An admirable article by Dr. Albert E. Sterne in the *Philadelphia Medical Journal* of December 2, 1899, elaborates this, as it seems to us, very important side of medicine. Nor should we fail to recognize that secretions and excretions are influenced by the emotions, — for example, serous diarrhea produced through emotion or overwork, as shown in the noviti-

ate to the examiner's room,—or application to hard mental labor in a neurasthenic subject. These physiological phenomena are shown in full light by the work of Darwin on "Expression of the Emotions in Man and the Lower Animals," hence the subtle metaphysical influence must be weighed in any case along with the accurate scientific knowledge indicated.

The more we study the sympathetic nervous system, the more clearly will morbid phenomena, such as the association of biliary disease or irritation causing disturbance of menstruation, of serous diarrhea substituting menstruation, or, indeed, vicarious menstruation, be better understood. The fact that pain seldom enters into these disturbances as a prominent factor at least misguides the patient as to interpreting his being ill, and the physician, too, in determining the conditions from the limited objective signs and symptoms alone.

Addendum.—Aside from the subject of intoxication, of course other irritants of a mechanical nature do produce nervous symptoms. I know of a case in charge of a Western physician where chronic eczema was cured by stretching a stricture of the rectum, and another case of epileptic convulsions ceasing after a cure of a rectal fissure which had been long neglected.

A similar case has been recently reported in the *Boston Medical and Surgical Journal*, December, 1899. The writer wishes here to refer also to the *New York Medical Journal* for July 29, 1899, in which he has reported a case of hebephrenia, with all its typical vagaries, undoubtedly due largely to persistent constipation. The girl is perfectly well to-day.

A METHOD OF DETERMINING THE DIGESTIVE POWER OF GASTRIC JUICE, AS WELL AS THE ABSORPTIVE POWER OF THE STOMACH.

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In considering the products of gastric digestion, it is, of course, first necessary to separate them into their constituent parts. First, we have soluble albumin, a substance which never exists except where there is a lack of HCl. Then we have acid albumin, a loose combination of albumin with this acid, and as final or end products, albumose and peptone. It is found, for all practical purposes, unnecessary to separate these two products, since both are equally readily absorbed. Whether there exist, also, anti- and hemi-groups of these latter products is unimportant to the clinical consideration of the subject, for both are precipitated by the same reagents and have all their other properties evidently similar.

To separate these products, it is first necessary, where no free acid is present, to add a drop or two of HCl and heat to boiling. Then sodium carbonate is added, until the acid albumin is completely precipitated. Now, by process of filtration we can readily separate the acid albumin from the albumose peptone. Whether all the native albumin is wholly removed can be readily demonstrated by adding some nitric acid to this filtrate, and warming. If albumose peptone only is present, the precipitate is redissolved. If native albumin is present, the precipitate becomes firmer and more copious. This precaution should never be omitted in testing for albumose peptone. In

the quantitative estimation of albumose peptone two methods may be employed: an absolute, known as Kjeldahl's, and an approximate method, which in this article we propose to demonstrate. The Kjeldahl method consists of converting the nitrogen in the albumose to the sulphate of ammonia by means of cooking with strong sulphuric acid, freeing the ammonia by the addition of sodic hydrate, and distilling it into an acid solution of known strength. By back-titration, with an alkaline solution of known strength, we can determine the amount of ammonia, and from this calculate the amount of nitrogen, and also of the albuminous product examined. This process, as can be seen, is extremely cumbersome, and entirely unsuited to clinical methods. It has its value, however, in enabling us to keep a control over all approximate methods, and to determine how far they depart from the absolute. To do this, it is necessary to know the percentage of nitrogen in albumose peptone, of which there exist only a few reports in chemical literature, so that we found it necessary to re-establish this fact from personal observation. Albumin possesses about 16 per cent. of nitrogen, but from the table appended below, it will be seen that the amount of nitrogen from albumose peptone is very much less than this. As an instrument of approximate estimation, the centrifuge was chosen, as its graduated tubes furnish a very good means of comparison between the precipitation and the solution in which it was precipitated. As a precipitant, Esbach's solution was first chosen, but proved unsatisfactory from the small amount of precipitate which it produced. On the contrary, phosphotungstic acid, watery solution, 1-20, and HCl were found to give a copious white precipitate, and to precipitate completely the albumose peptone held in solution. The necessity for comparison of the centrifuge method, and the absolute determination by Kjeldahl's method will be evident to all when the following results are compared:

Experiment 1.—Several solutions of Merck's peptone were prepared, varying in amount from .1 gramme in 100 c. c. of water to 1 gramme in 100 c. c. of water. It was found that, in order to keep these in perfect solution, a few drops of alkali were necessary, and

TABLE I.

Strength of Solution. Per cent.	KJELDAHL.		CENTRIFUGE.	
	Nitrogen in Grammes. 10 c. c.	Percentage of Nitrogen in Albumose Peptone. Per cent.	Reading of Graduated Tube. 6 c. c.	Calculated per cent.
.1	.00168	11.9	.3	.1
.2	.0028	14.8	.6	.2
.3	.0032	10.7	.9	.3
.4	.0049	12.2	1.2	.4
.5	.0065	13.1	1.5	.5
.6	.0072	12.1	1.8	.6
.7	.0071	10.2	2.1	.7
.8	.0092	11.5	2.4	.8
.9	.0091	10.1	2.7	.9
1	.0116	11.6	3.4	1.1

by means of this, perfect solution was maintained as long as the time requisite for manipulation demanded. Of these solutions, 6 c. c. were now taken in the graduated tube, a few drops of HCl added, and a watery solution of phosphotungstic acid added up to the 10 c. c. mark. The tubes were then placed in

the centrifuge, and rotated rapidly by hand for five minutes, after which the precipitate was found firmly impacted in the bottom of the tube, and its amount in fractions of a cubic centimetre could be easily read. As a control, 10 c. c. of each solution were treated by Kjeldahl's method, and the nitrogen determined and reckoned in percentage of the amount of albumose peptone used. The results of these determinations can be best displayed in the foregoing table, which we will call Table I.

From these determinations with known quantities, we see that the amounts registered by the graduated tube correspond very closely with the known quantities of albumose peptone, and that from these we can very easily devise a method of calculation. If we divide the amount registered by the tube by 300 it will give us the rate per cent. of albumose peptone. For instance, if the tube reads 1.5 c. c. and we divide this by 300 we find that the resulting product is .005, which is, of course, similar to .5 of 1 per cent. Still more briefly, we may divide the reading of the tube by three, considering the result as tenths of 1 per cent. Another point was discovered, that after a concentration of .6 of 1 per cent. is reached, it is more desirable to dilute with an equal amount of water, whereupon, of course, the resulting product must be multiplied by two.

To this lack of dilution, undoubtedly, the excessive result in the last determination can be attributed. From the Kjeldahl estimate, we learn that the amount of nitrogen apparently varies, but this variation is probably only apparent; resulting perhaps, from the imperfect distribution of the albumose peptone in these solutions, and also from error in calculation. This difficulty, of course, could not occur in filtered gastric contents. As an average of these ten estimations, we learn that albumose peptone contains 11.7 per cent. of nitrogen, but for convenience in future work we have adopted 12 per cent. as a ready factor of calculation. The degree of firmness possessed by the centrifuge precipitate depends, of course, upon its speed and the length of time; but as we regard the revolutions of the centrifuge as about 3,000 per minute, which can be readily procured by turning the handle with moderate rapidity, we have 15,000 revolutions as a basis for our reading. With the electric centrifuge, the revolutions can be more readily regulated; this would not present the slightest difficulty.

Experiment 2. — In order to apply these methods to actual gastric contents, we have, of course, to simulate digestion in the stomach as far as possible with our laboratory appliances. The ingredients of gastric juice we possess: HCl, pepsin and water. Heat of the temperature of the body is maintained for a long period with our brood oven. But absorption of digestive product we cannot simulate, nor can we simulate the peristaltic action of the stomach. Apart from these hindrances, which are unavoidable, artificial digestion in the laboratory must produce the same results as natural digestion in the stomach; so that in order to fit our method more accurately, various solutions were prepared which consisted of .1 gramme of pepsin, 100 c. c. of water, and .5 gramme of albumin. The albumin was dried, and in scales. The HCl was present in varying amounts, beginning with 2.5 parts per 1,000, and ending with .25 parts per 1,000. The period of digestion was invariably twenty-four hours.

As a control, there was also prepared a digestion with the same elements, except pepsin, and in place of that, a vegetable proteolytic ferment was used, whose digestive power it was desired to test. After the period of digestion was over each of these solutions was tested for the presence of free acid, soluble and acid albumin were removed, the previous volume of 100 c. c. re-established and then 6 c. c. were taken for estimation of albumose peptone in the centrifuge, and 10 c. c. were subjected to the determination of nitrogen by Kjeldahl. In each case, from the amount of nitrogen determined, there was calculated the amount of albumose peptone, using 12 per cent. as the factor. A comparison of these two methods of calculation can be seen in the following table:

TABLE II.

PEPSIN.					VEGETABLE DIGESTANT.			
Amount of HCl. Per 1,000.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.
2.5	.00126	.3	.1	.107	0	0	0	0
2.25	Miscar.	.3	.1	0	0	0	0	0
2	.0062	1.5	.5	.51	.0021	.45	.15	.18
1.75	.0044	1.25	.41	.37	.0026	.85	.28	.22
1.5	.0062	1.8	.6	.52	0	.15	.05	0
1.25	.0061	1.75	.58	.51	.0025	.7	.23	.21
1	.0056	1.35	.45	.46	.0030	.8	.26	.25
.75	.0067	1.56	.52	.56	.0032	.85	.28	.27
.5	.0054	1.3	.43	.45	.0023	.53	.17	.19
.25	.0043	1.15	.38	.36	.0025	.46	.15	.21

It is found upon comparison of this table that the percentage of albumose peptone calculated from the nitrogen, which is presumably fairly correct, compares very favorably with the amount which is estimated from the centrifuge precipitation. As the variation is not always in one direction, it is safe to consider that it is due to slight inaccuracies in calculation, and not necessary to the process.

Another noticeable thing about these digestions is, that the strength of HCl is apparently of lesser importance, provided only that all the albumin is saturated and that there is a slight excess. Every digestion except the last shows the presence of free HCl, and a marked difference can be seen between these results of digestion where a solution of .5 per 1,000 and .25 per 1,000 were used, to the great disadvantage of the latter. The presence of free HCl or the amount of free HCl has no significance whatever, beyond the fact that all the albumin present is converted to acid albumin. Hence we can see that the digestive power of gastric juice is dependent upon two factors, pepsin and HCl, and there is no reason why the power of both should not be determined as a whole, and termed the digestive power of gastric juice. In the absence of free acid, we are not yet clear that digestion may not occur, though to a limited extent. This point is now being investigated with favorable results.

Another thing which attracts our attention is the amount of albumose peptone which can be obtained from a stated quantity of native albumin. In these experiments, in our most favorable digestion 92 per cent. of the albumin was converted into albumose peptone. Whether the pepsin, which in every case was

20 per cent. of the albumin, was utilized to its fullest extent, we do not know; probably not. Yet it arouses an interesting discussion with reference to the use of pepsin as a therapeutic agent. At the same ratio, it would require 20 grammes of pepsin to digest the 100 grammes of albumin which are found in the ordinary individual's daily diet, if he is allowed to choose freely. All digestions in the laboratory are very much hindered by the products of their own digestive agent, a restriction which in the stomach is undoubtedly remedied by the constant absorption of these products, and in this case, pepsin would have a much wider range of efficacy than when its powers are so restricted. It is very improbable that albumose peptone alone is poured into the intestines, leaving the less fully digested products in the stomach, and the more reasonable belief is, that it is constantly absorbed during the process of digestion.

Experiment 3.—In order to test the process still further, certain digestions with pancreatin in an alkaline solution of varying strength, namely, from 1 to 5 parts per 1,000, were carried out, and the resulting products estimated. A control digestion in each case was also made with the vegetable enzyme which had been previously compared with the pepsin. The process of separation of the undigested products differed here, of course, from that previously used. It was found necessary to separate the alkaline albumin, plus the soluble albumin, by neutralizing with acetic acid, and to cook it, by which both substances were removed. In other respects, the digestions were exactly alike, the same amount of pancreatin and albumin being used as before. The results of the digestions were tabulated also, and can be seen as follows:

TABLE III.

Strength, Na ₂ CO ₃ , Per 1,000.	PANCREATIN.				VEGETABLE DIGESTANT.			
	Nitrogen in 10 c.c.	Reading Tube.	Estimated Albumose Peptone, Per cent.	Calculated from Nitrogen, Per cent.	Nitrogen in 10 c.c.	Reading Tube.	Estimated Albumose Peptone, Per cent.	Calculated from Nitrogen, Per cent.
1	.00364	.9	.3	.3	.00224	.65	.21	.19
2	.0017	.35	.11	.14	.0007	.15	.05	.06
3	.0028	.75	.25	.24	.0016	.4	.13	.13
4	.0028	.25	.08	.23	.0021	.28	.09	.17
5	.0016	.4	.13	.14	.0015	.2	.06	.12

The most noticeable thing about this series of estimations is the inefficiency of the pancreatin of trade to digest albumin. If we take, for instance, the most favorable of these digestions, we find that only 42 per cent. of the albumin was converted into albumose peptone, while with the pepsin-HCl digestion, 92 per cent. of the albumin was converted. This leads us to consider seriously the value of pancreatin as a therapeutic agent, especially when we know that apart from its evident inability to convert albumin, we consider also the effect of the HCl upon it in its passage through the stomach. Of course, we are not speaking now of freshly prepared extracts of pancreatin, which have a much greater activity than the dried powder which is commonly used. In fact, it seems from the experience of others, that freshly chopped pancreas in substance has a much more valuable

effect when it is desired to influence to duodenal digestion.

From a clinical standpoint, we have now the application of this method to the actual investigation of the power of gastric contents, removed from the stomach, and we must also recognize the fact that the HCl is equally effective, whether existing in a free form, or combined with albumin; so that it seems only necessary to filter out the insoluble food particles, and to use the gastric juice directly for digestive experiments. There is still some question as to the advisability of adding HCl when no free acid is present, but in the following experiment the gastric juice was employed just as it was removed from the stomach after filtration. There may be ample HCl for perfect digestion and still not a particle of it may exist in a free state. Combined HCl has not lost its power, with the aid of pepsin, of converting unchanged albumin to peptone. We may regard the term "digestive power" as the quality which gastric juice possesses of converting albumin to albumose peptone. It is always necessary to have a control which shall contain gastric juice alone, without the addition of albumin.

The process of Hammerschlag¹ is as follows: To add to a 4-1,000 solution of HCl albumin until we have a 1-per-cent. solution of this substance. Of this, measure out two portions of 10 c.c. each. To one add .5 c.c. filtered stomach contents; to the other, 5 c.c. water. Place both portions in a brood oven for one hour, and then estimate the amount of albumin in both by Esbach's albuminometer. The difference represents the amount digested, which can be calculated in percentage. In regard to this method it can only be said that the picric acid which Esbach's solution contained will precipitate albumose peptone as well as acid albumin, and hence the resulting difference is not necessarily due to the amount of albumose peptone formed. Our own applied method, which seems most satisfactory, is as follows: 10 c.c. of filtered gastric contents, either undiluted or diluted according to a definite proportion, are measured out and placed in a test tube, to which, afterward, .1 gramme of albumin is added, and it is allowed to digest for twenty-four hours in a brood oven or in a warm place. In another tube 10 c.c. of gastric contents, prepared in the same way, but without albumin, are placed in the same place for the same time. After this period, if no free acid is present, two or three drops of HCl are added, the solution is boiled in a test tube, and sodium carbonate added until no further precipitate is formed. These solutions are now filtered into two graduated tubes respectively, until six c.c. of each are obtained. Phosphotungstic acid and HCl are then added, as before, the whole is submitted to the action of centrifuge, and the difference in the reading of the two tubes divided by 300 will give the percentage of albumose peptone formed by the action of the gastric juice. This can be reckoned for 10 c.c., or can be reckoned as so many parts per 1,000. This method, employed in five cases, which comprise anaecidity, subacidity and hyperacidity, gave the following results:

CASE I. Anaecidity, with mild epileptic attacks. The gastric contents, removed one hour after a test meal, showed a tube reading of 1.4; with albumin, 3.3. The difference, 1.9, shows that 6.3 parts per

¹ *Versammlung Deutscher Naturforscher und Aerzte, Wien, 1894.*

1,000 were digested by the gastric juice. Fourteen days later another test made upon the same patient, who in the meantime had taken HCl, showed a tube reading of 1.3; with albumin, 4.4. The difference of 3.1 shows 10.1 parts per 1,000 digested.

CASE II. Hyperacidity, with some dilatation, under the same conditions showed a tube reading of 3.9; with albumin, 5. The difference, 1.1, shows a digestive power of 3.6 per 1,000.

CASE III. Deficient motility. Reading of the tube with albumin, 8 (3 c. c. used and calculated for 6 c. c.); without albumin, reading, 7. Difference, 1 c. c., shows digestive power of 3.3 parts per 1,000.

CASE IV. Subacidity of neurotic origin. Reading of tube without albumin, 1.4; with albumin, 1.7; difference, .3. As the gastric contents were diluted with an equal amount of water, this factor must be multiplied by two, and equals .6 c. c., which gives a digestive power of 2 parts per 1,000.

Upon an examination of these results, one must be struck with the varying amounts of albumose peptone found in the pure gastric contents, and the question arises whether this cannot be a measure of the absorptive power of the stomach. We have excellent authority for this supposition. II. Tappeiner² and J. Brandl³ both declare that not only albumose peptone but also acid albumin, and possibly soluble albumin, are absorbed in the stomach.

These results have been further substantiated by experiments performed upon persons suffering from almost complete closure of the pyloric orifice by malignant disease, in which solutions of albumose peptone of known strength taken into the stomach and after intervals of two to three hours removed by siphonage, showed a loss that could only be accounted for by their absorption in the stomach.

Furthermore, Riegel⁴ states: "One can obtain an idea of the degree of the disturbance of absorption in the stomach by examination of the digestive products present in the stomach contents removed." In addition to this there appears to be a very unsatisfactory method extant of determining absorption. The method of Penzoldt and Faber,⁵ which consists of ingestion of iodide of potash in capsules, has proved very unsatisfactory, and Boas⁶ says: "According to my view, the time of elimination of iodide of potash is in no way a test of the absorptive ability of the stomach." Hence we are compelled to return to the question of the residual albumose peptone in the removed stomach contents as a possible measure of the absorptive power. This seems the more probable as it is incredible that only albumose peptone is poured into the intestine, and the less well-digested products remain in the stomach for further action. When, however, we find a large residual albumose peptone in the stomach, it may be due to faulty absorption or an unusually great activity of the digestive fluid present. But, in general, it seems reasonable to consider the following statement as justified: The less the percentage of albumose peptone present, the greater the absorptive power of the stomach; and, vice versa, the greater the percentage, the less the absorptive power of the stomach. If, then, we re-

gard this albumose peptone present as a measure of absorption, the digestive power of the gastric juice as a measure of its strength and activity, and the amount of gastric contents removed as a measure of motility, we have three factors which give us a fairly clear idea of the condition of the stomach. In order to get a clear idea of the correlative relation between these factors we will arrange the results of these five cases in a table, which reads as follows:

TABLE IV.

Nature of Case.	Amount Albumose Peptone. Per 1,000.	Digestive Power. Per 1,000.	Amount Removed.
Anacidity. First analysis.	4.6	6.3	128 c. c.
Second analysis.	4.3	10.1	105 "
Deficient motility.	13	3.6	135 "
Deficient motility.	23	3.3	100 "
Subacidity.	4.6	2	56 "
Gastric neurosis.	4	3.2	46 "

Upon looking at the above table we find these peculiar combinations: We may have good absorption, good digestive power and deficient motility, or we may have another combination of poor absorption, fair digestive power and deficient motility. These three factors once determined, in connection with the determination of the amount of rennin, make up an analysis which apparently affords us about all that chemical examination offers in the analysis of the stomach contents.

While it is possible that further examination and a larger number of cases may disprove these suggestions presented, yet it seems worth while to carry out this line of work until the truth or falsity of its deductions is proved. While chemistry can never completely supplant the means of physical examination presented to us, yet it must always form a powerful adjunct in the diagnosis of stomach disease.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

II. TWO CASES OF THOMPSEN'S DISEASE, AND ONE OF TRANSIENT MYOTONE, OCCURRING IN ONE FAMILY.

BY S. A. LORD, M.D., BOSTON.

CASE I. Howard J. G., an American of eighteen, came to the clinic on December 16, 1899, during the service of Dr. Walton, complaining of difficulty in opening the clenched hand, "crackling" in the joints, "prickling" in the limbs at times, and occasional numbness of the fingers and toes (but only when they became cold). He was "sickly" up to the age of nine, after which he became strong and athletic above the average (so he states), and lived as a farmer. When about twelve years old he began to notice a stiffening of the thigh muscles immediately after starting to climb upstairs, rendering him almost powerless to advance for several moments; this would then slowly lessen, full freedom and power of motion returning when two or three additional steps had been taken. The trouble grew more severe, so that in less than a year after the onset any considerable jar suf-

² Ueber Resorption im Magen, Zeitschr. für Biologie, vol. xvi, 1880, p. 497.

³ Ueber Resorption und Secretion im Magen, Zeitschr. für Biologie, vol. xi, 1892, p. 277.

⁴ Magenkrankheiten, 1897, p. 100.

⁵ Berlitu. klinische Wochenschr., 1882.

⁶ Magenkrankheiten, 1897, p. 215.

ficed to make his legs rigid in an instant. Finally he refused to go to school, on account of the ridicule to which he was subjected. It then became hard to open the hand after a firm squeeze (eighteen months after the onset). The tendency growing still more marked, every time he "stubbed" his toe he fell to the ground, all voluntary motion of the neck, body and limbs being temporarily abolished by tonic spasm; and, at the present time, the general rigidity is so complete on such occasions that a half minute often elapses before the patient can arise. He can always move the tongue and face muscles during these spasms. Except as a part of such universal rigidity he never perceives involvement of the erector spinae, the motions of stooping and rising being quite free. After a sneeze, it is said, he cannot straighten up for a few moments, on account of the abdominal spasm. Involvement of the pectoralis, trapezius, latissimus dorsi, or deltoid is not often marked enough to inconvenience him. He states that jaw movements are occasionally difficult, especially when he has been exposed to cold; and the same is true of the tongue. In the legs the impeded thigh movements annoy him more than anything else, but the muscles below also are not spared, the flexor spasm of the toes resembling that of the fingers.

The rigidity is described as transient, not returning as long as action is kept up. The patient "could chop wood all day" if no variation in the motion were attempted. Likewise he can walk indefinitely when once over the initial disability, and states that he can run upstairs provided that some preliminary "dancing" is indulged in, and that there is never the slightest hesitation in going downstairs. He is confident that fear has no effect. Provided that he does not sweat, the whole tendency decreases on hot days; sweating exerts a marked influence for the bad, according to him, as does exposure to cold. He thinks that hard work makes the trouble worse, unless he can keep from perspiring. Effort to overcome the spasm is not only almost entirely ineffectual and very painful, but, in addition, is said to prolong distinctly its duration. Damp weather increases it. There has been no opportunity to judge of the effect of alcohol.

The disorder steadily increases in severity. This has been made especially evident recently in connection with the milking of cows, which can now be accomplished only after fifteen minutes' practice. He has, in fact, been inefficient in all employments essayed of late. He states that notwithstanding this progression of the disease, his muscles are becoming stronger as well as larger, and that he is still growing. There has been noticed during the past year a marked tendency to nose-bleed. The general health is excellent, and the mental and vital development normal, puberty having been reached at fourteen and the sexual power being adequate. The patient is temperate and of good habits.

Family history.—This is incomplete on the maternal side, but is said to be in general good. No instances of myotonia except the three here discussed are known in the family.

Status.—The patient is below medium height: he is well nourished, with slightly developed panniculus adiposus and remarkably developed muscles, those in the legs being strikingly large. The thigh measures $21\frac{1}{2}$ inches (54 centimetres) and the calf $15\frac{1}{2}$ inches

(40 centimetres). Over the scrotum and penis there is a condition of vitiligo, but the organs are well developed. The maximum impulse is in the fourth space, and the pulse (patient standing) 106 (it is to be regretted that the constancy of this rapid rate was not confirmed); the sounds and boundaries are normal. The thyroid gland is present, of normal size. Hearing and eyesight are good. Slight ulcerations are found on the septum, accounting for the nose-bleed, and there is a small adenoid. Cover-slips of the blood showed nothing abnormal, either in the character of the reds or in the differential white count. The red count was unfortunately inaccurate, but it seems almost certain that there was no deficiency in number. There was an apparent plethora. The urine is of normal appearance and specific gravity and contains no albumin or sugar.

Sensation.—Everywhere normal, unless the remarkable intolerance of the skin to painful and (less decidedly) to tactile stimuli be deemed hyperesthesia; there was no examination of visual fields or fundus. On palpation, the muscles are found to be abnormally firm, especially those of the legs. There is slight, fine tremor of the hands; no fibrillation or inco-ordination. The muscle bellies are of the short type.

Reflexes.—The pupils are normal. The knee-jerk is difficult to obtain; with re-enforcement it is present in normal degree, but shows tendency to weaken after three or four repetitions. The observations as to whether it was completely abolished on repetition were somewhat contradictory on different occasions; this is not surprising, considering the well-known variations in degree which the symptoms present in the individual case of myotonia. It happened at least once that I was unable to obtain the knee-jerk after several responses, successively lessening in vigor, had been excited. Local myotatic irritability may still be observed during the (only apparent?) absence of knee-jerk. The Achilles phenomenon presents a contrast: repetition certainly does not weaken it and it is easily obtained. There is no ankle clonus or triceps- or wrist-jerk. The front-tap contraction is present. The cremasteric, abdominal and plantar reflexes are normal.

Voluntary motion.—The gait and leg movements in general are somewhat slow. Two or three trials in quick succession did not enable the patient to run rapidly upstairs, even after the initial spasm had passed away. This residual awkwardness is probably pathological, and is accounted for perhaps by the fact that in this patient the subsidence of myotonic rigidity is not at once perfect, that after cessation of the evident spasm some further improvement in functional ability goes on, perhaps also in part by the abnormal consistency of the hypertrophied muscles. The muscular strength is poor compared to the development, but there is no evidence that the muscles tire quickly. Motions of the face, lips, eyes, eyelids, pharynx and larynx are absolutely normal, and there is no hindrance to the actions of spinal flexion and extension or to respiration. When the jaws are closed tightly the masseters become very firm and prominent and remain so for several moments after attempt is made to relax. Lateral but not forward movements of the jaws also result in after-spasm. The action of the genioglossus in the motions of the tongue is perfect, but the intrinsic muscles work slowly for an instant when an attempt is made to curl the tongue

backward or to execute lateral movements rapidly. The disorder is well marked in the neck muscles; on forced rotation the neck becomes set in that position for a time. In anteroposterior action the spasm appears after two or three oscillations, the head then becoming fixed; on lateral flexion the spasm is not so marked. The trapezius and other shoulder girdle muscles and those of the upper arm all present the characteristic tonic after-contraction; it is extremely pronounced in the biceps, triceps and in the flexor group of the forearm. On shutting the hand tightly it can be opened only with the greatest effort and slowness, and there is a high degree of resistance to passive extension; not so great, however, but that it can be overcome. Ordinary hand movements are free after two or three voluntary openings and closings. Severer tests, requiring much continued effort (as in the action of milking, already alluded to), would probably make it evident that a certain amount of impediment to motion persists several minutes; this statement seems justified in view of the positive testimony of the patient as to the protracted difficulty now experienced in milking cows. The gradual betterment of his walking power during the first mile or two bears equal significance, and is mentioned here to emphasize this point. The extensors of the fingers, contrasting sharply with the flexors, show a remarkable exemption from spasm—apparently complete—for the open hand can always be closed with instant readiness. The wrist, again, is involved both in extension and flexion. The small hand muscles are also involved in some motions, but writing, though labored, causes no spasm. There is momentary after-spasm of the abdomen on coughing. Lateral and rotatory trunk movements are similarly affected. The thigh muscles become rigid with the attempt to sit down on a chair twice or thrice rapidly, the patient being finally left standing, unable to bend his stiff legs. Adduction of the thighs is involved, but abduction shows an apparent exemption. The toes, like the fingers, can always be flexed at will, but extension is slow and difficult. The spasm is most intense, prompt and prolonged in the forearm and thigh. An attempt to go briskly upstairs is arrested on the third or fourth step, but not absolutely, progress being possible, though barely perceptible, throughout the duration of the spasm. The degree of rigidity in the legs is brought sharply to notice by the loud snapping of knee tendons during relaxation of the spasms. On placing the phonendoscope upon the joints in action, vibrations of seemingly abnormal intensity are heard.

With regard to voluntary movement after rest, then, rigidity is seen never to manifest itself till the intended contraction, with its entailed single motion, has been performed. If, now, that contraction has been extreme, if the effort is intense, the muscle will not relax despite the pulling of antagonists. Spasm does not therefore occur strictly at the *beginning* of intended movement. With less vigorous effort the spasm is less marked, and its development is not abrupt, one or two relaxations and contractions being possible before motion is suspended. The rigidity at its maximum does not utterly abolish motion. It is not seen to last more than eight seconds, begins to decrease with the third, and has disappeared with the fourth movement. Attention exercises no visible influence. Prolongation of the resting time has distinct influence in intensifying the next spasm. To ensure the appearance of

spasm at resumption of motion a rest of at least sixty seconds is necessary if the muscles have been brought to a freely working state. The rapid cessation of spasm observed during the third and fourth movements seems to be followed by further improvement in muscular control, which is mostly subjective and extends over fifteen minutes or more if action continues. The immediate cause of impeded motion is the failure of the muscle, once contracted, to relax; involvement of the antagonists is seen as an augmenting factor, but this does not seem to be an element in the case of finger-and-toe movements, in which the singular immunity of the extensors results in the arrest of motion in flexion. The sudden generalized rigidity following a stumble, previously mentioned, doubtless has in its direct production the elements both of mechanical excitation and of intense effort.

Mechanical irritability of the muscles.—This is exaggerated in a way absolutely typical of congenital myotonia. The facial muscles and the masseters do not show the reaction. In general, a fairly sharp blow is needed to bring it forth. On striking the deltoid, the whole muscle becomes rigid, the rigidity being greatest at the point struck, with the production there of a deep furrow, lasting several seconds. It is less easily produced in the forearm muscles. I could not obtain it in the erector-spinae mass. It is very marked in the thigh; here a quick blow with the fist causes a prolonged tonic spasm of the whole extensor group, the separate bellies standing out prominently. Well-defined furrows can be called forth by brisk strokes with small instruments; the vastus externus is especially susceptible. The same phenomena may be observed in all the groups of leg muscles. No idiomuscular mound was seen, and a trial to obtain the contraction by pressure was unsuccessful. The persistence of this irritability during apparent absence of knee-jerk has been mentioned. Attempt to elicit the "paradoxical contraction" by dorsal foot-flexion was without success. The *nerves* do not show increased mechanical excitability (facial, peroneal).

Myotonic electrical reactions.—These were studied in the deltoid, the arm and forearm and thigh muscles; those of the face reacted normally to both currents. Faradism: The muscles react to weak currents, which call forth momentary contractions when momentarily applied, tetanic after-spasm when the stimulation is longer. A deep furrow lasting nearly ten seconds after slightly prolonged stimulation can be produced with a very weak current. Galvanism: Weak currents act like the faradic. Tetanic after-spasm is seen in the quadriceps with five milliamperes, both poles; the spasm slowly disappears and successive shocks lose their efficacy, there being finally no response. If the poles are then reversed the contraction again appears. No rhythmical contraction could be demonstrated: the strength and duration of current found requisite by other observers could not be borne by this patient. Commonly it is impossible to obtain opening contractions in this disease, but they were twice seen in this case, in the quadriceps at the anode. With a strength of ten milliamperes a remarkable pulsating contraction, not exactly rhythmical, and showing no appreciable polar relation, was observed in the same muscle. The relations of the poles are apparently not entirely constant: in the quadriceps $\text{CaCl}_2 > \text{AnCl}_2$ and $\text{CaCl}_2 < \text{AnCl}_2$ were both noticed. In the deltoid, however, the anodal contrac-

tions are constantly greater than the cathodal. *The reaction of the nerves* to electricity is normal to both currents. Labile galvanic stimulation, mentioned by Oppenheim in his text-book as giving rise to myotonic reaction, was not tried.

CASE II. Brother of Howard G.; is a clinical counterpart if the descriptions are correct. This person lives in a distant State, and I have not seen him. He is two years older than II.; the symptoms came on at the same time of life — two years before puberty — and are of like severity. He is said to be subject to occasional attacks, in which there is complete loss of consciousness along with myotonic condition of body and limbs (resembling that of H. after stumbling), thus presenting the not infrequent combination (Oppenheim) of Thompson's disease with epilepsy, in all probability. It is to be understood that myotonia exists in typical form in the intervals.

CASE III. Cordelia G., age twenty-three, single, sister of Howard G.; is well and strong except that for a week before each catamenial period she experiences a peculiar momentary motor incapacity of the legs on going upstairs, after taking two or three steps; it never amounts to anything like total arrest of power, but is well marked. This gradually increases as the period approaches, but disappears wholly when the flow begins. There is also some difficulty in arising from a squatting posture at such times. Nothing but true myotonic affection, in very slight degree, seems to explain these symptoms. The hands and arms are not affected, nor any other muscles, according to the patient's knowledge. The trouble came on at sixteen. This woman I saw personally, but have not seen the manifestations she describes. They are best termed "transient myotone," but the propensity is probably congenital.

In the other cases the diagnosis — Thompson's disease — cannot be questioned; and though the name myotonia congenita has not its usual applicability here, inasmuch as the affection did not appear in infancy, it is more suitable than that of myotonia *acquisita*, because the symptoms are otherwise typical of the congenital form and because the family tendency is pronounced; such late onset is uncommon in the family type, but has been observed. Myotonia may indeed have existed unnoticed in early childhood.

In the literature are many atypical cases and numerous instances of associated conditions, of which two — progressive muscular dystrophy and paramyotonia congenita — deserve mention here, for in the case of Howard G. there is a resemblance to dystrophy in the weak, short-bellied and hypertrophied muscles, which present further an abnormally firm (though not lumpy) consistence; a likeness to paramyotonia on the other hand is seen in the influence of cold on the actions of the tongue and jaw muscles.

Worthy of recapitulation are the following points of particular interest: (1) The unusually late onset; (2) the continued progression of the disease; (3) the brief duration of the after-spasm — considering that the occasional occurrence of almost universal rigidity indicates a severe form of the affection; (4) the protracted persistence of a slight amount of spasm, usually in this case not evident except subjectively as a feeling of awkwardness; (5) the exemption of the erector spinae and of the finger and toe extensors from spasm; (6) the diminished knee-jerks and their tendency to

disappear; (7) the final absence of response to electric shocks after repetition, and (8) the reappearance of the response if the poles are reversed; (9) the presence of opening contractions, and (10) the absolute periodicity of the myotonic symptoms in the sister, this condition not having been previously reported so far as I know.

These cases present nothing new concerning the most interesting question in connection with myotonia — its etiology. The remarkable periodicity observed in the case of the sister seems to indicate merely either that wholly new conditions exist in the organism at the catamenial time, sufficient to bring about a myotonic state, or that a constant latent tendency is aggravated into evidence by the disturbance of vital equilibrium common at the menstrual period. Of the immediate or ultimate causes of myotonic spasm we have no knowledge. The much-divided opinion as to the direct cause has perhaps favored a muscular origin, while there are still adherents of the auto-intoxication theories. The classic muscle-fibre appearances have now a doubtful significance, however, particularly since Jacoby showed that they may arise through faulty technique.

It will always be difficult to rule out the participation of either one of the structural elements concerned, the nervous and the muscular, on account of their intimate and inseparable connection in function. But it is permissible to remark that, regarding the immediate, direct cause of the spasm, more will probably be heard of *inhibition* than heretofore, in view of the great importance now attached to it in the minds of physiologists, as a normal and constant element in all vital phenomena. If these phenomena are but resultants of the antagonistic actions of the two nervous forces, acting always concomitantly, of which inhibition is one, then we may reasonably regard myotonic spasm as the result of defective inhibitory supply. This would express only the immediate cause of the spasm, for those subtle influences determining the quantity and distribution of inhibitory impulses — in this conception the ultimate causes of the spasm — are of course unknown to us in our absolute ignorance of the nature of inhibition itself. Such a supposition is apparently as plausible as others put forth, and offers the further advantage of allowing an expression of the facts (in part imperfectly, it must be acknowledged) in terms of a physiological process, of simply a loss of balance between the opposing forces in the delicately adjusted nervous system. As Schulze has recently remarked, however, it is hardly profitable to speculate at length concerning the etiology of this disease so long as our knowledge of the physiology of muscular contraction remains far from complete. And Bernhardt, still more recently, in reporting a unique case combining the symptoms of atypical Thompson's disease with those of paramyotonia and atrophy (questionably neuritic), comments upon the possible importance of the relation of myotonia congenita to those and other diseases, and urges an exhaustive review of the subject of etiology, with a complete recasting of our ideas as to it from the point of view of such relation.

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Medical Progress.

REPORT ON PROGRESS IN PATHOLOGY.

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MALARIA AND MOSQUITOES.

IN a paper read before the Tenth Congress of the Società Italiana di Medicina Interna, Bastianelli and Bignami¹ sum up the results of their observations on the transmission of malarial infection by mosquitoes. They have experimented with all three forms of malaria: the estivo-autumnal, the tertian and the quartan. With the co-operation of Grassi, a zoölogist, they think they have demonstrated that the only kinds of mosquitoes that are concerned in the transmission of the disease are various species of the genus anopheles. These are found only in malarial districts. The parasite peculiar to each form of malarial fever has two life cycles, one completed in man and the other begun in man and completed in the mosquito. The cycle carried out in man is the one already long known, which is characterized by the breaking up, or the segmentation, of the adult parasite into a number of young parasites. The other cycle is represented in the estivo-autumnal fever by the "crescents," and in the other fevers by certain forms of the parasite which the authors do not clearly describe. These forms are regarded as sexual forms, and the authors seem to think that they are incapable of producing themselves in man. When they are taken into the stomach of the mosquito, however, they go through a special life cycle lasting ten or twenty days or more, as follows: Some of them develop into the well-known "flagellate bodies," and some develop into peculiar round bodies without flagella. Next, the flagella detach themselves from the "flagellate bodies" and one of the flagella penetrates a round body to impregnate it. The round bodies so impregnated then undergo certain changes and make their way into the wall of the intestine. Here they increase in size, and acquire each a delicate enveloping membrane, and segment into a great number of smaller bodies. The latter then elongate themselves and assume a filiform appearance. Later the enveloping membrane ruptures and the filiform bodies are disseminated throughout the body of the mosquito and eventually accumulate in the cells of the salivary glands, whence they are discharged into the blood of man. The authors found difficulty in infecting the mosquitoes with quartan parasites, although they did succeed in doing so. They explain this on the ground that the quartan parasite probably develops in man only a few sexual forms that are capable of undergoing further development in the mosquito.

These interesting results of these Italian observers are the direct outcome of the brilliant work of Major Ross, done a few years ago, who showed that in the stomach of mosquitoes fed on the blood of malarial patients the crescentic parasites develop into the flagellated forms and liberate their flagella. He also showed that a certain parasite, very similar to the malarial parasite found in the blood of birds, underwent a peculiar cycle of development in the body of the mosquito and that such infected mosquitoes were capable of infecting healthy birds by their bites.

The observation by MacCullom that the flagella of

the flagellated bodies behave like male reproductive elements has also contributed not a little to the development of our knowledge of this subject.

According to Bastianelli and Bignami, the crescentic bodies found in the blood in the estivo-autumnal fever originate principally in the bone marrow, where many young forms are to be found.

They state that a single mosquito may infect an individual, and in fact, several individuals, for they have found numerous parasites in the salivary glands of mosquitoes by whose bites they have experimentally produced malaria in healthy subjects. They have also made a study of the mosquitoes of very malarious districts in Italy, where almost the only genus is the anopheles. In the months of June and July only three per cent. of the mosquitoes examined were found infected with the parasites, while those caught far from any habitation were found free from malarial infection. They concluded from this that the few malarial infected mosquitoes met with here acquired the parasite from persons who were suffering from relapses of malaria. They also reported the following interesting observations: A number of harvesters were housed in a big granary. In this on June 23d, only one mosquito was found. On the 24th, eight mosquitoes were found, and on July 1st, 366. Of these 90 were examined and only three were found to be infected, but subsequently the number of the infected mosquitoes rapidly increased. At another place 42 laborers were housed in huts on an estate. On July 2d, out of seven mosquitoes only two were found infected. On July 17th, 15 mosquitoes out of 32 were found infected, and on July 20th, 11 mosquitoes among 17 contained the malarial parasites. Mosquitoes captured during the same period in the stables of the estate or at a distance were found free from infection as a rule. At the end of July or early part of August, nearly all of the men who had lived in the huts during this period had become affected with malaria.

As regards the prevention or limitation of the spread of the disease, the authors emphasize the necessity of getting rid of stagnant water and also the necessity of administering quinine early in the disease, for thus not only is the danger of relapse diminished, but the development of the parasites into those forms that complete their life history in the mosquito is prevented or interfered with. They think that malaria should be regarded by the authorities as an epidemic or contagious disease and treated accordingly.

PIGMENTATION IN ADDISON'S DISEASE.

The mechanism of the pigmentation in Addison's disease has been studied by only a few observers. According to Nothnagel, the pigment is carried from the blood to the epithelial cells of the skin by means of "wandering cells." The pigment was also found by Nothnagel about the vessels of the skin and in their walls.

Riehl found hemorrhages about the vessels of the cutis and in the neighborhood of these hemorrhages brown-colored "cutis" cells. Many of the vessels were thrombosed. According to Riehl, the cutis cells derived their pigment from extravasated red blood corpuscles.

Von Kahliden could not confirm the observations of Riehl. He found, in the case of the tongue that the pigment was contained chiefly in the cells of the papillæ and not in the epithelium. In the subpapillary

¹ *Lancet*, January 13, 1900. Translated by Dr. G. S. Brock.

layer amorphous black pigment was often present in the form of granules and clumps and outside of cells. He also found in some vessels black pigment granules among the red corpuscles.

Pförringer,² in a recent article, reports the results of his study of this subject. The case was a typical one, there being extensive tuberculosis of the adrenals. He could find no microscopic changes which seemed to him significant, neither in the splanchnic, nor in the sympathetic nerves, nor in the semilunar ganglion. The microscopic examination of the pigmented skin showed, in the tissue of the cutis, pigment in clumps, and, in the vessels of the part, pigment in granules, free or enclosed in blood corpuscles. The author thinks that the pigment in this disease comes from the blood, leaving the capillaries as granules either free or enclosed in leucocytes. He does not deny that the "wandering cells" may play a part in carrying this pigment, but he thinks that some of it gets into the epithelium directly from the vessels, which in many instances lie very close to the lowest layers of the epidermis. Upon the primary origin of the pigment he has no definite opinion.

A CASE OF HEMOCHROMATOSIS.

E. L. Opie³ reports a case of typhoid fever with pigmentation of the skin and various organs, notably the liver, pancreas, heart and gastro-intestinal tract. There was also cirrhosis of the liver and chronic interstitial pancreatitis. Microscopical examination showed an abundant deposit of pigment throughout the liver tissue. This pigment gave the microchemical reactions characteristic of iron. In addition to this pigment a second form was present which gave no iron reaction. It was in the form of small granules in the smooth muscle cells of the blood-vessels and in their connective-tissue sheaths. Both forms of pigment were also present in the pancreas. In the heart, the iron containing pigment was found in large amount in the muscle cells. In the gastro-intestinal tract, both forms of pigment were present, the iron-free form predominating. It was situated in the smooth muscles and in the connective-tissue cells. There was a less degree of pigmentation of other organs.

In the liver, necrosis of the liver cells was frequently observed in association with the pigment accumulation. The author seems to think that the necrosis and the interstitial increase in the pancreas are the results of the cell death, brought about by the pigment deposits. He regards the iron containing pigment as derived from the hemoglobin of the blood, which is set free by breaking off the red blood corpuscles. He calls attention to the fact that in all cases of so-called bronzed diabetes there has been found a chronic inflammation of the pancreas. The diabetes in these cases seems to be a result of the chronic inflammation of the pancreas and to be a terminal event in a disease characterized by general pigmentation. In Opie's opinion, the interstitial changes in the pancreas are the result of necrosis of the pancreatic cells, produced by the deposition of the iron pigment. In this view bronzed diabetes would be a disease which is due primarily to a destruction of the red blood corpuscles. As Welch has pointed out, however, in his discussion of Dr. Opie's paper, it seems that this explanation of the disease is inadequate, for a

number of conditions are known in which there is much destruction of red blood corpuscles without the production of pigment deposits like those in the present case.

THE GONOCOCCUS IN ACUTE DIFFUSE PERITONITIS.

Cushing⁴ reports finding gonococci in the peritoneal exudate in two cases of diffuse acute peritonitis secondary to salpingitis. The gonococci were found in cover-glass examination in both cases, and in one of the cases they were isolated in cultures as well. They were not present in the uterus or in the vagina, but were found in the inflamed Fallopian tubes.

These cases are worthy of mention, because notwithstanding the widely accepted view that cases of peritonitis due to the gonococcus are not uncommon, the only other case of acute peritonitis that we know of in which gonococci were satisfactorily demonstrated is the one reported by Wertheim in 1882.

HISTOGENESIS OF PERITONEAL ADHESIONS.

Büttner⁵ has studied the process of organization of the fibrinous peritoneal exudates. He finds that the first step in the process is the proliferation of the connective-tissue cells beneath the flat pavement cells of the peritoneum. These connective-tissue cells had begun to proliferate by the end of the second day. They elongated themselves and grew into the exudate into which they had penetrated far after five days, when newly formed blood-vessels derived from the adjacent vessels of the part also made their appearance. The flat cells of the peritoneum in the affected region were not actively concerned in the process of the organization. They became swollen, were loosened from their attachments, and after three and one-half days only fragments of them were to be found.

BACTERIA IN TYPHUS FEVER.

Balfour and Porter⁶ have made cultures from the circulating blood in 43 cases of typhus fever. In 36 out of the 43 a diplococcus was found. This organism appears from their descriptions to have considerable resemblance to some of the cocci which normally inhabit the skin. The blood for examination was obtained from the thumb of the patient in every case, the skin being thoroughly disinfected beforehand. The cultures were made by mixing the blood so obtained with bouillon. No growth was obtained from blood placed on solid culture media, but the organism, after growing in bouillon, grew readily on the ordinary solid culture media. The authors seem to have fully appreciated the likelihood of results obtained with such methods being open to serious criticism, and that it would be hard to convince bacteriologists that the organism they obtained was not an inhabitant of the skin. With the idea of meeting such criticism they report a number of examinations of control cases, among these being cases of measles, scarlet fever and typhoid fever. In 40 of 46 cases of typhoid fever the same diplococcus was found, but it was not encountered in any of the other cases.

Twelve cases of typhus were examined at autopsy. In eight out of these nine cases pure cultures of the diplococcus were obtained from one or other of the internal organs. Inoculation experiments with the

² Centralblatt für allgem. Path. u. path. Anat., Band xi, No. 1, January 2, 1900.

³ Bulletin of the Johns Hopkins Hospital, November, 1899, and Journal of Experimental Medicine, vol. iv, Nos. 3, 4.

⁴ Bulletin of the Johns Hopkins Hospital, May, 1899.

⁵ Beiträge z. path. Anat. u. allgem. Path., Bd. xxv, S. 453, 1899.

⁶ Edinburgh Medical Journal, December, 1899.

diplococcus on animals showed that it was pathogenic for rabbits by intravenous inoculation, producing a rapidly fatal septicemia. From the inoculation of guinea-pigs no positive results were obtained. In monkeys, while no fatal effect by subcutaneous inoculation was produced, yet some days after the inoculation, the diplococci were found in the circulating blood. A monkey intravenously inoculated gave a negative result.

While these observations are interesting and suggestive, they require confirmation before they will be generally accepted as of much value.

A CASE OF TRUE LYMPHOMA.

E. R. Le Count⁷ reports his examination of a tumor of the groin the size of a pigeon's egg, which in microscopical structure was identical with a lymphatic gland, having the follicles and sinuses which are characteristic of these organs. Such a tumor as this seems to be of rare occurrence. Most of the tumors which are described as lymphomata do not repeat the structure of a lymphatic gland. This tumor must be regarded as an example of a true lymphoma. The author emphasizes the need of a thorough revision of the classification of tumors of lymphatic glands.

SCROFULOUS LYMPHADENITIS.

F. C. Moore⁸ has tested the virulence of the tubercle bacilli in 26 cases of this condition. He found that the tubercle bacilli from these cases were clearly less virulent for animals than the bacilli from pulmonary phthisis. The author seems inclined to regard this diminution in violence as due to the natural resistance of the tissues of the lymphatic glands rather than to a primary low grade of virulence in the bacilli themselves.

A CASE OF BLASTOMYCETIC DERMATITIS.

L. Hektoen⁹ reports a fifth case of blastomycetic dermatitis. The disease involved a considerable area on the right leg, and the dorsal aspect of a portion of the right thumb, wrist and forearm. The affected skin was reddish in color with thickening and induration; there were no pustules or vesicles. Microscopic examination showed essentially a chronic suppurative process with hyperlasia of the epidermis. The parasites appeared in microscopic preparations of the lesions as round or oval bodies provided with a homogeneous capsule. Their protoplasm was granular and sometimes contained a vacuole. The organism seemed to multiply by budding as does the yeast organism. The organism grew readily on the ordinary culture media, but beerwort agar was found best suited for its growth. Animal inoculations showed that the organism was pathogenic to rabbits, guinea-pigs, white rats and gray mice. In these animals its effects are chiefly local, producing necrosis, suppuration and granulation tissue formation. It also seems to produce a slow toxemia which in time may become fatal. A young dog, into whose jugular vein a suspension of the growth had been injected, died greatly emaciated within a few weeks. The autopsy and subsequent microscopic examination showed minute foci of granulation tissue scattered throughout the lungs,

and focal lesions in the kidneys. The organism was recovered by cultures from the lungs and kidneys. This yeast-like organism is very much like the one described by Gilchrist and Stokes a few years ago, yet shows some cultural differences.

THE VITALITY OF THE BACILLES OF THE PLAGUE.

Yokote¹⁰ buried mice dead of the infection with the bacillus of plague in garden earth, and tested the dead bodies from time to time for the presence of the bacillus. He found that the bacilli survived in tissues of the dead animal for thirty days at the longest. They disappeared more quickly if the putrefactive process was active. The bodies were buried in wooden boxes, and it is interesting to note that in the earth of their vicinity none of the bacilli were found.

HYDROCEPHALUS AND HYPOPLASIA OF THE ADRENALS.

Czerny¹¹ has found imperfect development or absence of the medullary portion of the adrenals in five cases of hydrocephalus in children. Since no signs of degenerative changes were observed the author regards the condition in the adrenals as an anomaly of development. He has no adequate explanation to offer of this remarkable association of conditions.

THE EXPERIMENTAL PRODUCTION OF CANCER.

Lack¹² reports the results on experiments on rabbits in which the ovaries were incised and scraped with a knife, and the fluid which exuded allowed to spread over the peritoneum. One of the rabbits lived for nearly a year, when it became emaciated and was killed. At the autopsy numerous firm white nodules were found in the mesentery, pleura, lungs and uterus. There were also areas of firm tissue in the liver, together with many cystic formations. The nodules were found to exhibit the typical microscopical structure of carcinoma of the ovaries, consisting of columnar epithelium, arranged in alveolar spaces and of a connective-tissue stroma. In Lack's view, carcinoma is essentially an invasion of the lymph spaces by normal epithelium; once arrived in this space the cells continue to multiply. The frequent carcinosis of the peritoneum that follows the removal of cystomata of the ovaries is regarded by the author as the result, in some cases, of the escape of the free cells from the tumor into the peritoneal cavity. He does not believe that the occurrence of carcinosis of the peritoneum in these cases is necessarily a sign that the original neoplasm was of carcinomatous or malignant nature.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of November 21, 1899, the President, DR. ALFRED WORCESTER, in the chair.

DR. W. L. BERRAGE read a paper entitled

FURTHER EXPERIENCE WITH THE OPERATIVE TREATMENT OF RETROPOSITION WITH ANTEFLEXION.¹

¹ See page 241 of the Journal.

⁷ Journal of Experimental Medicine, vol. iv, Nos. 5, 6.

⁸ Journal of Pathology and Bacteriology, vol. vi, May and August, 1899.

⁹ Journal of Experimental Medicine, vol. iv, Nos. 3, 4, May and July, 1899.

¹⁰ Centralblatt f. Bakt. u. Parasitenk., Band xxvii, No. 21.

¹¹ Centralblatt f. allgem. Path. u. path. Anat., Band x, No. 7, 1899.

¹² Journal of Pathology and Bacteriology, vol. vi, 1899.

DR. E. REYNOLDS: I would like to ask whether the uterus as a whole has a tendency to sag forward after the division of the posterior ligaments.

DR. BURRAGE: I have never noticed any such tendency, nor, on the other hand, do the divided ligaments tend to contract. A lozenge-shaped gap is left after the division of the ligaments over which the peritoneum is adjusted.

DR. C. H. NOBLE, of Philadelphia, by invitation, read a paper entitled

REMARKS UPON THE TECHNIQUE OF THE CLOSURE OF THE ABDOMINAL WOUND.²

DR. M. H. RICHARDSON: I have of course used at one time and another various methods to close the abdominal wall, but have never seen any reason to give up the through-and-through suture. I should not be willing to accept as an axiom that this suture is more liable to suppurate than any other. As to hernias, while I can give no figures, the number that have occurred in my practice must be extremely small, otherwise I would be apt to hear of more. Of course it is possible that other men sew up my hernias as I sometimes do theirs, but they would be apt to let me know. I always notify other surgeons when operating upon cases upon which they have worked previously. Of course in suppurating wounds the percentage of hernias is large, but I am surprised that it is not greater. While my number of wound infections, of course, cannot be smaller than the splendid showing of the reader, it certainly is very small indeed. In the first six months of this year in over 200 abdominal operations I can hardly remember a single wound infection, even in appendix operations. The last 260 intercurrent appendix cases all recovered without wound infection. The great disadvantage of the layer suture is that it leaves one or two dead spaces. I never saw a wound which might not become filled with blood. This is well shown in breast cases, where we are very careful to stop all oozing, yet it is common to see a hematoma. It seems to me that there is more liability for infection to take place where such dead spaces are present. In stout people I am apt to sew through and through and then sew up the aponeurosis separately. From 1886 to 1892 I used silver wire almost entirely. The great objection is that the buried ends are apt to irritate. Now I use nothing whatever but silk, and see no reason to abandon its use, and it certainly is excessively rare to have to take out a buried suture. I object to catgut because it does not bite; in tying a large artery with catgut it does not feel secure. I do not like to desert an approved method, and so I stick to silk.

As to disinfection, I think gloves are the greatest advance that has been made in surgery in late years. Previously we have seen every year one or two cases going to the bad inexplicably with general peritonitis. Now with gloves nothing of the kind occurs. In the last six months I have also used a gauze mask. I do not believe there is any very great danger of infecting a wound after a few hours. By that time it has become sealed up.

DR. J. G. BLAKE: In Alexander's operation my results have been satisfactory with interrupted sutures, followed by the dusting with iodoform or dermatol. In 60 or 70 cases I can hardly recall more than one or two of suppuration.

DR. G. HAVEN: I have not been able to see very much difference as regards hernias or suppuration no matter which method was used.

DR. G. H. WASHBURN: I have seen very few hernias following the abdominal operation, and it has so happened that most of those few have followed the tier suture. Sometimes I use one method and sometimes the other.

DR. W. L. BURRAGE: I am absolutely in favor of the tier method. From theoretical reasons the abdominal wall must be stronger when we bring back the layers as nearly as possible as they were before operation. Dead spaces can be avoided by bringing the layers together by one or two deeper sutures. I use chlorinated lime and soda and rubber gloves. Instead of adhesive straps I put collodion on gauze around the wound. This stays on for a week. I think a woman is entitled to having her abdominal wall restored to its original state as nearly as possible if we have time enough to do so. Torri has shown the great advantage of the tier method, and also that the through-and-through method gives a potential hernia in many cases.

DR. E. REYNOLDS: For a number of years I have been studying this subject, and it is my custom always to try the strength of the abdominal wound from inside with my finger before closing. I think that theoretically the tier method has advantages in all abdominal incisions except in Casarean sections. Practically I have gone back to a modified through-and-through suture. In small wounds where there has been little manipulation, I do the layer suture. In long operations with a large incision, I have been surprised to see how much separation of the layers there always is and how hard it is to fill in the dead spaces. My method of closure is to catch the peritoneum together with fine silk and then do a through-and-through suture, picking up the muscle as I go, while at the lower angle of the wound I put one or two silk-worm-gut sutures well below the cut, with especial reference to hernia, killing any dead space, for some years ago I noticed that all hernias start in the lower angle of the wound. The only trouble with the layer suture that I have found has been in the subcutaneous fat, especially in very fat women. I think gloves the greatest advance made for a long time. The man who always uses them is apt to have clean hands, and, furthermore, they enable us to do clean work soon after touching a septic case. Finally, I do not think we all appreciate the importance of slight septic infection in determining the result in critical cases. Since using gloves it seems to me that critical cases have done better than before. I agree with Dr. Richardson as to the importance of the face mask. I have seen a hair drop from the beard into the abdominal cavity.

DR. J. B. BLAKE asked as to the use of the swathe after operation.

DR. NOBLE: I tell my patients to wear one for a year, but a swathe can do little good unless a woman has a pendulous abdomen, except in so far that it reminds her that she has had an operation performed and must be careful. I have been asked as to the cumol catgut. In my experience it has been perfectly satisfactory.

DR. G. W. W. BREWSTER: It has seemed to me that in some cases in using the through-and-through suture trouble comes from tying the stitches too tightly, and therefore it is sometimes of advantage

² See page 256 of the Journal.

to do the first dressing sooner than a week and cut one or two stitches if any appear too tight.

DR. F. H. DAVENPORT: I use the through-and-through method, except that in very fat women I put a suture in the aponeurosis of silk or catgut, feeling that the aponeurosis is the most important structure. My relatively few hernias have been where drainage was used or a second laparotomy was done. I cannot but feel that there is danger of infection if the wound becomes exposed to the air. Frequent changing of the dressing can avoid this, and accordingly it is my custom to change the dressing after forty-eight hours and every day after that.

DR. MALCOLM STORER: I have been struck by the tendency of the scar of the intracuticular suture to spread out after six or more months. Of late it has been my practice to sew the peritoneum, muscle and aponeurosis in layers, and then use interrupted silkworm sutures through the skin and fat, catching up a little of the aponeurosis in the median line to avoid a dead space. Since I have employed this method the scars, seen after a few months, seem to be much more linear and firm.

DR. NOBLE: I am surprised that here in Boston the through-and-through suture should still find so many warm advocates. The researches of Winter ten years ago and Abel more recently showed that hernias are ten times as apt to occur with the through-and-through suture as with the tier suture. I used the through-and-through method myself until 1892, and I had certainly five per cent. hernias. Of course then I drained more than I do now, and so would expect more hernias. Tying sutures too tightly has more to do with suppuration than infection. I have not been troubled by the dead spaces spoken of, nor have I had any trouble with hemorrhage after tying with catgut.

DR. F. H. DAVENPORT showed a

FIBROID, TEN CENTIMETRES IN DIAMETER, REMOVED BY MYOMECTOMY.

Recent Literature.

The International Text-Book of Surgery. By American and British Authors. Edited by J. COLLINS WARREN, M.D., LL.D., Professor of Surgery in Harvard Medical School; Surgeon to the Massachusetts General Hospital, and A. PEARCE GOULD, M.S., F.R.C.S., Surgeon to the Middlesex Hospital; Lecturer on Practical Surgery and Teacher of Operative Surgery to the Middlesex Hospital Medical School, etc. Vol. I, General and Operative Surgery. Pp. 947, with 458 illustrations in the text and nine full-page plates in colors. Philadelphia: W. B. Saunders. 1900.

This work is intended to furnish a reliable text-book of surgery, one "untrammelled by the many traditions of the past, and which presents with due discrimination the results of modern progress." Recognizing that the broad field of special surgery has made it practically impossible for any one writer, however brilliant, to be omniscient, the editors (who, as is well known both in this country and abroad, are men exceptionally well qualified to prepare such a work) in order to accomplish their purpose have obtained the assistance of others, notably experts in their special

departments of surgery. These are men of wide experience and international reputation. They have contributed extensively.

The book is to be published in two volumes. Vol. I is now placed at the disposal of the profession and others who may be interested. It treats of General and Operative Surgery. Vol. II is to contain the chapters devoted to Special or Regional Surgery.

Vol. I, the one just published, is an exceedingly handsome, attractive book. Our space will not permit us to enumerate in detail the subjects included in its table of contents. The usual ones appear and also some unusual ones, such as Surgical Pathology of the Blood, Constitutional Reaction to Wounds and Infections, Surgery of Muscles, Tendons and Bursae, of the Heart and Blood-Vessels, etc. Some subjects are treated with much more care and detail than is usually observed, for example, the chapter of 25 pages on Anesthetics and Surgical Anesthesia.

The articles as a rule present the essentials of the special subject treated in a clear, concise manner. They are systematically written. The subdivisions are readily distinguished from the general text by the lettering at the commencement of each paragraph, a method which greatly facilitates rapid reference. The book is extensively indexed. The illustrations are abundant, well chosen and enhance greatly the value of the work.

The chapters are often excellent résumés of the more detailed publications of their authors. The present status of some of the more recently investigated lesions is well described, for example, "traumatic" and "congenital" dislocation of the hip. The book is a thoroughly modern one. As is unavoidable, when so much has to be condensed into a limited space, some chapters are very concisely written; but the general ground has been well covered, the main facts have been presented, and the student can be sure that, when he has thoroughly studied the volume and has familiarized himself with its contents, his general knowledge of modern surgery will be up to date. The presswork of the book is highly satisfactory. The second volume will be awaited with interest.

Brain in Relation to Mind. By J. SANDERSON CHRISTISON, M.D., author of "Crime and Criminals"; formerly of the New York City Asylum for the Insane, etc. Pp. 143, illustrated. Chicago. 1899.

The author has tried to present in this book what is known of the relationship of the brain to the mind, and give the facts indicating the present status of our knowledge. He has tried to state facts, rather than present arguments, and to establish those facts by the necessary references. Cerebral development functions, the significance of brain contour and size, and mind localization are among the subjects discussed. The book deals with a subject of interest to the physician, the lawyer, the theologian, and the psychologist.

A CASE OF LEPROSY.—A young man, twenty-two years of age, who recently arrived in New York from Bridgetown, Barbadoes, was discovered by the examining surgeon of the Immigration Bureau to be suffering from leprosy, and was immediately ordered back to the steamsHIP on which he had come as a steerage passenger, for deportation.

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THE CONTROVERSY AS TO THE NUTRITIVE
 VALUE OF ALCOHOL.

THE results of some recent experiments conducted by Dr. Atwater, of Wesleyan University, upon the nutritive value of alcohol, have awakened anew a vigorous controversy upon one of the important questions of education, the teaching in regard to alcohol in the schools.

Dr. Atwater claims in his published statements that the results of his experiment prove that alcohol is a food, and that therefore the teaching of pulpit and schools that it is not a food is an error, and should be discontinued. The adherents of temperance and of the present method of teaching in regard to alcohol have replied in several letters, and finally by a pamphlet called "An Appeal to Truth," stating that Dr. Atwater's experiments do not prove that alcohol is a food either in the common sense of the term, as understood by people generally and used in books of hygiene, or in the particular sense in which the author uses it, as a food entitled to rank as sugar, starch and fat, and that, therefore, his experiments should have no effect upon the teaching.

The question in dispute in this case is not the actual value of alcohol as a food, but is solely whether or not the conclusions which Dr. Atwater draws from his results are justified by these results.

These conclusions, stated in Circular No. 357, November 6, 1899 (U. S. Department of Agriculture, Division of Publications), are:

- (1) That the alcohol was almost completely oxidized in the system.
- (2) In the oxidation all of the potential energy of the alcohol burned was transformed into heat or muscular energy.
- (3) That the alcohol protected the material of the body from consumption just as effectively as corresponding amounts of sugar, starch or fat.

If we examine the experiments from which these conclusions are deduced, contained in Bulletin No. 69 (Office of Experimental Station, Department of

Agriculture), in regard to each of the three conclusions separately, we find that conclusions Nos. 1 and 2 are perfectly tenable and justifiable on the basis of these experiments, but that No. 3 is not thus justifiable. The data given in the Bulletin show conclusively that alcohol is oxidized in the body and that the potential energy of this alcohol is transformed to heat or energy of some other kind. It fails, however, to show that the alcohol protects the body materials from consumption equally with sugar or starch or fat. In fact, this data shows an actual loss of nitrogen in the experiments in which alcohol was used, proving a consumption of body material under these conditions. We are thus forced to conclude from an examination of the facts that the authors of "An Appeal to Truth" are correct in their claim that Dr. Atwater's experiments do not justify his statement that alcohol is a food entitled to rank as sugar, starch or fat in its effect in protecting the body materials from consumption. In fact, the experiments as they stand prove the contrary.

Are they justified also in their claim that his experiments fail to justify him in his conclusion that alcohol is a food in the ordinary sense of the term, a conclusion implied in his statements in the report which refer to alcohol "with other food materials"? We think that they are so justified.

The two conclusions in regard to the metabolism of alcohol which Dr. Atwater's experiments did warrant, namely, that alcohol is oxidized in the body, and that the potential energy of the alcohol is there liberated, do not by any means prove that alcohol is a food in the ordinarily accepted sense of the term "food." To demonstrate this fact, it must be proven that the sum total of the effect of the ingested alcohol is useful rather than harmful in the maintenance of the animal economy. And this Dr. Atwater has not proven. And it has not yet, as far as we know, been demonstrated by any experiments. In fact, the weight of experimental evidence at the present time is decidedly against such an assumption. Thus the experiments made upon large bodies of men under conditions of sustained labor, as those conducted in the English, German and American armies, prove to us that the effects of the use of alcohol, in the amounts ordinarily spoken of as "moderate," make the soldier less rather than more fit for work, and decrease rather than increase the amount of energy which he can put forth under given conditions. That the use of alcohol in large amounts is harmful no one doubts.

It is possible that it may some day be proven that the effect of very small amounts of alcohol upon the economy is such as to entitle it to be considered as a food. But it has not yet been so proven. And until it is, the advocates of the temperance education are quite justified in any protest which they may make against the assumption that alcohol is a food.

As we have said, the whole truth in regard to the action of alcohol in the body or the question of its nutritive value is not known. If it is at some future

time proven that small amounts have such a value, then alcohol must be classed as a food.

It must be pointed out, however, that even such a result would not entitle it to be classed as a desirable or hygienic food, which is the sense in which people in general understand the meaning of the term "food." Against such inclusion there are many weighty arguments, as, for example, the fact that the tendency to the formation of the alcohol habit from taking these small amounts is so great that the danger of its use far exceeds any possible benefits which may be derived from it.

These remarks are not intended as a justification of all the teaching upon the subject of alcohol which has up to the present time been advocated or employed by the agents of temperance education in the schools. We wish merely to point out that, in regard to the teaching upon this particular question, as to whether or not alcohol is a food, their position has not yet been successfully controverted by scientific evidence. Whether the present teaching upon this point is the wisest under present conditions of knowledge is another question.

It is our personal opinion that the wisest course at present would be to base the prohibition of alcohol advocated in the teaching upon the fact that alcohol is an undesirable substance, the use of which in any capacity in health is quite unjustifiable under the laws of hygiene, rather than upon the statement that it is not a food or the unqualified statement that it is a poison. For while the latter statements in unqualified form have, at the present time, the preponderance of scientific evidence in their favor, still our knowledge in this regard is not complete. The former statement, however, is based upon facts and arguments so established that it may be regarded as true beyond the shadow of a doubt.

TWO VOLUMES OF "PROCEEDINGS."

THE growth of medical knowledge, unfortunately, does not keep pace with the growth of medical literature. Journals are multiplying beyond all necessity and demand, and each special branch has also its special organ. In addition to this, medical societies are increasing in number, as representing certain sections of the country or special interests, and hence is born another species of medical literature, the proceedings or transactions. Of these we now have two bulky volumes before us, one the *Proceedings of the American Medico-Psychological Association* for 1899, and the other Volume 1 of the *Transactions of the Mississippi Valley Medical Association* for the same year. The first is, of course, a collection of special papers relating to the problems and interests of psychiatry. A notable contribution is the one by Dr. Peterson, of New York, on methods of study and improved facilities in our large cities. He speaks highly, and with reason, of the comprehensive laboratory inaugurated by Van Giesen for the study of mental dis-

orders, and strongly advocates the establishment of what he calls "psychopathic hospitals" (the term is hopelessly bad) for the reception of the acutely insane. The volume should be of much interest to psychiatrists, and of some interest to all of us, but the papers, with few exceptions, lack the stamp of real originality and personal research.

The *Transactions of the Mississippi Valley Medical Association* is a very different sort of a book. It has a wide scope of subjects, under forty-seven titles, — papers of personal experience in great part. No doubt, for members of the Association, such a collection of uncritical papers has a certain interest and value; for the rest of the world, we confess to the conviction that it adds to the bulk but not to the worth of existing medical literature. It is usually a misfortune that an author writes a paper for such a volume, with the consciousness that it is first to be read at a meeting. The tendency to deviate from direct statement into the vagaries of fine writing is apparently quite irresistible, under such circumstances. It is hard for some of us to learn that in dealing with a subject of scientific character, an absolutely direct style of expression is alone admissible.

MEDICAL NOTES.

POLLUTION OF WATER SUPPLIES.—A bill has been introduced in Congress relating to the pollution of water supplies. The bill provides for an appropriation of \$3,000 to enable the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to investigate the sources of contamination of rivers and other natural sources of water supply where the sanitary condition of the people of more than one State or Territory or the District of Columbia is affected, the first investigation under the provisions of the bill to be made of the Potomac River. At the instance of the Game and Fish Protective Association of the District of Columbia an amendment has been adopted by the committee providing for an appropriation of \$2,000 to enable the Commissioner of Fish and Fisheries to investigate and report on the effects of pollution in interstate rivers upon the fish, fry, spawn, fish-food, plankton and riparian vegetation of such waters. It is of interest in this connection to note that Massachusetts alone, through its Board of Health, expends \$30,000 yearly for the prevention of river and stream pollution. The foregoing bill savors somewhat of a union between the Marine-Hospital Service and the Game and Fish Protective Association, to be used by the former as an entering wedge to larger things.

ANTIVIVISECTION ESTIMATES OF THE VALUE OF SERUMS.—While the Treasurer of the New England Antivivisection Society is informing a committee of the Massachusetts Legislature that Haffkine's anti-plague inoculations have been proved to be worthless, the Indian Plague Commission is reporting to the Under-Secretary of State for India, that they "consider Mr. Haffkine to have performed a great life-saving

work in the face of almost insuperable difficulties." They express their sense, after very careful investigations, of the importance of the method which Mr. Haffkine has devised and of the results which have been achieved by it. As the same official of the Antivivisection Society informed the same legislative committee that the only value of antidiphtheritic serum resided in the carbolic acid by which it is preserved, and that, notwithstanding the proved worthlessness of the antitetanus serum, doctors go on just the same injecting it into the brains of their patients, thoughtful and serious people may afford to disregard his statements and his conclusions.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS. — A circular has been issued by the General Secretary of the Congress, giving information to members who propose to attend. Each member has the privilege of participating in the work of any of the sections. Reports of proceedings will be sent to each member, but only in that section to which he, personally, belongs. In addition to this, each member will receive later, without charge, a volume containing a general résumé of the work of the Congress; also a volume giving a complete account of the general assemblies. Other volumes may be purchased, if desired.

ANOTHER ANTIVIVISECTION BILL. — The indefatigable Dr. Gallinger has introduced in the United States Senate a new bill which reads as follows: "That no person shall perform upon the body of any human being in the District of Columbia any scientific experiment involving pain, distress or risk of life and health, whether by administration of poisonous drugs for the purpose of ascertaining their toxicity, by inoculating the germs of disease, by grafting cancerous tumors into healthy tissues, or by performance of any surgical operation for any other object than the amelioration of the patient."

UNIVERSITY MEDICAL MAGAZINE. — It has been announced that the Board of Trustees of the University of Pennsylvania has finally secured entire control of the *University Medical Magazine*, and that in the future it will be published under the auspices and with the support of the University. Heretofore the publication has been in the hands of a stock company, over which the University had no control. Dr. Charles H. Frazier has recently been appointed editor.

NEW ORLEANS POLYCLINIC. — A report has been circulated that the New Orleans Polyclinic has been suspended on account of small-pox in New Orleans. This is incorrect. The small-pox situation in New Orleans has at no time justified any apprehension on the part of students attending the Polyclinic or on the part of those who might wish to do so.

THE GERMAN CONGRESS OF INTERNAL MEDICINE. — The eighteenth German Congress of Internal Medicine will be held at Wiesbaden, April 18th to 21st. Professor von Jaksch, of Prague, is the president. A discussion on the "Treatment of Pneumo-

nia," is announced, and also one on "Endocarditis and its Relations to other Diseases."

TUBERCULOSIS IN FRANCE. — A bill providing for the erection of a national institution to combat tuberculosis has been introduced into the French Chamber. It is said that about 150,000 deaths annually in France are due to tuberculosis.

RETURN OF SIR WILLIAM MACCORMAC. — Sir William MacCormac, President of the Royal College of Surgeons, who has been acting as volunteer surgeon with the British Army in South Africa, has sailed for England.

APPOINTMENT OF DR. LEWELLYS F. BARKER. — Dr. Lewellys F. Barker, of the Johns Hopkins Medical School, has been appointed professor of anatomy in the University of Chicago and Rush Medical College.

HOSPITAL BEQUESTS. — Under the will of the late Siegfried R. Zunz, of Wimbledon, it is reported that the London, England, hospitals will benefit to the extent of between \$400,000 and \$450,000.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 7, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 69, scarlatina 42, measles 104, typhoid fever 15.

MORTALITY STATISTICS IN BOSTON. — The total number of deaths reported to the Board of Health for the week ending March 3d was 273, against 187 the corresponding week last year, showing an increase of 86 deaths, and making the death-rate for the week 25.7. Of this number 136 were males, and 137 females.

CHRISTIAN SCIENCE AND DEATH CERTIFICATES. — A child has recently died in Somerville, Mass., who had been treated by a Christian Scientist; he gave as the cause of death, pneumonia. The clerk of the Board of Health declined to issue the burial permit without the testimony of an accredited physician, as required by law. After considerable controversy, in which the clerk was upheld in the position he had taken, a physician was allowed to view the body, and the burial was permitted.

A CASE OF SMALL-POX AT YALE. — It is reported that a student in the Freshman Class of the Sheffield Scientific School is ill with small-pox. Very few of his classmates have been exposed to contagion, and with the precautions that have been taken, it is not expected that the disease will spread.

A CENTENARIAN. — Mrs. Abigail Kimball Garvin died in Westford, Mass., March 2d, at the age of one hundred and four years.

NEW YORK.

AN IMPORTANT DECISION. — A will case that has attracted much public interest has just been decided in

the courts. The will in question was that of Miss Annie Taylor Morgan, who is believed to have lost her life at the Windsor Hotel fire on March 17, 1899, and it has now been admitted to probate by Surrogate Thomas. The main ground of contest was that there was no proof of the death of the testatrix. The Surrogate decides that the evidence of her death, though circumstantial, was entirely sufficient. From the time of the fire until now no friend of the testatrix has seen her or heard from her. Only one witness, the Surrogate states, was willing to express an opinion that the testatrix was insane. The evidence on that point, however, amounted to little. By the provisions of the will Miss Morgan's estate is left to a god-child, and the contest was brought by her sister, from whom she had long been estranged.

RESIGNATION OF DR. CHARLES MCBURNEY. — Dr. Charles McBurney has resigned his position as attending surgeon to the Roosevelt Hospital, and the announcement is received with great regret and considerable surprise by the profession. Dr. McBurney has been identified with Roosevelt during its entire existence, and it was on account of the high esteem felt for him that the Sims Operating Pavilion, one of the most completely equipped establishments of the kind in the world, and which was erected and fitted up under his personal supervision, was added to the hospital.

Miscellany.

ANOPHELES AND MALARIA.

A VALUABLE paper by Professor Celli, the Director of the Institute of Hygiene in Rome, has appeared in a recent issue of the *British Medical Journal*. The following comments are made editorially:

"The older observers had noted, what is indeed a part of the folk-lore of malarial districts of Europe, that malaria was most likely to be contracted about sunset and at night. *Anopheles* lies hid by day and issues forth in quest of human blood at sunset, and pursues its search through the night. Again, the old observers noted that the malarial 'miasm' was often very limited, and did not extend to any great elevation, so that residence on the top of a rock or in the highest story of a lofty house was some protection. It is known that the mosquito does not fly far from its birthplace, nor mount high in the air. Again, the older observers knew that the malarial 'miasm' was not carried by high winds, and it is notorious that the mosquito does not fly on stormy nights.

"Professor Celli thus traces the cycle, for the maintenance of which, in Italy at least, man is essential. Beginning with the great multiplication of mosquitoes at the end of June or the early part of July, it is found that some of these are infected by the malarial parasite. They convey the infection to man, thus bringing about the great increase in the number of attacks of malaria observed in July and August, but sometimes continuing into the fourth quarter of the year. During the first and second quarters of the following year the

malarious cases met with are generally recurrence of the infections contracted in the third or fourth quarter of the preceding year, and it is by these recurrent cases occurring even as late as June, when the mosquito once more becomes active, that the infection is again transmitted to the insect, and a new epidemic started.

"Professor Celli observes incidentally that in Italy children are more affected by malaria than adults, and Professor Koch lays great stress upon this point, making it indeed the test of the extent to which malarial prevails in a population, since he finds evidence that adults in a malarial district having survived the infection in early youth have acquired a more or less complete immunity. This observation Koch believes may be of great importance in prophylaxis.

"Both Celli and Koch lay great stress on the part which the cultivation of rice plays in favoring the multiplication of mosquitoes. 'The more rice fields,' Koch reports, 'there are in the neighborhood of a place, and the nearer they are, the greater the abundance of mosquitoes;' and Celli observes that it is well known that 'the formation of rice fields causes the reappearance of malaria where it had become extinct, and where it already exists they are a very active focus of production.' Rice is best cultivated on low lands subject to occasional inundation, but where inundation cannot be depended upon very copious artificial irrigation is resorted to."

Correspondence.

[Special Correspondence.]

LETTER FROM PARIS.

PREPARATIONS FOR THE EXHIBITION. — THE INTERNATIONAL MEDICAL CONGRESS. — FRENCH SPLEEN AS MANIFESTED TOWARDS AMERICANS AND ENGLISH. — TO ATTEND OR NOT TO ATTEND THE EXHIBITION AND THE CONGRESS?

PARIS, February 22, 1900.

MR. EDITOR: — We whose lot it is to live in Paris have been made very painfully aware during the past year that the great Exhibition of 1900 is fast drawing near; the town has been simply torn up by the roots in its preparations for the event, and life has thereby been rendered loathsome. Immense groups of buildings going up, others being pulled down, three sections of underground railways being hurried through at once, long quays being constructed on the river banks, rails being laid in many streets for electric tram-lines, two fine railroad termini being erected, the direction of some of the main sewers being altered, the Seine being bridged in several places, etc., have thrown the city into such a state of chaos as the oldest inhabitant has never witnessed, unless during the Commune, if even then. During this Exhibition, as your readers are undoubtedly aware, is to be held the Triennial International Medical Congress, and it is of this Congress that I wish to say a few words to-day.

As regards the general utility of these great medical conclaves I think there is practically but one opinion: nothing of real importance has ever been brought forth at any of them. This is so true that the tendency now appears to be for leading medical men to bold aloof from them, or, at any rate, only to appear *pro forma*, reserving their interesting communications for the societies and periodicals with which they may happen to be personally affiliated. This leaves the arena to the young and ambitious, who have had things pretty much their own way at the last two or three congresses. Some of the communications at Berlin and Moscow on the part of unknown members of the

profession were so utterly valueless, and such unabashed attempts at self-advertisement, as to call forth universal remark at the time, followed later on by a variety of proposals for modifying the method of holding the sittings so as to put a stop to this abuse.

Furthermore, the number of medical men with or without encumbrances who attend these gatherings appears to be steadily on the increase, so that at the more recent ones the crowd has become practically unmanageable. Whence the occurrence of a great deal of sore feeling and wounded susceptibilities, the local committees being incapable of singling out the grain from the chaff, and powerless to pay proper attention to the lights of the profession, even when discovered, owing to their necessarily restricted numbers. If this has been the case in what may be called uneventful years, and in such relatively unfrequented centres as Berlin, Moscow and Rome, what are we to expect in an exhibition year, and in such a universal rendezvous as Paris? The thought of the herd of physicians that will congregate here next summer makes one positively shudder.

If, now, to this we add that the unfortunate committee has appointed as the date of the Congress August 2d to 9th, a time of year when the atmosphere of Paris, without reaching the lofty summits of heat with which many Americans are familiar, is absolutely dead and filled with stench, and also that the majority of the attendance will be composed of the great unwashed populations of the Continent, to whom an open window is the height of abomination, and who will crowd the stifling assembly rooms and then sit and sweat and sweat and sweat again, the prospect for the fresh-air, English speaking delegates to this Congress may be realized.

I see on the north bank of the Seine, in full exposure to the sun, a light shell of a building of great size, marked: *Palais des Congrès*. I have not heard whether the intention is to hold the Medical Congress in this building, but, if such is the plan, all I can say is that the members attending will have my profoundest commiseration and that there is, at any rate, one practitioner in this city who will be conspicuous by his absence. Under an August sun that edifice will be a furnace.

Let us consider for a moment what can be the expectations of the average American physician in attending this Congress — I mean those who may intend to come unofficially and not as delegates. I think that a certain number will look on the Congress as a sight to be seen with the other sights of Paris during their summer trip abroad. Others, and this appears to me to be the only real purpose that can be attained at these congresses, will come to it to extend their circle of acquaintances, to meet many confrères with whom they are in correspondence and of whom they hear from mutual patients, or to see the celebrated men whose publications they read and in whose work they may be specially interested. Others, still, will come to look into medical Paris of to-day, to visit the hospitals, clinics, laboratories and museums, and to see what ideas they can discover worth noting and transplanting to America. Will the pains of the latter be rewarded; will the results they can expect to obtain be worth the trouble, expense and loss of time the journey will entail?

Unfortunately, I am obliged to give a decidedly negative answer to these questions. No; there is not enough for American physicians to learn here to warrant the undertaking; any one having the time and means to take the trip, if for medical purposes only, can accomplish far more by visiting Vienna or Berlin than by coming to Paris. It is positively melancholy that a great medical centre like Paris, which, no further back than thirty or forty years ago, led the world, should now occupy the position it does. The foreign *clientèle* of the French medical schools is now composed almost exclusively of the Southern and far Eastern races: South America, the Spanish Peninsula, Greece, Egypt, Turkey, Roumania, Southern Russia and Siberia. The more progressive and highly cultured countries are conspicuous by their almost total absence, and no further proof then is needed to show the superiority of the other great medical centres over Paris.

I do not propose to go into the details of medical teaching and practice in Paris in this letter; they would take up too much space, and I hope to treat this point in full on some future occasion. But in general terms I can say that all is anarchy in *rebus medicæ* in Paris. There are brilliant exceptions, naturally. Many of the professors are most gifted men; a few of the clinics are practically up to date (though in such cases this is generally due to altogether private efforts on the part of the *chef*); one at least of the museums is unique, and on several hospitals a great deal of money has been spent lately, with results not proportionate to the expenditure. But on the whole, the American will meet with more surprises and disappointments than with anything else.

There are, as I have said, many excellent men as professors; the clinical material has simply no limits; the facilities are all that one can ask, and there are plenty of funds. Yet the net result produced is so poor as to be positively astounding. The cause of this miscarriage of effort appears to me to be the fact that medical affairs in France are a monopoly held by the Government, and are run on the lines of a great "administration," like any other "administration," such as the post-office, for instance. They are entirely managed by officials, who in this instance, as in all others in this country, throw a withering blight on whatever they are brought in contact with. Competition is absolutely excluded, there being no degrees conferred except by the Government Faculties, of which there are only half a dozen for the whole of France. Finally, one is forced to admit the existence in the French either of inability to grasp the value of certain things they see in hospitals abroad, or else of deliberate unwillingness to make any innovation that has not its point of departure in their own country. For instance, how is it possible otherwise to comprehend a national medical system in a great country at the end of the nineteenth century in which the hospital trained nurse, as evolved in England and America, is totally unknown?

In conclusion, I wish to allude briefly to a somewhat delicate side of the question of American attendance at the Paris Congress this summer. Politics are not at home in the columns of a medical journal — that I know; still, there are some things that one *has* to say, and the one I now have on my mind is that I shall be very sorry to see my American confrères contribute to the success of this Congress.

It is evidently difficult to make people who live at a distance in America appreciate what the feeling of the French is toward the English-speaking races, or what occurred here during our war with Spain, and is now occurring again while the English are at war in South Africa. There is something about the English-speaking peoples that creates a profound aversion in the French mind. This they admit themselves with perfect candor. Under ordinary circumstances, when the political atmosphere is relatively calm, this aversion is kept more or less out of sight, and is covered over with a superficial veneer of ceremonial politeness. The English or American who during such periods visits France, and is only thrown in contact with the French in a casual way, is apt to depart *charmed* with French politeness and affability, and I for one do not blame him. The French are simply *passed masters* in this art, and although I have lived here a great many years, am beginning to understand my Frenchman fairly well, and am quite on my guard, it is even now *almost impossible* for me to avoid being taken in by the Frenchman's *apparent* cordiality and courtesy.

But let some great political cataclysm occur — the war with Spain, Dreyfus case, or the present war in South Africa — you at once see the Frenchman *as he really is*. The superficial shell of good manners behind which he has been concealed falls from him, and you behold a man whose hatred of everything English (in which he includes everybody who speaks the English tongue) is rendered doubly bitter by being long contained, and generally very ignorant of all that concerns the object of his hatred.

Such an outburst of gratuitous insults, venomous lies and

outrageous attacks of all sorts against Americans as filled the French press during our war two years ago must be almost unparalleled; and now that the process is being repeated against the English in connection with the South African War, I am almost led to believe what I have several times heard said, that the animosity of the French toward the English is more intense than their feeling against the Germans.

Let me merely give one or two instances of the violence of this feeling, and the undisguised way in which it has been manifested of late, so that no one will think I am exaggerating.

During our war I, personally, saw a Frenchman come up behind an English lady seated in a cab and try to knock her sailor hat off, the endeavor only failing by the hat being held by long pins run through her hair; this attempt caused great satisfaction to those who saw it, and to a policeman a few yards away, who made no step to interfere.

During the Spanish War, Dreyfus case and present African War, it has hardly been safe for an English-appearing woman to go on the streets of Paris unaccompanied; she is liable at any moment to have the epithet, "*sale Anglaise*," hurled in her face, as has happened any number of times to ladies whom I know—once recently on the Champs Elysées, in the afternoon, by a soldier in uniform.

The last few weeks have seen the appearance of a new form of ventilating the French spleen. Placards have been posted in different parts of Paris, reading: "*Mort aux Anglais*." I saw a paper being sold along the boulevards the other day, that had those words printed in an immense heading running across the page, so that every one could read them at a distance. Finally, on entering a suburban train recently I found the carriage sides plastered with little printed labels bearing the same amiable inscription.

These are only samples of the electricity there is in the air here, and of the true feelings of the French toward us. It is quite possible that the anti-English campaign will be lulled during the Exhibition, and that the more usual appearance of affability will come to the front again, as the French are not quite easy in their minds about this Exhibition. They know that their best foreign customers are the English and Americans, and certain warning notes have already appeared in their papers about not carrying their insulting tirades and caricatures too far.

But whatever they do, their true feeling toward us is as I have described it. Americans should know what it is, and should bear in mind their scurrilous behavior to us during our war, and what they would have done in the way of intervention if they had not felt Great Britain in their way.

Let the members who do attend this Congress take the greeting of the French at its real value, and not at all for what it appears to be worth. SPECTATOR.

STREET PAVEMENTS.

BOSTON, March 3, 1900.

MR. EDITOR:—Permit me a few words in reply to the editorial comments on my communication in the last number of the JOURNAL. I did not mention the names of Dr. Durgin, Professor Allen and Mr. McClintock, because I was not sure of them and therefore spoke of these gentlemen collectively as experts, thinking that I was thus showing due regard to their opinions. As to Mr. McClintock, he gave an account of macadam roads, but said nothing, I believe, about asphalt *pro* or *con*. The letters you publish I had the pleasure of hearing read at a meeting before the Park Commission a few years ago. They present strong evidence, but it is only just to say that the Brick Paving Company also produces many testimonials and statements as to the superiority of brick. A book on this subject with the title of "Brick Roadways" was distributed some years since, and doubtless many of your readers possess it. A gentleman who lives on Arlington St., opposite the portion laid with brick, tells me that this makes an ad-

mirable pavement, and there are abundant proofs that it can be made to wear well.

Horses require no special shoe to travel over it, and water can be used freely on it. Asphalt is certainly a boon to the street superintendents, who find a company ready to put down a roadway and keep it in repair, but it is not so great a boon to the public, in a changeable climate like ours. Its disadvantages are not imaginary, but real and easy to verify. London may be called as a witness. London has tried asphalt and returned to wood pavements, preferring comfort to durability. Regarding the use of wood, I find in a recent magazine this statement: "Improved wood pavements are a luxury. They have many points of superiority over asphalt. They are so considered in London, where their use is continued, although they require renewal oftener than asphalt, and much more often than granite. They will undoubtedly be used more frequently in this country, when the people are willing to pay the additional cost for the quiet and freedom from dust, and from the somewhat disagreeable glare of asphalt." As for local testimony against asphalt, there was a letter published in the *Boston Transcript* of February 24th, by John F. Ryan, M.D., which is worthy of attention.

Yours truly, S.

AN EXCURSION TO THE PARIS EXHIBITION.

HARTFORD, CONN., March 5, 1900.

MR. EDITOR:—An excursion to the Paris Exposition and the International Medical Congress, to be confined exclusively to physicians and their families, has been organized in the West. Two steamers have been chartered, one the *City of Rome*, and the other the *Nebraska*. They will sail from New York on June 30th, and return in forty-five or fifty-two days, according to the wishes of the excursionists. A New England Committee has been appointed to solicit physicians in this part of the country who would like to make this excursion. The expenses, including hotels, carriage drives, etc., also including a tour through Scotland, Ireland, England, and Belgium, will be from \$260 to \$285. The return can be made any time during the year. A large number of physicians are arranging to go on this excursion, which promises to be one of the most enjoyable of the year. The New England Committee are H. O. Marcy, M.D., Boston, Mass.; E. R. Campbell, M.D., Bellows Falls, Vt., and T. D. Crothers, M.D., Hartford, Conn. Each one of these gentlemen would be pleased to give all information, and to send circulars of the itinerary of this trip to any who may wish to join it. Over 200 have already been booked, and the prospect is that both ships will be crowded. It is necessary that any person wishing to join this excursion should communicate at once with the Committee.

Very truly yours,
T. D. CROTHERS, M.D.

THE DISCOVERY OF THE BACILLUS OF INFLUENZA.

PORTLAND, MAINE, March 5, 1900.

MR. EDITOR:—In your issue of March 1st is a review of Dr. W. H. Park's "Bacteriology," the review being chiefly a list of "errors or special defects." In this list appears the following finality: "On page 30 Canon is erroneously credited with a part in the discovery of the bacillus of influenza."

It may be now within the knowledge of your reviewer that Canon is a pretender; but in Berlin, in 1892, Canon was the flushed and happy recipient of congratulations for a discovery simultaneous with that of Pfeiffer.

Very truly yours,
ADDISON S. THAYER, M.D.

¹ Appleton's Popular Science Monthly, March, 1900.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 24, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,654,564	1671	698	22.80	27.96	.60	3.84	3.60
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	227	68	19.36	21.12	—	3.96	.44
Baltimore . . .	506,389	225	74	17.60	29.92	.44	4.84	.44
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	119	39	32.68	13.76	9.46	2.58	.86
Washington . . .	277,000	—	—	—	—	—	—	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	77	36	31.20	31.20	—	—	12.98
Nashville . . .	87,754	34	11	29.58	32.34	—	—	—
Charleston . . .	65,165	33	11	12.12	24.24	—	—	—
Worcester . . .	111,732	39	11	20.48	12.80	—	2.56	—
Fall River . . .	103,142	51	26	5.88	19.60	—	1.96	—
Cambridge . . .	92,520	40	8	27.50	20.00	—	5.00	—
Lowell . . .	90,114	34	11	14.70	23.52	2.94	2.94	—
New Bedford . . .	70,511	28	7	14.28	7.14	—	—	—
Lynn . . .	68,218	20	5	—	20.00	—	—	—
Somerville . . .	64,394	18	3	34.88	16.76	—	—	—
Lawrence . . .	59,072	35	20	25.74	14.30	—	8.58	—
Springfield . . .	58,266	27	9	18.50	18.50	—	3.70	3.70
Holyoke . . .	44,510	11	7	27.27	36.36	—	9.09	—
Brockton . . .	38,759	8	—	25.00	12.50	—	—	—
Salem . . .	37,723	18	1	5.55	11.11	—	5.55	—
Malden . . .	36,421	4	1	—	25.00	—	—	—
Chelsea . . .	34,235	16	6	18.75	—	—	12.50	—
Haverhill . . .	32,651	13	3	7.69	15.38	—	7.69	—
Gloucester . . .	31,426	—	—	—	—	—	—	—
Fitchburg . . .	30,523	9	1	—	33.33	—	—	—
Newton . . .	30,461	4	2	—	25.00	—	—	—
Taunton . . .	28,527	12	—	16.66	16.66	—	—	—
Everett . . .	28,102	5	2	—	60.00	—	—	—
Quincy . . .	24,578	4	2	—	25.00	—	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	3	1	—	—	—	—	—
North Adams . . .	21,683	4	1	25.00	25.00	—	—	—
Chicopee . . .	18,316	7	3	—	—	—	—	—
Medford . . .	17,190	5	—	—	20.00	—	—	—
Newburyport . . .	15,036	5	—	20.00	—	—	—	—
Melrose . . .	14,721	4	—	25.00	25.00	25.00	—	—

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 2, 1900.

F. W. OLCOTT, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, Detroit, Mich., and ordered home and to wait orders.
 J. A. MURPHY, assistant surgeon, ordered to the Pensacola Navy Yard.
 W. F. ARNOLD, passed assistant surgeon, detached from the Pensacola Navy Yard and ordered to the Naval Hospital, Norfolk, Va., for treatment.
 D. H. MORGAN, assistant surgeon, ordered home from the Asiatic Station and to wait orders.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 1, 1900.

BROOKS, S. D., surgeon. To proceed to Bar Harbor, Me., as inspector. March 1, 1900.
 PERRY, T. B., passed assistant surgeon. To proceed to Buckingham, W. Va., for special temporary duty. February 26, 1900.
 WOODWARD, R. M., passed assistant surgeon. Granted leave of absence for thirteen days from April 16th. February 26, 1900.
 COBB, J. O., passed assistant surgeon. To proceed to Folsom and Catskill, N. M., for special temporary duty. February 27, 1900.
 YOUNG, G. B., passed assistant surgeon. Granted leave of absence for one day. February 26, 1900.
 TABB, S. R., assistant surgeon. To proceed to Fernandina, Fla., as inspector. February 24, 1900.
 VON EZDORF, R. H., assistant surgeon. To proceed to Atlanta, and report to the Governor of Georgia for temporary duty. February 24, 1900.
 NEWBERN, WALTER, hospital steward. Relieved from duty at the Tortugas Quarantine Station and directed to proceed to Mobile, Ala., and report to the medical officer in command for duty and assignment to quarters. March 1, 1900.
 BECK, J. E., hospital steward. Upon being relieved from duty at Mobile, Ala., to proceed to San Francisco, Cal., and report to medical officer in command, for duty and assignment to quarters. March 1, 1900.
 HOLT, E. M., hospital steward. To proceed to Boston, Mass., and report to the medical officer in command, for duty and assignment to quarters. February 28, 1900.

APPOINTMENT.

EDWIN M. HOLT, of Pennsylvania, appointed as junior hospital steward. February 24, 1900.

THE SAMUEL D. GROSS PRIZE.

ONE THOUSAND DOLLARS.

No essay which the Trustees deemed worthy of the prize having been received on January 1, 1900, they hereby announce that the prize will be awarded on October 1, 1901.

The conditions annexed by the testator are that the prize "Shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 S. 13th St., Philadelphia," on or before October 1, 1901.

Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The Committee will return the unsuccessful essays if reclaimed by their respective writers or their agents, within one year.

The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

W. W. KEEN, M.D.,
 J. EWING MEARS, M.D.,
 J. CHALMERS DaCOSTA, M.D. } Trustees.

RECENT DEATH.

WILLIAM EDWARD WAMSLEY, M.D., of Brooklyn, N. Y., died on February 25th, at the age of forty-five years. He was graduated from the Medical Department of the University of the City of New York in 1877.

Deaths reported 2,817; under five years of age 980; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 584, acute lung diseases 713, consumption 288, diphtheria and croup 103, measles 74, diarrheal diseases 37, typhoid fever 34, scarlet fever 27, whooping-cough 25, erysipelas 16, cerebrospinal meningitis 10.

From diarrheal diseases New York 20, Pittsburg 5, Providence 4, Charleston and Fall River 3 each, Baltimore 2. From scarlet fever New York 17, Boston 5, Baltimore, Providence, Somerville, Lawrence and Gloucester 1 each. From whooping-cough New York 16, Boston 4, Pittsburg 2, Providence, Nashville and Lawrence 1 each. From erysipelas New York 12, Boston, Cambridge, New Bedford and Somerville 1 each. From cerebrospinal meningitis New York 5, Boston and Baltimore 2 each, Somerville 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending February 10th, the death-rate was 22.8. Deaths reported 5,082; acute diseases of the respiratory organs (London) 423, whooping-cough 138, diphtheria 115, measles 82, diarrheal 39, scarlet fever 37, fever 34, small-pox (Hull) 3, Leeds 1) 4.

The death-rates ranged from 12.6 in Cardiff to 35.1 in Preston; Birmingham 22.0, Bradford 21.8, Bristol 19.4, Gateshead 17.6, Hull 25.8, Leeds 28.4, Leicester 18.3, Liverpool 31.8, London 20.4, Manchester 28.0, Newcastle-on-Tyne 25.4, Nottingham 16.5, Sheffield 26.1, Swansea 15.8, West Ham 14.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending February 17th, the death-rate was 25.8. Deaths reported 5,750; acute diseases of the respiratory organs (London) 527, whooping-cough 138, measles 132, diphtheria 102, fever 33, scarlet fever 31, diarrheal 31, small-pox (Hull) 2.

The death-rates ranged from 14.3 in Brighton to 54.8 in Preston; Birmingham 32.4, Bradford 18.4, Cardiff 15.8, Gateshead 30.5, Hull 24.7, Leeds 28.4, Liverpool 25.7, London 22.9, Manchester 37.2, Newcastle-on-Tyne 23.4, Nottingham 22.6, Portsmouth 25.7, Sheffield 26.5, Sunderland 26.5, West Ham 19.1.

Original Articles.

INJURIES ABOUT THE SHOULDER AT BIRTH.

BY J. S. STONE, M.D., BOSTON.

I HAVE been much interested in the injuries and deformities about the shoulder which are seen not infrequently in the clinics at the Children's and Infants' Hospitals. Most of these cases come under the general head of obstetrical injuries, and in most of them I have become convinced, partly from observation and partly from the rather scanty and very contradictory literature on the subject, that injury to the brachial plexus is by far the most important factor, while direct injury to bone and joint is of only secondary importance.

It has long been recognized that obstetrical paralysis is of Erb's type, that the deltoid is the muscle most seriously affected, and that the other muscles paralyzed are the supra- and infra-spinatus, teres minor, biceps, and brachialis anticus, together with the supinators. In some of the severer cases paralysis of some of the extensors of the wrist, or more especially of the fingers, also occurs.

All of the paralyzed muscles are supplied by the circumflex, suprascapular, musculocutaneous, and musculospiral nerves, including with the last its branch, the posterior interosseous. Of these nerves the circumflex, suprascapular and musculocutaneous arise entirely from the fifth and sixth cervical roots. In obstetrical paralysis these nerves are most seriously affected and every muscle supplied by them is usually paralyzed, excepting only the coracobrachialis, which is also supplied in infancy by a separate branch derived from the seventh cervical root.

The only other nerves which arise regularly from the fifth and sixth cervical roots are those to the scaleni, to the rhomboids, and to the subclavius, the posterior thoracic, a part of the external anterior thoracic, a very small part of the median, and the upper and lower subscapular, together with a small part of the musculospiral. Of these nerves the fibres which go to supply the scaleni, the rhomboids and the subclavius, and the fibres going to the posterior thoracic, leave the roots of the plexus almost immediately after their exit from the spinal canal and before the roots have joined to form the cords of the plexus. Furthermore, all of these nerves take a decidedly different course from the other nerves of the plexus. They do not go outward toward the shoulder. The pectoral and the subscapular muscles are supplied only in part by nerve fibres arising from the two upper roots.

As to the causation of the paralysis, I will mention, first, a theory which has been held somewhat in Germany, and which has been put forward in this country by Burr.² It is, in brief, that the lesion is a hemorrhage into the anterior horns of the cord, due to the congestion arising during birth. Burr argues in favor of this theory that sensation is unimpaired. His opponents reply that in infants this is an extremely fallacious sign, that complete recovery from an anterior poliomyelitis is rarely, if ever, seen, and that it is extraordinary that such a lesion should always occur at one particular spot. Furthermore,

as Carter³ points out, injury to the fifth and sixth cervical roots at or before their exit from the spinal canal may be excluded by the fact that the serratus magnus and the rhomboids, though supplied by nerves leaving these roots very soon after their exit from the canal, are never paralyzed. In other words, the lesion must be at a point below the origin of the fibres going to the posterior thoracic, to the rhomboids, and scaleni.

The other theories of the causation have been many. The theory of direct pressure on the plexus in the side of the neck, or axilla, by the blade of the forceps, the finger, or the hook, has been thoroughly discredited by the work of Carter, and more lately by Fieux,⁴ among others. As Fieux puts it, whether the delivery be spontaneous, or whether extraction of the shoulders is necessary, whether coming on after the use of forceps or after a breech delivery, Erb's point is always pressed upon, and in one case by the posterior edge of the clavicle, in another by the fingers, in another by the edge of the forceps blade. Explanations of this sort obviously presuppose too much.

This brings up a point in regard to the etiology, on which there has been considerable discussion, the theory that the paralysis is due to a pinching of the plexus at Erb's point between the posterior edge of the clavicle and the first rib in cases in which the shoulder is carried far back. Some hold that the pinching of the plexus occurs between the clavicle and the transverse processes. These views are held by Oppenheim, Gault, Roulland, Budin, and of late have been advanced in Boston by Walton,⁵ after anatomical study of a fetus at term, and more lately still by Schoemaker.⁶ This pressure of the clavicle against the first rib, or the transverse processes, is an anatomical possibility. It means, however, that the shoulder must be carried considerably downward and very far backward to a degree which is at least not likely to occur during childbirth, although the theory that the pinching results from the rotation of the head, with the anterior shoulder hung up on the pubes, is attractive.

In the dissections on six babies which I have made the anterior curve of the clavicle gave ample space for the plexus not to be crowded. My conclusions agree absolutely with what I have since learned Fieux had done, but with which Schoemaker does not entirely agree; work bearing out in every way the theory ably set forth by Carter, that the paralysis is due to nerve stretching, and, in extreme cases, to nerve tearing.

The plexus arises from the fifth, sixth, seventh and eighth cervical, and first dorsal, nerves. If the shoulder is lowered it is plain that the upper cords must be stretched more than the lower, because the lower have normally a more nearly horizontal course. This is entirely confirmed on the cadaver. The upper two roots become as tight as bowstrings when the shoulder is lowered, while the lower three remain perfectly lax until the upper cords are severely stretched, or even completely ruptured. A pull down on the shoulder of about fifteen pounds is sufficient to break the upper roots when the plexus alone holds the shoulder up. A pull of about forty-five pounds, or three times as much, does the same thing when every-

³ Boston Medical and Surgical Journal, vol. exxviii, p. 434.⁴ Annales de Gynécologie et d'Obstétrique, 1897, vol. xlvii, p. 53.⁵ Boston Medical and Surgical Journal, vol. cxxxv, p. 642.⁶ Zeitschrift f. Geburtsh. u. Gynakol., xli, 1.¹ Read before the Boston Society for Medical Improvement, February 5, 1900.² Boston Medical and Surgical Journal, vol. exxvii, p. 235.

thing is intact, except for a small incision through which to watch the plexus.

Fieux showed experimentally the amount of the separation of the cut roots of the brachial plexus when the shoulder was held down and the head carried to the opposite side with as much force as occurs in an ordinary delivery. He found that the upper two cords separated from 26 to 28 millimetres, the third only 12 and the lower two only eight. In other words, the upper two separated more than three times as much as the lower, and more than twice as much as the middle. The separation varies with the amount that the head is inclined to the opposite shoulder. It likewise varies with the amount that the shoulder is depressed.

The point at which rupture occurs, experimentally, is from about a quarter to half an inch from the emergence from the spinal canal, at or near the junction of the fifth and sixth cervical roots. The fibres of the suprascapular nerve may be ruptured here or at a point slightly lower. They are always ruptured among the first. This point is a little lower than that mentioned by Fieux, who states that rupture occurred five or six millimetres from the emergence of the nerves. The distance seems to be determined by the strength of the fibrous sheath which surrounds the nerve bundles. Very near the canal the prolongations outward from the dura prevent injury to the nerves. Farther out it is determined by a certain weakest point.

One very important point mentioned by Walton, which is admirably shown experimentally, is the fact that the suprascapular nerve must be severely stretched or ruptured, because it has a comparatively short course and what may be termed a very definite distal attachment where it passes through the suprascapular notch. Similarly, though to a less marked degree, the circumflex has a short course and a definite distal attachment where it winds about the humerus. In other words, these two nerves have but a short distance in which they can accommodate themselves to stretching.

Fieux produced by traction on the necks of rabbits, separating the head from the shoulder, a similar partial paralysis of the foreleg, but did not report the results of post-mortem examinations.

Cases reported by Phillips, Beevor, and Walton show similarly that a violent separation of the head from the shoulder may, in adults, cause a paralysis of Erb's type.

A degree of asphyxia leading to a loss of all muscular tone would obviously increase the danger of injury to the nerves.

In regard to the theory that fracture or dislocation of the bones may cause obstetrical paralysis, it should be remembered that paralysis from this cause in adults is not usually of Erb's type. Furthermore, certain anatomical facts in regard to the bony development at birth must be considered. The clavicle is osseous, except at the two ends, ossification beginning here earlier than in any other bone. The sternal and acromial ends are cartilaginous. The scapula at birth is cartilaginous along its whole inner border, at the angle, and in the acromion and coracoid processes. The main part of the body, the spine and the glenoid fossa are ossified.

The humerus at birth is ossified throughout the shaft; the head is cartilaginous. Thus the outer end

of the clavicle, the coracoid and acromion processes are all cartilaginous and are all firmly united by strong ligaments. These parts making up the prominence of the shoulder are so freely movable and so strongly held by ligaments that injury to them is exceedingly unlikely to occur during birth. Injury to other parts is very much more likely to occur. Experimentally the cartilaginous head of the humerus is separated with great ease. The glenoid cavity may be broken off entirely by the exercise of considerably more force. The clavicle may be broken in its bony portion. The bony shaft of the humerus may be easily broken. Judging from what is seen experimentally, separation of the cartilaginous head of the humerus must be of extremely common occurrence during birth, and must often pass entirely unrecognized and indeed give rise to no symptoms, except the subjective one of pain, with perhaps a very soft crepitus which it would be impossible to detect with certainty during life. A fracture of a portion of the glenoid it is impossible to produce experimentally. The whole glenoid may be broken off. This would be an injury detected also with difficulty. Fracture of the clavicle and of the shaft of the humerus is in each case apt to occur about the middle of the bone and is detected with ease.

Experimentally, these fractures occur comparatively so easily that it is impossible by the use of any reasonable amount of force to dislocate the head of the humerus and practically absolutely impossible to dislocate the head of the humerus, if the word dislocation is used in the sense of forcing the head out of the glenoid through a rent in the capsular ligament. It is possible, with considerable force, to stretch and tear some fibres, particularly about the lower posterior part of the capsule.

It is perfectly conceivable that injury to the brachial plexus, through fracture of the clavicle, might cause paralysis of Erb's type, but it is likewise inconceivable that a fracture of the clavicle should very often pass undetected where there is an obstetrical paralysis. It is not possible for injury to any other bone than the clavicle to cause a paralysis of Erb's type.

It is, nevertheless, true that a considerable number of cases are recorded in which there is a backward displacement of the humerus, usually with paralysis of Erb's type, rarely without. My feeling in regard to these cases is that the dislocation, which is usually in the reports considered congenital, is in reality due to the paralysis; that is, that it is due to a slow yielding of the posterior part of the capsular ligament under the pull of the internal rotators. This form of dislocation was described by Dechenne in 1866. One case of backward dislocation has developed within my own observation during the second year of life. The child had a typical obstetrical paralysis, occurring after a version. When first seen the head of the humerus rested in the glenoid and could be slipped back onto its posterior border. When seen, a scant year later, the head rested outside of the glenoid and could be slipped forward onto its posterior border. This child has turned out to be microcephalic.

Another case had typical obstetric paralysis noticed immediately after birth, and examined by the family physician, Dr. Cahill, of Cambridge, who is positive there was no dislocation at first. I saw the child first at six months of age, when it was seen again by Dr. Cahill. The dislocation was then most striking.

Dislocation of this sort secondary to paralysis, whether or not accompanied by more or less tearing and stretching of the capsule at the time of the injury, is made much easier by the relatively small size, at birth, of the glenoid cavity as compared with the head of the humerus. Of course the disproportion is obvious in adults, but in infants at term the joint surface of the glenoid is in breadth only a quarter to a third of the diameter of the joint surface of the head of the humerus, while in adults it is one-half as large. In other words, the glenoid cavity is relatively from half as large again to twice as large in the adult as in the baby.

In obstetric paralysis the position of the arm is characteristic. It hangs at the side, rotated inward strongly, with the elbow slightly flexed, the forearm pronated so that the palm faces backward and outward and the wrist and fingers flexed. The most marked muscular atrophy is in the supra- and infra-spinati and deltoid. The pectoralis major and the subscapularis unopposed by any outward rotator keep the arm so strongly rotated inward that the head of the humerus is constantly stretching the posterior portion of the capsule. This stretching is increased by the backward and the downward pull of the latissimus dorsi. The result is a contracture of the pectoralis major and a gradual yielding of the weak posterior portion of the capsule. A backward displacement inevitably follows. The stronger anterior portion of the capsular ligament and the coracohumeral ligament, which at first prevented any forward dislocation, are not developed normally, and together with the contracture of the pectoralis major, hinder the rotation of the arm outward and the replacement of the head of the humerus in the glenoid cavity. Secondary bony changes may occur both in the glenoid cavity and in the head of the humerus. From disuse of the arm, lack of growth is common. It is possible that in some cases more or less recovery of power may occur in the deltoid and outward rotators, even after considerable displacement of the head of the humerus has occurred. This is probably the manner of production of most of the so-called congenital dislocations of the shoulder, which is, therefore, usually a misnomer.

There are three classes of infantile dislocations of the shoulder. The first includes the true congenital dislocation, where the lesion is due to a true lack of development during intra-uterine life of the glenoid cavity and the head of the humerus, analogous to the congenital dislocation of the hip. This form of dislocation, however, is extremely rare, and many cases reported as congenital dislocations are probably in reality paralytic dislocations. While a lack of development in the acetabulum is the most frequent congenital defect in the pelvis, in the shoulder girdle congenital defect of the glenoid is less common than other malformations, such as absence of the clavicle, congenital elevation of the scapula, exostosis of the scapula, or defect of its lower portion. Lack of development in later childhood or in adult life cannot in any sense be taken to indicate that the dislocation is truly congenital, for in severe cases of obstetrical paralysis lack of development is common.⁷ The association of paralysis with cases regarded as congenital disloca-

tions should lead to the suspicion that the paralysis was the cause of the dislocation, and especially should this be suspected in cases in which there is reason to believe that the paralysis arose from trouble during delivery. If the cases reported as congenital dislocations of the shoulder are studied in this way, a large majority of them must be looked upon as probably of paralytic origin.

Another class of infantile dislocation is the traumatic. It is undoubtedly possible that this may be produced during delivery. Experiments and clinical experience, however, both show that this must be an extremely rare occurrence, simply because any violence sufficient to force the head of the humerus through the capsular ligament would almost invariably produce other injuries which would allow the shoulder-joint itself to escape.

A vast majority of the cases of infantile shoulder dislocations must be regarded as paralytic. The displacement may have been aided by rupture or stretching of the posterior part of the capsule at birth, but they are not true dislocations in the sense that the head of the humerus has passed through a rent in the capsular ligament. They are due to a gradual yielding of the ligament under a constant unopposed muscular pull in one direction.

Before speaking of treatment something should be said regarding prophylaxis. Traction is the cause of obstetrical paralysis. Of course it is often absolutely necessary to use extremely severe force in delivery where the choice must often lie between injury to or death of the child. There are certain times, however, when traction directly on the shoulder may be avoided. Particularly in delivering an after-coming head, the pull may be exerted on the pelvis and chest rather than on the shoulders. In delivering the shoulders after the head is born, direct traction is much more apt to cause paralysis than is the freeing of the shoulders by insertion of a finger in the axilla,—a manœuvre likely of course to fracture the humerus. This accident, however, is far less serious than a paralysis. The suggestion of Walton that the second stage of labor is to be hastened should be limited by the other rule that it should not be shortened by any measure producing traction on the shoulders.

After the injury is done, support for the arm is essential. Thus further dragging on the stretched nerves or separation of their torn ends is prevented, the stretched ligaments are supported and the muscles are given a chance to recover their tone. The muscles should be protected from undue stretching just as in the early stages of infantile paralysis.

Thus for a time further harm is prevented. Later, massage and electricity have their uses. By these simple measures, or even without treatment recovery will occur in probably a considerable majority of the cases. The obstetricians thus regard obstetrical paralysis rather lightly, while the neurologists and orthopedic surgeons, who only see those cases which do not recover, regard the prognosis as bad. This difference is due probably to the varying degree of injury to the nerves; in one case simple stretching, in another a rupture of certain fibres of a nerve, and in the most severe possibly a complete tearing apart of the whole nerve. In cases not improving decidedly within the first six or eight weeks of life a serious injury to the nerves is to be regarded as probable, and consequently the outlook for marked im-

⁷ Une Endémie de Paralyties Radiculaires Obstétricales. Guillemeret: *Annales de Gynécologie et d'Obstétrique*, 1897, vol. xviii, p. 35. An interesting series of cases occurring in the practice of one midwife, and probably usually due to difficulty in delivering the head after version before full dilatation had occurred.

provement is poor, although improvement has occurred after years.

It is a question whether in certain cases the injury cannot be repaired by surgical interference. The greatest obstacle to any successful nerve suture is that in all probability the nerves are torn by individual fibres as a hemp rope tears, not directly across at any one point. Furthermore, after several weeks there would probably be the greatest difficulty in recognizing in the small nerves of the baby any abnormality without considerable manipulation. And during the interval of waiting for improvement to occur, an ascending degeneration of the torn fibres would probably have occurred which would interfere with a restoration of function, even after approximation of the torn ends. Exploration is possible, however, even in small babies.

In the lower part of the posterior triangle of the neck the upper brachial plexus is comparatively easy of access. It lies back of the sternomastoid, above the omohyoid, in front of the trapezius. The *scalenus anticus* and the sternomastoid protect the great vessels and the phrenic nerve. The spinal accessory nerve is considerably behind the plexus. The subclavian vessels, thoracic duct and several small arteries running across the neck are all below the omohyoid.

The external jugular vein and the branches of the cervical plexus which wind around the posterior border of the sternomastoid are in danger. The difficulty in reaching the upper cords of the plexus lies chiefly in the shortness of a baby's neck. The outlook for successful interference, however, is doubtful. In one case, in a baby of six weeks, I have cut down on the plexus, but found nothing more than a rather soft spot just below the junction of the fifth and sixth roots. The child died of pneumonia two weeks after operation. In the older cases where dislocation has occurred probably little is to be hoped from nerve suture, although exploration is justifiable.

Leaving aside the possibility of any radical cure of the condition through repair of the nerve injury and consequent restoration of power in the paralyzed muscles, several palliative measures are to be considered. The condition always present and the one for which relief is most often sought is the inward rotation of the arm. The inability to elevate the arm and the other paralyses vary considerably in degree. For the relief of the inward rotation, stretching or section of the contracted *pectoralis major* is necessary. By means of plaster bandages applied with the forearm flexed to a right angle and the arm rotated outward with the elbow at the side, it is a simple matter in the course of a few days or weeks to overcome the inward rotation and by direct pressure to bring the head of the humerus back into the glenoid cavity, if it is dislocated. It is possible that in a few cases rest of the over-stretched outward rotators may thus enable them to recover their tone and bring about some improvement. Relapse will almost surely occur, however, unless systematic passive motion and massage is used, aided by some orthopedic apparatus to check inward rotation.

In the more marked cases of longer duration section of the contracted muscles will cause a considerable improvement, but here again systematic after-treatment is essential. Several cases, among them one of my own, thus operated upon have been somewhat benefited.

The operative procedure of Phelps⁸ consists in deepening the glenoid cavity, paring off a portion of the head of the humerus and stitching up the lax posterior portion of the capsular ligament. His procedure is based upon the belief that the dislocation results from a fracture of the posterior portion of the glenoid cavity occurring at birth. In one case in which I opened and explored the shoulder-joint in a boy six months old with a typical paralytic dislocation I found no evidence of malformation or fracture of the glenoid or head of the humerus. Stitching up more snugly the posterior ligaments caused slight improvement, although in his case systematic stretching of the anterior muscles probably accounted largely for any benefit obtained. Previous section of the contracted pectoral muscle should be advised.

In certain rare cases there is a marked laxity of the whole of the capsular ligament and an unusually extensive muscular paralysis, allowing the arm to drop downward. Here a shortening of the ligaments in order that the head of the humerus may be brought up into its normal relations will be of benefit. In all cases, however, in which the joint is opened, particularly where any portion of bone or cartilage is excised, the formation of adhesions is to be considered. Of course, in this manner, motion in the shoulder-joint is limited, but this very limitation of motion may still be a means of increased functional usefulness in the arm. In fact, in certain cases, where the paralysis is extensive, an arthrodesis of the shoulder-joint may greatly improve the condition, through enabling the arm to be moved by movements of the scapula.

Another measure to be considered in overcoming the inward rotation of the humerus is a linear osteotomy of the upper portion of the shaft of the humerus, with union of the bone in a position of outward rotation. Another possibility to be considered in overcoming the inward rotation is a transference of the insertion and consequent change in function of the *latissimus dorsi*. After the section of the *pectoralis major*, which is the operative procedure usually demanded, the *latissimus dorsi* might be exposed and cut close to its insertion along the inner edge of the bicipital groove. It might then, by means of a posterior incision, be reached and drawn back to be sutured to the humerus under the posterior border of the deltoid immediately below the insertion of the *teres minor* and above the origin of the external head of the biceps. In this manner the *pectoralis major* would be lengthened and the *latissimus* would be changed from an inward to an outward rotator of the arm, in a manner similar to that in which Tubby, by changing the course of the pronator radii *teres*, converts it into a supinator of the forearm. Some such measure as this would, if successful, overcome the great obstacle to permanent reduction.

In conclusion I wish to emphasize these points:

True congenital dislocation of the shoulder, that is, defective development of the scapula and head of the humerus, is of extremely rare occurrence.

True traumatic dislocation of the shoulder at birth or in early infancy is of extremely rare occurrence.

Obstetrical paralysis, which, as has long been recognized, is of Erb's type, is due probably almost invariably to a stretching and in some cases a rupture of the two upper roots of the brachial plexus, as is proved by anatomical study.

⁸ Transactions American Orthopedic Association, vol. viii, p. 239.

Obstetrical paralysis is usually recovered from entirely in the course of a few weeks or a few months. If recovery does not occur within this period the prognosis is very much more serious, although improvement may occur even after the lapse of many years.

After an infant's arm has been held in the position of inward rotation for some months the posterior part of the capsule becomes so stretched as to permit the head of the humerus to slip out of the glenoid cavity posteriorly, while the anterior portion of the capsule and the pectoralis major are shortened. This backward subluxation is always made easier by the relatively small size of the glenoid cavity in infancy. It may be made easier by a tearing and stretching of the posterior part of the capsular ligament through the same trauma which stretched the upper cords of the brachial plexus.

A dislocation of this sort is easily reduced by measures which stretch the inward rotators of the arm, but when thus reduced it is held in place with extreme difficulty, because the cause which originally produced the dislocation, that is, the unopposed action of the inward rotators, is still present.

Any abnormality in the shape of the head of the humerus or in the glenoid in a case accompanied by paralysis or lack of development of the deltoid and supra- and infra-spinatus muscles is probably secondary to the paralysis, and if accompanied by a dislocation is not to be looked upon as the primary cause of the dislocation. Lack of bony development of a paralyzed arm may become very marked after the lapse of years, and this lack of bony development is not in any way to be regarded as proof of a congenital defect.

All early cases of obstetrical paralysis are to be treated by sling or bandage which will support the paralyzed muscles and prevent dragging on the ligaments and injured nerves.

In cases of obstetrical paralysis which persist without improvement there is reason to hope that surgical intervention looking to a union of the torn ends of the fifth and sixth cervical roots at a point from a quarter to three-quarters of an inch from their emergence from the canal may be of benefit.

The subluxation resulting from the paralysis is to be treated by stretching or section of the contracted muscles and ligaments, by osteotomy, arthrodesis, or muscle transfer, according to the conditions present in each case.

STEAM IN THE TREATMENT OF CHRONIC, HYPERPLASTIC, AND SENILE ENDOMETRITIS, PUTRID ABORTION AND PUERPERAL SEPSIS.¹

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WHEN I went on duty at the Carney Hospital in the fall of 1898 I found Dr. Malcolm Storer had been and was using steam in the treatment of the various forms of uterine hemorrhage. This method of treatment appealed to me, and I began its use at once in the treatment of chronic endometritis and menorrhagia.

Concerning this method Prof. A. Dührssen thus writes:² "The method of arresting hemorrhage by

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, November 22, 1899.

² Klinische Wochenschrift.

steam was first employed by Sniegureff, of Moscow, in 1894, for profuse hemorrhage during the removal of an echinococcus cyst from the liver. Since then experiments have shown that parenchymatous organs can be incised almost bloodlessly, and that hemorrhage from arteries of the size of a dog's femoral can be quickly arrested by a steam jet.

"The technique is simple. A penetrated uterine catheter is joined by a gutta-percha tube to a small boiler. The steam issuing from it should be at 212° F. Higher temperatures are advocated by some, but the author has never used them, except in experiments on animals. In this way dangerous uterine hemorrhage can be arrested permanently and painlessly without an anesthetic; and serious operations, for instance, hysterectomy for fibroid tumors, may often be avoided.

"The details of the procedure differ according to the age of the patient. If the steam is allowed to act for two minutes, exfoliation of the uterine mucous membrane follows, either *en masse* or piecemeal. A raw surface is left which forms adhesions, which cause obliteration of the cavity and subsequent atrophy of the uterus, and hemorrhage is cured as certainly as though the uterus had been removed. In order to exclude cases which are unsuitable for this treatment, such as malignant tumors or placental remnants, the cervix must always be dilated first. An important detail is that the instrument, when it passes through the cervix, must be encased in a drainage tube, for otherwise the heat may damage the cervical walls, and be followed by obliteration of the cervical canal and hematometra.

"Cases in which this treatment is indicated are exhausting floodings between the ages of forty and fifty, whether caused by chronic metritis, by abnormal friability of the walls of the uterine vessels, or by small interstitial myomata. In this last case the steam probably produces atrophy of the myoma, as well as of the uterus. Where it is required to arrest abnormal uterine hemorrhage without causing obliteration of the uterine cavity, as in young women with too profuse menstruation, the steam must not be allowed to act for more than a quarter of a minute (Sniegureff says one minute, which is certainly too long), and the process should not be repeated until after the next menstrual period. The application of steam for a quarter of a minute successfully sterilizes septic endometritis in puerperal fever, and the raw granulating surface left offers an excellent barrier against the further entry of bacteria into the circulation. Good results have also been obtained in subacute and chronic gonorrhœa, and the author suggests its use as an abortive treatment for acute cases.

"If carried out properly the treatment is quite harmless, and has no disadvantages."

Dr. Alexander Rovinsky wrote me that Sniegureff, together with Blogovolin, had experimented on animals and had come to the following conclusions: (1) Desired portions of the liver could be excised without loss of blood, the animals surviving; (2) any part of the spleen could be cut out without loss of blood; (3) whole lobes of lungs can be removed without any loss of blood; (4) the same applies to the kidney; (5) also to some extent to the brain; (6) it is possible to stop the bleeding from the spongy portions of bones; (7) the marrow of the bone coagulates and the regeneration of the bone takes a normal course;

(8) almost the whole cornu uteri may be taken out of the dog without bleeding; (9) the femoral artery of the dog, when cut transversely or otherwise, will not bleed after the application of steam; (10) bleeding from skin and muscles ceases immediately; (11) wounds subjected to the action of steam heal *per priam intentionem*; this last was observed not only on the experimental animals, but also on human beings.

Sneguireff has applied steam successfully as a hemostatic in the following operations: (1) In five cases of resection of the knee-joint, without any preliminary use of the bandage, or any employment of ligatures or forceps; (2) in extirpating a carcinomatous mamma under the same conditions; (3) for the removal of fatty, cancerous and other tumors of the skin; (4) in amputation of the cervix; (5) in resecting bones and in sequestrotomies; (6) in abscesses to deodorize and to promote filling up of the abscess cavity; (7) in various sinuses and fistulae (especially of a tuberculous nature).

Sneguireff, in 1895, was first to suggest the use of steam in the uterine cavity. He spoke of steam as a styptic, even strong enough to stop a dog's femoral. In 1895 Pincus was led to try it in gynecology by Sneguireff's article. He used the ordinary kettle of an inhaling apparatus with a safety valve. A male catheter with a slight curve and three lateral windows to aid in the escape of the steam was used in conducting the steam inside the uterus. He states that it is a *sine qua non* that the uterus should be perfectly movable if the operation is to be done without ether. In 1895 he used it in a few cases with good results.

Paneccki had a similar experience in 1896. Kahn (1896) in his early trials used steam at 100° C. for two minutes; later 115° for fifteen seconds to one minute. In his experience he found that the more energetic the treatment, the better the results. It is generally painless. He used it mostly post partum. If in such cases the uterine walls are thin, only low pressure is admissible. It seems to do good in *incipient* inflammation of the appendages, but should not be used when actual pus is present. If the products of conception are retained, they should first be removed. He used it in nine puerperal cases. He claims that steam in the uterine cavity has (1) no disadvantageous sequelae and causes practically no pain; (2) quiets sensitiveness; (3) starts good contractions; (4) deodorizes; (5) sterilizes; (6) through shutting off blood and lymph vessels by coagulation of albumin, it affords a roof for new granulations to form under.

Pincus, in 1897, reports several cases in the treatment of putrid abortion. He emphasizes that in puerperal cases it must be used only when appendages are free. It is especially valuable in cases of habitual abortion, as it removes the diseased endometrium which very likely is the cause of the abortion. At that time he used a wooden speculum to guard the vagina. He uses it without paying any attention to possible retained membranes. He regards it, to a certain extent, a specific in the treatment of putrid abortion. It was not found valuable in bleeding submucous fibromas or other causes that render the inner surface of the uterus irregular. Examination of specimens showed that the action was most vigorous in the immediate neighborhood of the camula.

Schick (1897) used hot water instead of steam. He used it boiling with certainty that by the time it

reached the uterus its temperature had dropped to 80° C. or 85° C. He used it one-half to two minutes. He used it in four cases, all under ether.

In 1897 Sneguireff had used steam 400 to 500 times without the slightest bad effect. In cases occurring at the menopause, if the bleeding cannot be stopped otherwise, he advises using the steam longer than one minute. He advises against the use of steam, if there is any disease of the adnexa. Steam should be delivered in the uterus at about 100° C.

In 1898 Pincus further remarks about vaporization and vapocauterization: "My communications concerning the value as a therapeutic agent of hot aqueous steam in gynecology and obstetrics have attracted much attention on the part of my colleagues, if I can judge by the number of communications I have received from all parts of the world in reference to it. But my own service in the matter is only a very modest one, for, as I have already carefully stated, it was only through the reading of Sneguireff's communication as to the styptic effect of hot steam that I was led to introduce its use in gynecological and obstetrical therapeutics."

Pincus has got up a very complete apparatus, which is described and pictured in the *Centralblatt für Gynecologie*, 1898, page 256. In this machine he controls both the pressure and the temperature of the steam. He thinks many of the failures have probably been due to not sending the steam into the uterus hot enough. He generally keeps patients in bed a week. There is almost always more or less discharge, which seldom amounts to much. The odor in septic cases almost always stops. He still sticks to his view that tender appendages and a stricture of the cervical canal are contraindications. He has no fear that steam will get into the tubes, but if the tubes are diseased harm could easily be done by the vigorous contractions of the uterus that are set up. In general terms he regards a very rigid cervix as a contraindication. Warns against veiling malignancy by means of vaporization. He says steaming is of especial value in the bleeding of the climacteric, not depending on malignant disease, and leucorrhœas following the menopause. In one obstinate case he used it at 119° C. for two minutes, with the complete destruction of the uterine canal, but cured the patient just the same. He has used it in 18 post-climacteric floodings, with good effect in 13. Was obliged to repeat the steaming in two cases. Also used it one minute at 100° C. to 105° C. in seven cases of metrorrhagia and subinvolution, with five successes. He does not believe in using it in submucous fibroids on account of the danger of suppuration. Has used the steam in a large number of cases of endometritis with good results. Sometimes he uses the steam and sometimes the vapocautery. Cured three cases of gonorrhœal endocervicitis. He found the steam did no good in a case of puerperal general sepsis.

Hollander, in 1898, showed his apparatus for the use of hot air instead of steam. Can get by it three times as much heat as by steam; can measure it better and apply it more exactly.

Baruch (1898) reports a case of complete atrophy of the uterus following steaming. "Girl, age twenty-seven, was steamed once as an out-patient by a female M. D. Never any menses afterwards, with symptoms of the menopause. Uterus, when examined several months afterwards, was found tiny in size.

Again quoting from Pincus (1898): "By this time

the apparatus has proved its worth. Now it will be only a great exception that one will be obliged to remove a uterus for a hemorrhage at the menopause. Further experience leads me to suggest the following: (1) The cervix should be protected in every case. It is a necessity if the treatment is to last longer than one-half minute. As far as that goes, time begins to show me that in most cases half a minute is quite enough, especially if previous to using the steam you carefully wipe out the uterus with a Playfair sound. If there is much detritus in the uterus, steam should be played in for thirty seconds, then the clots removed and the steam reapplied for thirty seconds more; (2) there should be no repetition of the steaming until complete regeneration of the mucous membrane has taken place; (3) steaming for endometritis should be done in the few days before menstruation, or after it, and never during."

Kahn (1898) writes: "If you want to produce a deep effect use low temperature a long time, and if superficial a high temperature a short time, that is, bleeding of the menopause *versus* puerperal conditions. In puerperal cases I use even up to 112° C. for even three to four minutes, depending on intensity of affection." He reports a case of pregnancy and labor following one steaming out. "The steam tube should not be pressed against the fundus, as you may get a perforation later on."

Weiss (1898) reports the case of a girl, age nineteen, where steam at 100° C. for three or four minutes was used for metrorrhagia (not a puerperal case). There followed complete obliteration of the uterine cavity and severe symptoms of the menopause. He has collected three cases of obliteration and two of stenosis of the cervix following the use of steam, a large number considering how new the process is and how little used as yet.

For three years Fenomenow has used steam where the uterus was to be opened. Where the uterus was septic he has often steamed for several minutes to ensure its disinfection before removal. He even steams before vaginal hysterectomies and before morcellation.

Pineus (1898) gives his views on the present state of steaming as follows: "Atrophy of the uterus with obliteration of the canal cannot be called a 'mischance'; it is inexcusable. Steaming is of inestimable value in inoperable carcinoma of the fundus. In the treatment of subinvolution I regard it as something we cannot do without. It may also be of value in producing artificial sterility, if desired."

Pineus makes the rule to use the steam as short a time as possible. Fifteen seconds is generally enough. Thirty seconds is the maximum. In young people thirty seconds is to be regarded as too much. It is better to repeat after the mucous membrane has had a chance to regenerate. The temperature of the steam inside the uterus should range between 102° C. and 110° C. The rule is, the shorter you are to work the higher must be the temperature. The quicker you work, that is, the less the cooling off after you shut off the steam in the catheter, so much the prompter is the effect. In a recent case he used 109° C. for only eight seconds and stopped a vigorous hemorrhage entirely. In old women, when very likely you desire to obliterate the uterine cavity, he uses it about two minutes at 105° C. to 110° C. and repeats if necessary.

After experimenting for a long time I have decided that the following method of doing the operation gives me the best results. The ordinary steam throat atomizer is used for generating steam: A hard-rubber tube eight inches in length, the size of a No. 18 French bougie, conically pointed at one end, is connected with boiler by soft-rubber tubing. The hard-rubber tube is detachable and is boiled in the soda solution with the instruments. The external genitals are washed with soap and water, then with permanganate-of-potassium solution and oxalic-acid solution; finally rinsed off with normal salt solution. The vagina is treated in the same way. After dilating the cervix, wipe dry with sterile gauze the cervical and uterine cavities. Introduce the small-size uterine speculum and through it steam body and cervix thirty seconds. Remove uterine speculum, wipe dry with sterile gauze the cervix and body, and steam again for thirty seconds. The patient is kept in bed from four to six days. Short douches are given night and morning. The steam as it leaves the boiler is 212° F., but inside the uterus the temperature varies from 192° F. to 212° F., dependent upon the amount of moisture in the uterus. With a dry uterine cavity the self-registering thermometer would indicate 212° F. There is no danger of burning too deeply if the steam is used as above described.

Unless I wished to obliterate the uterus I should not consider it permissible to use the steam under pressure or to use it longer than one minute. In puerperal cases the curette makes raw healthy as well as diseased surfaces, while the steam can be used without doing any mechanical injury. The steam is safer and more thorough than the curette. We all know from experience repeated over and over again how very difficult it is to curette smoothly the inside of the uterus. Islets of tissue are apt to be left here and there, especially at the fundus and in the horns. The steam uniformly reaches every part of the uterine cavity, and there is no danger of it escaping into the tubes, if used as I have described.

It was by having steamed uteri examined by the pathologist that the proper *modus operandi* could be determined upon. To work up from a comparatively short exposure of the uterine cavity to steam (212° F. as it leaves the boiler), examining the uteri from time to time, until the examination showed that the endometrium was destroyed almost down to the muscular layer, seemed the safer plan, then drawing conclusions from the clinical results. I felt safe in stopping just short of the muscular tissue in cases of chronic endometritis, hyperplastic endometritis, etc., than to run any risk of *burning* the muscular tissue or of destroying the glands and thus cause cicatricial tissue where no endometrium would be produced. Where there is suspicion of malignant disease, tissue for microscopical examination should be removed with the curette at the time of steaming. The tissue destroyed by the steam begins to come away in seven to twelve days. It may come in small pieces or in quite large hunks, like the specimens shown. Since receiving Dr. W. F. Whitney's report of the examination of the first uterus sent him, I have steamed through the smaller uterine speculum and have used the steam as above described. The smaller speculum would offer less chance of escape for the steam, consequently there would be more heat inside the uterus and the cervical canal would be just as well protected.

DR. WHITNEY'S REPORT.

"I have finished the examination of the four uteri which you have cauterized by steam, and as far as I can determine, in none of them has the mucosa been entirely destroyed through its entire thickness. The action in all seems to be fairly uniform throughout the entire canal, although in No. 3 (January 21, 1899) it failed to reach the bottom of the cornu at the fundus. In No. 4 (January 25, 1899), on the whole, the action seemed to be the deepest, while in No. 3 (January 21st) it seemed to be the least. In none was there much of the cervical lining left, whether destroyed or rubbed off I cannot say, but there was no evidence of any action on the muscular tissue. In all the action was most marked at the fundus, but as the endometrium was thicker there only about one-half its thickness was destroyed. Of course the cells may be killed more deeply than the microscope will show, as their vital function may be gone although the nuclei still stain and the shape of the cells is unaltered. But as far as any physical evidence goes, the action has in no case extended more than through three-fourths of the thickness of the endometrium, and then without absolute uniformity."

This report was very satisfactory, in that it showed the destruction did not go into or even quite down to the muscular tissue. I was aiming to get live steam hot enough inside the uterus to cause exfoliation of the entire endometrium. The effect on the endometritis will show this. If it is desired to cauterize into the muscle, as in senile cases of hemorrhage or endometritis, it would simply be necessary to allow the steam to escape inside the uterus for two minutes or more.

I have here tabulated 31 cases. Previous to using steam these would have been curetted. Each case was looked up two or more months after the steaming to ascertain what effect it had had on the endometritis and the menstruation.

In addition to the above, I have used it in one puerperal case, curetting just before using the steam. The uterus had been curetted twice by the attending physician. She had been septic for three days. Pulse and temperature were high. There was a profuse and offensive vaginal discharge, she had had one rigor and there was phlegmasia alba dolens on the left. She got no worse after the steaming, remained about as she was for thirty-six hours, and then began to improve.

During the past year steaming was done in a great many cases where other operations were performed, and it was not always possible to say how much the other operations contributed to the relief of symptoms. Consequently, in these 31 cases, I have selected as much as possible those who were alone steamed.

CASE I. K. McM., twenty-four, single. Dysmenorrhea for the past six months; constant leucorrhœa; frequent micturition, with scalding. Consumptive family history. Diagnosis: Chronic endometritis and chronic urethritis. Uterus curetted for specimen, then steamed. A solution of nitrate of silver applied to the urethra. No tubercle bacilli found in the scrapings. Has been unwell five times since going home. Has had no dysmenorrhea and there is no leucorrhœa.

CASE II. J. H. C., twenty-four, married. Backaches; severe dysmenorrhea; leucorrhœa since childhood. Diagnosis: Chronic endometritis. Uterus steamed in February, 1899. Has menstruated since then without pain, and

has been absolutely free from all backache and leucorrhœa since the operation.

CASE III. W. H. H., thirty, married. One child, eleven years ago. Dysmenorrhea during the first day of sickness; abundant leucorrhœa, requiring the use of a napkin; at times considerable hemorrhage from the bladder, and smarting and burning during micturition. Diagnosis: Chronic endometritis and chronic urethritis. Uterus steamed in May and urethra painted with nitrate of silver. The injection of the urine into guinea-pigs excluded tubercular disease, which was strongly suspected. No dysmenorrhea, no leucorrhœa, and no trouble with micturition since the operations. The patient is now three months pregnant.

CASE IV. H. R., fifty-one, married. For four years very profuse leucorrhœa, at times very irritating; obliged to wear a napkin most of the time. Diagnosis: Senile endometritis. Four months after the steaming there was a little leucorrhœa, but it was not irritating. Advised a second steaming, which was done November 15, 1899; the uterus was steamed two minutes.

CASE V. A. A. Q., twenty-five, married. Menorrhagia, severe dysmenorrhea; leucorrhœa for four years. Some time ago had scalding micturition for two months; dysmenorrhea, requiring the use of morphine. Diagnosis: Chronic endometritis. Uterus steamed. Two months after the steaming there has been no leucorrhœa and no pain during menstruation.

CASE VI. R. P. E., thirty-one, married. Leucorrhœa since puberty; a show of blood every two weeks for last five months. Diagnosis: Chronic endometritis. Uterus steamed. Been unwell three times since the steaming; first time went three weeks and five days; since then has been regular; almost no leucorrhœa.

CASE VII. E. B., twenty-eight, married. Menorrhagia; the amount has doubled in the past two years; leucorrhœa. Diagnosis: Hyperplastic endometritis. Uterus steamed. Been unwell twice since the steaming; flowed four days, formerly seven to ten, and had no pain; no leucorrhœa.

CASE VIII. T. W. F., forty-one, married. Been flowing constantly for fourteen days; leucorrhœa for one year; at times it is bloody. Diagnosis: Three polypi projecting from cervix; hyperplastic endometritis; uterus large. Scrapings removed for pathologist and the uterus steamed. First menstrual period occurred twenty-five days after the steaming; used twelve napkins; no pain. Menstruation returned in twenty-eight days; used eight napkins and was through in five days; no pain. Between and since these menstrual periods there has been scarcely any leucorrhœa and that not bloody. Dr. W. F. Whitney reports that it was a case of polypoid glandular hyperplasia.

CASE IX. B. R., thirty-seven, single. Constant leucorrhœa with backache and dragging down; dysmenorrhea with menorrhagia (soaks twenty-five to thirty napkins). Diagnosis: Chronic endometritis. Uterus steamed. No improvement in the menorrhagia; relief of the dragging down feeling and diminution in the amount of leucorrhœa. Advised steaming again.

CASE X. H. C. Q., thirty-two, married. Gonorrhœal vaginitis, endometritis and urethritis of some weeks' duration. May 5, 1899, uterus steamed; vagina swabbed with Churchill's tincture iodine; nitrate of silver applied to dilated urethra.

May 30th, returned with a fresh attack. Treated as above, with complete relief.

CASE XI. M. S., twenty-four, single. Constant leucorrhœa with backache; dysmenorrhea. Diagnosis: Chronic endometritis. Uterus steamed. No dysmenorrhea or leucorrhœa since the operation.

CASE XII. E. Q., sixteen, single. Leucorrhœa with backache and severe dysmenorrhea. Diagnosis: Chronic endometritis. Uterus steamed. Been unwell twice since the steaming; no pain; no leucorrhœa.

CASE XIII. M. D., thirty-seven, married. Had four abortions at three months from July, 1895, to December, 1898; constant white thick leucorrhœa. Diagnosis: Chronic endometritis. Uterus steamed. No leucorrhœa since the

steaming. It would now be very satisfactory if she would become pregnant and not abort.

CASE XIV. L. K., twenty-five. Thick vaginal discharge, at times offensive, for a long time. Diagnosis: Debility, retroversion and chronic endometritis. The uterus was steamed and an Alexander operation done. Two months and a half after the steaming she reported that there had been no vaginal discharge for some weeks after the steaming. Then without cause it began, but it was not as bad as formerly. Two months and a half after the first steaming, and a few days after a menstrual period, steam was again applied. The cervix was found patulous, the internal os easily admitted a Sims's sound and there was no indication of cicatricial tissue. There has been no leucorrhœa since the second steaming.

CASE XV. C. E., married four years. Dysmenorrhœa. Profuse, thick, yellow vaginal discharge. Diagnosis: Chronic pelvic peritonitis and chronic endometritis. On opening the abdomen a condition was found demanding hysterectomy. On examining the uterus the endometrium was found everywhere of a brownish-black color. The fundus and horns had been thoroughly steamed.

The uterus was sent to Dr. W. F. Whitney, and the following is his report: "I have examined the uterus cauterized with live steam, and find in the cervix, where the mucosa was very thin, that apparently the whole thickness had been killed, in the middle of the body about three-quarters of the thickness, and in the depths of the fundus about one-half the thickness. The action was very uniform everywhere, but I should not think that the length of time was sufficient to destroy the mucosa throughout. Of course, the action may go deeper than the microscope shows, but all that I can judge by is the depth to which the blood corpuscles and cells are altered."

After Dr. Whitney's report was received the uterus was steamed for a longer time.

CASE XVI. A. E. W., twenty-three, single. Severe dysmenorrhœa; considerable leucorrhœa. Diagnosis: Chronic endometritis; hemorrhoids. Uterus was steamed. Three months after leaving the hospital had menstruated twice without pain. There was no leucorrhœa.

CASE XVII. K. T., twenty-five, married seven years and never pregnant. Has had repeated attacks of peritonitis and frequent and painful micturition. Severe dysmenorrhœa and considerable leucorrhœa. Diagnosis: Retroversion and chronic endometritis. Uterus steamed; left tube and ovary removed, part of the right ovary resected and the uterus suspended. Three months after the operation had menstruated twice, and instead of flowing ten to fourteen days she flowed seven days the first period and six the second. During these periods there was but slight dysmenorrhœa.

CASE XVIII. M. G., seventeen, single. Neurasthenic; severe dysmenorrhœa; profuse thin, odorless vaginal discharge. Diagnosis: Retroversion with adhesions and chronic endometritis. Uterus steamed; portions of both ovaries resected and the uterus suspended. Menstruation did not appear for a month and a half. She used in all but five napkins; before the steaming used eighteen to twenty. Had severe dysmenorrhœa; no leucorrhœa.

CASE XIX. L. R., thirty-one, single. Severe dysmenorrhœa; some leucorrhœa. Diagnosis: Retrocession; shortening of the uterosacral ligaments; chronic endometritis. Uterus steamed; uterosacral ligaments cut and uterus suspended. Menstruated while in the hospital with but little pain. Menstruated one month after getting home with scarcely any dysmenorrhœa; no leucorrhœa.

CASE XX. A. F., twenty-seven, single. Menorrhagia; constant thin, yellow vaginal discharge. Diagnosis: Retroversion, bound down by adhesions and chronic endometritis. Owing to the profuse menorrhagia the uterus was curetted and then steamed. The right tube and ovary were removed, part of the left ovary resected and the uterus suspended. Four months after the operation she had been unwell three times; flowed five days and used about eight napkins. Has had slight amount of leucorrhœa.

CASE XXI. E. O. B., twenty-five, single. Neuras-

thenic; dysmenorrhœa; menorrhagia; thick, yellow vaginal discharge with offensive odor. Diagnosis: Retroversion and chronic endometritis. Uterus steamed and an Alexander operation done. Two months after the operation she had been unwell twice. There was great improvement in the menorrhagia, but she still had dysmenorrhœa and leucorrhœa.

CASE XXII. E. B. H., twenty-six, single. Leucorrhœa began thirteen months ago as a yellowish discharge, which soon became greenish in color. Irritation and soreness soon began about the vulva, accompanied with scalding during micturition; obliged to wear a napkin; severe dysmenorrhœa. Diagnosis: Endometritis, vaginitis and urethritis. Uterus steamed and Churchill's tincture iodine applied to the dilated urethra. Three and a half months after the steaming she had been unwell twice; flowed about as formerly; some dysmenorrhœa, but not as much as formerly; none during the flow; diminution in the amount of leucorrhœa.

CASE XXIII. B. F., twenty-eight, single. Severe dysmenorrhœa the first day, confining her to bed; profuse leucorrhœa. Diagnosis: Antelexion of uterine body; undeveloped uterus; retrocession; chronic endometritis. Uterus steamed. Been unwell twice since steaming; flowed freely and had no pelvic pain. Before the operation flowed but little, and had severe dysmenorrhœa; no leucorrhœa.

CASE XXIV. A. R., twenty-eight, married. Sterile; considerable leucorrhœa; no dysmenorrhœa until September, 1898. Diagnosis: Tumor on right side of uterus anteriorly; chronic endometritis. Uterus steamed; left tube and ovary removed; small fibroid enucleated. Been unwell once since the steaming; flowed as formerly, but had no pain; has no leucorrhœa; freedom from all pain.

CASE XXV. H. D., forty-five, single. Epileptic for thirty years; considerable leucorrhœa; dysmenorrhœa. Diagnosis: Retroversion; cystoma on the left side; chronic endometritis. Uterus steamed; cystoma removed and uterus suspended. Been unwell once since the operation; no improvement, except some diminution in leucorrhœa.

CASE XXVI. C. E. W., forty-two, married. Slight leucorrhœa. For the past ten years has had backache when unwell. Diagnosis: Retroflexion; a mass on the left side of the uterus; chronic endometritis. Uterus steamed. Hysterectomy was then done. Specimen sent to Dr. W. F. Whitney. This was the second uterus sent to Dr. Whitney.

CASE XXVII. M. McC., twenty-nine, married six years. Has had one child and two abortions; last abortion three years ago. Six weeks ago began to flow, and has flowed more or less ever since; previous to six weeks ago had not flowed for months, as she was nursing her child; white and thick vaginal discharge, requiring a napkin. Diagnosis: Retroflexion of a large soft uterus; chronic endometritis. Uterus steamed; uterus suspended. No flowing since the steaming (over two months); much leucorrhœa; uterus of normal size and in perfect condition. Advised steaming again.

CASE XXVIII. F. B., thirty-two, married one year; one child; no abortions. For six weeks sharp, crampy pain in left ovarian region; backache; white, watery vaginal discharge; some dysmenorrhœa. Diagnosis: Chronic endometritis; uterus pushed to the right; cystoma of the left ovary. Uterus steamed; cystoma removed; uterus suspended. Been unwell twice since the steaming; first time flowed one-half day; flowed a very little for a few hours; "had an ache just below the navel." Second time flowed two days; soaked five napkins; no pain; has absolutely no leucorrhœa.

CASE XXIX. C. C., thirty-three, married eighteen years; three children; no abortions. Constant leucorrhœa; for three years has had more or less dull pain in the region just below the right kidney; pain in the left ovarian region. Since October has noticed swelling in the right iliac region. Uterus steamed; cysts in right ovary punctured with cantry; uterus suspended; adhesions about the gall-bladder broken up. The right kidney, which was very movable, was fastened by securing its capsule to the

fascia below the ribs with three sutures of silk. Great improvement reported six months after the operations.

CASE XXX. E. B., thirty-four, married three years; one child thirteen months old. Some leucorrhœa; dysmenorrhœa. Diagnosis: Retroflexion; uterus large; chronic endometritis; left ovary enlarged and prolapsed. Uterus steamed; retention cysts in the left ovary were punctured with the cautery; uterus suspended. Has been unwell once since getting home; flowed the usual time and amount; no pain; has no leucorrhœa.

CASE XXXI. C. N., twenty-nine, married four years; one child two years ago. Backache; sagging and dragging down; considerable leucorrhœa. Diagnosis: Retroversion; chronic endometritis. Uterus steamed; retention cysts in left ovary punctured with cautery; uterus suspended. Been unwell once; flowed as usual; little pain; has a little leucorrhœa.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL. CLINICAL MEETING OF THE MEDICAL BOARD.

REGULAR meeting, December 15, 1899, Dr. C. B. PORTER in the chair.

IDIOPATHIC DILATATION OF THE COLON.

DR. R. H. FITZ showed a case of this affection in a child aged two years and one month. The patient had been nursed until twenty-three months old, and since the age of eleven months had also been fed. Constipation had existed from birth, intervals of several days being frequent, during which no dejections occurred, and then only from the use of laxatives or enemata. When six months old there were frequent loose discharges during a period of two months, and since then constipation had been more marked than before. There had been a considerable progressive and symmetrical enlargement of the abdomen, with slight temporary diminution in size, dependent upon evacuations of gas and feces. At present the distended abdomen is everywhere tympanitic, although the abdominal walls are sufficiently flaccid to permit the distended intestinal coils to be readily palpated. There is no obvious cause of obstruction to be determined, and the general nutrition of the child is unaffected. The case is regarded as one of infantile dilatation of the colon, due to obstinate constipation. As there are no urgent symptoms, and sufficient temporary relief is to be obtained by laxatives and enemata, it is considered inexpedient to recommend at present any so radical a measure as extirpation of the distended portion of the large intestine. The mother has been informed of the nature of the affection and of the importance of continued medical supervision of the child.

DR. J. J. PUTNAM showed the following cases:

I. INSTRUCTION IN CO-ORDINATION IN TABES.

This was a patient with tabes, who, about a year and a half before, had become rapidly ataxic, so that, finally, he was almost wholly confined to his chair. The case was shown to illustrate the benefit which may be obtained from systematic instruction in co-ordination. The patient had been taught by Mr. Harding to stand and walk and to do various exercises, first with two chairs, then with crutches, then with canes, and finally alone. Considering the difficulties which had to be met, he had made good progress.

II. MUSCULAR DYSTROPHY.

This was a patient with advanced muscular atrophy of the dystrophic variety. The case was reported partly as an illustration of that type of disease, partly in order to show how long such patients may continue to live and even work, in contradistinction to the case of those with atrophy of spinal origin. This patient is now about thirty years old, and all the skeletal muscles are involved, and, in addition, the muscles of the face. The deltoids, the supra- and infra-scapular muscles and those of the forearms and hands and of the calves are much better preserved than the rest, and the first two groups mentioned are remarkably large, firm and dense. The disease began when the patient was thirteen years old and has been slowly progressing ever since, yet in spite of this fact, and even though there is double facial paralysis and the erect posture can only be maintained by skilfully balancing, he is still able to support himself, in a measure, by peddling.

DR. G. L. WALTON showed a

CASE OF ACROMEGALY.

Constant relation between this disease and lesion of the pituitary body has been disputed on the ground that such lesion has been found without sign of acromegaly, and conversely that post-mortem examination in acromegaly does not always show pituitary disease. In view, however, of the coincidence of these affections in the vast majority of cases, it is pertinent to inquire whether these apparent discrepancies may not be reconciled, a reconciliation towards which Dr. Brooks has made a decisive step in practically establishing the fact that acromegaly is due only to increased secretion of the pituitary gland. It follows that a destructive lesion of this gland will not produce acromegaly unless the secretion is increased; the cases of acromegaly not accompanied by post-mortem change in the pituitary body may be due to the fact that the increased secretion was not accompanied by obvious physical abnormality of the gland. In this connection I should like to exhibit a section, prepared by Dr. Mallory, from the pituitary tumor of our late colleague whose case was reported in the JOURNAL of December 7, 1899. The specimen shows several large collections of colloid, showing the active secretion, and possibly increased secretion, of that part of the gland not destroyed by the sarcoma. In this case sarcoma was not only demonstrated by the post-mortem finding, but was indicated by the clinical history, the rapid course and early fatal termination offering a marked contrast to the history of uncomplicated acromegaly, the latter disease running a course of perhaps fifteen to twenty years, without metastasis, spinal headache or vomiting, a history pointing to hyperplasia of the gland rather than to malignant invasion.

Individuals presenting moderate variations from the average type in form or feature (variations suggestive of altered function of the pituitary gland either within or without the limits of health) are not infrequently observed, but the opportunity is rare to study a typical case of pure acromegaly. Such a type is presented by this patient, for whom we are indebted to Dr. Howard, under whose observation he came at Tewksbury.

The patient, a teamster, fifty-nine years of age,

height five feet, ten inches, has noticed progressive weakness, loss of virility, and pains in various parts of the body during the past fifteen years; during the same time the lower part of his face, and his hands and feet, have increased steadily in size. You will notice first the facial aspect: the face is very long, the lower jaw massive and projecting so that the lower teeth (formerly on a level with the upper) are now fully half an inch in advance, but without the separation of teeth usually found in these conditions. The head, while large (he wears a 7 $\frac{3}{4}$ hat), has not increased proportionately in size. The nose is large and broad, the ears long and wide, the tongue large in size. The hands are typical; you will note the general square appearance of the finger tips; the length of the hand (8 $\frac{3}{4}$ inches), the breadth (4 $\frac{3}{4}$ inches), and the thickness are unusual, these measurements being equal to the largest recorded in Dana's text-book. That the bones take part in the hyperplasia is shown by this skiagraph, in which you will also note the spongy texture and comparatively indistinct edges of the terminal phalanges. The chest measures 46 $\frac{1}{2}$ inches; the feet are large and bulky, though the increase is not quite in proportion to that of the hands. The patient's lack of vigor is in marked contrast to his bulk.

DR. E. W. TAYLOR demonstrated

A CASE OF POLIENCEPHALITIS SUPERIOR AND INFERIOR, WITH ACUTE ANTERIOR POLIOMYELITIS.

The patient, a previously well man of twenty-seven, without other venereal history than gonorrhoea seven years ago, was confined to the bed for three weeks in January of this year with an attack supposed to have been influenza. On recovering from this acute—probably infectious—disorder the following conditions persisted, whether of sudden or relatively gradual onset is not known: Paralysis of both sixth nerves; of right seventh nerve; of right eighth nerve—much impaired hearing; paresis of motor portion of right fifth nerve and of the tenth and twelfth nerves. Associated with this involvement of cranial nerves was a flaccid, atrophic paresis of both arms, but particularly of the left. There has been considerable improvement since the onset of the disease, but the paralyses mentioned are still well marked. There are, at present, altered electrical reactions. [This case will be reported more completely later.]

A SECOND CASE OF CHRONIC CYANOSIS WITHOUT ASSIGNABLE CAUSE.

DR. RICHARD C. CABOT showed the following case:

F. S., a spinster of forty-nine, a native of Roxbury, and a rubber-worker by trade, came to the Out-Patient Department, January 5, 1894, complaining of vertigo, weakness, a dry, bad-tasting mouth, and constipation. What was thought to be a blue line due to lead was noted on her gums. She was given cascara and potassic iodide, and did not appear again till a year later, January 12, 1895.

At this visit it was noted that the knee-jerks were normal and wrist-drop absent. The urine was pale, 1,011, with a trace of albumin, a few hyaline, granular and fibrinous casts, one having blood and fat adherent. Dr. Blood found "considerable lead in 1,040 cubic centimetres." Blood examination showed 120 per cent. of hemoglobin. January 22d she was

admitted to the hospital under Dr. F. C. Shattuck, and the following history obtained: Family history good, except that her father died of "consumption of the blood." Otitis media at eighteen. Several attacks of what was apparently acute articular rheumatism; menopause in 1891; habits good. Since the menopause, has been troubled off and on with vertigo, palpitation and headache. Feels slightly dizzy most of the time and at intervals, from no apparent cause, the room begins to swim about, and she has to grasp at something for support. Attacks are ephemeral. No tinnitus, nausea or eye symptoms.

Palpitation and precordial distress, on excitement or exertion, for seven or eight years; slight dyspnea on exertion; no edema. Constipation, chronic.

Headache, frontal, more or less for years; worse for four months. Blueness of lips noticed by sister six months ago. Four months ago, after having three teeth drawn, got a bad stomatitis. Itching, occasionally troublesome at night, with burning sensation all over. Polyuria noticed for a year; has to pass urine two or three times at night. No hemorrhages.

Examination.—Face and mouth very markedly cyanotic; conjunctivae much injected. No lead line. Heart negative, except a slight systolic murmur in the pulmonic region. Edge of liver palpable. Spleen considerably enlarged up and down (and up to sixth rib and two fingers below rib margin). No ascites. Gums bleed very easily. Hands and feet very blue; fingers not clubbed. *Tâche cérébrale* marked. Scratch marks on trunk. A patch of eczema in the left iliac region; lungs negative. Urine pale, 1,000; a slight trace of albumin and a few hyaline casts; a faint trace of bile was present. Hemoglobin, 120 per cent. Spectroscopic examination shows two bands of oxyhemoglobin and no others.

After a week's stay the liver had receded to the rib margin, but the spleen was still enlarged. The vertigo and cyanosis decreased considerably under quinine and potassic iodide, but the hemoglobin remained 120 per cent. After a stay of two months she was discharged March 28, 1895.

Four years later (April 4, 1899), she came again to the Out Patient Department with the same complaints and in the same condition. I saw her at this time, and counted over 12,000,000 red cells in a cubic centimetre of her blood. Her symptoms seemed to have continued unabated since her last appearance at the hospital, but the sponginess and bleeding of the gums were now the most troublesome thing. The attacks of vertigo come every two or four weeks and make her stagger as if drunk. Has lost twenty pounds in six years. The skin now showed considerable bronzing, especially about the axillae, but small, leucodermatous patches are scattered over the trunk. Cyanosis is as marked as ever, especially on the mouth. The gums are spongy and sore. Retinal examination showed dark and dilated veins, while the arteries looked normal, or a trifle contracted (Dr. Amadon). The liver dulness began at the fifth rib, and the edge of the organ could be felt, three fingers' breadth below the costal margin. Spleen reaches a hand's breadth below the ribs. Urine, 1,012, albumin, .1 per cent; many hyaline and granular casts, some with blood and fat on them; few coarse granular casts; numerous abnormal blood globules. Blood: red cells, 9,252,000; white cells, 10,600; hemoglobin, 110 per cent.

Ten days after entrance venesection was done, and six ounces of blood withdrawn; patient felt relieved by it. Two hours after the bleeding a blood count showed: red cells, 10,032,000; white cells, 5,800; hemoglobin cells, 120 per cent. Differential count: polynuclears, 80.8 per cent.; lymphocytes, 15.2 per cent.; eosinophiles, 3.2 per cent.; mast cells, .8 per cent. Five normoblasts were seen while counting 500 leucocytes. Three days after, eight ounces more blood were withdrawn. A blood count of a drop taken from the spurting stream showed 9,580,000 red cells.

A month later she was discharged in about the same condition as at entrance. During this day she had an attack of pain, tenderness, redness and swelling in the toes of the right foot; relieved by salicylates.

December 9, 1899, she re-entered for similar symptoms, and physical examination showed practically the same condition. Spleen extends to navel. Red corpuscles, 11,352,000; white corpuscles, 8,300; hemoglobin, 105 per cent. Differential count of 400 cells showed: polynuclears, 77.25; lymphocytes, 18.75; eosinophiles, 2.75; myelocytes, 1.25. While counting these, two normoblasts and two microblasts were seen. The red cells were of uniform and normal size and well stained. Pulsation was marked in many of the superficial veins, and the veins of the fundus oculi were four or five times their normal diameter. The gastric contents on two occasions showed the absence of free HCl.

The case is very similar to one which I reported in the *Boston Medical and Surgical Journal* in December, 1899. I do not believe that we are here dealing with a genuine plethora, but with a venous congestion, the cause of which, however, remains a mystery.

Dr. J. C. WARREN reported the following cases:

I. RESECTION OF A PORTION OF THE LIVER FOR ADENOCARCINOMA OF THE CYSTIC DUCT.

Dr. Warren showed a specimen of adenocarcinoma of the cystic duct which was removed by operation on October 10, 1899. The patient, a woman of fifty-seven, had for three months noticed a tumor in the right hypochondrium, which had given rise to considerable pain. There were no other symptoms suggestive of its origin. Incision was made in the right semilunar line, and a distended gall-bladder found, from which were removed thirteen large gall-stones. The probe showed a stricture of the cystic duct, which was found on exploration to be caused by a tumor about the size of an olive, consisting of a dense white fibrous growth. A fragment of the growth removed was found by Dr. Whitney to be carcinoma. The edge of the liver was now seized with double hooks and drawn forward and upward over the cartilages of the ribs. A wedge-shaped portion of the liver, including the gall-bladder and cystic duct, was removed by the Paquelin cautery knife, with little or no hemorrhage. As the lobe of the liver was dropped back into the peritoneal cavity, the cut edges fell into apposition. A drainage tape was placed between them, the end being brought out of the wound, which was closed in the usual manner with silkworm-gut sutures.

Pathological report.—Gall-bladder and surrounding portion of the liver to the extent of seven centimetres was removed. Gall-bladder was dilated; measured 10 centimetres, and contained thirteen faceted calculi. The inner surface was slightly thinned. The cystic

duct was surrounded for about two and one-half centimetres by a dense, fibrous growth, which microscopical examination showed to be adenocarcinoma.

The patient made a good recovery; wound healed well. Since leaving hospital, she has had no return of symptoms, but was unable to be present.

II. FRESH FRACTURED PATELLA, SUTURED WITH CATGUT THROUGH THE PERIOSTEUM.

Dr. Warren showed a patient who had entered the hospital less than seven weeks before with a fresh transverse fracture of the patella. He operated about an hour after the injury; made a curved incision below the patella, washed out the joint cavity with hot salt solution and sutured the capsule with chromicized catgut. The wound healed solidly by first intention, and in three weeks passive motion of joint and massage were begun. In six weeks the patient walked alone and without crutches, and was able to bend the knee to a right angle.

III. TWO CASES OF RUPTURE OF QUADRICEPS EXTENSOR TENDON.

Dr. Warren also mentioned two cases which he had operated recently for rupture of the quadriceps extensor tendon. In one case the operation was performed four days after the injury; in the other, six weeks after. In both, animal tendon was used as the suture material to hold together the divided ends. In both cases the capsule of the joint was found ruptured in the same way as is seen in fracture of the patella. The lacerations in the capsule were sutured with catgut; those in the tendon with four stout kangaroo-tendon sutures. In the case operated on six weeks after injury the rectus muscle had contracted about three fingers' breadth from the patella, and could only be brought down after several transverse incisions had been made in its substance. In the case operated upon four days after injury there was no retraction whatever of the muscles. Both cases made excellent recoveries, and in a few weeks the patients regained perfect function of the extensor muscles of the thigh.

(To be continued.)

Medical Progress.

REPORT ON PROGRESS IN THORACIC DISEASES.

BY GEORGE G. SEARS, M.D., AND JOHN W. BARTOL, M.D., BOSTON.
TRAUMATIC CHYLOTHORAX.

HAHN¹ reports a case of traumatic chylothorax, which from his account appears to be the ninth recorded case of this affection following accident. As other possible causes he details carcinoma, tuberculosis, syphilis, filaria sanguinis and thrombosis of the left subclavian vein. The protected situation of the thoracic duct is described and the conclusion reached that injury to it can be done only by fracture of a vertebra or serious crushing of the surrounding tissues; in order for chylothorax to result it is also necessary for the costal pleura to be so injured as to allow passage of the chyle into pleural cavity.

¹ Deut. med. Woch., No. 25.

In his patient, a man run over by a wagon, there was, on first examination, fracture of two ribs on the left, evidences of injury to spine and dulness from the fourth rib downward on right. On the eleventh day this dulness suddenly increased, with marked dyspnea, which grew so rapidly worse that three days later the chest was tapped and 2,000 c. c. rose-colored opaque fluid drawn off. Tappings then became necessary for relief of symptoms every few days, averaging 3,000 c. c. of fluid, which after third tapping lost its reddish color (due to blood) and was milky white, presenting physical and chemical characteristics of chyle. In all, during twenty-six days, there were drawn off 29,650 c. c. and at autopsy the pleural cavity contained 7,000 c. c.

Of the nine reported cases, four died and five got well, and the conclusion is drawn from study of the cases that in those recovering the main duct was not ruptured, but some of its branches.

TUBERCULOUS PNEUMOTHORAX.

Drasche,² in a forty years' hospital service, has had under treatment 10,212 cases of phthisis, 6,686 males, 3,526 females; of this total there have been 198 cases of pneumothorax, 158 males, 40 females. A large proportion of the cases were in twentieth to thirtieth years of life; in 55 per cent. it was right-sided, in 44 per cent. left-sided, and in three cases bilateral. As immediate causes for the development of pneumothorax are to be reckoned violent coughing or any exertion which brings such a strain to bear upon the lung as can effect rupture of an existing cavity: thus many patients have been made perfectly conscious of the rupture by a sharp pain immediately after coughing, vomiting, defecation or lifting. As might be expected from the usual location of tuberculous process, a large proportion of the ruptures (71 per cent.) occur in the upper lobes.

In most cases the perforation is single and small (pin-head to hazel nut); when there is a pyopneumothorax the effect of the pus is to increase the destruction of lung tissue; an effusion may remain serous for months or become purulent within twenty-four hours of the rupture. Spontaneous closure of the perforation, when it takes place, does so probably by the spread of a pleuritic membrane.

Pneumothorax is one of the most serious complications of phthisis but is not necessarily fatal in itself, as is shown by evidences of perfectly healed lesions found post mortem, and also by those cases which have healed spontaneously under observation or as result of operation; still the treatment of it has remained, even in hospitals, mainly expectant, and attempts to promote healing by operative interference are prevented by prognostic pessimism.

It should not, however, be accepted as a fact that perforation necessarily means one further step in a fatal disease, but it should be borne in mind that phthisis, even of advanced degree, is capable of being arrested. Up to within a short time, practically the only indication for operative interference has been compression of the lungs and heart threatening suffocation, but at present there is a tendency to operate with the hope of promoting healing, a hope which is justified by statistics. Of the 198 cases, 158 were treated expectantly and 30 by operative interference; of the former, 5.5 per cent. and of the latter, 13.5 per cent., were

discharged living; of the unoperated cases there were living up to six weeks and over, 13.2 per cent., of the operated, 37.9 per cent. Operation is always indicated in cases of threatening increase of dyspnea, cardiac oppression and thoracic tension. For puncture a medium-sized trocar should be used; with recurrence of symptoms puncture may be repeated or permanent drainage established. Pyopneumothorax is not necessarily a contraindication to operation. Many such cases are much improved subjectively and prolongation of life secured.

POSSIBLE DANGERS OF THORACENTESIS.

The fact that evacuation of pleuritic effusion is often followed by rapid spread of tuberculous changes in the lung is emphasized by Pinquet.³ The theory that a large number of all serous pleural effusions are tuberculous in origin is sustained, and, on account of the uncertainty as to serious results of tapping any given case, stress is laid on the advisability of avoiding interference if possible; and when the patient's comfort demands relief drawing off as little as possible; the theory being that the effusion keeps apart and at rest the two pleural surfaces loaded with tubercle bacilli, thus preventing further irritation and spread of the invasion.

Mollard, under whose direction the work was done, thinks the danger of permanent collapse of lung and pleural adhesion, as a result of non-interference, has been overestimated.

THE TREATMENT OF PNEUMOCOCCUS EMPYEMA.

O. Vierordt⁴ speaks of the impression more or less prevalent in the profession that empyema from infection with the pneumococcus runs a more benign course than that due to other micro-organisms, and compares it with his own experience, which was almost exclusively confined to children. In 1897 he met with 16 cases of the disease, of whom five were surely due to the pneumococcus. Three of these died from extraordinarily severe complications. The following year he also treated 16 cases, with two deaths. Ten were due to the pneumococcus and one died. In other cases, a report of which is incorporated in the paper, an empyema so small as to be difficult of diagnosis reduced the patient to a critical condition, which improved after the evacuation of at times a few cubic centimetres of pus. These observations, he says, show exclusively the extreme variations in the malignity of the affection, which is little, if at all, dependent on the amount of pus. They further show how much risk one may run, in spite of their undoubtedly frequently benign character, and irrespective of the amount of the exudate, in delaying operation. At least so far as children are concerned, and probably also for older persons, there is no difference, from the standpoint of treatment, between the metapneumonic and other forms of empyema. A prompt and complete evacuation is necessary.

A RARE CASE OF INTERNAL THORACIC INJURY.

Kolbe⁵ prefaces his account by the remark that it is certainly a rare occurrence for a single fall on level ground to produce in a healthy child a wound within the thoracic cavity that forthwith results in pneumothorax and a quickly spreading cutaneous emphysema

² Thèse de Lyon, 1899.

³ Deut. Arch. f. klin. Med., 1899, Bd. lxxiv.

⁵ Deut. med. Woch., August 24, 1899.

¹ Wien, klin. Woch., Nos. 45, 46 and 51.

of neck, face, chest, upper arm, back and abdomen. The patient, a seven-year-old girl, was pushed down by a companion, but was able to get up and walk home, when she complained of pain in her chest and was put to bed; during night the pain increased and a cough developed, with blood-stained expectoration. On the third day with a continuance of these symptoms there was noticed an increasing swelling in the right neck and upper right chest. Kolbe saw her first on the sixth day. He found a right-sided pneumothorax and a very extensive cutaneous emphysema extending on right side from cheek to mid-scapula behind, and five cm. below costal margin in front; there was marked dyspnea; temperature slightly elevated; no fractures or dislocations.

The emphysema, favored by paroxysmal attacks of coughing, steadily increased and the effect of a firm bandage over absorbent cotton applied to thorax was to increase it in uncovered portions, so that both eyes were closed and the face swollen out of all recognition. Slight improvement in the condition began five days after application of the dressing and it was re-applied in greater extent. Within a few hours of the re-application there ensued a very violent paroxysmal attack of coughing lasting half an hour and ending with the expectoration of a cherry stone embedded in a coagulum of blood and mucus; from this time on, rapid improvement and complete recovery in nine days. It then was discovered that she had been eating cherries at the time of the accident and the sequence of events is explained on the theory that with sudden inspiration the stone was carried to a branch of the right primary bronchus, became imbedded and held fast by a reflex spasm, and formed so complete an obstacle to the egress of air that a sudden blow over the portion of the distended lung that could not empty itself caused a rupture of lung tissue and also of the two pleural layers.

STAB WOUND FOLLOWED BY PNEUMOHEMOTHORAX AND PNEUMOHEMOPERICARDIUM.

Baracz⁶ reports such a case, which ended in complete recovery. The wound, received in a duel, began at left border of sternum in fourth intercostal space and extended obliquely outwards four cm. ending just under nipple; by retracting its edges a wound in pleura one cm. long could be seen through which the air swished with each inspiration. The outer wound was closed and there was no interruption in its healing. Examination showed dulness and diminished respiratory murmur at base of left lung. Signs of fluid and air in pericardium were first positive on fifth day, when patient complained of a swishing sensation in cardiac region and there was audible at a distance of one-half to one meter, synchronous with systole, the characteristic sign first described by Morel-Lavallée as the water-wheel murmur. This lasted only one day, but there was later demonstrated a definite enlargement of cardiac flatness. On the eleventh day there was evidence of effusion on the right side, and on the seventh a very marked increase in the fluid in the left chest, which on exploratory puncture proved to be blood. Baracz concludes that this sudden increase was due to a secondary hemorrhage resulting from absorption of clot and increased activity of heart. In eight weeks patient was entirely well.

⁶ Wien. klin. Woch., No. 47.

THE NIGHT AIR OF NEW ENGLAND IN THE TREATMENT OF CONSUMPTION.

Millet's⁷ paper deserves more than a passing notice. He has cut loose from all traditions as to the awful dangers of draughts and night air in consumption, and furthermore has had the courage to act on his convictions. He reports five cases in which the essential part of treatment consisted in the patients spending the night in the open air, the beds being placed on an upper piazza or on a platform built over an L or a bay-window in their own homes in a New England shoe town. "Dampness and draughts are bugbears, and need not be considered for a moment. Many times these patients have found their bed coverings and night clothes wet with dew, and once in a while a summer rain has disturbed their healthful slumbers, but with no harm." During the day, the patients, if strong enough, followed their regular vocations, for example, working in a shoe shop; when not at work they have spent most of the time out of doors. Cough mixtures and sedatives were not given, almost the only medicines used being *nux vomica* and an occasional laxative. It was found that the more air the more appetite and less cough. All five cases showed remarkable improvement.

PROBLEMS IN TUBERCULOSIS STILL UNSOLVED.

No one interested in the subject should miss a paper by Trudeau,⁸ which, although going beyond the limit of application to thoracic disease, still has so much of general interest that it is summarized here. The significance of virulence is alluded to; does it mean increased capacity for producing toxic effects, or simply increased capacity for rapid growth? Adenoid growths in nasopharynx are probably much more frequently the channel of access than is generally supposed. How may the problem of individual and racial immunity and insusceptibility be helped by a study of the discoveries: (1) that the resistance of chickens to the human bacillus can be overcome by using for inoculation bacilli that have been previously cultivated in celloidin capsules, inserted and kept for some time within the peritoneal cavity of these birds, — this method allowing access of the body fluid to the bacilli and the escape of toxins into the circulation, while preventing egress of the bacilli, — and (2) that the resistance of guinea-pigs to avian bacilli yields, when these bacilli have been passed through a series of rabbits, animals which are susceptible to the avian variety. Does the tuberculous individual, like the syphilitic, acquire an immunity during the progress of the disease? Prophylaxis must be carried along the lines of establishment of sanatoria and the education of the masses as to the sources of danger and methods of prevention. But it is in the details of these very matters that we are in need of further investigation.

As aids to clearing up obscure diagnosis, the x-ray and tuberculin test are destined to gain in value by being more frequently used. The mechanism of the tuberculin reaction needs further investigation as to the best method of applying it, its exact value, its discrepancies and its possible dangers. The latter have probably been over-estimated, and while it is apparently true that the "reaction" is caused by an intense hyperemia set up in the various tuberculous foci, and

⁷ Maryland Medical Journal, January, 1900.

⁸ Johns Hopkins Hospital Bulletin, July, 1899.

a liberation therefrom of the toxins which cause the characteristic symptoms of the reaction, there is no proof at present that the disease is spread, or new foci established. The stronghold of treatment will continue for the present, at least, to be in climatic and open-air measures, and further investigations as to methods and modification will be of much value.

Little of practical avail has yet been accomplished in the attempts to produce immunity or cure by inoculation; the outlook, however, in spite of certain inherent difficulties, is not hopeless. Just now the most promising line of research seems to be the possibility of establishing immunity by inoculation with living cultures of attenuated bacilli.

(To be continued.)

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting Wednesday, November 22, 1899.
Dr. R. A. KINGMAN in the chair.

Dr. FREDERICK W. JOHNSON read a paper entitled

STEAM IN THE TREATMENT OF CHRONIC, HYPERPLASTIC AND SENILE ENDOMETRITIS, PUTRID ABORTION AND PUERPERAL SEPSIS.¹

Dr. BURRAGE: I have not had personal experience with the method, but should like to say a word with reference to it. I have seen it used by Dr. Johnson, and it seems to me it is a most valuable addition to our therapeutic resources. It is, however, one that I somewhat fear, for I have felt that it is hard to control; that is, I think that Dr. Johnson has pointed out that if a short application is to be made that the temperature of the steam must be kept near the maximum, 212°, and if a long application, the steam may be partly condensed, but even then, it seems to me, that theoretically, and I must speak of it on theoretical grounds entirely, it is difficult to control the temperature, and to limit the cauterizing effect in any given case. Of course it is no argument against steam to say that it will obliterate the uterine cavity; we know that excessive curettings will do practically the same thing. I saw a patient to-day whose uterine cavity is not entirely obliterated, but partially so, as a result of a curetting done eighteen months ago by a friend of mine in a neighboring town, and she has had amenorrhea virtually ever since. It seems to me there is a very distinct danger from the steam, and that is in the septic cases if there happens to be a perforation of the uterus. Of course, in cases of criminal abortion there may be a perforation, and there may be in cases that have been curetted. We all know how soft the uterine tissue is in septic cases, and how easy it is for a curette to slip through. There was a fatal case recently reported in one of the New York journals where the steam got into the peritoneal cavity through a perforation in the uterus and the patient died.

Then, again, in certain cases, where there is very abundant tissue in the uterus, it seems to me that

steam ought to be used as a supplementary measure rather than the chief measure. I curetted a case last Friday where the uterus was large, and there was much tissue in the cavity, some of the pieces as large as my little finger, and I fail to see how it would be possible to destroy all that tissue with steam without destroying the uterine wall in places where the tissue did not occur, near the cervix for instance, and if the tissue were destroyed, it seems to me not a surgical procedure to destroy it and leave it to come away slowly. To my thinking, in those cases the steam does not take the place of the curette or curette forceps or some similar instrument for removing tissue directly. As a supplementary measure, it seems to me it has great advantage. In senile endometritis it is a very good measure, and wherever we want to obliterate the uterine cavity, but the matter of the lack of control is, in my mind, a very strong argument against its use, and I cannot believe that it is going to take the place entirely of the curette. I think that careful curetting, using in addition to the sharp curette with flexible shank, a very small Simon curette to go into the horns, is the most rational method of treating cases of endometritis, and then following the curetting, as I do still, although it sounds old-fashioned, by swabbing with pure carbolic acid. Pure carbolic is an antiseptic, and it will go into the nooks and corners of the uterus and cauterize any islands of tissue that may be left. I do not feel there is the same danger of a small amount of fluid going through a patulous tube or a perforation, though I do not use carbolic when perforation is suspected, as there is danger of a vapor going through. Steam is a valuable agent in the cases that have not been relieved by curetting. We see patients who have had several curettings and have not been relieved, and I think these would be good cases for steam, and in senile endometritis, and in certain septic cases, it seems to me, it would be of great advantage, but I should hesitate to use it in all cases instead of the curette. I think curetting properly done is a wiser and much better method.

Dr. JOHNSON: I should like to say in reference to the temperature of the steam that it cannot be any hotter than 212° anyway, and by repeated experiments with a thermometer inside the uterus while I was steaming the temperature depended entirely upon the amount of moisture inside the uterus. If the uterus was dry you could get 212° easily. With the apparatus I described you get almost no pressure. Now, in reference to the death Dr. Burrage spoke of, if he will look up that article again he will see that the steaming was done with the Russian apparatus, by which you can get enormous pressure, and I should think with an apparatus of that kind you might do at times a good deal of harm. In saying that the temperature was sometimes 104° to 110° C., I was quoting. I do not advocate that. I advocate the use of the steam as it comes out of an ordinary throat atomizer, and practically there is no pressure at all, only what you get from its being put through the small tube that goes into the uterus. Neither did I write the paper with the idea that steam was to take the place of the curette in every particular. I used steam after reading articles of prominent men who had used it extensively, to see what it could do.

In organizing, the Watertown, Mass., Board of Health has chosen Dr. B. F. Davenport as chairman.

¹ See page 269 of the Journal.

Recent Literature.

The Mechanics of Surgery. By CHARLES TRUAX. Pp. 1,024, with 2,381 illustrations. Chicago. 1899.

The character and purposes of this somewhat unique book are perhaps best described by quotations from the author's preface, which states that its aim is to illustrate and describe such mechanical appliances as research and experience have proved to be suitable, or best adapted to the purposes for which they are designed; to furnish information relating to surgical instruments and appliances which is not only from the point of the maker but also from that of the user of such apparatus. Extensive experience in both fields has apparently fitted the author to fulfil this task. It is intended to furnish the doctor with information which will enable him to select and order any instrument or appliance, be it a scalpel, stethoscope, electric battery, or an artificial leg, without depending upon a surgical-instrument catalogue or dealer, the former giving, as a rule, no other information than the name and price, the latter often buying and selling the goods as a hardware dealer does common tools. It also tells what is commonly required for any particular operation or ordinary clinical investigation. No attempt has been made to include all instruments, but only those in general use which are accepted as the standard patterns, or recommended by good authority. The introductory chapter contains a few facts relating to the history of surgical instruments. Then follow some details of construction and care of instruments. Next the subject of mechanical aids in clinical diagnosis, for example, microscopy, urinary analysis, blood examination, etc. The next chapters are devoted to hospital equipment, including sterilization, anesthesia, and other subjects. Following are the instruments, appliances and dressings necessary in general work in minor and major surgery. These are fully tabulated and described. Regional and special surgery is assigned to its specific chapters. Two lists are furnished, one intended for hospital work, the other as a guide to operative work in private practice. The writer has tried to make these lists complete to the last pin and bandage. The concluding chapter, on prosthetic surgery, is devoted to a subject usually neglected, and on which the author has spent considerable thought and time in collecting data. The chapter on orthopedic appliances is more satisfactory than is usual with such descriptions.

The book is profusely illustrated, well arranged, and contains much information which will be for the benefit and profit of its readers. Many ways are readily suggested in which its data can be utilized. Its chapters treat of subjects, a knowledge of which is usually acquired only by years of personal experience and extended observation.

An American Text-Book of Surgery for Practitioners and Students. Edited by WILLIAM W. KEEN, M.D., LL.D., and J. WILLIAM WHITE, M.D., Ph.D. Third edition, thoroughly revised and enlarged. Pp. 1,228. Philadelphia: W. B. Saunders. 1899.

This book is well known to the medical public. The authors state that nearly 29,000 copies have been sold, and that it is used as a text-book in more than one hundred medical colleges. It has been revised to keep

the book fully up to date. In regard to the general character and appearance it is hardly necessary to speak in detail. It resembles its predecessors. Among the new features are the subjects of serum therapy, leucocytosis, the Krause system of cerebral localization, the congenital hip operations of Haffa and Lorenz, the Allis method of reduction of hip dislocations, lumbar paracentesis, the French method of forcible correction of Pott's deformities, some additions to gastric surgery, the surgery of typhoid fever, skiagraphy, advances in surgery, the surgery of the ureter, and some of the more recent changes in antiseptic technique. The sections on appendicitis, fractures and gynecological operations have been revised and enlarged. The chapters describing the surgery of the eye and ear have been omitted in this edition.

The book as it now appears fully attains the high standard of the earlier editions. The subject of surgery seems to be very well covered, at least as thoroughly as is possible to do in a work of this character. The authors who, in addition to its editors, have contributed to the volume are Drs. P. S. Conner, F. S. Dennis, C. B. Nanerode, R. Park, L. S. Pilcher, N. Senn, F. J. Shepherd, L. A. Stimpson, and J. C. Warren, a list which surely ought to attract attention to and arouse interest in the book. In reviewing it one thought was suggested several times before the task was completed. It was that perhaps for the average reader at the end of a day's work the book would be more restful and convenient if published in two volumes.

Imperative Surgery for the General Practitioner, the Specialist, and the Recent Graduate. By HOWARD LILIENTHAL, M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

This book was written for "the practitioner of general medicine, who rarely takes up the scalpel, the specialist, whose path seldom leads him to the operating-room, and the recent graduate, who though versed in the lore of books and lectures, has seen but little surgery at close range." It deals only with diagnosis and the treatment of conditions necessitating immediate operative measures. It presupposes the absence of a surgeon, and the impossibility or inexpediency of moving the patient, or waiting for expert assistance. For purposes of clearness and directness, the author claims to have described only one good method of relief in each case.

The book is well published, with unusually large, clear type, and is beautifully illustrated. It reminds one of that attractive volume, the "Aseptic and Antiseptic Surgery" of Gerster. The text is systematically arranged and indexed. The story is interestingly, at times graphically, told. It is attractive from the implied success of each procedure and its freedom from doubt and uncertainty. Many valuable suggestions and expedients for use in emergencies are introduced. Miniteness of descriptive detail in many instances is noteworthy. In regard to some of the operative procedures recommended, it might be a matter of opinion as to the one best adapted for an emergency operation to be performed by one unaccustomed to surgical work. However, the book seems to fulfil very well the object of its author. He is to be congratulated on the success of his efforts and his contribution to medical literature. The book shows en-

thusiasm and interest, much time and thought, and a desire to produce the best. The text covers 412 pages, and contains 153 illustrations.

Collins and Rockwell's Physiology. A Pocket Text-Book of Physiology. By H. D. COLLINS, M.D., Assistant Demonstrator of Anatomy, and W. H. ROCKWELL, Jr., A.B., M.D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Pp. 316. Philadelphia: Lea Brothers & Co. 1899.

As you read this book you will agree with the authors' statement in the preface, when they remark that they make no claim to original research. When you have finished the volume you will be inclined to add that they should have included in this remark originality of any description. In short, everything is culled from the various well-known text-books and simply boiled down, not to such an extent as a "quiz compend" perhaps, but still enough to establish a distant relationship to these doubtful blessings.

The book to a medical student is not very valuable, but it ought to make a very good high-school class book. Unfortunately (?) it does not contain any garbled facts about the poisonous and atrocious effects of alcohol and tobacco. Consequently it is a pernicious (?) book and is debarred from being adopted as a school book. If "brevity is the soul of wit," then the book scintillates with witty remarks. We do know that the mechanism of rhythmical contraction is contained within the heart itself. This joke explains the cause of the heart beat! Internal secretion, ductless glands, and the phenomena of inhibition are short comedies.

In favor of this book it may be said that it contains no *bad* physiology or antiquated hypotheses. It is nicely bound, well illustrated with clean cuts, and is printed on good paper.

Notes on the Modern Treatment of Fractures. By JOHN B. ROBERTS, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic. Pp. 162, with 39 illustrations. New York: D. Appleton & Co. 1899.

This interesting and suggestive little work contains the result of the investigations and study of the author of several subjects connected with fractures which have especially attracted his attention. The text of these brochures has been revised to correspond with Dr. Roberts's present ideas. The subjects discussed are all of importance and interest, particularly to those actively engaged in treating such lesions. They represent the complications rather than the routine work; for example, the question of an exploratory incision in the treatment of "closed" fractures and dislocations; subcutaneous nailing in fractures, with unusual tendency to displacement; fractures on the lower end of the radius, with forward displacements, etc. The book will repay a careful perusal. It contains several instructive illustrations.

Essentials of Physical Diagnosis of the Thorax. By ARTHUR M. CORWIN, A.M., M.D. Third edition, revised and enlarged. Philadelphia: W. B. Saunders. 1899.

This is the third edition of Dr. Corwin's little book. Although somewhat enlarged, it is still open to the same criticism which has been made on former editions, that in the effort to epitomize and condense, the

essentials and non-essentials have received the same amount of emphasis. There is no perspective presented to the student. He meets a mass of facts which seem of equal value and have no apparent connection and which he must learn by an effort of memory and not through being taught the logical dependence of the signs on the conditions which cause them. The essential facts are all given, and in the hands of a competent teacher the book would be useful.

Surgical Nursing. By ANNA M. FULLERTON, Clinical Professor of Gynecology in the Woman's Medical College of Pennsylvania, etc. Third edition, revised and enlarged. Pp. 294, with 69 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

This little book is one of the best of its kind. It is attractively and well written. The style is concise. It is well arranged. The data relating to aseptic and antiseptic technique incorporated in its pages are accurate. It treats more especially of nursing in abdominal surgery and in gynecological practice, but the principles of aseptic surgery in general are well presented with the most essential details. If the nurse does her work as directed in this book, it will be well done. The present edition fully equals in excellence its predecessors.

A Text-Book of Diseases of Women. By CHARLES B. PENROSE, M.D., PH.D., Professor of Gynecology in the University of Pennsylvania; Surgeon to the Gyneccean Hospital, Philadelphia. Third edition, revised. Philadelphia: W. B. Saunders. 1900.

This third edition follows so closely upon the heels of the second that but little change has been necessary. The book is, as has been said before in these pages, essentially a text-book for students. It is clear, concise and thorough, and considered as a text-book for students, it is perhaps the best exponent of the modern school of operative gynecology which we have.

Golden Rules of Physiology. By T. WALKER HALL, M.B., Ch. B. (Vict.), and J. ACKWORTH MENZIES, M.D., C.M. (Edin.). Golden Rules Series, No. VI. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1900.

Nothing new, nothing original, except the size, which is, roughly speaking, 7 x 10 x .5 centimetres, and into this small space is crammed a lot of useful physiological hints. The book was written chiefly for unfortunates "on the threshold of examination." As a simple "refresher" for the memory it may be of some use; otherwise it has no value whatever.

A Pocket Medical Dictionary. Giving the pronunciation and definition of the principal words used in medicine and the collateral sciences, etc. By GEORGE M. GOULD, A.M., M.D., author of the Illustrated Medical Dictionary, etc. Fourth edition, revised and enlarged; 30,000 words. Philadelphia: P. Blakiston's Son & Co. 1900.

Dr. Gould's dictionaries are deservedly popular. The total circulation, as stated in the preface to this fourth edition of the Pocket Dictionary, has now passed 100,000 copies. The small volume before us is compact and attractively bound with flexible covers. It should continue to fill a place in this its somewhat enlarged and elaborated form.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 15, 1900.

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PROGRESS IN MEDICAL TEACHING.

A MEDICAL meeting of much more than usual interest and significance, to be published in full later, was held last week under the auspices of the Boston Society for Medical Improvement, on the general subject of "Medical Teaching." That a very active movement toward the improvement of teaching in medicine has developed within the last few years has been sufficiently evident to those who have followed the course of events, and it appears equally evident that positive results are to follow the introduction of the new methods. It was the purpose of this meeting to outline the changes which have been suggested, and to excite discussion as to their merits or shortcomings. In both of these objects the meeting proved a decided success, as shown by the perfectly clear presentation of the subject matter, and the extended discussion by many men more or less personally interested in the development of medical education.

As not infrequently happens, however, it was apparent that the exact meaning and scope of the proposed changes was not clear to the minds of all present, and that a certain confusion existed as to the various methods of teaching which formed the basis of discussion. There was a tendency to regard methods as antagonistic, rather than supplementary and directed to precisely the same end by somewhat different means. Nothing could be more unfortunate for reform than this setting up of two systems of teaching as rival claimants, one of which must succumb if the other be adopted. As a matter of fact, the adoption of one should mean the acceptance of the other if either is properly understood.

Three general changes in method were suggested at the meeting, and presented briefly by Dr. W. T. Councilman, Dr. H. L. Burrell, Dr. A. H. Wentworth and Mr. W. B. Cannon. The speakers were entirely in agreement in maintaining that the teaching of the future must be directed toward the intellectual develop-

ment of the individual student, that the student must do his own thinking and draw his own conclusions, and that the instructor must act rather as a court of last appeal than as a painstaking director of the student's mental processes. For these reasons the extreme use to which the so-called didactic lecture has been put was discouraged as directly leading to intellectual dependence. About this there can be no confusion. The didactic lecture, as a means of medical instruction, must resign its place of pre-eminence, and assume, as we have frequently insisted, a position of less prominence, but of greater dignity, because more in keeping with the sort of instruction it is designed to supply. Our correspondent on another page is inclined to defend the old régime on somewhat sentimental grounds, but this is not argument, and some of us may even be inclined to think that we learned in spite of, and not because of, those same didactic lectures. In any case, whether the old method was bad or good, we are certainly not disloyal to our former teachers in demanding better things for the future. We can hardly progress by looking backward.

Admitting the desirability of the inductive method, how is it practically to be attained? This is the question which the various speakers set themselves to answer. Dr. Councilman spoke on the course in pathology at the Harvard Medical School, as carried out under the new plan of concentration. We have already commented in considerable detail on the theory of this system of teaching, and Dr. Councilman's remarks on the practical working of the plan showed, in the course in pathology at least, that the hopes of its projectors have been amply borne out. The students were made self-reliant, developed a highly gratifying enthusiasm, and passed a good examination. The lecture was in general subordinated to more direct means of instruction.

Dr. A. H. Wentworth spoke on section teaching, a résumé of his recently published paper in this JOURNAL for February 15, 1900. There was a very apparent tendency on the part of some of those who discussed this paper to misinterpret its significance and to question its originality. As we understand Dr. Wentworth's position, he claims no originality for the method, which, of course, has always been used wherever medicine has been taught. His contention simply is that it is the best method of teaching clinical medicine, and that it is possible to apply it to large classes. The application of a method recognized as valuable is Dr. Wentworth's service. He has demonstrated that it may be applied, not only to classes of ten or twenty, but to classes of a hundred or more, in such a way that each student may examine in the course of a year a large number of actual cases. He has worked out a plan for the Harvard Medical School which, in principle, may be used at other institutions. This, so far as we are aware, has not been attained before in anything like the completeness that Dr. Wentworth's plan of rotation renders possible.

Mr. Cannon's contribution to medical teaching, as many of our readers know, consists in the application to medicine of the "case system," which for many years has been used with success in the teaching of law. A detailed account of this method, which certainly demands attention, will be found in Mr. Cannon's original paper, published in our issue of January 11, 1900. The disputants at the meeting in question were again rather vague in the discussion of this communication, and were apparently not clear as to the exact meaning or the exact position in the curriculum of this "case method." In the first place, Mr. Cannon also claims no other originality than one of application. His plan provides a method of studying medicine systematically and in a natural way by the use of case histories. There is no conflict with the system of "section teaching," as was implied in the discussion; it is designed rather to fill out the inevitable gaps left by any method of instruction which looks to patients alone for the material of study. It is therefore supplementary rather than antagonistic to the section teaching plan, and as such has a place of the greatest significance in the general scheme of teaching, as experience has already shown. The "young gentleman from the Medical School," as our correspondent terms Mr. Cannon, has himself had a large experience in teaching, and is, no doubt, quite aware of the fact that his ideas are not revolutionary, and that there is still some good in old methods. His contribution, properly understood, remains one of the most significant and fruitful that has ever been presented to a body of medical teachers.

The general ferment now going on is sure to result in marked improvements; of that the most conservative of us can have no doubt. We suspect the final outcome will be a system of teaching in which the didactic lecture will still be permitted to hold its head erect, and also one in which the principles of all the new ideas will find a definite abiding place, modified only to meet the requirements of advancing knowledge. Because we have learned in the past, is surely no reason why our successors should be forced into the paths we have laboriously travelled, if better ones may be found.

CHRISTIAN SCIENCE A MENACE TO THE PUBLIC WEAL.

It was stated last week that a child had died at Somerville under the treatment of a Christian Scientist, who gave the cause of death as pneumonia; that the Board of Health refused a burial certificate without a proper death certificate from an accredited physician, as required by law; that after much controversy a physician was allowed to view the body and burial was permitted. It now appears that the City Physician of Somerville was ultimately allowed by the friends to see the body, after several refusals; that he gave a death certificate, cause of death unknown, and secured a culture for bacteriological examination; that

it is now shown that the child died of diphtheria and not of pneumonia.

It is time it should be made plain whence comes the validity of a death certificate, and what is required for the issuance of a burial permit. The State and individual communities, for the protection of their citizens, require certain duties of physician; these duties are in the nature of police service. Among them are the reporting of contagious diseases to boards of health, the signing of death certificates, and the granting by boards of health of burial permits. The essential importance of the correct discharge of these duties for the prevention of the spread of disease, for the saving of life, for the control of crime, for the approximately proper preparation of vital statistics, is so evident that it seems hardly necessary to dwell upon them. And they are essentially important not to the physician as a professional man, but to the people at large. It is the people and not the physician who will suffer if these duties are overlooked or ignorantly and carelessly attended to.

We have no intention of discussing the question whether Christian Scientists should be allowed to suffer and die unnecessarily if they so prefer, or even to help their relatives and friends to do so, but how far they are to be allowed to endanger the community at large.

What may be expected from them is shown in this Somerville case, as in others previously on record. It is shown again most clearly in the testimony before the Committee on Hygiene of the Maryland Assembly, printed on another page of this issue.

THE QUESTION OF PRIZES.

It is a matter worthy of note that the Samuel D. Gross prize of \$1,000 has not been awarded this year, owing to the fact that no essay submitted was considered sufficiently meritorious. This is a fate which we continually see overtaking prizes of less value from which we are led to the belief that the standard set for work worthy of consideration is very high. No doubt this is, in a measure, the case, which is after all merely a confession that really able men are not apt to compete. As we have recently taken occasion to point out, prizes are yearly increasing in number and decreasing in value, until they have come to lose a great part of their interest. When, however, a prize which in addition to what honor it may bring also offers the successful writer \$1,000, and still finds no one of sufficient ability to present an essay, on a subject, too, in which thousands of men are interested, it would seem that but one conclusion is open to us, namely, that such a method of stimulating research is wrong in theory and unsuccessful in practice. It is to be hoped that in the future men with money to expend will perpetuate their names in some other way than through the establishment of prize funds, of which we have already enough and to spare.

MEDICAL NOTES.

THE PLAGUE SITUATION.—During the last week of February, there were 411 deaths from plague in Calcutta. The viceroy, Lord Curzon, addressing some of the plague-stricken patients, said he considered it his duty to visit all the quarters of the vast dependency committed to his charge. In spite of the fact that several new cases have occurred in Honolulu, the situation is very decidedly improved. At Hilo no new cases have been found and none are expected to occur. A suspicious case recently discovered in San Francisco has proved to be genuine plague.

DEATHS FROM TUBERCULOSIS IN DENVER, COL.—Tuberculosis is reported to have caused more deaths in Denver, Col., during 1899 than any other disease. The annual report of the Health Department shows that the tuberculosis mortality was 536 for the year ending December 31st, 31 more than during 1898, and 47 more than during 1897. Eighty-eight of the 489 deaths from consumption in the same city during 1897 were of patients who had contracted the disease in the State, 99 out of 505 deaths in 1898, and 58 in 1899.

A HOSPITAL IN NEED OF MONEY.—We are informed that the Hospital for Sick Children, London, the oldest institution of its kind in England, is urgently in need of money to continue its work. If aid is not forthcoming, the hospital must be closed. This is suggestive of the situation in England with regard to home charities, and the diversion of benevolence temporarily into other channels.

SMALL-POX IN MISSISSIPPI.—A violent outbreak of small-pox is reported from the Jonesville District, Miss. About 100 deaths occurred during a period of six weeks, and difficulty has been experienced in burying the dead. Medical attendance has been inadequate and the neighborhood is in a state of demoralization. Every effort is being made to check the spread of the disease.

PROFESSORSHIP OF MEDICINE IN EDINBURGH.—The professorship of medicine, or the practice of physic, in the University of Edinburgh, rendered vacant by the death of Sir Thomas Grainger Stewart, is said to be worth about £1,050 a year.

TYPHOID FEVER IN LADYSMITH.—Mr. Frederick Treves, surgeon of the British forces in South Africa, has reported that immediately after the relief of the town there were 800 cases of typhoid fever among the inhabitants.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, March 14, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 106, scarlatina 48, measles 70, typhoid fever 8.

TYPHOID FEVER AT HAVERHILL, MASS.—An epidemic of typhoid fever is reported from Haverhill.

In the last few weeks many cases of the disease have appeared. In all there are 25 cases in the city, and all are confined to houses connected with the water supply of Kenoza Lake. The Board to-day made known their findings in the following communication to the Water Board. "It is the judgment of the Board of Health, after a careful investigation, that the present excessive sickness from typhoid fever is due to the pollution of the water supply coming from Kenoza Lake, and that the source of its special infection is the leaking cesspool connected with the Hale Hospital. Its contents are discharged on the surface of the ground, and have been carried by recent heavy rain storms and also by a system of stone drains, into an eight-inch Akron pipe for the removal of surface water from the street on the northerly side of Kenoza Ave. This pipe, passing under the roadbed, connects, presumably, as there is no other visible outlet to it, with an old stone drain, or covered water course, which discharges into an open trench about 150 feet distant, thence over the surface of the ground, about 200 feet into the northwesterly side of the Lake."

STATISTICS FROM NEWTON, MASS.—The number of cases of diphtheria in Newton decreased during the month of February. On the 1st of February the Board of Health had under observation 29, while in the mortality statistics for February there are only seven cases of diphtheria. During February there were 40 deaths, and the average death-rate per thousand for the month was 17.39, as against 17.83 last year. There are 19 cases of scarlet fever at present and 14 were reported during the month.

A BILL TO RESTRICT THE USE OF ARSENIC.—The Committee on Public Health of the Massachusetts Legislature has under consideration a bill to restrict the use of poison as a coloring matter. The bill is aimed at arsenic, and seeks to prevent the manufacture and sale of textile fabrics and papers containing that mineral. An exception is made of dress goods containing no more than one-tenth grain of arsenic to the square yard.

REMONSTRANTS AGAINST THE BILL TO RESTRICT VIVISECTION.—President Eliot and Bishop Lawrence appeared among others at the meeting on Tuesday before the Committee of the Massachusetts Legislature and spoke against the bill to restrict vivisection. Dr H. P. Bowditch opened for the remonstrants.

INFLUENZA IN BOSTON.—The death-rate during the past week has been unusually high, owing in part to the prevalence of influenza. Ten deaths attributable to influenza have occurred. There has been a considerable epidemic of the disease at the Long Island Hospital, Boston Harbor.

A MEASLES WARD NEEDED.—The attention of the public is being directed by the Trustees of the Boston City Hospital to the great need of a ward for measles in the Contagious or South Department of the Hospital.

NEW YORK.

A VETERINARY SCHOOL FOR NEW YORK.—At a meeting of the Council of the University of the City of New York, held March 5th, a memorial was framed requesting the State authorities to adopt the Veterinary Department of the University (the New York American Veterinary College), for the education of veterinarians in the section of the State in which New York City is situated. That city, the memorial claimed, was better adapted to the successful maintenance of a veterinary school than any other locality, especially on account of the advantages which it afforded in the matter of anatomical and clinical study.

SHORTENING OF TERM OF SERVICE IN THE PHILIPPINES.—Dr. D. H. Morgan, of the United States Navy, now in New York, who recently arrived from Manila, has, by request, sent to the Navy Department in Washington a report in which he strongly recommends that the terms of service of officers and men in the naval service on duty in the Philippines shall be made two instead of three years. The climate there he regards as very enervating, and he has found that its effects are seriously felt in the second, rather than in the first year; so that the men cannot stand the strain of continuous service there.

UNITED STATES REVOLVER ASSOCIATION.—The United States Revolver Association was organized on March 5th, when Dr. Reginald H. Sayre was elected President, and Dr. Calvin Thayer Adams a member of the Executive Committee. Dr. Sayre, who is inspector of carbine and pistol practice in Squadron A of the New York National Guard, has won a large number of trophies in various contests by his skill in marksmanship. The Association has decided to accept a challenge received from France, and it is expected that the match will be shot in May in this country and in Paris at the same time.

A UNIQUE CLAIM.—A claim of \$2,386, arising from the importation of small-pox into the State of New York by the Joshua Simpkins Opera Company, was filed at Albany on March 10th, by the city of Geneva. A mild epidemic of small-pox in that section originated with a member of the company, who was taken ill at Ithaca. The company went to Geneva, where its twenty-six members were placed on the steamer *Onondaga* and quarantined on Seneca Lake for several weeks. The city's claim is for the cost of the quarantine.

BILLS PASSED BY THE ASSEMBLY.—Other bills recently passed by the Assembly are Dr. Henry's bill to shorten the hours of drug clerks, which is said to be free from the objectionable features of the one with the same object in view passed by the Legislature last year; and a bill authorizing New York City to appropriate \$50,000 to aid in the erection of a monument to martyrs who perished in the prison ships in New York Harbor during the Revolutionary War.

STATE HOSPITAL FOR CRIPPLED AND DEFORMED CHILDREN.—On March 9th the Assembly passed a bill establishing the New York State Hospital for the Care of Crippled and Deformed Children, and appropriating \$10,000 for the purpose. The incorporation of the institution, one of the directors of which is Jacob A. Riis, was approved by the State Board of Charities.

A FATAL CASE OF PEMPHIGUS.—A fatal case of pemphigus was reported at Bellevue Hospital during the past week. The patient was a young man of twenty-four, and the diagnosis was vouched for by Dr. George T. Jackson, the well-known dermatologist. A death from this skin affection, except in the form incident to infantile syphilis, is so rare as to be almost unique.

Miscellany.

INFLUENZA AND PNEUMONIA IN NEW YORK.

ASIDE from pneumonia, there have been fewer deaths reported from influenza since January 1st than during the same period of 1899, but the number of deaths from pneumonia has been considerably greater. The following tables, taken from the records of vital statistics, show the number of deaths from influenza and from pneumonia, by weeks, in the two years:

1899.		INFLUENZA.		1900.	
Week ending Jan. 7	. . . 74	Week ending Jan. 6	. . . 6	Week ending Jan. 6	. . . 141
" " " 14	. . . 53	" " " 13	. . . 5	" " " 13	. . . 132
" " " 21	. . . 31	" " " 20	. . . 3	" " " 20	. . . 176
" " " 28	. . . 27	" " " 27	. . . 4	" " " 27	. . . 169
" " Feb. 4	. . . 16	" " Feb. 3	. . . 7	" " Feb. 3	. . . 158
" " " 11	. . . 19	" " " 10	. . . 8	" " " 10	. . . 184
" " " 18	. . . 14	" " " 17	. . . 11	" " " 17	. . . 203
" " " 25	. . . 16	" " " 24	. . . 29	" " " 24	. . . 254
" " March 4	. . . 11	" " March 3	. . . 29	" " March 3	. . . 261

1899.		PNEUMONIA.	
Week ending Jan. 7	. . . 182	Week ending Jan. 6	. . . 141
" " " 14	. . . 143	" " " 13	. . . 132
" " " 21	. . . 128	" " " 20	. . . 176
" " " 28	. . . 140	" " " 27	. . . 169
" " Feb. 4	. . . 124	" " Feb. 3	. . . 158
" " " 11	. . . 138	" " " 10	. . . 184
" " " 18	. . . 151	" " " 17	. . . 203
" " " 25	. . . 157	" " " 24	. . . 254
" " March 4	. . . 151	" " March 3	. . . 261

While the deaths from pneumonia reported during the week ending March 3d reached the extremely high figure of 261, the number of deaths from pulmonary tuberculosis was comparatively small for this season of the year, namely, 106. The general mortality in the city during the week named represented an annual death-rate of 26.76, against 20.26 for the corresponding week of 1899.

CHRISTIAN SCIENCE: A MENACE TO THE PUBLIC HEALTH.

In Maryland the Christian Scientists appeared before the Committee on Hygiene of the Legislature in opposition to the proposed bill regulating the practice of medicine. From a report of the proceedings we make a few excerpts concerning which comment is unnecessary:

Dr. Samuel T. Earle asked Mr. Hammond how he discriminated between infectious diseases and those that were not infectious. "The power of God," said Mr. Hammond, "is the same always. We do not believe in infectious diseases, and a person, if a Christian Scientist, could not contract such diseases." Dr. Earle asked whether the method of treatment would be altered for an infectious disease, and Mr. Hammond replied that it would not. Dr. Edward Brush said it was unnecessary to ask the gentleman any further questions, as he had practically admitted that he could bring a patient with the small-pox into a room with other persons, or send a child with scarlet fever to school.

Dr. Earle asked Mrs. Linscott how she could distinguish diphtheria from tonsillitis. Mrs. Linscott laughed heartily and said: "All diseases are the same to us, and we make no microscopic investigations; but I could easily distinguish." Dr. Earle insisted upon knowing by what means, and Mrs. Linscott remaining silent, Mr. Hammond answered in sonorous tone, "Through the power of Almighty God." Mrs. Linscott stated that in a community of 500 people, all of whom were Christian Scientists, such a thing as diphtheria would be impossible, and there would be no necessity for any health department, as the community would be exempt from disease.

Dr. Fulton said the course of medicine of the Scientists was two weeks, according to their own books. He read of a little child who had a terrific toothache and was so completely cured in one night by a Christian Science teacher that not only did the pain leave her, but the cavity in the tooth became filled up, and this was without any physical treatment. The Christian Scientists all exclaimed that this was perfectly true.

Another incident read by Dr. Fulton was to the effect that a lady who had been horribly burned was sufficiently improved to go out the day after the accident. Several of the delegation said they knew this lady.

Another article read referred to a schoolboy who could not do his fractions until aided by Christian Science, when they at once became easy.

Mrs. Linscott remarked to Dr. Fulton, "No wonder the power of God surprises you!"

Dr. Brush read a letter from a member of the Health Department in Buffalo, stating that the sect of Christian Scientists should be suppressed, as they were a menace to the public health.—*Philadelphia Medical Journal.*

PLAGUE AT MENGTSZ YUNNAN, CHINA.

FROM the *Journal of Tropical Medicine* we learn that, with the exception of 1899, plague has been epidemic in Mengtsz Yunnan (population 12,000) every year for the last thirty years, or since the Mahomedan rebellion. The disease ordinarily appears about June, and finishes early in August—practically the rainy season. The annual plague mortality in the town and surrounding villages would range from 300 to 1,100. In Mengtsz rats are phenomenally abundant. Strange to say, cats are very rare and are much valued, fetching high prices. The Chinese say the cats die of plague caught from the rats. As Chinese cities go, Mengtsz is clean. Every year, just before the outbreak of plague, all street rubbish is removed; domestic rubbish is stored in open places in the city and is removed at the same time. Rats dying of plague are a familiar sight. Very few women get the plague—hence the title "City of Widows" applied to Mengtsz. Possibly the comparative immunity of females depends on the careful bandaging of their feet, which in this way are protected from injury and the bites of insects. Many of the women have had several husbands, a most unusual thing in China.

Correspondence.

THE OLD ORDER CHANGES.

BOSTON, March 10, 1900.

MR. EDITOR:—At the meeting of the Boston Society for Medical Improvement the other night, as one listened to the discussion of methods of teaching medicine, to the able papers of Dr. Councilman and Dr. Burrell, and to the remarks of President Eliot and Messrs. Ames, Cannon and others, it was interesting to reflect how the old order changes, and how soon the new becomes the old.

For years those of us who teach have been striving to devise new methods of imparting knowledge. Here comes a young gentleman from the Medical School, who tells us that we must revert to the method of our grandfathers; that knowledge cannot be imparted to such advantage as it can be acquired by the individual through his own efforts, judiciously guided and aided; and the young gentleman is right.

In the earlier years of this century students attended on the practice of active physicians and studied their cases, and that method, modified to suit our present needs, is again the favorite one.

Of course, all that is good and true, as President Eliot so well said. As a section teacher myself, I have long appreciated the value of case study and individual instruction, and I feel that we are developing such lines of work to the great advantage of the student. But is it indeed true that the old-fashioned lecture was the futile thing Dr. Councilman and President Eliot tell us it was?

Between twelve and fifteen years ago I was a student in the Harvard Medical School. Many of my old teachers are still teaching there; many of them attended the meeting of which I write. Who am I, that I should rise up and tell them that their labors were a vain thing? That their strivings to impart knowledge were misdirected strivings, and that their words were as naught? Indeed, I am moved to say to those laboring men something very different, and, though we may have resurrected and perfected another thing, that thousands of us, taught largely on the old didactic plan, still look back on our pains as not altogether unfruitful.

To name names may seem invidious, but when I recall some of those charming, forceful, teeming lectures, I am inspired again. In both Harvard College and the Medical School were teachers whose class-rooms were crowded, whose discourses were eagerly anticipated. Who can regret the words of Mr. Norton and Mr. Shaler in Cambridge? Who failed gladly to attend the lectures of Dr. Bigelow, Dr. Cheever, Dr. Bowditch, Dr. W. L. Richardson, Dr. Francis Minot, and many others in Boston?

To such days, to such teaching and to such men we owe a debt, Mr. Editor, which we can never repay, and as we enter upon a field of new and perhaps more fruitful endeavor, let us not neglect to look backward for a moment, and gladly to render honor where honor is due.

Very truly yours,

J. G. MUMFORD, M.D.

THE DISCOVERY OF THE INFLUENZA BACILLUS.

BOSTON, March 10, 1900.

MR. EDITOR:—A correspondent in your issue of March 8th implies, but is cautious enough not to directly state, that the reviewer of a book on bacteriology in a recent number of the *JOURNAL* has made a mistake in pointing out that in this book, "Canon is erroneously credited with a part in the discovery of the bacillus of influenza." Your correspondent gives no basis for his idea, except that "In Berlin, in 1892, Canon was the flushed and happy recipient of congratulations for a discovery simultaneous with that of Pfeiffer." What are the facts? Canon did

announce simultaneously with Pfeiffer the discovery of the influenza bacillus. This organism Canon claimed to have found by careful searching of cover-glass preparations of drops of blood taken from the finger tip in a certain proportion of cases of influenza. He did not prove that all the bacteria seen by him were of the same kind, nor did he prove that any of these bacteria were identical with the bacillus discovered by Pfeiffer in the sputum, bronchi and lungs, in cases of influenza. Canon's work thus consists essentially in observations of bacteria in cover-glass preparations of the blood from the peripheral circulation. Such observations, however, are always open to the objections that the bacteria seen come from the staining solutions used, or from the skin, and unless they are confirmed by cultures and by reliable observers, they are never regarded by bacteriologists as of much value. An examination of Canon's paper upon this subject in *Virchow's Archiv*, Bd. cxxxi, Heft 3, 1893, fails to reveal any reason why his observations should not be open to the objections above mentioned. Moreover, neither Pfeiffer nor any other worker has since succeeded in finding the bacilli in the peripheral circulation. Therefore, it is altogether improbable that Canon had any of Pfeiffer's bacilli before him in his preparations, and he should not be mentioned as one of the discoverers of the bacillus of influenza.

Very truly yours,
J. H. WRIGHT, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 3, 1900

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,594	1801	604	18.80	26.15	.15	3.35	1.65
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	596	188	21.08	16.32	1.53	5.78	1.53
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	273	75	17.39	22.20	1.11	3.69	.74
Baltimore	506,389	—	—	—	—	—	—	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	129	34	13.86	19.25	10.78	1.54	2.08
Washington	277,000	94	18	19.08	13.78	2.12	1.06	1.06
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	—	—	—	—	—	—	—
Nashville	87,754	53	17	20.79	26.46	—	—	1.89
Charleston	65,165	37	17	8.16	27.20	—	—	—
Worcester	111,732	32	12	6.26	15.65	—	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,520	35	10	25.74	14.30	—	—	—
Lowell	90,114	—	—	—	—	—	—	—
New Bedford	70,511	—	—	—	—	—	—	—
Lynn	63,218	20	7	10.60	5.00	—	5.00	—
Somerville	64,394	—	—	—	—	—	—	—
Lawrence	59,072	17	10	5.88	—	—	—	—
Springfield	58,266	18	8	22.22	22.22	—	5.55	—
Holyoke	44,510	24	5	25.00	12.50	—	6.25	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	16	6	—	12.50	—	—	—
Malden	36,421	12	2	50.00	—	—	—	—
Chelsea	34,235	12	2	16.66	—	—	—	—
Haverhill	32,651	—	—	—	—	—	—	—
Gloucester	31,426	—	—	—	—	—	—	—
Fitchburg	30,523	4	1	—	—	—	—	—
Newton	30,461	—	—	—	—	—	—	—
Taunton	28,527	5	1	—	20.00	—	—	—
Everett	28,102	—	—	—	—	—	—	—
Quincy	24,578	6	1	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	—	—	—	—	—	—	—
North Adams	21,583	—	—	—	—	—	—	—
Chicopee	18,316	7	5	—	—	—	—	—
Medford	17,190	4	1	25.00	—	—	—	—
Newburyport	15,036	5	—	—	—	—	—	—
Melrose	14,721	3	1	33.33	—	—	—	—

Deaths reported 3,222; under five years of age 1,026; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 610, acute lung diseases 785, consumption 315, diphtheria and croup 118, measles 52, whooping-cough 33, typhoid fever 32, scarlet fever 28, diarrheal diseases 19, erysipelas 15, cerebrospinal meningitis 8.

From whooping-cough New York 27, Philadelphia, Boston and Cambridge 2 each. From scarlet fever New York 23, Philadelphia 3, Boston 1. From diarrheal diseases New York 13, Pittsburgh 2, Philadelphia, Washington and Lawrence 1 each. From erysipelas New York 12, Boston 3. From cerebrospinal meningitis New York 7, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,295, for the week ending February 24th, the death-rate was 24.2. Deaths reported 5,877; acute diseases of the respiratory organs (London) 485, whooping-cough 120, measles 115, diphtheria 92, fever 47, diarrhea 10, scarlet fever 30.

The death-rates ranged from 9.9 in Croydon to 14.7 in Preston, Birmingham 22.7, Bradford 21.5, Cardiff 13.7, Gateshead 23.1, Huddersfield 21.5, Hull 22.3, Leeds 29.5, Liverpool 33.8, London 21.5, Manchester 31.7, Newcastle-on-Tyne 25.1, Nottingham 21.3, Plymouth 27.1, Salford 39.0, Sheffield 27.6, Sunderland 22.3.

METEOROLOGICAL RECORD

For the week ending February 24th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'thr.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...18	29.46	20	24	16	93	53	73	N.W.	N.W.	24	15	N.	C.	.39
M...19	29.76	21	30	12	61	54	59	W.	N.W.	16	15	C.	C.	—
T...20	30.23	28	39	18	69	51	60	W.	N.W.	11	6	C.	C.	—
W...21	30.33	35	45	25	77	50	68	W.	S.	3	3	C.	O.	—
T...22	29.57	40	44	35	94	98	96	E.	N.E.	30	7	R.	R.	1.47
F...23	29.35	36	42	31	100	72	86	N.E.	W.	1	15	O.	O.	.33
S...24	29.62	43	52	34	72	78	76	S.W.	S.E.	7	9	C.	O.	—

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

METEOROLOGICAL RECORD

For the week ending March 3d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'thr.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...25	29.07	34	56	12	86	46	66	W.	W.	15	24	R.	F.	1.61
M...26	29.86	13	21	5	45	39	42	W.	W.	30	23	C.	C.	—
T...27	30.59	6	16	4	62	27	44	N.W.	N.W.	18	14	C.	C.	—
W...28	30.62	19	30	8	54	65	60	E.	S.E.	4	7	C.	O.	—
T...1	29.75	42	54	30	96	100	98	E.	S.E.	4	16	R.	R.	1.56
F...2	29.42	40	51	28	80	49	64	S.W.	W.	22	20	O.	C.	.62
S...3	29.94	30	33	26	51	56	54	W.	N.W.	15	16	C.	C.	—

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 10, 1900.

J. C. WISE, medical director, commissioned medical director from February 7, 1900.

E. Z. DERR, medical inspector, commissioned medical inspector from February 7, 1900.

R. P. CRANDALL, surgeon, commissioned surgeon from September 24, 1899.

J. T. KENNEDY, assistant surgeon, appointed assistant surgeon.

G. E. H. HARMON, medical inspector, detached from the "Baltimore" and ordered to the "Oregon."

F. B. STEPHENSON, surgeon, detached from the "Oregon" and ordered to the "Baltimore."

W. B. GROVE, assistant surgeon, detached from the "Brooklyn" and ordered to the "Baltimore."

H. H. HAAS, assistant surgeon, detached from the "Baltimore" and ordered to such other duty as the commander-in-chief of the Asiatic station may assign.

J. C. ROSENBLUTH, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, New Orleans, La., and ordered home and to wait orders.

F. E. McCULLOGH, assistant surgeon, detached from the "Nero" when put out of commission, and ordered to temporary duty on the "Independence."

I. N. HURD, pharmacist, ordered to additional duty on the "Massasoit," Key West, Fla.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 8, 1900.

MEAD, F. W., surgeon. Upon expiration of leave of absence to proceed to New York, N. Y., and assume charge of the Purveying Depot during absence of Surgeon C. E. BANKS. March 3, 1900.

BANKS, C. E., surgeon. Granted leave of absence for seven days from March 6th. March 3, 1900.

KALLOCH, P. C., surgeon. To proceed to Mobile, Ala., for special temporary duty. March 7, 1900.

GLENNAN, A. H., surgeon. To proceed to San Francisco, Cal., for special temporary duty. March 8, 1900.

PERRY, T. B., passed assistant surgeon. To proceed to Atlanta and report to the Governor of Georgia for temporary duty. March 8, 1900.

GUTERAS, G. M., passed assistant surgeon. Relieved from duty at Matanzas and detailed as quarantine officer at the port of Cienfuegos, Cuba. March 5, 1900.

BROWN, B. W., passed assistant surgeon. Upon being relieved from duty at the Cape Fear Quarantine Station, to proceed to Cape Charles Quarantine and assume command of the Service. March 8, 1900.

CUMMING, H. S., passed assistant surgeon. To report at Washington, D. C., for special temporary duty. March 3, 1900.

VON EZDORF, R. H., assistant surgeon. Relieved from duty at Atlanta, Ga., and directed to rejoin station at New Orleans, La. March 8, 1900.

McCLINTIC, T. B., assistant surgeon. Relieved from duty at Cape Charles Quarantine Station and directed to proceed to Cape Fear Quarantine, Southport, N. C., and assume command of the Service. March 8, 1900.

TROTTER, F. E., assistant surgeon. Relieved from duty at Havana and detailed as quarantine officer at the port of Matanzas, Cuba. March 5, 1900.

SCHERESCHEWSKY, J. W., assistant surgeon. Relieved from duty at the Immigration Depot, New York, N. Y., and directed to proceed to Havana, Cuba, and report to Surgeon H. R. CARTER for duty. March 2, 1900.

LORD, C. E. D., assistant surgeon. Relieved from duty at the port of New York, N. Y. (Stapleton), and directed to report to Surgeon L. L. WILLIAMS, Immigration Depot, New York, for duty. March 2, 1900.

WILSON, R. L., assistant surgeon. Granted leave of absence for twenty-one days from June 14th. March 7, 1900.

BAILEY, C. W., acting assistant surgeon. Granted leave of absence for seven days. March 3, 1900.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for four days from April 17th. March 3, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, March 19th, at 8 o'clock.

Dr. E. A. Codman will present "A Study of Cases of Colles's Fracture at the Massachusetts General Hospital since the Introduction of the X-ray." This paper will be illustrated by the lantern. The following gentlemen are prepared to take part in the discussion of the cases: Drs. F. H. Williams, Sender, Conant, Cotton, Lund.

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, March 21, 1900, at 8 P. M.

At 8 o'clock; Dr. J. N. Coolidge will report "Two Cases of Diabetes Mellitus."

At 8.15 o'clock; Dr. E. G. Cutler will read a short paper entitled "A Form of Digitalis Free from Fat."

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

MUTTER LECTURESHIP OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The next course of ten lectures instituted by the late Prof. Thomas Dent Mutter, M.D., LL.D., on some "Point or Points in Surgical Pathology," will be delivered in the winter of 1902-1903 before the College of Physicians of Philadelphia.

The compensation is \$600. The appointment is open to the profession at large. Applications, stating in full subjects of proposed lectures, must be made before October 1, 1900, to the Committee on the Mutter Museum.

JOHN H. BRINTON, M. D., *Chairman*,
Northeast Corner of Thirteenth and Locust Streets,
Philadelphia, Pa.

RECENT DEATHS.

HARRIET P. BILL, M.D., of New York City, died on Wednesday March 7th, in New Hampshire. Dr. Bill has been resident physician of the Sherborn Reformatory and of the Child Hospital on Staten Island. She was also, later, matron of the New York Nursery and Child Hospital. She was a woman of unusual mental attainments.

OLIVER PAYSON HUBBARD, professor emeritus of chemistry and pharmacy at Dartmouth College, died at his residence in New York City on March 9th, in his ninety-first year.

CHRISTOPHER PRINCE, M.D., formerly a prominent New York practitioner, died at his home at Irvington-on-the-Hudson, on March 5th, of pneumonia, at the age of seventy-six. He was born in Brooklyn, N. Y., in 1823. He studied medicine under the late Dr. Willard Parker, and was graduated from the College of Physicians and Surgeons, New York, in 1845. He practised for a number of years at Fort Hamilton, L. I., and afterwards removed to New York. He was appointed a police surgeon in 1872, and subsequently resigned this position to accept the surgeonship of the Fire Department. One of his daughters is the wife of Dr. George B. Fowler, recently a Commissioner of the Board of Health.

AARON E. PECK, M.D., of Brooklyn, N. Y., died suddenly of pneumonia, resulting from influenza, on March 8th, in his sixty-sixth year. He was graduated from the College of Physicians and Surgeons, New York, in 1855.

CLARENCE EDWIN BEEBE, M.D., of New York, died on March 1st. He was born in Brooklyn, January 4, 1839. He was graduated from Yale University in 1871, and from the Medical Department of the University of the City of New York in 1873. For several years he was a surgeon in the Veteran Corps of the Seventh Regiment, New York National Guard.

FRANK WALKER GRAVES, M.D., M.M.S.S., died in Woburn, March 13, 1900, aged fifty-eight years. He was born in Concord, N. H., and received his medical degree from the University of Vermont. He served the community in various ways, as trustee for the Burben Free Lecture Fund, member of the Woburn School Board, and President of the Middlesex County Medical Society. When the Ancient and Honorable Artillery Company visited London three years ago Dr. Graves went as surgeon. He leaves a widow.

BOOKS AND PAMPHLETS RECEIVED.

Progress in Pharmacy and Therapeutics. Reprint. 1899.

Alcoholic Gastritis. By J. A. Hofheimer, M.D., New York. Reprint.

A Review of Swedish Gymnastics. By Theodore Hough. Boston: George H. Ellis. 1899.

Twenty-second Annual Report of the Board of Health of the City of Lowell for the year 1899.

La Pratique des Accouchements Obstétrique journalière. Par Henri Varnier. Paris: G. Steinhell.

Sterility and Pelvic Deformity. By Joseph Brown Cooke, M.D., New York City. Reprint. 1900.

Transactions of the Luzerne County Medical Society for the Year Ending December 31, 1899. Volume VII.

On Diabetes Mellitus and Glycosuria. By Emil Kleen, Ph.D., M.D. Philadelphia: P. Blakiston's Son & Co. 1900.

The Treatment of Nephrolithiasis with Glycerine. By A. Iermann, M.D., Carlsbad, Bohemia. Reprint. 1900.

Publicazioni del R. Istituto di Studi Superiori Pratici e di Perfezionamento in Firenze.

Sulla Struttura dell' Ovidutto del Geotriton Fuscus, Ricerche Istologiche. Del Dott. Umberto Rossi. Tip di G. Carnesecci e Figli. 1895.

Cheloni Fossili di Montebamboli e Casteani. Memoria Paleontologica del Prof. Giuseppe Ristori. Tip di G. Carnesecci e Figli. 1895.

Rendiconto Sommario dell' Istituto Ostetrico-Ginecologico (Maternità). Di Firenze per cura del Dott. Giovanni Invernardi Stabilimento Tipografico Fiorentino. 1892.

Original Articles.

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?¹

WITH AN ANALYSIS OF THE RESULTS OF THE PRESENT METHODS OF TREATMENT IN ONE HUNDRED AND FIFTY-THREE FRACTURES OF THE LOWER EXTREMITY.

BY CHARLES L. SCUDDER, M.D., BOSTON,

Surgeon to the Massachusetts General Hospital, Out-Patient Department; Assistant in Clinical and Operative Surgery, Harvard University.

IN responding to the invitation of the chairman of the Surgical Section to introduce the discussion upon the open treatment of fractures, it occurred to me that no better introduction could be made than the presentation of the actual results which have followed the generally accepted methods of treating fractures of the lower extremity.

In order to intelligently discuss the wisdom of operative interference in closed fractures, it is necessary to have a clear notion of the results of the present method of treating fractures. No surgeon, excepting a hospital surgeon of long experience, can have a great knowledge of these end results, and ordinarily few men are sufficiently interested, even though the opportunity be present, to record and study these results in cases coming under their personal observation.

With the permission of the visiting surgeons of the Massachusetts General Hospital, I have obtained the results in fractures of the bones of the lower extremity, after varying periods of time have elapsed. I will briefly state the conclusions of this investigation. It must be constantly borne in mind that statistical tables of the kind here presented are of value just in proportion as one studies the individual units composing them.

FRACTURES OF THE HIP OR NECK OF THE FEMUR.

The treatment followed: If unimpacted, care was exercised that the impaction was undisturbed, and if impacted, a light weight traction was applied to the thigh. The leg, thigh and body were steadied in the recumbent position by a long outside splint. The patient was kept in bed, and after a few weeks was allowed up and about, walking by the aid of crutches.

There are 16 cases in this series of fractures of the hip. Seven were between forty-two and forty-seven years of age; the remaining nine cases (with two exceptions, adults, whose ages were not known) were over fifty years of age; three of these were sixty years or over. This, then, is an adult series. The age given is that at the time of the receipt of the injury. Most of these cases were primarily or secondarily unimpacted.

The results are known in all of these hip fractures from two and one-half to twenty-four and one-half years after the receipt of the accident. In three cases, which were thirty-nine, thirty-eight and twenty-six years old, respectively, the result as to usefulness is said to be perfect, with the exception that there is slight grating in the hip at times, aching in the hip

in stormy weather, and shortening of an inch or more, causing a perceptible limp in the gait. Thirteen of the 16 cases have more or less impairment of the functions of the limb. Movements at the hip-joint are limited. There is a weakness of the limb, necessitating the use of a crutch in many instances. Eversion of the foot is observed. There is pain in the hip, which extends down the thigh, even to the sole of the foot. There is a very decided limp in many cases. There is pain in the hip at night when resting in bed; pain upon going up and down stairs, and in stooping and in stepping forward. There is undoubted rheumatism in many cases. Atrophy of the muscles of the thigh, buttock and calf of the injured side is noted. In practically all these 16 cases, followed carefully many years after the original injury, there is impairment of the hip, anatomically and functionally.

FRACTURES OF THE THIGH.

The treatment followed: Etherization. Adhesive-plaster extension; ham-splint, coaptation splint, long T outside splint; body swathe. Later, plaster-of-Paris spica from ankle to axilla; crutches.

There are 35 cases in this series. Thirteen of these cases reported for examination. Fourteen cases occurred in childhood, averaging seven and one-half years old. These childhood cases were examined from one and one-half to seven years after the accident. All have perfect functional results. Four cases complain of slight pain in the thigh occasionally; three of the four have a little stiffness of the knee, one and one-half, three and three and one-half years respectively after the accident. Sixteen cases occurred in adults from eighteen to forty-eight years of age. This group was seen from one to six years after the injury. Five have unqualifiedly perfect results, without pain and stiffness. The remaining 11 cases have limited motion at the knee-joint, aching in the thigh, pain after exercising, pain in wet weather, a weakness of the whole leg and a slight limp. Five cases occurred in old age, averaging fifty-eight years. This group was seen from two to six years subsequent to the injury. None have perfect results. There is one case of fibrous union with shortening; two must use a cane in walking. The knees are painful, and motion of the knee-joint is painful and limited. Swelling of the whole leg is not uncommonly seen, and pain in wet weather is of course an ordinary occurrence.

FRACTURES OF THE PATELLA.

The treatment followed: There are 51 cases in this series. Five were compound. Fifteen were operated by wiring the bone, suturing the capsule, by using Malgaigne's hooks, and by steel pins. Thirty-six were treated by the expectant method, that is, by elevation of the whole limb, immobilization of the knee-joint, straps about the fragments, local compression, and more or less prolonged immobilization.

These cases were examined from one and one-half to ten and one-half years after the accident. Of the 15 operated cases, seven (46 per cent.) are about as good as the well leg. Eight are not as good as the uninjured leg. Of the 36 cases treated expectantly, 16 (44 per cent.) were about as good as the well leg, and 20 were not as good as the well leg. All cases had some limitation of motion at the knee-joint. In some the knee cracks while walking, feels stiff, aches and

¹ Read at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

burns; is weak; is troublesome while going up and down stairs; gives way unexpectedly, causing a fall. In some there is pain after unusual exertion and in damp weather, stepping up is difficult, kneeling is painful, stepping upon irregular surfaces is painful. In others running and jumping are impossible.

FRACTURES OF THE LEG.

The treatment followed: Invariably the leg, thigh and foot were placed upon a posterior wire splint and immobilized by side splint and straps. Later the leg was placed in a plaster-of-Paris splint extending above the knee, the patient moving about by the aid of crutches. These cases were seen from one year and five months to ten years after the accident happened. The average period was between four and five years. There were 35 cases of fracture of the leg. Under twenty years of age there were seven cases; between twenty and fifty years of age, 21 cases; fifty years of age and over, seven cases; this series is largely, therefore, of adults of middle age.

Of those twenty years of age and under, six were closed fractures and one was an open fracture. Five cases had as good a leg as before the injury; these were all closed fractures. Two cases had poorer legs than before the injury; one of these cases was open and one was closed. Of those twenty-one years to fifty years of age, 11 were closed fractures and 10 were open fractures. Eight cases had as good a leg as before the injury. Of these eight, five were closed and three were open fractures. Thirteen had poorer legs than before the injury. Of these 13, six were closed and seven were open fractures. Of those fifty years and over, four were closed and three were open fractures. All these cases had poorer legs than before the injury. Of the 35 cases of fracture of the leg, 21 were closed and 14 were open fractures. Of the 21 cases of closed fractures only eight (40 per cent.) were perfect results. Of the 14 cases of open fracture, only three (21 per cent.) were perfect results.

These cases invariably complain of flat-foot; pain in the fracture when the weather is damp; cramps at night in the calf of the leg; pain after long standing; a weakness of the leg; a swelling of the leg; pains through the leg after using it much; a stiffness of the ankle-joint; limitation of motion of the knee-joint; that stepping upon an uneven surface is troublesome; that the foot turns in; that there is a limp; of rheumatism.

Considering these groups of fractures of the lower extremity the results are unsatisfactory.

In the fracture of the hip² in old age the physical changes in the bone will always modify the reparative processes to some extent. Age symptoms will always appear. Eighty-one per cent. of the results are poor. Much can be attempted for these unfortunate people by more careful fixations and the operative treatment of pegging or clamping. In young adults with impaction and deformity the impaction should be broken up and the fracture set accurately.

In fracture of the thigh the apparent effect of age is seen in the end results obtained during the different periods of life. In childhood all fractures resulted in perfect functional results, 100 per cent. In adult life 31 per cent. were perfect, 69 per cent. imperfect. In old age none were perfect, 100 per cent. imper-

fect. These imperfect results of 69 per cent. and 100 per cent. can certainly be reduced.

In fracture of the patella statistics are misleading, for treatment of this fracture has so radically changed that cases are no longer to be fairly compared unless the method of treatment is known in all cases. Today there are four methods of treating fracture of the patella:

(1) The old expectant method, by straps, immobilization, rest, no motion permitted at the knee for six months or more, unprotected.

(2) The new expectant method, which is the same as the old, with the addition of early continuous massage and early use of the limb.

(3) The old operation, by wiring with silver wire and long immobilization.

(4) The new operation, by repairing the bony damage and the damage to all the soft parts as well with early use and massage; very properly called the completed operation. The second and fourth methods of treatment are the most satisfactory. The results of these methods will be comparable.

In the series of cases of patellæ here reported 46 per cent. operated upon made a good recovery; 44 per cent. not operated upon made also a good recovery. Even in these cases which are said to have made a good recovery all exhibited limitation of motion at the knee-joint, in the extreme of flexion.

In the closed fracture of the leg 60 per cent. showed a poor result. In the open fracture of the leg 79 per cent. showed a poor result.

Very great care has been exercised in the preparation of the tables, which relate the details of each case in the several groups of fractures. A perusal of these cases thus tabulated will prove instructive.

Changes in the accepted methods of dealing with fractures of bone have been very gradual. Very little zeal has been exercised in dealing with simple fractures. Such fractures have been almost disregarded by surgeons in our large hospitals, the treatment of uncomplicated cases in hospital practice passing into the hands of the house surgeons, who ordinarily know little as to the detailed care of such so-called simple cases. Until recently, little clinical instruction has been given in the medical schools of this country upon the practical treatment of fractures.

The classical division of fractures into those in which there is a wound from the surface to the broken bone and those in which there is no such wound is still recognized as a fundamental division. The former group of compound fractures was invariably associated with various alarming conditions — namely, with primary or secondary hemorrhages, with suppuration, with sloughing of soft tissues, with necrosis of bone, with various forms of blood poisoning known to us under the names of sapremia, septicemia, pyemia, with hospital gangrene, with erysipelas, with greatly delayed union, and not very infrequently with amputation and death. The mortality from this group of fractures in the ordinary course of treatment in hospital practice was as high before the antiseptic period as 68 per cent., nearly 70 per cent. Is it any wonder that the fracture without an open wound of the soft parts resulting ordinarily in freedom from all infections and complications, resulting in safety to life, and in a more or less perfect recovery — is it any wonder that such a fracture should have been styled a simple fracture? Is it any wonder that the simple fract-

² These cases have been carefully treated. The present methods of treatment are faulty and can be improved.

ure was regarded as a *noli me tangere*, lest the simple should be converted into a dreaded compound fracture? This influence of pre-antiseptic days has been felt strongly up to the present time. The fear of suits for malpractice has likewise had its influence in hindering advance in the treatment of fractures and in encouraging surgeons to follow the old let-alone treatment.

The treatment of closed fractures has always been thought to be easy and simple. The tables are to-day being reversed; it is the simple fracture which to-day is found to be the most difficult to treat, if the problem of treatment is fairly faced. Is there anything more difficult to treat satisfactorily than the simple oblique fracture of both bones of the leg above the ankle; than fracture of the surgical neck of the humerus with or without displacement of the head of the bone; than fracture of the clavicle with considerable displacement? Is the separation of the upper epiphysis of the humerus an easy lesion to treat satisfactorily? Instances may be multiplied until it is evident that each bone is frequently fractured in a way most difficult for easy and satisfactory treatment by existing methods.

The Röntgen ray provides through the developed plate and fluoroscope accurate anatomical knowledge of the relative position of broken bones. The interpretation of the fracture seen through the fluoroscope and upon the plate must be made by one skilled in the art. The casual observer makes many errors in judgment and misinterprets the conditions present. The exact conditions of exposure and position under which the skiagraph is taken must be known before even the trained interpreter can correctly make the diagnosis. The x-ray provides the means for an accurate diagnosis.

Championnière, the one who has urged most strongly the use of massage in the treatment of fractures, finds that by it pain disappears, tension disappears with the absorption of ecchymosis, a sedative nervous effect is obtained, the callus forms more rapidly and consolidates earlier, function is restored to the part early, and that there is less atrophy of muscles, less stiffness of joints and tendons, less edema and a better local circulation. These assertions have been demonstrated to be true by men in this country, and the proper use of massage as a means to an end in the treatment of certain fractures is now thought to be desirable. It is to fractures near joints rather than to those in the diaphysis of the bone that massage is particularly applicable, and it is so used by the German surgeons. Massage properly applied will improve the ultimate results of fractures near to joints, under both the closed and open treatment. Massage has hitherto been used too little in the hospital treatment of fractures. It should be used systematically and its great benefits studied.

From analogy, considering the results of excisions of the knee-joint, an operation having to do with the larger bones of the leg by some method of internal and external fixation, we should expect good results in operations for fracture of the same bones. Excision of the knee is undertaken without fear of infection and with a strong probability of union taking place between the two bones. I find that of 13 excisions of the knee for tuberculosis the results, after from one to six years, showed solid union of the bones, with the exception of one case in which there was, after four years, very slight motion.

The mortality following compound fractures of the

extremities has fallen from 68 per cent. a few years preceding the introduction of antiseptics, to two or three per cent. at the present time. Dennis has published a list of 1,000 consecutive cases of compound fractures treated in four metropolitan hospitals, with a mortality of one-seventh of one per cent. Practically, therefore, sepsis has been done away with in the treatment of compound fractures. In operations, therefore, upon closed fractures the element of sepsis may be left out of account in reckoning the risk of interference. I have found in six recently reported cases in which closed fractures have been treated by open incision no sepsis.

From analogy, osteotomy being a simple, safe and satisfactory surgical procedure, the operative treatment of closed fractures should be a safe procedure so far as the likelihood of infection is concerned. The only element not common to the two conditions is that of laceration of the soft parts in the case of fracture. The experience of those operating aseptically upon closed fractures demonstrates that this difference in the two conditions need not be regarded.

Very few are familiar with the conditions existing at the seat of fracture immediately after its occurrence. The denuded bone, comminuted fragments possibly, the great mass of blood clot from the torn vessels, the injury to the soft parts, often very extensive, far from the seat of the fracture of the bone, all these conditions if seen in a superficial wound or presented to the surgeon in an open fracture, would immediately receive attention. The fact that these conditions exist in every fracture to a greater or less degree should lead to their treatment in a rational way, by open incision.

The wound of the hard parts should be treated upon the same principles as the wound of the soft parts. There is as great safety to-day in an open as in a closed wound. There is greater safety in an open than in a closed fracture. Closed fractures of the vault of the skull are very generally operated on by surgeons to-day in the presence of cerebral symptoms, no matter how trivial.

Weir,³ in a case of closed fracture of the malar bone, incised the mucons membrane above the canine tooth, opened the antrum, inserted a steel sound and lifted the depressed bone into place, packed the antrum with iodoform gauze, and the patient recovered without deformity.

Spencer⁴ reports that Hearn has incised and sutured two fractures of the clavicle. In one case the subclavius muscle was caught between the fragments of the fracture, in the other case a triangular piece of bone was broken off and lay displaced between the fragments. The result in each instance was a perfectly shaped clavicle and a scarcely perceptible scar. At the Congress of French surgeons, Heydenreich did not favor operation upon the clavicle, unless a nerve or vessel were in danger. He objects to any scar and to the resulting swelling, which certainly did not appear in Hearn's cases.

McBurney,⁵ Porter and others, have used the open method in fracture of the surgical neck of the humerus, with and without dislocation of the upper fragment.

Barker⁶ has treated recent closed fractures of the

³ New York Medical Record, March 6, 1894.

⁴ G. W. Spencer: American Journal Medical Sciences, April, 1898; La Semaine Méd., October 26, 1895.

⁵ Annals of Surgery, May, 1896.

⁶ Barker, O. E.: Lancet, August 20, 1898.

olecranon process of the ulna by incision and suture, with good results in all the cases.

Watson Cheyne⁷ reports a partial fracture of the head of the radius in a girl twenty-six years of age. He removed the portion of the radial head fractured, with a perfect functional result. The portion of the head remaining intact prevented possible lateral motion at the elbow.

Wainwright⁸ reports a fracture of the coronoid process of the ulna, together with a fracture of the radial head. He removed the head of the radius and a part of the coronoid of the ulna. This operation was followed by good functional results.

Watson Cheyne reports a fracture of great interest in a boy of thirteen, namely, a fracture of the olecranon and coronoid processes of the ulna, together with a fracture of the external condyle of the humerus. He wired the olecranon and removed the fragments of the coronoid and external condyle. Later it was necessary to remove the silver wire from the olecranon, because it pricked the skin and was an annoyance when the child moved his arm. The boy recovered with a useful arm.

Bruns and Poland, as early as 1884, recommended operation in recent epiphyseal separations, in cases in which the fragments are so locked together that they cannot be restored to their proper position, and when a fracture of the epiphysis extending into the neighboring joint is likely to interfere permanently with its normal function, and when a dislocation accompanies the separation which is impossible of reduction, and when the dislocation presses upon important structures, as often happens in separation of the lower femoral epiphysis.

Fractures of the femoral neck have been pegged by Cheyne and Senn⁹ with successful results. Cheyne's case was instructive in that a woman with infantile paralysis in one leg fractured the other femoral neck. Cheyne pegged the fracture with an ivory peg and she made a splendid recovery.

Allis¹⁰ has many times operated upon fracture of the femur, when in the upper one-third of the shaft, with good result. It should be generally recognized that many of these fractures cannot be set by traction or position, and that the only method that warrants a satisfactory result is that of the open treatment. Allis uses steel screws. The weakness of the fracture of the femoral shaft is probably due in large measure to the angular deformity and rotation of the upper fragment which result after the ordinary treatment.

Lane¹¹ advocates the open treatment in recent fractures of the leg in order that oblique fractures of the tibia and fibula near to the ankle may be held satisfactorily. Lane is especially interested in the relative position of the two fragments in a leg fracture. He maintains that the old-time and generally accepted method of placing the foot at a right angle, with the inner side of the great toe in a line from the anterior spine and mid-point of patella, results in permanent deformity of the leg.

Fractures of the patella have for some time been subjected to two distinct forms of treatment, either the expectant treatment or the open treatment by some form of suture. Good functional results are obtained

by the expectant treatment, at the expense of time to the patient. Ultimate recovery is longer by this method. By the operative method a quicker result is obtained, and it is in many particulars better than that obtained by the expectant treatment.

The open treatment of the fracture should be undertaken only after careful consideration of the health of the patient, and under the most rigid antiseptic and aseptic conditions possible. The open treatment of the fracture should be carried out only by a skilled and competent surgeon. It should not be done in the aged. It is an operation for young adults, particularly for the laboring man. Early massage and passive and active motion after four weeks are desirable in the treatment of the fracture after operation.

The open method.—The operation should be performed only by skilled surgeons, as soon after the injury as is possible. It is thought by some that if it cannot be performed immediately following the injury that it should be done after about one week. Scrupulous antiseptic preparation of the skin throughout the whole circumference of the limb and for a long distance either side of the seat of the fracture is absolutely essential. This preparation should be that which the surgeon finds efficient preceding other operations. The skin incision should fall, when possible, away from the line of fracture, so that the wound of the soft parts shall not cross the wound of the bone. All bits of detached bone, fragments of muscle and all blood clots should be removed; all hemorrhage checked. When possible, the bones should be reduced without cutting the broken ends. For it is wise to lock the bones together in their natural and original position.

Fixation of the fragments.—Attempts have been made to fix the fragments of a fractured bone in different ways in the treatment of open fractures and in ununited fractures: Forms of suture and wrapping of fragments by silver wire, silk, silkworm gut and chromicized catgut; forms of pegs and screws of ivory and steel; forms of ferrules of bone; dovetailing fragments together; the Parkhill clamp, which inserted into the two fragments is allowed to project beyond the skin covering the broken bone.

It is impossible to determine which method of those in use to-day will prove effective until the fracture is exposed to view. That method in any given case is the best which preserves the alignment of the shafts of the bones.

The general condition of the patient must be carefully studied before deciding upon operation. In extreme age operation may be contraindicated because of insufficient kidneys. Some disease may be present contraindicating operative interference. Operations should not be done indiscriminately without regard to constitutional conditions.

Difficulties which hitherto have been concealed by an intact skin.—The difficulties of reducing fractures will become more and more apparent as the open treatment is more commonly used. It will be found that no one factor is the cause of the difficulty, but more often it is due to a shortening of all the soft parts of the limb about the fracture occasioned by hemorrhage into the tissues; by retraction of tissues, which have been normally stretched, and after the fracture have no resistance offered to their retraction. This difficulty in reduction I have found to be more common than is generally supposed. A recognition

⁷ British Medical Journal, March 7, 1891, p. 516.

⁸ Transactions Clinical Society of London, vol. xx.

⁹ Journal of the American Medical Association, 1899.

¹⁰ Allis: Philadelphia Medical News, November 21, 1891, p. 590.

¹¹ Transactions of Clinical Society, London, 1894, p. 167.

of it as a cause will lead undoubtedly to the supplementing of splints by internal fixation in the treatment of many fractures.

That method of internal fixation will be the best for the individual case which immobilizes it best. It is unfair to state that one method will be best in every instance. Let each operator use that method which in his experience he finds most efficient. But let each operator hold a high ideal of what he means by an efficient method. For instance, silver wire used as it is ordinarily employed, one strand through each bone, in fracture of the forearm, is inefficient; it cannot be made to hold the fragments perfectly reduced. There is need for greater immobilization than that method can afford. The clamp of Parkhill offers in this instance more satisfactory means. It is wise, whatever form of fixation is used, that it should not be placed finally in position until the part has been immobilized upon a splint of some sort. Otherwise the wire suture, or pin, becomes loosened and ineffective.

In conclusion, the ideal result to be aimed at after a fracture is union of the fracture without deformity and without impairment of the function of the limb, either immediately or remotely. The generally accepted methods of treating fractures do not give satisfactory results in many cases. There is need for a radical departure in the treatment of closed fractures. Anesthesia and the x-ray afford the means of accurate diagnosis. Sepsis is practically abolished. From analogy in excisions and osteotomy, closed fractures of bone may safely be treated by open incision. The cases reported in literature, expressing the opinions of many surgeons, demonstrate that the open method of treatment is satisfactory and a great advance upon generally accepted methods.

Under these circumstances, it is fair to state that closed fractures should be treated by open incision and internal fixation, when other methods fail to secure reduction and immobilization. The open method will then be used more and more in oblique fractures of the diaphyses of long bones; in complicated fractures about joints; in all fractures associated with injury to nerve trunks, with injury to great blood-vessels, and associated with threatening gangrene.

(To be continued.)

INTERMITTENT GASTRIC HYPERSECRETION, WITH A REPORT OF A CASE.

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CHRONIC hypersecretion is to-day a well-recognized, and not infrequent, form of gastric disorder. Intermittent hypersecretion is, however, of much less frequent occurrence, and there are but comparatively few cases to be found in the literature. Reichmann,¹ in 1882, first called especial attention to a gastric disorder characterized by intermittent attacks of hypersecretion. Rosenthal² has reported cases of intermittent gastric hypersecretion, and has advanced the theory that it is due to an excitation of the vasomotor centres which results in an anemia of the brain, with a stimulation of the vomiting and gastric secretory centres in the medulla. Boas³ has reported cases of intermittent gastric hypersecretion, and has discussed the condition in some detail. He believes it to be due either to a

secretion neurosis or a reflex neurosis resulting from disease of the central nervous system. Boas³ does not, however, believe that a so-called central form of gastric hypersecretion is to be differentiated. In this view he is supported by Bouveret,⁶ to whom we are indebted for careful studies upon this subject.

Lenbe,⁶ Ewald⁷ and Riegel⁸ have reported cases of intermittent hypersecretion, and they believe the condition to be a functional disturbance of the nerves of the stomach, which may occur alone or as part of other neuroses. Rosbach⁹ has described a form of intermittent gastric hypersecretion, in association with which there occurs just before or at the beginning of the attack most severe headache. To this he has given the name of gastroxynsis. This is undoubtedly but another form of intermittent gastric hypersecretion, and one which seems to occur more frequently among the better classes.

There was recently admitted to the Albany Hospital, in the service of Dr. Vander Veer, a case which manifested practically all of the characteristic signs and symptoms of intermittent gastric hypersecretion. Since it was possible to study this case carefully, both during an attack as well as during the interval between attacks, it is considered advisable to report the history and notes in some detail.

W. C., male, age thirty-three, married. Complaints of stomach trouble.

Family history.—Negative. No history of any nervous disorder in any members of the family, nor of any disease similar to patient's present illness.

Past history.—Measles when a child; no other exanthemata. Typhoid fever in Calcutta at twenty-three years of age; was sick two or three months in a military hospital; recovered completely. About six months after he recovered from typhoid fever patient had an attack of dysentery, with numerous bloody stools. This lasted for about six weeks, since which time the patient has not had any gastro-intestinal trouble of any importance till the present illness. Patient says he has always been strong and healthy up to the present illness, and has always done hard work. Denies syphilis, and from his history no indications of a syphilitic infection can be obtained. Gonorrhoea and cystitis at twenty-three years of age; recovered completely, and has had no subsequent trouble with the genito-urinary organs. His appetite has always been good and his bowels regular until present illness.

Present illness.—Began about two years ago, when patient was convalescent from a broken leg: prior to that time he had never had any stomach trouble. He had always been a hearty eater, but food had never caused any distress. The stomach trouble began with a severe, constant, moderately sharp pain in the region of the stomach. The pain remained fairly well localized in this region. An hour or two after the onset of the pain, the patient says he vomited a considerable quantity of a greenish fluid which did not appear to contain food.

The first attack lasted about four weeks, during which time the patient says he had more or less pain in the stomach, except when relieved by morphine. The pain would usually pass off or become much less severe by evening, but would reappear with great severity in the morning, usually about six o'clock, and would continue very severe until the patient vomited, which would usually occur from one to two hours

after the severe pain began. The patient says that these paroxysms of pain were always followed by vomiting. He says that during the forenoon he would vomit from a pint to two or three quarts of a greenish fluid which never contained any food, unless he should vomit shortly after eating. The vomitus was never blood-tinged, nor did it contain anything that suggested blood. The patient says the pain would always be most severe until he vomited, and that vomiting always afforded a great deal of relief. When vomiting did not occur spontaneously, he was in the habit of inducing it by putting the finger down the throat.

The patient insists that the quantity vomited was out of all proportion to the fluid he had taken, and that usually he would take no food or fluid during the night, and yet he would, in association with the paroxysm of pain, vomit a large quantity in the morning.

The first attack lasted about four weeks, when the pain gradually disappeared, the vomiting ceased and the patient began to feel better. During the attack the patient says that he took but very little nourishment, and he is of the opinion that the taking of food had a tendency to increase the pain somewhat. He says that during the period of this attack there was marked tenderness on pressure over the region of the stomach. During the first attack he lost about twenty pounds in weight. Following this attack the patient says he was free from stomach trouble for about six weeks, during which time he had a good appetite; retained all kinds of food, gained in weight, and went back to work. At the end of this interval of six weeks, patient had another attack resembling in all particulars the first one and lasting about three weeks, and followed by an interval of two weeks in which he was free from stomach symptoms. Since then up to the present time these attacks have recurred at intervals of two or three weeks, and the attacks have usually lasted two or three weeks. In each attack the patient has manifested the same symptoms: severe pain in the stomach coming on in the early morning and followed in a short time by profuse vomiting, usually of a greenish fluid and never any blood, and never any food, except when vomiting occurred shortly after eating.

During the attacks the patient says he loses in weight, but usually regains most of it in the interval between attacks. During these intervals between attacks he says that his appetite is good and he can take any kind of food and never has any gastric disturbance. He does not know of anything that will cause an attack, but thinks it comes on spontaneously. They never follow indiscretions in food or drink, overexertion or mental anxiety. He says he is not of a nervous temperament and is not in the habit of worrying. Patient smokes moderately, but does not chew tobacco. He takes an occasional glass of beer. His bowels are usually constipated during the attacks. Has never had any chills or fever in association with the attacks.

Physical examination.—Well-developed, well-nourished man; skin and mucous membranes of good color; tongue clean, no tophi; pupils of moderate size, equal, react to light and accommodation. Pulse 84 to the minute, regular, and of good quality. Wall of the artery is palpable. Thorax: Well-formed and symmetrical. Expansion good and equal on both sides. Vocal fremitus equal on both sides. Percussion note

clear and resonant throughout front and back. On auscultation breath sounds clear and of normal relative intensity. Heart: Point of maximum cardiac impulse in fifth left intercostal space inside mammillary line. Area of dulness not increased. Heart sounds clear and of normal relative intensity at apex and base. Abdomen: Symmetrical, natural looking; costal and iliac grooves equal. No peristaltic waves visible; no visible mass. On palpation, abdomen is everywhere soft, no tenderness on deep pressure; no mass to be felt. Pylorus cannot be palpated. Abdomen is everywhere tympanitic. Liver: Area of dulness is of normal extent; edge not palpable. Spleen not felt. Area of dulness not increased. Kidneys not felt. No glandular enlargement. Reflexes are present, both superficial and deep, and are normal. No clonus; no evidence of skin anesthesia. On inflation of stomach the greater curvature extends to a point about five centimetres above the umbilicus. The stomach does not appear to be enlarged. There are no visible waves of peristalsis and there is no mass to be felt. There is evidently no dilatation of the stomach, and no tenderness on palpation of the stomach.

October 30th. Since admission to the hospital, October 24th, patient has enjoyed excellent health. Has taken food well and has not complained of the least gastric discomfort. His general condition is excellent. At 8 A. M. to-day the patient having had no food or drink since 6 P. M. yesterday, he was given a test breakfast composed of two small slices of stale bread and eight ounces of water. This test breakfast was removed at the end of one hour. Thirty cubic centimetres of an opaque fluid obtained, containing very small particles of partially digested bread. Sour odor; acid to litmus. Free hydrochloric acid by both the Congo-red test and the dimethyl-amido-azobenzol test. No lactic acid by Uffelmann's test. Total free hydrochloric acid, 9; total acidity, 32; rennin present; pepsin present. Microscopical examination negative.

November 1st. Stomach tube passed at 8 A. M. to-day, patient having had nothing to eat since 6 P. M. yesterday. Nothing obtained from the stomach by the tube.

November 2nd. At 12 noon to-day, the patient was given a test dinner composed of soup, beefsteak, potato, bread and water; a liberal allowance of each. At 5 P. M., the stomach tube was passed and 10 cubic centimetres of fluid with a few particles of partially digested food obtained. This test demonstrated that the motor activity of the stomach is normal and that there is no retention of food.

November 9th. Patient has felt very well since last note. Has been around all the time and has taken food well. On one or two occasions since last note the stomach tube has been introduced into the fasting stomach in the morning; nothing has, however, been obtained.

November 10th, 6 P. M. This morning patient began to complain of rather severe pain in the region of the stomach. Had felt perfectly well till 10 o'clock. No nausea or vomiting. At 2.30 P. M. stomach tube was passed and only a few cubic centimetres of mucus were obtained. The pain ceased late in the afternoon and patient was able to take nourishment.

November 11th, 6 P. M. Patient had a very com-

fortable night and day. Up and around all day and took food well. No pain, no nausea and no vomiting.

November 12th, 6 p. m. Patient had a very good night. At about 6 a. m. to-day he began to complain of severe pain in the region of the stomach. The pain grew worse, and at 9.30 a. m. he required morphine. Vomiting began about an hour after the onset of the pain, and between 7 a. m. and 12 noon patient vomited 600 cubic centimetres of greenish fluid. Vomiting seemed to afford some relief. At 12.30 p. m. stomach tube was passed and 225 cubic centimetres of greenish fluid removed from the stomach, affording patient considerable relief. The pain has continued more or less severe until this evening, but there has been no vomiting since the passing of the stomach tube. In the eighteen hours from 6 o'clock last evening till noon to-day, patient took only three ounces of fluid and no nourishment. The vomitus and the stomach contents removed with the stomach tube were examined separately and found to practically agree, except that the total acidity was a little less in the vomitus than in the contents removed with the stomach tube.

Examination of stomach contents.—Slightly greenish fluid; mucous flocculi; no particles of food; sour odor; faintly acid to litmus; no free hydrochloric acid; no lactic acid; total acidity, 13; rennin present; pepsin present. Microscopical examination negative.

November 13th, 6 p. m. Patient had a good night and has been up and around to-day, and has taken food well. No pain, no nausea and no vomiting. At 9 a. m. to-day the stomach tube was passed and only a few cubic centimetres of mucus obtained.

November 14th, 6 p. m. Patient has been very comfortable during the past twenty-four hours. Has taken food well.

November 15th, 6 p. m. Patient had a good night and felt well till about 7 o'clock this morning, when he began to have very severe pain in the region of the stomach. The pain continued until about 2 p. m., since which time he has been comfortable. Vomiting began about one hour after the onset of the pain this morning and during the forenoon patient vomited 420 cubic centimetres of greenish fluid. At 1 p. m. stomach tube passed and 115 cubic centimetres of similar fluid obtained. During the attack there was considerable tenderness on palpation over the region of the stomach, but the stomach outlines did not appear to be increased. The patient looks pale and pinched and is evidently losing in weight rapidly. The vomitus and the stomach contents obtained with the tube were examined separately. Both examinations agreed, except that the total acidity was a little less in the vomitus.

Examination of stomach contents.—Greenish fluid; no particles of food; slightly sour odor; neutral to litmus; no free hydrochloric acid; no lactic acid; total acidity, 11; rennin present; pepsin present. Microscopical examinations negative.

November 16th, 6 p. m. Patient had a good night and has been perfectly comfortable all day. Has taken food fairly well.

November 17th, 6 p. m. Patient had a good night. About 6 a. m. to-day severe pain in the region of the stomach began and continued until about 2 p. m., during which time he required morphine. Vomiting began at 8.30 a. m. and within a few minutes he

vomited 650 cubic centimetres of a greenish fluid. Stomach tube passed at 9 a. m. and 70 cubic centimetres of greenish fluid obtained. There has been no vomiting since 9 o'clock, at which time patient's stomach was washed out with silver-nitrate solution, 1 to 1,000, which seemed to afford some relief. From 8 p. m. yesterday until noon to-day patient did not take any food. He looks very pale and distressed, and severe suffering is indicated by the facial expression. Since 2 p. m. patient has been perfectly comfortable. For several days past the patient has been on tonic treatment. The vomitus and the stomach contents obtained with the tube were examined separately. Both examinations practically agreed.

Examination of stomach contents.—Greenish fluid; no particles of food; sour odor; neutral to litmus; no free hydrochloric acid; no lactic acid; total acidity, 12; rennin present, pepsin present. Microscopical examination negative.

November 18th, 6 p. m. Patient has been very comfortable since last note.

November 19th, 6 p. m. Patient had a good night. At 7 o'clock this morning severe pain began in the region of the stomach; this continued till noon.

At 8 a. m. patient began to vomit, and during the forenoon he vomited 910 cubic centimetres of greenish fluid. Vomiting seemed to afford much relief. Lavage of the stomach at noon with 1-to-1,000 silver-nitrate solution. Patient has had a comfortable afternoon.

November 23d. Patient has been very comfortable since the last note. Has taken food well and shows marked improvement. He has, however, evidently lost considerably in weight during the past ten days. His general condition is satisfactory and he has absolutely no gastric symptoms. At his request he was discharged to-day, and advised to take tonic treatment constantly, with lavage of the stomach during the attacks.

January 10, 1900. In a letter of this date, the patient says that he has felt perfectly well since leaving the hospital. He has had absolutely no gastric symptoms, and has gained in weight and has been able to attend to his work. His appetite has been very good and all kinds of food have been well retained.

The nature of the etiological factors concerned in intermittent gastric hypersecretion is not at all well understood. Its occurrence at times in young, nervous, excitable individuals would seem to indicate that some functional disorder of the nervous system is responsible for the condition. Whether this disordered state is confined to the peripheral or central nervous system or involves both cannot be definitely determined. Its association in many instances with neurasthenia and other functional neuroses of a general character would seem to indicate that in certain cases, at any rate, intermittent gastric hypersecretion is but a part of a general neurosis. In some instances, over-indulgence in food, tobacco, or liquor may precipitate an attack, while in other instances psychical excitement may be the immediate cause. In each instance there would appear to be some fundamental disorder of the nervous system, which renders it more susceptible to these influences.

In brief, then, intermittent gastric hypersecretion would appear to be a functional neurosis of obscure origin.

The condition is characterized by intermittent attacks of pain in the region of the stomach associated with nausea and vomiting, and occurring at a time when ingesta are usually no longer present in the stomach. The attacks usually begin suddenly and unexpectedly, most frequently in the early morning, and the first symptom is a more or less severe pain in the region of the stomach. Shortly after the onset of the pain, vomiting usually begins and both the pain and vomiting may continue several hours.

The quantity of fluid vomited within a few hours may vary from a few hundred cubic centimetres to as much as two or three litres. The vomitus, which possesses the characteristics of gastric juice, is of a greenish or yellowish color, and is, as a rule, quite acid, free hydrochloric acid usually being present. The total acidity may vary from 10 to 50, and occasionally, as in the case reported, free hydrochloric acid may be absent. In other instances intermittent gastric hypersecretion appears to be associated with marked hyperacidity.

Food is usually not present in the vomitus, unless the attack should begin shortly after a meal. In rare instances the vomitus may be slightly blood-tinged, and in such cases the possibility of the existence of a gastric ulcer would have to be considered.

The intensity of the pain varies; in some cases it is not especially distressing, while in other cases it is most severe and often requires large doses of morphine, and these are the individuals especially apt to develop a morphine habit. Vomiting usually affords considerable relief from the pain and in many instances when vomiting does not occur spontaneously, the patient will induce it. There is complete loss of appetite and inability to retain food during the attack, and the patient may emaciate rapidly. The duration of the attack varies from a few hours to several days. In some cases the patient will have a paroxysm every day or perhaps every second or third day, for a period of two or three weeks, and this will be followed by an interval lasting perhaps several weeks, during which time there will be absolutely no gastric symptoms. The cessation of an attack may be sudden or it may be more gradual, the symptoms slowly abating and a normal state of health being gradually established. The appetite usually returns immediately after the cessation of the attack. During the interval between attacks the patient usually feels quite well and there may be absolutely no indication of a gastric disorder, food of all kinds being well retained. If, during the interval between attacks, the stomach tube be passed when the stomach is in a fasting condition, it will be found to be empty, thus proving that there is no chronic hypersecretion. Examination of the gastric contents after a test meal given during the interval between attacks usually demonstrates that both the secretory and motor activity of the stomach are normal. Physical examination during an attack usually reveals but little, aside from some tenderness in the region of the stomach.

The diagnosis as a rule offers no difficulty, for the symptom complex is characteristic.

The occurrence occasionally of attacks of intermittent gastric hypersecretion in association with gastric crises in tabes may be a source of confusion. In such cases careful examination will usually reveal other signs of tabes and preclude the possibility of an error in diagnosis.

Treatment.—The treatment of intermittent gastric hypersecretion is not especially satisfactory. There are two essential points to be borne in mind: (1) treatment during the attack, and (2) treatment between attacks. The treatment during the attack is the relief of the accumulated secretion by means of the stomach tube and lavage of the stomach with weak alkaline solutions or 1-to-1,000 silver-nitrate solution. When the pain is very severe, morphine hypodermatically or cocaine internally is indicated. Food should be allowed only between the paroxysms and that in small quantities, and preferably in a fluid form. Subcutaneous infusion or rectal enemata of normal salt solution are the best means of allaying the thirst, which is at times most intense. Since the disease appears to be a functional neurosis, the predisposing factors are constantly present, and hence constant tonic treatment of the nervous system is indicated during the intervals between attacks. The cold water treatment will often be followed by most satisfactory results. Strychnia, nux vomica, quinine, phosphide of zinc, arsenic and other well-recognized tonics are indicated, and the necessity of their almost constant use should be emphasized. Since the attacks are often precipitated by certain immediate factors, great care should be exercised in protecting the patient from all such factors, as over-indulgence of all kinds, and all psychological excitation. In addition a carefully arranged diet should be prescribed and insisted upon. Only in this way can one hope to render the attacks less frequent and less severe, and in some instances perhaps cause their entire disappearance.

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A NEW NEEDLE-HOLDER.¹

BY GEORGE H. MONKS, M.D., BOSTON.

SOME two years ago I devised a needle-holder the clutch of which, so far as I know, is quite new. I have used this holder ever since, making a few changes from time to time. I have found it to be entirely satisfactory in actual work.

This holder has, I think, the following advantages over the instruments now in common use:

(1) When the jaws close upon the needle, the latter at once assumes its proper position *automatically*.

(2) The needle retains its exact position at right angles to the holder so long as the jaws grasp it; in fact, the needle and holder become for the time one instrument, as it were.

(3) Only slight pressure at the handles is required to hold the needle. This fact makes it possible to manipulate the instrument with a degree of delicacy and accuracy hardly possible with any instrument requiring a firmer grasp.

¹ This instrument was shown at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

(4) The needle is released at once by relaxing the grasp and allowing the jaws to open.

The instrument is made by Codman & Shurtleff, of this city, and the Knv-Scheerer Company, of New York. A reference to the cuts, especially to Fig. 2, will make clear, I think, its construction and action.

screwed firmly. When it is necessary to refill this bottle, the upper part of the attachment only is unscrewed, and, after the bottle is filled, this is screwed on again.

To administer ether one has only to tip up the bottle and press the valve handle, thus opening the valve,

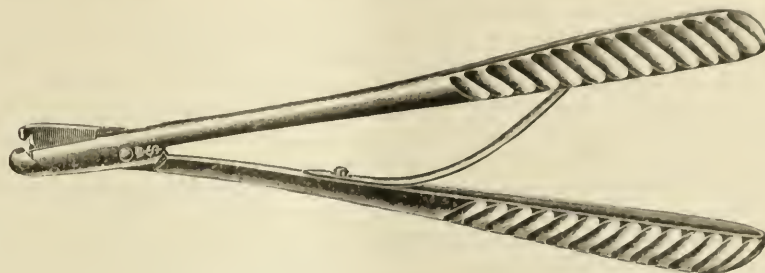


FIG. 1.

Fig. 1 shows the instrument just as it lies, with open jaws on the instrument table; and Fig. 2 presents these jaws on a larger scale.

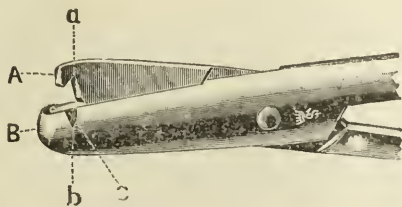
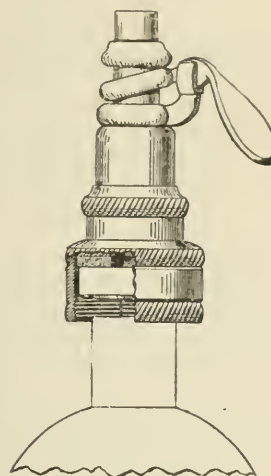


FIG. 2.

The lower jaw (see Fig. 2, B) consists of two pieces with an interval between, in which interval the upper jaw (A) plays, as the instrument is closed and opened. There is a V-shaped depression (a) in the upper jaw, and corresponding depressions (b) in the lower one. When the jaws close upon a needle, the V's of the lower jaw approach the V in the upper jaw until the needle is grasped between them. If Fig. 2 be examined closely it will be seen that the V's in the lower jaw seem to be filled up, as it were, by a tongue of metal (c) projecting from a part of the upper jaw. This projecting portion acts as an ejector, throwing the needle out of the V's of the lower jaw whenever the instrument is allowed to open. Though different kinds of handles have been used on the needle-holder, I think that shown in Fig. 1 is the best.

and a continuous stream of ether is directed into the cone. When the pressure is relaxed, the valve closes automatically, and remains closed. The stopper is



manufactured for the hospital at the Grundy Brass Works, 50 Sudbury St., Boston.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL.
CLINICAL MEETING OF THE MEDICAL BOARD.

(Concluded from No. 11, p. 276.)

REGULAR meeting, December 15, 1899, DR. C. B. PORTER in the chair.

DR. C. B. PORTER showed the following cases:

I. SARCOMA OF TONSIL.

V. A., age forty-nine. Iron foundry laborer. Four months before entrance noticed a tight feeling at base of tongue. The left tonsil had been enlarging since that time. Has some pain on articulation, which has become more and more indistinct. Mastication is difficult and there is considerable dysphagia, the food seeming to catch behind the growth to drop later and cause choking. He has lost six pounds in two months.

A SELF-CLOSING STOPPER FOR AN ETHER BOTTLE.¹

BY L. R. G. CRANDON, M.D., BOSTON,
Senior Surgical Intern, Boston City Hospital.

FOR the purpose of saving ether and facilitating the work of the etherizer, I recently devised a self-closing stopper, which has been in practical use for the past six months on the surgical side of the hospital, and seems to have answered the above requirements. The stopper which is shown in the accompanying figure will exactly fit the common flat-topped sixteen-ounce bottle, to which it is to be

¹ Exhibited by Dr. G. H. Monks at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

Three days before entrance, after eating dry bread, he spat up some blood and had three attacks in two hours, during which he expelled numerous clots and swallowed considerable blood. No bleeding since then.

Examination showed pink, fleshy growth on left side, coming from behind tongue and blocking the fauces except for one-half inch below palate. Both sides of throat swollen, and both submaxillary glands enlarged and movable. Patient was pale and pasty, but not emaciated. Examination of piece of tumor showed lymphosarcoma. Tracheotomy with cocaine.

Operation.—Etherization through tracheotomy tube. Incision along lower edge of ramus of jaw on left side, and the digastric triangle exposed. Submaxillary gland turned downwards. The growth on the tonsil was then shelled out—one finger being in the mouth; very little bleeding. Submaxillary glands sewed into place, and the wound sewed up, leaving a nick.

Five days after operation facial paralysis developed. Tracheotomy tube removed one week after operation. Coley's treatment begun twelve days after operation, with one-half minim daily increase. Steady improvement. Discharged December 21st.

II. SLIPPING PATELLA.

D. O'L., age twenty-seven, single, porter. Seven years ago wrenched his knee while pole vaulting. There was severe pain at the time, and knee was swollen, stiff and sore for two weeks, although he could walk about. Since then he has hurt his knee several times, each accident being followed by a week or so of disability. He complained of a weak feeling in his knee and of a cracking or slipping of his patella.

Examination showed moderate genu valgus. Right patella very movable laterally. On flexing leg, patella was seen to slip outward onto outer side of femur, accompanied by audible crepitus, but no pain; no effusion, but right patella seemed higher than left when at rest.

Operation.—Three-inch incision on inside of joint, exposing the internal lateral patellar ligament. An elliptical piece of this ligament was removed, one-half inch wide. The joint was not opened and the wounds were united with kangaroo-tendon interrupted sutures. Twelve days after operation, up and about on crutches and a ham-splint. Discharged well, fourteen days after operation. December 15th, his patella is in good position, and motion normal.

III. CYSTS OF BOTH OVARIES; HYDATIDIFORM MOLE, REMOVED BY ABDOMINAL INCISION.

E. D., thirty-four, married. After last child, three years ago, menstruation did not appear for twenty months, when it was profuse and at abnormally short intervals. Condition relieved by repair of cervix. Menstruation normal since that time. Two months ago, at time of period, seized with pains that suggested labor pain, though she did not believe herself to be pregnant. Pain lasted four days and was accompanied by a "slightly brownish" discharge, which has persisted with some variation to present time. Was treated in Out-Patient Department for retroversion, with some relief. Six days ago "felt something snap inside," followed at once by a discharge of about one ounce of bright blood; no faintness. Two days ago a similar attack, but with considerable pain and "a large flow."

Examination negative, except for pelvis and lower abdomen. Color good, does not look anemic. Abdomen showed a rounded, boggy tumor, about size of grape fruit, slightly to the right of the median line and rising three fingers' breadth above the pubes. Vaginal examination showed the os soft, patulous and pushed forward with a mass corresponding to that felt in the abdomen and easily felt in the posterior cul-de-sac. Relation of the uterus to the tumor could not be accurately defined, and on account of the possibility of a normal pregnancy, the sound was not used.

Three days after admission, during which time the patient had more or less pain in the lower abdomen, she was seized with severe colicky pain in lower abdomen, accompanied by flowing to the amount of about a pint; no faintness. Diagnosis of probable extra-uterine pregnancy was made and operation advised.

Operation.—Both ovaries extensively cystic and were removed. Tumor found to be the uterus filled with a semisolid mass of such consistency that the uterus was much flattened from before backward by its own weight; not a normal pregnancy. Incision of uterus showed a typical hydatidiform mole. Uterus thoroughly emptied and curetted; cervix dilated from above, and a gauze drain passed from body of uterus down through cervix. Wound in uterus closed with animal-tendon sutures. Abdominal wall sewed up in layers without drainage.

Convalescence uneventful. Discharged well, thirty-one days after operation.

IV. DISLOCATION OF INTERNAL SEMILUNAR CARTILAGE; REMOVAL; GOOD RECOVERY.

J. P., laborer, married, age twenty-three. Six weeks ago fell into a ditch, striking the internal surface of left knee, wrenching and severely bruising it. The knee became swollen, painful, black and blue, stayed in bed one week, being treated with steam and massage, but without relief; walked with a rubber bandage for four weeks. During this time the knee caught very often, there being a sensation of something moving inside the joint. On entrance, the knee was not swollen, but painful, and caught more often than formerly. Examination showed the knee perfectly normal, except for slight tenderness just above internal tuberosity of tibia. X-ray negative.

Operation, on November 21st.—The knee-joint was opened by a curved incision, two and one-half inches long, along the inner and lower border of the patella. The internal semilunar cartilage was found tipped on edge, and external and anterior to its normal position. It was removed and the wound closed, the deep structures by animal tendon sutures, and the skin by a continuous catgut suture. There was increasing pain and tenderness of the joint for six days after operation, but without rise of temperature. On the sixth day the temperature was 100.8°. The dressing was removed and the knee-joint found distended, with a tender area above, and internal to the patella. A blood count showed 22,000 white corpuscles. Three sutures were removed, and several ounces of bloody serum evacuated, and a rubber-tissue wick introduced. The culture taken was pronounced sterile. For three days the temperature varied between normal and 101°, on the third day falling to normal and remaining so. The wick was removed on this day, and opening closed with *crêpe de lisse*. Recovery followed rapidly. Ham-splint removed twenty-four days after

operation. Good lateral movement of patella and flexion to 150° . Discharged well, four weeks after operation.

The convalescence in this case interested me exceedingly: (1) Because for six days after operation there was increasing pain and tenderness, with distention of the joint, and I feared that the operation had not been aseptic. On the sixth day, the temperature rising to 100.8° , and the leucocytosis being 22,000, I decided to open the joint. The fluid was bloody serum, and the culture showed it to be sterile, much to my relief, and the subsequent behavior of the joint proved this to be true; (2) it was shown, as far as one case can do so, that distention of the joint with sterile fluid can cause a rise in temperature and in the white blood count.

V. UNUNITED FRACTURE OF OLECRANON.

W. St. J., age twenty-three, single, freight-handler. Four months ago fell off step of his truck, striking right elbow. Was treated at outside hospital for sprain (Fig. 1). Examination of right arm shows a sharp prominence on a level with the condyles, with a



FIG. 1.

sulcus underneath it. In complete flexion the sulcus admits the whole of two fingers.

Operation.—Fragments wired; arm put up on straight anterior splint, reaching from finger-tips to axilla; large pad at elbow, so as to hold arm very slightly flexed.

November 20th. Straight splint removed; olecranon solid; pronation and supination almost complete; forearm flexed and placed in an adjustable internal splint of an angle of 120° .

November 21st. Discharged. Supination and pronation almost complete; flexion, 45° ; extension, 120° . Later he reported motion good in all directions.

VI. FLOATING CARTILAGES IN BOTH KNEE-JOINTS.

D. H. M., age thirty-eight, surveyor. Fifteen years ago left knee suddenly collapsed while walking. He had great pain, and the knee remained one-fourth flexed for three months, causing him to walk on his toes, and then suddenly slipped back into place. This happened more and more often for thirteen years, and finally it slipped out almost every day. Two years

ago two floating cartilages the size of walnuts were removed above the patella in Portland. After this pain persisted, but the knee was cured for one and one-half years, when it began to slip as before, although the patient could reduce the knee by pressing on the outside of the joint, and replacing some small cartilages. For the last three months the knee slips out very often, and he is prevented from working. He has never had any trouble with his right knee.

Examination showed small movable hard body, size of almond, on outer aspect of left knee, apparently under ligamentum patellae. Best felt when knee is flexed, which causes audible crepitus. A walnut-sized, hard, ill-defined mass, under external ham-strings, and a chestnut-sized, hard mass, not very movable, just above inner tuberosity, were also felt. On inner side of right knee a small, hard, round body was felt, and on outer side there was a sensation of small moving bodies on movement of joint. Flexion of left knee limited one-half; not limited in right.

Operation.—Four-inch incision on inside of left knee, through capsule. Twenty-five pea-sized, white, hard, irregular, slippery bodies removed. On outer side of joint, through incision not communicating with joint, three larger but similar bodies were removed from under the external ham-strings. Joint drenched with salt solution, and incisions sewed up.

Fifteen days after operation, the patient was up and about on crutches, and discharged much relieved seventeen days after operation. Nothing further has been heard from this patient.

VII. FRACTURE OF RIGHT PATELLA.

J. F., age twenty-seven. Brought to the accident room with history of having fallen on his right knee. Examination shows marked distention of joint, which I explained as due to hemorrhage into joint, as the accident was only an hour previous, and no synovial effusion of such an extent could take place in so short a time. A transverse fracture was made out, with separation of fragments of one-half an inch. The leg was placed on a splint with ice bag to knee.

Five days after, operation was performed. A curved incision was made over joint, with convexity reaching below lower fragment. The flap was dissected up, exposing joint, which was filled with blood clots. These were cleaned away, the joint washed with normal salt solution and the fragments wired together; the rents in the capsule closed with tendon sutures; external wound sutured with fine catgut; splint applied. Convalescence uninterrupted. Discharged in four weeks, and had then one-third normal flexion. Had walked some on crutches, bearing weight on foot.

In showing these cases of fracture of the patella, I wish to emphasize some points in the treatment, and to call attention to the great gain in time by the method of wiring over the old treatment by strapping and fixation. One case illustrates a point which I have felt was important: That the union by buried wire is stronger than that by suture of the capsule and periosteum with catgut or tendon; that the presence of the buried wire suture holds the fragments so firmly that the motion may be safely allowed some weeks earlier than where the approximation is made with weaker or absorbable materials.

The case which I now show, G. W. B., had a simple fracture of the patella on June 10, 1899, and the

fragments were sutured through the periosteum and capsule on June 14th, by Dr. Elliot. Passive motion was begun on July 18th. On July 19th, up on crutches. On October 29th he reported at the hospital; had used his leg for over a month; flexion was then three-fourths of the normal amount, without pain.

On November 5th he slipped while going downstairs, and his injured leg was violently flexed under him. Examination showed a refracture at the old place. On November 11th another operation was done and the fragments wired together. On December 3d he was up and about on crutches, three weeks after operation. On December 15th, five weeks after operation, he walked a mile or more to the hospital with only a cane, with flexion to an inch more than a right angle. To the older surgeons, accustomed to a protracted convalescence after this injury, so good a result in so short a time seems remarkable.

VIII. COMMUNUTED FRACTURE OF HUMERUS.

C. W., seventeen, single, brought to accident room at 6 P. M., with history of having arm crushed while at work at a steam wringer. Examination shows the right arm swollen almost to twice its normal size from shoulder to elbow. Along the outside just below the shoulder is a small wound bleeding slightly. X-ray showed comminution of humerus into four fragments. On operating, the shattered end of the upper fragment was found displaced outwards. Below this was a short loose fragment which was displaced inwards and rotated on its long axis. A four-inch incision was made, beginning just above the insertion of the deltoid, and continued through the muscle to the bone. The middle fragment, which was rotated on its long axis, was loosened after considerable manipulation, so that it could be swung round on its axis again and made to fit into the upper fragment, which was pushed into position. The ends of these two fragments were brought together with silver wire and were adjusted into fair position. The muscle was sewn over it with interrupted kangaroo tendon. The arm was put up on an internal angular with coaptation splints and bandaged up with a large absorbent dressing. On reaching the ward the hand was placed on pillows and the whole extremity swathed to the body.

On November 2d, arm strapped to side with a plaster swathe; rests on body, hand being held with a pillow. On November 5th, patient up in steamer chair; hand supported with a sling and four-pound weight attached to elbow. On November 9th, arm put up with coaptation, internal angular splints, plaster swathe and shoulder cap. On November 20th, coaptation splints reapplied; plaster shoulder cap, plaster swathe and sling at wrist. On November 29th, bones in good position; anterior posterior line good; union firmer. On December 8th, discharged, wearing the splints.

Some weeks later the splints were removed and the union firm throughout whole of humerus. This was the worst comminuted fracture I have ever seen, and the result is good beyond all expectation. There was no shortening.

IX. FRACTURE OF SURGICAL NECK OF HUMERUS, WITH DISPLACEMENT OF HEAD OF HUMERUS.

A girl, thirteen years of age, fell while swinging, striking on the left shoulder. The shoulder was dressed, but at the end of two weeks, after the swell-

ing had subsided, the attending surgeon was not satisfied that the condition was as good as it should be (Fig. 2).

The case was brought to me. An x-ray picture showed the condition to be a comminuted fracture at



FIG. 2.

the surgical neck, with displacement by rotation of the head of the humerus. I advised open section, with wiring of the fragments. This was done, the incision being made through the anterior fibres of the deltoid. The small fragment seen in the photograph was removed (Fig. 3). The head and shaft of the bone were wired and the wire twist hammered into the bone. The convalescence was uneventful, and some weeks



FIG. 3.

afterward the motions of the joint were good. The photograph taken after the operation shows the perfect position of the fragments.

X-RAY PLATES OF TRAUMATIC SEPARATION OF EPIPHYSIS.

DR. CHARLES L. SCODDER showed the tracings of x-ray plates taken from three cases of traumatic separation of the epiphysis. The first case was that of a

boy eleven years old who had a separation of the lower femoral epiphysis. Reduction by manipulation having proved unsatisfactory, an open fracture was made and the epiphysis reduced. The result was good as to function, with slight lameness six months after the operation. The second case was that of a boy of six years with a separation of the upper epiphysis of the humerus. He recovered with a useful arm. The x-ray showed some bony deformity. The third case was that of a girl, seven years old, who had a separation of the lower epiphysis of the humerus. She recovered with a useful arm after manipulation, reduction and immobilization upon an internal right-angle splint.

Especial emphasis was laid upon the importance of an accurate diagnosis in all injuries to the epiphysis. The development of the epiphyses of the humerus and femur was illustrated by two series of bones from the Warren Museum, loaned for the purpose by Prof. Thomas Dwight. Many obscure injuries to the neighborhood of joints are injuries to the epiphysis. Many so-called fractures in the neighborhood of joints are complicated by involvement of the epiphysis.

The development of the x-ray makes diagnosis more exact. The development of the aseptic method of treating operative wounds makes operative interference in these closed injuries safe and, because safe, justifiable. The open treatment of closed fractures and epiphyseal separation is coming to be more and more the surgeon's duty if he is to accomplish the most for his patient.

STRANGULATED DIAPHRAGMATIC HERNIA.

DR. S. J. MIXTER showed this case: G. H. M., twenty-nine, single, plumber. Always well. Four days ago, following several minutes' violent exercise pumping at a pumping machine, he had severe pain near the navel and fell over in a state of collapse. Pain continued all the next day and he was given a laxative that night. The following day he was given an enema, which was followed by a small movement of the bowels. Has passed no gas since. Temperature has been normal till yesterday and pulse about 90; to-day, temperature 101° and pulse 145. Has had vomiting off and on for past two or three days.

Physical examination.—Well-developed and well-nourished, muscular man. Some abdominal distention, but no extreme tenderness, as is indicated by the fact that when he was about to leave his home for the hospital he jumped up and started to snap on his trousers in the usual way. Seen by Dr. Mixter in accident room. Operation was decided upon; ether.

Operation.—Abdominal incision five inches long in median line. Small intestine found to be greatly distended. Bowels allowed to come out through the wound and kept warm with hot towels. Nothing found in pelvis or appendix regions. Small intestine punctured to allow escape of feces and gas. Intestine sewed with intestinal sutures and returned in abdominal cavity. Incision now enlarged upward to a coil of intestine found passing upward through middle of left lobe of diaphragm. It was impossible to pull the coil back into the abdominal cavity, so the opening in the diaphragm was enlarged anteriorly and outwardly about an inch. Dr. Mixter then passed his hand up through the opening and succeeded in pulling down this coil of intestine and also a large part of the great omentum.

The omentum and intestine were both gangrenous and the latter was perforated. Every respiration now sucked in air through the abdomen, just as the air is sucked in and out in a case of empyema. The patient was by this time in such a critical condition that the operation was brought to a close as soon as possible. The contaminated peritoneal surfaces were hastily cleaned. One towel was placed deep down against the opening in diaphragm and the upper end of long incision wicked, while the lower three-fourths of the wound was sewed up tight with interrupted silkworm-gut sutures; dry dressing and swathe. The patient did not recover from the shock and died in fourteen hours.

DR. J. G. MUMFORD reported the following cases:

I. A CASE OF ACUTE GENERAL PERITONITIS; OPERATION; RECOVERY.

I make this report because it is still necessary, in the present state of our knowledge, and in elucidating this extremely grave condition, that all cases should be reported and causative factors investigated thoroughly. The history of the case is, in brief, that of a young man twenty-five years old, whom I show here. On the third day of his illness, which began with sudden, acute, right-inguinal abdominal pain, and with vomiting, he was brought to the hospital. There was general abdominal distention, pain, tenderness, spasm of the right rectus, and tenderness high in the rectum. Pulse 120, temperature 102° F. The condition obviously was one of appendicitis, with a rapidly spreading or general peritonitis.

An incision was made through the right rectus muscle; a few delicate adhesions were found and an appendix, gangrenous, perforated, free; the peritoneal cavity filled with a thin pus, the intestines distended and injected. The appendix was tied off. A second incision was made, this time through the left rectus, just above the pubes. The pelvis and whole abdominal cavity were thoroughly washed out through both openings with six gallons of hot sterilized salt solution; two ounces of a saturated solution of Epsom salts were injected into the colon; the wounds were deeply wicked; the belly was left full of the salt solution and the patient put to bed with "postural drainage."

On the next day the bowels moved freely, and from that time on the convalescence of six weeks was steady and uneventful. He is now well.

Several cultures taken from both wounds and the appendix showed pure cultures of the bacillus mucosus capsulatus, one of the least virulent of organisms.

II. A CASE OF CHOPART'S AMPUTATION, WITH TENDON IMPLANTATION AND TENOTOMY.

This case I report on account of the treatment employed for the stump, and the interesting mechanical problem involved. The patient was a boy of five whose toes had been crushed by a trolley car. So great was the laceration of the soft parts that a mediotarsal amputation was required. A plantar flap was secured sufficient to cover in the stump, and an attempt was then made to obviate the condition usual in this amputation, which so commonly results in a very sensitive stump.

The cause of this usually sensitive stump is evident at once on a glance at the anatomy. The foot is left to rest on the heel bones, but the extensor ten-

dous being all cut, the tendo Achillis is left unopposed to pull up on the os calcis, and as a result the body's weight comes to be borne on the severed astragalus and its new coverings, in large part.

A tenotomy of the tendo Achillis would obviate this for a time, but with reunion of tendon the deformity would be reproduced. To correct this condition I took the cut ends of the extensor longus digitorum and of the tibialis anticus and stitched them firmly to the periosteum of the astragalus and os calcis. In order to overcome any dragging on the implanted tendons, the tendo Achillis was divided subcutaneously. The plantar flap was then brought up and the stump covered in. The wound healed kindly, and six weeks later the boy was walking on the stump.

After a lapse of six months I sent for him, and was much gratified with the condition he presented. He walked with a slight limp, to be sure, but freely and without pain. He had strong and voluntary control of the motion of his heel through an arc of about fifteen degrees.

I advise strongly the trial of this method whenever possible in cases of mediotarsal amputation.

TRAUMATIC RUPTURE OF ECHINOCOCCUS CYST OF LIVER.

DR. C. A. PORTER reported this case. An Italian boy of seventeen entered the accident room on July 13, 1899, in Dr. J. W. Elliot's service. At 5 p. m. he was in his usual health, but had been eating largely of watermelon, when he was kicked in the epigastrium by a companion. The past history obtained from his father showed that he had been very thin for several years except for his upper abdomen, which has been very prominent for as long as the father could remember. The boy was unable to rise after the kick and was brought to the accident room about 6 p. m. by the police. He had vomited several times vast quantities of undigested melon; there was no blood. He complained of great pain in the upper abdomen, and at 9 p. m. was walking about the otherizing room howling with pain.

Physical examination showed a poorly developed and nourished boy, hollow-eyed, pale, anxious, pinched expression; tongue not coated; upper part of chest hollow; supraclavicular spaces retracted; liver dullness on the right up to the fourth rib anteriorly; lower ribs flared outwards and were very prominent, particularly on the right. The heart apex was in the fourth space, mammillary line; no murmur; lung examination negative. Abdomen prominent and much distended, especially in upper half; abdominal muscles rigid as a board, dull in both flanks and in hypogastrium; stomach tympany present and not abnormally large; wave of fluctuation easily obtained from side to side. Bladder contained four ounces of normal urine. An enema had been followed by much gas and normal feces. No tumor could be felt. The abdomen was universally tender, but the tenderness was most pronounced in the upper right quadrant. Temperature 102°; pulse 120, poor quality; respiration 32. A leucocytosis of 32,000 was present.

The diagnosis could not be made. It seemed as if peritonitis was present, but whence the several quarts of fluid suddenly arose could not be determined. The bladder and stomach were normal; the boy's condition, though poor, seemed to exclude so large an abdominal hemorrhage. Rupture of a hydronephrotic

kidney, pre-existing ascites or tuberculous peritonitis was thought possible.

Operation.—An incision six inches long was made through the right rectus muscle; about three quarts of bloody fluid, not turbid or purulent, escaped. In the left flank a blood clot the size of two hands was found. On examining the pelvis, a collapsed cyst wall was discovered lying free among the intestines. The cyst wall was yellow, elastic, laminated and quite typical of an echinococcus cyst. The incision was immediately enlarged upwards to the rib margin and the upper surface of the liver explored. The whole right lobe was a hollow sheet and close to the diaphragmatic attachment of the liver, just to the right of the suspensory ligament, a ragged hole could be made out about the size of an orange. The thinned liver tissue was incised downwards to the lower border of the organ: many clots of blood were sponged out from the cavity; no bleeding point could be determined, so the margins of the cavity were sewed to the abdominal wound, so far as possible, and the hole in the liver firmly packed with gauze, the whole abdomen having been previously flushed with hot salt solution. Microscopic examination of the fluid by Dr. W. H. Smith showed no hooklets or bacteria. Cultures were sterile. The examination of the cyst wall by Dr. Wright showed that it was a typical inner membrane of an echinococcus cyst.

Subsequent history is not of great interest. The boy had considerable fever from eventual suppuration in the cyst wall, but by December had gained twenty-five pounds in weight; no signs of recurrence of the disease, and only a small sinus admitting the little finger to a depth of three inches remains under the right rib margin. From this sinus, however, there is a free discharge of bile-stained fluid.

Medical Progress.

REPORT ON PROGRESS IN THORACIC DISEASES.

BY GEORGE G. SEARS, M.D., AND JOHN W. BARTOL, M.D., BOSTON.
(Concluded from No. 11, p. 279.)

THE TREATMENT OF ANEURISM OF THE AORTA BY SUBCUTANEOUS INJECTIONS OF GELATINE.

PROFESSOR STOICESCO,⁹ of Bucharest, has reported six cases of aneurism of the aorta and innominate artery treated by this method with striking results. A woman, aged thirty-six years, had aneurism of the ascending aorta. There was considerable dyspnea and the patient could not lie on her back. The face was edematous and cyanosed and the veins of the neck were dilated. A pulsatile hemispherical tumor occupied the first and second right intercostal spaces. On March 3d, 83 c. c. of a one-per-cent. solution of gelatine were injected subcutaneously; on the 6th, 105 c. c.; on the 9th, 120 c. c.; on the 16th, 120 c. c., and on the 25th, 120 c. c. The tumor became harder and the expansile movements less pronounced, while the dyspnea and the difficulty of the circulation were much diminished. The patient left the hospital and was lost sight of. In another case a woman, aged fifty-

⁹ Journal de Médecine Interne of July 18, 1899 (inserted in Lancet, September 16, 1899).

five years, had aneurism of the innominate artery. In the right subclavian region was a pulsatile tumor the size of an orange. On July 15th, 80 c.c. of a similar solution were injected. On the 17th the tumor appeared smaller and firmer and the pulsations were less superficial. On the 25th, 100 c.c. were injected, and on the 27th the tumor was reduced to the size of a pigeon's egg. On April 5th, 100 c.c. of a two-per-cent. solution were used, which was followed by intense pain at the seat of the injection. The tumor progressively decreased to the size of a filbert and the pulsations were no longer superficial. On August 8th the patient was discharged completely cured.

On March 8, 1899, she was again seen and the tumor found to be of the same volume as at the time of her discharge. In another case of aneurism of the ascending aorta the patient died two hours after a single injection. The arch of the aorta was found to be dilated in its whole extent and presented a large sac in its right half which contained some organized clots and one recent clot. In the left carotid artery, about six cm. above its orifice, was a recent clot one and one-half cm. in length. The injection was found to have been completely absorbed. In the other cases the results were very satisfactory and in one (aneurism of the innominate) the patient was long enough under observation to enable the permanence of the results to be proved.

THE REMOTE PROGNOSIS OF PERICARDITIS.

In order to determine, if possible, the factors which influence the ultimate prognosis in any individual case of acute pericarditis, Sequeira¹⁰ has followed up the after history of 130 cases which were in the London Hospital from 1890 to 1897, 100 of which came under his personal observation. He finds that "the remote prognosis of pericarditis depends in the main upon the amount of dilatation of the pericardium." The dilatation is due to the softening of the sac by inflammation. It may occur at once before the patient has recovered from the acute illness. It may be brought on by a too early resumption of work after the acute attack, or it may be due to the patient keeping about while there is latent inflammation of the sac. The dilatation may be progressive, and then compensation can never be established, but a similar result occurs if the primary dilatation be excessive.

The adhesion of a dilated pericardium to the chest wall, while it renders the condition of dilatation permanent, may be of advantage when the adhesions become consolidated, for the thick sac acts as a support to the cardiac cavities. If the dilatation of the sac is not very great, the support thus afforded in some measure replaces that of the normal pericardium; but as the cardiac envelope is dilated beyond its normal dimensions so also is the heart. In these abnormal conditions there is a great tendency for the compensation to be impaired. Such cases may live for years after the original attack; but they are subject to frequent breakdowns, and are in a precarious state. If the pericardium is undilated there may be universal adhesions, but these are of no moment.

As regards age and sex, the young cases show a greater tendency to dilatation of the pericardium, and therefore are worse than the older patients. The period during which there is a rapid increase of the body weight is one which is especially trying to a

heart working in a dilated pericardium. In girls who have suffered from pericarditis in childhood, and in whom compensation has been more or less established, the failure is almost certain to take place between the thirteenth and fifteenth years. In women the years of heavy work, pregnancy and parturition are those in which failure of the heart is prone to occur. In boys the failure occurs later than in girls—in the sixteenth and seventeenth years, or in the years of early labor. In adult males the prognosis is good, but heavy work, especially soon after an acute attack, leads to dilatation of the softened sac and consequent failure of compensation.

VENOUS STAGNATION IN AORTIC REGERGITATION DURING PERFECT COMPENSATION.

Grawitz¹¹ discusses the cause of the considerable enlargement of the liver and spleen where the signs of back pressure in the pulmonary circuit are wanting. He considers it due to the pressure of the hypertrophied and dilated left ventricle on the inferior vena cava, while the collateral circulation in the vena azygos explains the absence of circulatory disorders in the lower limbs.

GONORRHEAL ENDOCARDITIS.

Loeb¹² makes the occurrence of a case of ulcerative endocarditis in which gonococci were demonstrated in the valvular lesions an excuse for a short review of the subject with reference to previously reported cases, and draws the following conclusions:

(1) Amongst gonorrhoeal patients there develops in certain instances an endocarditis, either in direct association with the acute catarrhal stage, or, as is more common, as an accompaniment of a joint manifestation.

(2) Apart from occasional observations in which bacteriological examination demonstrated streptococci, and the endocarditis accordingly is to be considered part of a pyemic infection, gonorrhoeal endocarditis is a genuine metastasis caused by gonococci.

(3) It occurs in two forms: endocarditis verrucosa and endocarditis ulcerosa. In the former it is generally the mitral valve which is affected, resulting in permanent valvular defect or in *restitutio ad integrum*. The ulcerative form almost always attacks the aortic valve and relatively often the pulmonary.

(4) Endocarditis ulcerosa of gonorrhoeal origin occasionally attacks normal valves, but generally develops in valves that have been the seat of former disease.

(5) As in the ulcerative form of endocarditis in general, so also in the gonorrhoeal form the female, in proportion to total number of infections in that sex, is relatively often attacked.

THE EFFECT OF THE DIPHTHERIA TOXIN ON THE HEART.

The results of Rolly's¹³ investigations are interesting from the light they shed on the causes of the cardiac symptoms which develop after infectious diseases, and on the locality in which the effect of the toxins is most felt. He sums up his conclusions as follows:

(1) In diphtheria poisoning paralysis of the heart immediately follows the fall of blood pressure caused

¹¹ Deut. med. Woch., No 20, 1899.

¹² Deut. Archiv f. klin. Med.

¹³ Arch. f. Exper. Path., 1899, vol. xlii.

¹⁰ Medico-Chirurgical Transactions, vol. lxxxii, 1899.

by paralysis of the vasomotor centre, and, in spite of artificial respiration, soon leads to death.

(2) This effect of the poison on the heart is a direct one, and appears independent of the central nervous system in the isolated hearts of warm-blooded animals.

(3) The cardiac paralysis develops after a long latent period, at a definite time after the poison is administered. Even the direct injection of diphtheria poison, or the transfusion of diphtheritic blood taken just before death, never immediately affects the normal isolated rabbit's heart. A longer or shorter latent period is always necessary.

(4) On the other hand, the heart isolated after being poisoned by the diphtheria toxins stops at the expected time, whether it is washed out with normal blood after the beginning of the first symptoms of intoxication or before them.

(5) It follows that there must be a gradual accumulation and fixation of the poison in the heart, and explains why functional heart disturbances can appear after the acute infection has run its course.

INFLUENZA AND THE HEART.

In the Hunterian Lecture¹⁴ Sansom discourses on the effects of influenza upon the heart and circulation. After some general considerations on the character of the infection as a whole, and the likelihood of certain forms of it being mistaken for rheumatism, he gives a descriptive résumé of cases coming under his own observation when the heart was especially implicated, reverting for statistical details to a former report by himself of 100 cases. Of these 100, there was tachycardia in 37; bradycardia in five; irregularity in 25; pain at the heart in 23, and organic disease in five. He notes that whereas in the cases of tachycardia and irregularity the subjective symptoms were lacking or of slight importance, in several of the cases of bradycardia there was great distress, severe pain, or symptoms of syncope, making prognosis in this affection much less favorable than in the other two. In most respects, however, these manifestations of functional irregularity of the heart's action, due probably to effect of toxins on the nervous system, do not differ from similar phenomena in other conditions, and the treatment of them should be based on rational grounds.

Those cases, however, which he has classified as having precordial pain as the dominant symptom, and which he formerly considered as instances of neuritis or visceral neuralgia with favorable prognosis, he now thinks are, in part, instances of acute aortitis; an inference founded on post-mortem investigation in a few cases. In these cases of organic change the prognosis is bad, and treatment chiefly symptomatic.

In the same connection it is interesting to note the demonstration by Austin¹⁵ in three cases of endocarditis of a bacillus, occurring in great numbers and apparently in pure growth on the diseased valves, which agreed perfectly in morphological characteristics with Pfeiffer's bacillus and lacked only success in attempts at culture for positive identification. All three cases represented anatomically the engrafting of an acute (in two cases ulcerative) process on an old endocarditis. In one case the pulmonary valves alone were af-

ected, in one the mitral only, and in the third, aortic, mitral and tricuspid.

CARDIAC ARRHYTHMIA.

Elstein¹⁶ discusses rather diffusely the etiology of this condition, having especial reference to myocarditic fibrosis. He reviews at some length recent literature, and after referring briefly to sundry well-recognized etiological factors and giving a classified table of 21 autopsies, he concludes that arrhythmical heart's action in men or animals is the expression of an increased demand on the heart, when the chambers are overfilled with blood, and when a disturbed relation exists between resistance in the circulation and the heart's force. From the single symptom a positive conclusion as to cause and duration of the condition cannot be reached, but must rest on careful investigation of various possible causes. His own investigations have shown the importance in this relation of myocarditis fibrosa, myofibrosis cordis (Dehio), fibromata of the heart, and the so-called "Kugelthrombe."

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, December 6, 1899, Dr. J. W. ELLIOT in the chair.

DR. MONKS showed a

SELF-CLOSING STOPPER FOR AN ETHER BOTTLE,¹ designed by DR. CRANDON, of the City Hospital.

Dr. Monks also showed a

NEEDLE-HOLDER,²

designed by himself.

DR. C. L. SCUDDER read a paper entitled

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?³

DR. C. B. PORTER: The subject of the paper for this evening is one to which I have given a good deal of thought, and about which my ideas have been crystallizing many years. Concerning certain fractures, as that of the patella, I am no longer in doubt. The almost universal success in the treatment of ununited fractures by exposing the seat of fracture, refreshing the ends and wiring, should have led the surgeon, it seems to me, long ago to expose and wire simple fractures when it is at all difficult to get them in good position by apparatus. It is a well-recognized fact that the adjustment of fragments in compound fractures is more satisfactory in many cases than in simple fractures. Wiring of the fractured ends makes the union at once stable. The accurate adjustment in simple fractures is many times impossible.

In connection with fracture of the patella, for many years attempts have been made to shorten the convalescence by a variety of sutures placed in a different manner by different surgeons, but all looking to

¹ See page 296 of the Journal.

² See page 297 of the Journal.

³ See page 289 of the Journal.

¹⁴ Lancet, October 21st.

¹⁵ Johns Hopkins Hospital Bulletin, October, 1899.

¹⁶ Deut. Archiv f. klin. Med., September 29, 1899.

the better coaptation of the fragments. You are familiar with those different methods.

Some of the reasons for suture of the patella. — In the first place, the shortening of the convalescence; second, the better and closer relation of the fragments; third, the cleansing of the joint of blood; fourth, the removal of portions of capsule or periosteum from between the fragments. All recognize that one of the conditions in the non-union of fracture of the patella by bone is that some portion of the soft parts has fallen between the ends and they cannot be approximated so as to get bony union and these can only be removed by an open section of the joint. That is also true with regard to other fractures. There are certain cases in which it should not be done, it seems to me. There are certain people who would not submit to the operation, and therefore they would have to take the long convalescence of the old treatment. The class of people in whom it should always be done is the working class, who are obliged to support themselves and their families, and where the advantage of six to eight weeks to which we are coming, I think, in connection with wiring the patella, instead of a year to eighteen months, as it used to be, is a matter of very grave concern, and I was urged into doing some of the earlier operations for fracture of the patella by the fact that the patients could not possibly put up with a long convalescence. Phelps, so far as I know, has given the statistics of the largest number of cases of wiring of the patella — 116 cases, with only one death, and that from delirium tremens. I have said much on this subject before this Society and it is not best to repeat it, except to emphasize that I do feel that silver wire is a much better material with which to suture the patella than any of the soft materials which are absorbed in a short time; that just so much stronger as is the silver wire than the silk or catgut, so much stronger is the union for all time, because the wire in the majority of cases can be left in.

Next to the patella in frequency of treatment by wiring is fracture of the upper end of the humerus with dislocation inwards of the head of the bone. The case which I have to show here is one which happened in another city, and had been under the care of very competent surgeons for two weeks, and they found it impossible to make an accurate diagnosis as to what the lesion was, and the case was brought to me. I recognized that there was a dislocation, malposition of the head of the humerus, with a fracture, and so stated. The child was placed in my hands for treatment and I made an open section in front of the shoulder through the deltoid and reduced the head of the bone and wired the two fragments together, and I will send the pictures of the condition before and after around.

In fractures of the olecranon the necessity for the elbow to be kept in the position of extension is very pronounced and the position is extremely irksome. With the olecranon wired the position can be varied to a considerable angle, as I will show in a case which is quite recent. These two photographs are the before and after of the olecranon. This man five months before operation fractured his olecranon and up to that time had not been able to do any work. Four weeks ago I operated by the open method and wired the olecranon to the shaft of the ulna. (The man shows what he can do.)

I have here another picture which I will show, in which the wiring operation was done in 1892. A gentleman was kicked by a polo pony in the elbow, producing a compound dislocation of the elbow, with a fracture of the olecranon. The fracture was reduced and the olecranon was wired. It exhibited a perfect use of the elbow-joint. I have spoken of some of the reasons for wiring particular fractures, and it seems to me it would be well here to consider it as a usual or universal means of treating fractures in which good adjustment cannot be obtained. We have all had to deal with ununited fractures, and although the vice of constitution is occasionally at fault, in the majority of such cases malposition or the interposition of some of the soft parts is at fault. These conditions can only be remedied by exposure of the fracture and proper adjustment of the fragments, and the time of convalescence can be much shortened.

This young man works in a laundry. His arm was caught in a wringer and he was thrown around in a manner which he does not remember at all. He was found insensible, with multiple fractures from the elbow to the shoulder. He was brought to the hospital, and on the same evening, having had a skiagraph taken, he was found to have multiple fractures of the humerus. I found the upper fragment pointing outward and overlapping the one next below; the middle piece was rotated on its long axis about half, and the lower third of the bone was comminuted. I felt that nothing short of the open method would enable me to get those fragments into anything like good position and so I cut down upon the point of fracture of the middle and the upper fragment, and then with a pair of incisor forceps took the middle fragment and twisted it so that it came into place and wired the fragments together. I thought it unwise to do more than mould the lower pieces into shape, and all the fragments are now in very good position, as you will see by the pictures. I think any one can see from the contour of the arm that the line of fragments is good. The whole extremity was so swollen that no retention apparatus could be put on for a week. The arm was laid on a pillow with an internal angular splint, with a mass of dressing to make it as firm as possible. As soon as the swelling went down the shoulder splint was applied.

I was surprised this afternoon when I went to get the skiagraph of a case I operated upon in 1896, to have Mr. Dodge say the skiagraph of that leg was the first he took. This was the case of a lady, brought into the private ward, injured by a bicycle accident. It was impossible to get the fragments into position. I had a talk with her husband after some days, and said I did not want to speak to her unless he thought something would come of it, and that was, if she would consent to have that fracture made compound, and the bone wired she would get a better leg. She consented. At the time the operation was done, when the wire was put in and the fragments adjusted they came in nearly perfect position. Some weeks afterwards when we had another skiagraph taken it was found there had been a sagging of the lower fragment. The lady never knew that. The skiagraph showed that in spite of the wiring it was faulty in that respect. It seems to me I should have put in two wires instead of one.

We have all of us, I think, been slowly coming to the conclusion that in the majority of cases fracture

of the patella should be treated by the open method, and some have not yet made up their minds as to what is the best method, whether it shall be by suture of one material or another. I have two cases to show that I think will illustrate the advance that has been made in the treatment of fracture of the patella in the last few years. The first case that I will show fractured his patella some months ago, and the capsule was sutured by catgut, if I recollect aright (not a case of mine), and he came to the hospital to show what a splendid result it was, and it seemed as though there was bony union. There was perfect position. He fell a few days afterwards and refractured the patella. There are one or two points about this case I want to speak of, and that is, one of the dangers in doing the operation is that of sepsis of the joint, and Phelps speaks of the necessity of having the wound as far as possible away from the joint, not directly over it. You will see from my flap, that I have gone below the patella and turned up a good large flap and brought the fragments together, then the capsule is sutured and we have only the skin sepsis to dread. It is four weeks next Sunday since the operation, and he already has this motion. I suppose to the younger men it does not seem like much, but to the older ones, who saw such cases treated a year or year and a half before being allowed to do as much as that, it seems really quite marvellous.

This is another case of fractured patella, operation done ten days ago. Here is a case that comes to the hospital with the history that an hour before he had fractured his patella. The joint was half as large again as it is now, but showed no discoloration. I said to the students at that time: "That is blood clot, because nothing could make such an effusion into the joint in an hour except blood clot," and in the course of a few days it all commenced to show through and the whole joint was ecchymosed. We waited a day or two, treating with ice bags and rest, and he suffered a great deal of pain from the distention of the joint. I opened the joint; found it full of blood clots. Down in the outer corner, there having been so much bleeding, there was ecchymosis of all the tissues. I put in a little gauze drain. That was taken out two days afterwards and the wound closed with ordinary sutures. Now the wound is healed. There is some motion in the joint.

DR. ELLIOT: I have a few cases I will show before the discussion goes further, in order that the patient may go home. In regard to the patella that Dr. Porter mentioned as being operated at its first break by some one else, I was the surgeon who had charge of that patient and it was sutured by catgut sutures. This patella was broken into three fragments and the patient was walking around in eight weeks after the operation, and went home in twelve weeks and appeared six months later at the clinic showing a good result. Then he fell down a flight of stairs and it is interesting to know that he fractured his patella in only two pieces, whereas originally he broke it in three, so at least one line of catgut sutures held well. While I am on this subject, one of the important points in the open treatment of fractured patellas is that whenever we are in doubt about wiring, if we have an x-ray taken the doubt disappears at once. In some of my cases the fragments were thus shown to be in a position impossible to bring together with coaptation splints in the old way. Occa-

sionally I have found one fragment tipped up so that if you squeezed it against the other the articular surface of one would come against the fractured surface of the other. In such a case I have opened the joint and easily brought the two fractured surfaces together with a few catgut stitches. This gave a good result, with no separation of the fragments, and the patient walking about in six weeks instead of months.

Dr. Elliot then presented another patient, saying: This patient had one of the most difficult fractures to manage that occur, that is, fracture of the head of the humerus, and here are the x-ray photographs, the before operation and afterwards. The head of the humerus was widely separated from the shaft and we tried to pull it into place under ether, but it was impossible. On seeing by x-ray what the condition was, and exactly where the ends were, I was able to bring them together and wire them. In this case there was a notch in one bone which fitted beautifully into the other bone. So there was no tendency to displacement. The result is almost perfect. The entire shaft of the bone is straight and clear; there is no thickening. There is a little atrophy of the deltoid, due partly to the original injury and partly to the cut made to expose the bone.

Dr. Elliot showed another patient. This man came into the hospital with a tumor of his clavicle. He was examined by several of the surgeons and one of the opinions was that it might be a sarcoma. There was a very large lump on the clavicle. He was an electric-car motorman. No history of injury or fracture; simply it became disabled and he could not work his car. On careful examination of this lump and with x-ray photo I found it was an ununited fracture, and cutting down on it I cut out the enormous callus, wired the ends of the bone, and he is now braking a motor car. The open treatment has in this case restored a disabled man to normal activity.

DR. GAY: One who remembers the treatment of fractures for a third of a century cannot but be very agreeably surprised at the exhibition that has been given here to-night. Thirty years ago a compound fracture was about as frightful a thing as was brought into the hospital in the way of an accident. Amputation for compound fracture was a very common affair. Nowadays, I presume, some of the students go through their whole four years and never see such a case as that. The accidents that used to follow the compound fractures were more severe than the fractures themselves. I refer to the septicemia, sloughing, necrosis, etc. A case of compound fracture which became simple within a week was something talked about for six months; it was a very rare affair. The idea of operating upon a fractured patella never entered our heads in those days. The rule was three months in bed, three months with stiff bandages, and afterwards orders or admonitions to be very careful for another six months, making about a year in all. The result was a union by a ligament, which varied in length from one to four inches. Well, those legs were sometimes pretty good legs. I have seen a case of fracture of the patella in each leg with a separation of two or three inches, and that man could go upstairs with a cane pretty well.

It seems to me that the point is not quite settled as to whether wiring a patella gives you a result that is as free from subsequent injury as is the old method.

It undoubtedly gives you a better knee, better limb, but the force that broke it in the first place will break it again. I speak feelingly of that, because it fell to my lot to operate a second time four months after a man had his patella united by suture; he got a perfect result, but in opening a door the door stuck, the knob came off, he fell over backwards and tore his patella open a second time. Now, if that had not been wired, but joined by a ligament, of course he would have stretched the ligament, but would not have broken his patella. That is not an objection to the operation, merely one of the phases of the two methods of treatment.

In young or middle-aged people, unless there is some special vice of the constitution, I believe thoroughly in treating fractures of the patella by the open method. When you come to fractures of the tibia and fibula—the oblique fractures of the tibia and fibula—I am not quite so sure about it. I cannot say much about this method from experience, because the treatment of the simple fractures by making them compound is a later development than I have had any experience in, and I should not feel like expressing an opinion either way, but if there is ever a book written on fractures by any one in this city, and I hope there will be in the near future, I hope a distinction will be made between delayed union and non-union of broken bones. I have seen two cases of fracture of the femur that have required a year to get a good recovery. I have seen one case of fracture of the bones of the leg that required six months to get a recovery. Now those cases were not cases of non-union, simply cases of delayed union. A case of non-union would mean that there is no effort at union, that is, the limb is shrunken and atrophied and the ends of the bone atrophied, none of the thickening, induration and callus around the ends of the bone that you find where nature is making an effort at union. That, it seems to me, is rather an important point, and one that is not dwelt upon in our books on fractures to a sufficient extent.

Wiring of bones where the fault is in the nutrition, some vice in the constitution, in my experience does very little good. Wiring of bones where there is some foreign substance, as muscle or fascia, interposed between the ends is of the greatest importance; saves and gives a good limb. I do not know how you are going to distinguish those cases except by incision and examination. We all know that ununited fractures of the humerus and of the femur are more common than ununited fractures of the leg and the arm. Why it is, it is not now worth while to inquire, but that is the fact, and the few cases of ununited fracture of the humerus that I have wired have not been benefited by the operation, but as they were done ten years ago, before asepsis was as complete as now, I don't think they amount to much in this connection. Wiring of the femur in a large fleshy thigh is a good deal of an operation, and it is especially an operation for hospitals, the same as are all of these operations. They are operations that should be done by hospital surgeons, who are reasonably sure of their asepsis, and I think it would be a mistake for advice to go from this Society to the public in general that the ordinary family physician shall treat simple fractures by open incision. If the operator is reasonably sure of his asepsis it is safe, even if it does no good; if not reasonably sure, he may make a bad matter ten times worse.

DR. RICHARDSON: This interesting and valuable paper of Dr. Scudder contains strong convincing arguments for operating upon certain simple fractures. I should agree that a more perfect adjustment is possible in open fractures than in closed, and that the more perfect the approximation the better will be the result.

Unfortunately, however, my experience leads me to deny the absolute safety of intervention. It seems to fall to my lot to present the unfavorable aspect of operative surgery. My methods may fairly be said to be, I think, not below those of the average surgeon. My cases may have been unusually difficult, and the patients may have been of low recuperative powers. This may account for two instances of severe wound infections which I have had,—one of wiring an old fractured patella, and one of wiring a recent fracture of the thigh. In both cases the operation was imperative. The ultimate result was good, though both wounds were infected at operation. I believe, from what I have seen, that a small percentage of such wounds will be infected, and that some will prove fatal. Indeed, I have known of two fatal operations for serious injuries of the shoulder. I did not see these cases, but I have no doubt that intervention was justifiable; yet life was sacrificed to an attempt at lessening disability.

Statistics taken from hospital records are incontrovertible; taken from literature, they are generally too favorable for whatever discussion they may be quoted. I am greatly surprised by the almost invariable recovery of compound fractures. I should have said, from my recollection of cases, that there was a considerable loss of life and limb, especially after extensive comminution of bone and destruction of soft parts. Without being able to bring forward any definite statement of facts in my own cases, I should say that I have had deaths after compound fractures, and loss of limb. My results have of course been embodied in Dr. Scudder's paper.

For the elucidation of the subject every death after fracture, whether open or closed, should be considered, as I dare say they have been. In some fractures intervention is a bloody and dangerous procedure. I have once operated for dislocation of the head of the humerus with fracture at the surgical neck. The operation was a formidable one, and must have some mortality. If I am not mistaken, the two fatal cases just referred to were of this class.

In one case of my own a fracture at the junction of the upper and middle thirds of the thigh was in such bad shape, after the usual methods of reduction, that I decided to open and wire. There was extensive laceration of the soft parts, abundant hemorrhage, and a deformity almost irreducible even in the open wound. The man was past middle age, and his general condition was not especially favorable. There was extensive sepsis following the operation, and long-continued suppuration, though I was especially careful in my technique, it being my first deliberate cutting operation in simple fracture. In one old fracture of the patella I had a brief suppuration of the knee-joint. I have known a fatal septicemia to follow simple arthrotomy, and that in the hands of a painstaking operator of large experience.

I think that, in spite of its dangers, the open treatment should be used when the position remains faulty after careful attempts at reduction under ether by the

old method, provided the patient's age and general condition do not forbid.

In the large percentage of poor results it must be remembered that some of the complaints may be due to injuries to the joint and soft parts not directly implicated in the fracture. I am sure that many a case of simple sprain would be fairly classed as a poor result, — if poor result means pain, impaired functions, sensitiveness to changes of weather, rheumatism, and the like.

Assuming that in 100 cases of simple fracture all have some disability, it seems to me a fair question whether such results are not better than, say, 95 perfect recoveries and five deaths; or 90 perfect recoveries and five deaths and five total failures. Yet we cannot fairly assume that the results would be as favorable, taking all cases of all bones. Selecting only cases favorable for operation in regions remote from large joints, excluding fractures of the shoulder and of the hip, I have no doubt that the danger is slight, and that the results in faulty approximation will be better under the open than the closed methods.

In the case mentioned by Dr. Porter of the little girl with fracture of the shoulder, I must say that my inclination would have been to trust to closed methods of treatment, in spite of the x-ray demonstration. I was happy to say after his brilliant operation and success that I was wrong, and I am glad here to repeat it. I have been influenced by such cases as that of a boy with separation of the epiphysis of the shoulder whom I treated some years ago. There was a wide separation and much deformity. The shoulder-joint is now perfect. The x-ray shows such a perfect repair of the fracture that Dr. Scudder is loath to credit my diagnosis. Yet my records show a sketch, made from life, of extreme deformity. Furthermore, the humerus is two inches shorter than its fellow, a fact that supports my diagnosis and Dr. Scudder's argument in favor of intervention. I have had several cases of separated humeral epiphysis with such good functional results that I shall still feel somewhat disinclined to operate, especially when the bone is fully grown.

With reference to wiring the patella, I admit the force of the arguments given, and I have seen the splendid results of suture. Yet after what I have seen of surgery I should myself trust my broken patella to the old methods of repair rather than run even the risks of joint infection, slight though they may be.

A few disasters in the admittedly safe operations cannot but increase one's respect for the deplorable errors which it is but human to make, whether the operation be a simple cholecystotomy or a simple fracture. Such disasters may and do occur in the hands of the best of us. I simply maintain that the possibility of their occurrence should be emphasized, and that at times duty demands that well enough be let alone. The cases of fracture in which operation is advised should include only those in which it is clearly shown that the result can be only bad, or in which local and general conditions of the patient, and the experience and skill of the operator, are conspicuously good. To teach that any and every practitioner is justified, even in unsatisfactory approximation of fragments, in converting a closed into an open fracture, in my judgment, cannot but be pernicious.

DR. CODMAN: I have been particularly interested

in this discussion, on account of the bearing the x-rays had in bringing forward the open method of treatment. Three years ago, in a paper to the Medical Improvement Society, I made the statement that I thought the time would come when surgeons would recommend the open method in all those cases where a good result could not be expected by the regular routine treatments. I think that after three years I am inclined to be more conservative in that opinion, but I still think that the open treatment should be pursued in a certain number of cases where a good result cannot be expected. I think that is the point of view to take, rather than the question of a little better result. If a man with a fracture can expect good use of the limb and no great deformity under the old treatment, I think that treatment should be pursued; but if he must necessarily expect deformity and disuse, and there is a reasonable chance by operating of improving that condition, I think that operation should be done. In fractures about the elbow-joint it seems to me particularly important, because the old results are notoriously unfavorable. In fractures of the head of the radius, where the annular ligament is involved so that no rotation of the radius can take place, I think the fracture should be cut down on. On the whole, the conservative treatment in most cases is better because it is very difficult to get the bones into accurate position, even if you know the exact deformity. In cases of fracture of both bones of the forearm the muscles on both sides, extensors and flexors, tend to pull the lower fragment upwards so that there is overlapping of the bones. If the two ends are wired, the tension of those muscles still remains, and instead of pulling the ends by one another, tends to bow the arm. I have seen several skiagraphs of these cases that have been wired, and invariably instead of a perfectly straight arm you get bowing of the arm instead of overlapping fragments. Three years ago I took a skiagraph of an open fracture for Dr. Mumford, which I have brought. It shows slight overlapping fragments and the rough points. A week ago I took another skiagraph of that same patient to illustrate the change that had taken place in three years. The resulting deformity is very slight indeed. The ends of the fracture have become smoothed over so that the lines of both are nearly straight. The man has perfect use of his arm. The treatment was never modified after the original skiagraph was taken. The second skiagraph is a stellate fracture of the radius where the orbicular ligament was caught in it and the radius could not be rotated under ether. Operation should have been done in that case, but was not. There is one other point I should like to speak of. The reason for the opposition to the open treatment lies, it seems to me, more in the inefficacy of the present method of wiring bones. A wire can hold the ends of the bone together, but cannot keep the shape of the whole bone. There is always some bending of the bone as a rule. It can bend so as to form a bowing in a long bone. In Dr. Parkhill's clamp each fragment is firmly grasped so as to hold the bones in direct line as well as the ends in apposition. It seems to me the coming treatment of these cases will lie more in that direction than in the direction of wiring, which allows a certain amount of movement between the bones. The clamp holds them firmly, allows no movement; the wire still allows some.

DR. VIETOR: As I understood the reading of the paper by Dr. Scudder, there were indications in two directions for converting a closed into an open fracture. The first was when there was great difficulty in replacing the fragments, and the second, if I understood correctly, was to avoid the after-results, the affections of the joints, muscles and nerves. I have had no experience with the open method of treating these, but I had considerable observation in Dr. Van Arsdale's clinic, in New York, of the effects of treatment upon these after-results. The results in my observation have led me to the conclusion that the after-effects can in many instances be so modified and the evil effects so prevented (principally by the early use of massage) that I should question how much that factor would have weight in determining the conversion of a closed wound into an open one. The question of the adjustment of the fragments would, it seems to me, be the particular class under discussion this evening. However, I would like to ask the gentlemen who have operated and sutured the ends of the bones whether there is any material difference in the formation of callus from those cases in which the bones are treated only by external manipulation; also, whether they have any opinion as to the danger of inclusion of nerves in the callus, whether it is any less in the operative treatment than in the old method.

DR. ELLIOT: In one case of fracture I have seen the nerve was included in the callus.

In summing up the sense of the meeting I think this Society would not be ready to recommend to the general practitioner to open all fractures. I doubt if this Society would follow Dr. Scudder as far as breaking up impacted fracture of the hip. I do think the sense of the meeting is that the open method is a great advance in the treatment of certain fractures. Dr. Richardson and Dr. Codman have said that even if you do see by x-ray photos that the ends are not right, there is still the difficulty of getting them together, yet that difficulty is a mechanical difficulty and we must work away at that and overcome it by better methods. With the x-ray, we can see when the thing is really wrong and is not going to come together, and when we see the head of the humerus turning directly away from its broken shaft, as in the case of the little boy just shown, we know he is not going to have a useful arm; then we balance the risk of the opening becoming septic, which is small, against the deformity of the boy's arm, and the decision is easily made in most cases; and, again, if you see with the skiagraph that the two fragments of a patella cannot be brought together, that is a clear case to wire. I agree with Dr. Richardson and the conservatives that if the skiagraphs showed that the two fragments of a patella could come properly together, I should not advise wiring, although I think it would be shorter if we did wire, yet there is a certain risk and I would not take that risk unless there was something to be gained by it. I think, as matters of practice, we should agree pretty closely as to which cases to wire. As to matters of theory, we all have our own theories and may disagree more or less.

DR. SCUDDER: If we all agree that in cases of fracture which it is impossible to reduce by simple means, as evidenced by the x-ray, operative interference should be used, a much greater amount of operating in simple fractures will be the result, and

the percentage of poor results as shown by statistics will be much less. We do not obtain now, as Dr. Richardson suggested, 100 per cent. of fair results; we obtain 70 per cent. of poor results. In regard to impacted hips, I believe that the sense of surgeons generally who have had experience with fractures of the hip will agree that in young adults under forty years of age it is rational treatment to break up the impaction and place the fragments in good position by means of the sure-ledge and gentle traction, avoiding in this treatment an everted foot and limp.

In regard to massage in the treatment of fractures, it seems to me that massage has not been used hitherto in hospital cases — where cases of fracture are seen most largely — as it should be used. It has been used in private practice to a certain extent. It has been used by a few surgeons in hospital practice, and all of these surgeons testify that the results are infinitely superior. Given a simple fracture of the patella treated in the old way the result is fair, treated by the new method with massage the result is better, treated by the open method and massage the result is infinitely better than by either of the other methods. Massage forms an important element in the treatment.

Dr. Codman referred to fractures of the forearm. If a suitable clamp can be used which will restore and preserve the alignment of the bones, we shall have a desirable mechanism for treating these fractures, because wiring will not do it.

Dr. Porter referred to the use of silver wire in fractured patella. It seems to me that the question of the material used to bring the fragments into apposition is of comparatively little importance. You may use one material or another; if fractures are brought into perfect apposition, strong bony union will result.

It should here be stated that Dr. John Homans, as the Massachusetts Hospital records show, used, some twelve years ago, absorbable material in the suture of two cases of fracture of the patella. The end results of those two cases I have recorded. The material was catgut. In one instance there was some superficial suppuration and in the other nothing abnormal occurred. The functional results were good.

Dr. Richardson referred to a loss of growth in separation of the upper epiphysis of the humerus. It may be said that Olier, and recently Poland, in his valuable book upon traumatic separations of the epiphyses, conclude from all the evidence at hand, both pathological and clinical, that separations of the epiphyses need not be absolutely reduced in order to prevent subsequent lack of growth of bone. In other words, it is not an argument for open suture that a loss of growth results if an epiphysis is not reduced.

Recent Literature.

Atlas and Abstract of the Diseases of the Larynx.

By L. GRUENWALD, M.D., Munich. Authorized translation. Edited by CHARLES P. GRAYSON, M.D. Philadelphia: W. B. Saunders.

A book containing in 100 pages of text an excellent didactic abstract of the anatomy, examination and diseases of the larynx, followed by 44 plates con-

taining 107 colored figures illustrative of different morbid conditions of the larynx as seen in the laryngoscope and microscopical sections is a marvel. Each figure is explained by giving a short clinical history of the case from which it is taken, and the reasons for the diagnosis. The colored figures in most cases are well chosen and bring out clearly the point to be emphasized. They are, as they should be, the more common, and not the extraordinary lesions.

All teachers of laryngology should study this book and its method of bringing the subject before the student. It is especially interesting in connection with what has recently been discussed as the case method of instruction. If used in the proper way it is a very valuable addition to a clinical course, where it is impossible to show each student a large number of representative pathological cases. The instructor need not feel at the end of the session that he has had to rely solely on description to include many of the important lesions which may be found in the larynx. The plates alone would not begin to be of the same value without the clinical histories and descriptions in connection with them. As a practical matter, it might be useful to bind the first part separately, to be used as reference notes by the student, and to mount the plates and the descriptive matter on separate cards for use in sections. The practising physician also will find the book useful to refresh his memory, or to give him a suggestion in some doubtful case.

Diet and Food. Considered in Relation to Strength and Power of Endurance, Training and Athletics. By ALEXANDER HAIG, M.A., M.D. (Oxon.), F.R.C.P., Physician to the Metropolitan Hospital and the Royal Hospital for Children and Women; author of "Uric Acid as a Factor in the Causation of Disease." Second edition, with five illustrations. Philadelphia: P. Blakiston's Son & Co. 1900.

The first edition of this book was reviewed a year ago in these columns. It is well to read the book that one may become acquainted with Dr. Haig's ideas and experimental work upon the subjects of metabolism and diet. In doing so, however, one cannot but feel that the experimental work and the deductions therefrom are too much influenced by the theory of the writer to stand as scientific data.

The Urine and the Clinical Chemistry of the Gastro-Intestines, the Common Poisons, and Milk. By J. W. HOLLAND, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College of Philadelphia. Sixth edition, revised and enlarged. Forty-one illustrations. Philadelphia: P. Blakiston's Son & Co.

This book forms a useful pocket manual for use in the laboratory. In this last edition the work has been carefully revised and brought up to date.

Nordrach at Home, or Hygienic Treatment of Consumption. Adapted to English Home Life. By Jos. J. S. LUCAS, M.R.C.S., etc., late Medical Registrar and Pathologist at North London Consumption Hospital. Bristol: J. W. Arrowsmith.

The object of this modest little duodecimo of 60 pages is to adapt the principles of the "open-air," "hygienic," "sanatorium," treatment of consumption to English home life. The directions and suggestions are sensible and to the point.

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THE DEVELOPMENT OF OUT-PATIENT DEPARTMENTS.

WITH the growth of the modern hospital there has gradually come into existence the so-called out-patient, or, as it is termed in other cities, the outdoor department. The name implies a certain dissociation from the hospital proper, and the facts too often bear out this lack of unity between the hospital and its out-patient departments. This is unfortunately inevitable under the existing arrangement by which the out-patient services are regarded as stepping-stones to entrance to the house, and not in themselves worthy of the most painstaking work on the part of the incumbents of the several positions. For this reason it happens that a considerable injustice is done the hospital at large, with the perfectly natural consequence that the out-patient department tends to lose its significance and be relegated to a position of minor importance and minor consideration. As a matter of fact, however, the development of this department of a great hospital should be encouraged in every way, both for the sake of the community at large and for the credit which is sure to come to the institution from the proper scientific management of its ambulatory as well as of its more acutely ill patients who are confined to bed. This fact must be more and more forced upon hospital authorities with the growth of the special branches of medicine. We have long since come to recognize that what we nowadays include under the general headings of medicine and surgery are but a part, and a relatively small part, of the conditions calling for study and treatment. The special attention now being given, for example, to the skin, throat, nose, eye, ear, children, nerves and orthopedics all demands recognition in adequate out-patient departments, in which the importance attaching to these several branches may be clearly recognized and not subordinated to other departments. These are all important branches of medicine, cases of which are ordinarily not treated in the wards of a general hospital. Those who devote their time to the study of these conditions do not look for-

ward to the distinction of being promoted to a position in the hospital proper; they are working with no ulterior motives whatever, and, therefore, their departments should be accorded a place of dignity in the hospital régime.

The justice of this attitude will no doubt be recognized in time in a substantial way through the building and equipment of proper structures for good out-patient work. Progress absolutely demands this recognition, and when it is forthcoming there can be no question that results of a positive sort will justify the necessary expenditure. Any one with the slightest experience must admit that to prosecute laborious investigations or do justice to the needs of the individual patient in the bad-smelling, overcrowded and often entirely inadequate out-patient rooms now provided for the most arduous medical service a man is ever called upon to perform, is not to be expected nor required. We welcome with satisfaction new and elaborate operating-rooms, with all the refinements which modern surgery demands, but let us not in our enthusiasm forget that other branches, and particularly the swarming out-patient departments, are fully as important from a humanitarian point of view, and have requirements of as definite a sort. It will be a step of the greatest significance in the history of hospital management when the dignity of the out-patient departments is fully established, and they are accorded the measure of esteem which their work for the community and for scientific progress demands.

OUR ATTITUDE TOWARD EPIDEMIC DISEASE.

ONE of the most notable effects of the research of the past twenty-five years is the tendency it has had to remove from the popular mind the dread of epidemic disease. It has been said, no doubt with some truth, that more people died from fear during the great epidemics of the Middle Ages than from the disease itself. That this tendency to panic is still present among us in modified form is shown by the condition of excitement we get into on very slender provocation, when a disease which our ancestors regarded with deserved dread appears among us. An instance in point is the undue anxiety now being manifested at Yale College over certain cases at the Sheffield Scientific School, regarding the appearance of what is feared to be small-pox. President Hadley in an address to the students so admirably sums up the proper attitude of mind in such an emergency that we quote his remarks:

"There is in some parts of the college community an excitement concerning small-pox which is not warranted by the facts. From the first the authorities have adopted the policy of making publicly known and of isolating every case which could give ground for the slightest suspicion. Only two such doubtful cases have developed. In view, however, of all the circumstances, the authorities recommend that all students should be

vaccinated. This is the right remedy and the sure one. The wrong remedy is to run away. If you have not the disease in your system, vaccination will make you safe. In the very improbable contingency that any of you has the disease in his system, running away will not protect him. Least of all will the university countenance any such mistaken policy by contemplating the suspension of any part of its regular exercises.

"Every few years we have an alarm of this kind. No such alarm has ever been followed by serious consequences. I congratulate you on the superior coolness which the students of the present college generation have shown, as compared with their predecessors under similar circumstances. If you can, individually and collectively, maintain this improvement in moral courage, it will stand Yale in good stead in all the affairs of life."

This is good advice and is worthy of wider circulation than the confines of one college community. President Hadley meets the situation at every point, and we have no doubt it will have the desired effect upon the student body, which was apparently quite ready to stampede.

This event at Yale College, however, forces upon us again the desirability of properly equipped infirmaries to meet just such emergencies. With the great increase in size of educational institutions, it is becoming more and more incumbent upon the authorities to provide suitable means of isolation on the appearance of an infectious or contagious disease. We have no doubt that the present "scare" will do much toward hastening the general establishment of infirmaries, an example which Harvard University has just set

THE CRAIG COLONY FOR EPILEPTICS.

THE annual report of the Craig Colony for Epileptics was recently sent to the State Board of Charities. The colony, the site of which is a former Shaker settlement in Livingston County, has a capacity at present for about 400 inmates, but the new buildings now nearly completed and others in course of erection will increase the capacity to a total of 720 beds. There are said to be 12,000 epileptics in the State, of whom about 2,000 are not able to support themselves. The Craig Colony will be capable of accommodating all the latter when it has been fully developed. Since the institution was opened in 1892, it has received 504 patients, of whom 378 remain. The State allows the colony \$250 a year for each patient, and each county allows \$30 a year for each person from within its boundaries who is cared for; but the labor of the inmates themselves goes far towards paying the running expenses of the institution. Among the industries of the colony are a lumber camp, brickyard, printing-office, tailor shop, straw-matting factory, and upholstery school. The females, some of whom are employed in these, also do light outdoor work and all the house

and needle work. During the year there was an average attendance of 24 in the department of manual training. In March, after having worked seven months and completed the prescribed course of training, 10 girls were sent to the Sloyd school, where they took the grammar-school course in making drawings and models.

For maintenance, beginning October 1, 1900, the Board of Managers ask for \$125,000, and for scientific observation and research \$4,000. The colony authorities have systematized the work of collecting data, and hope to be able in time to offer to students of epilepsy the best facilities for carrying on their work to be found anywhere in the world. There was a Craig Colony prize for original research in epilepsy, of \$100, offered last year by Dr. Frederick Peterson, of New York, President of the Board of Managers, for the best contribution to the pathology and treatment of the disease. None of the essays received was deemed sufficiently satisfactory to be awarded the prize, though three of them were given honorable mention, and Dr. Peterson has offered a \$200 prize for the present year. The most important elements of success have been found to be the homelike character of the colony and the introduction of industries within the abilities of the patients to conduct. Of these, Dr. Spratling, the Medical Superintendent, says: "We have noticed that as the homes for the colonists grew smaller, the nearer in reality they are made to approach in every way an ordinary home, and the clearer grows the interest in the work of the colony, on the part of the colonists who can take part in the same, the greater is the measure of success; and while we have every reason to hope that our best work is yet to be done, we have gone far enough to see that no mistake was made when we undertook to build into the fundamental structure of the colony system the two great factors of classification and occupation."

MEDICAL NOTES.

NEWSPAPER BACTERIOLOGY.—We clip the following from a daily paper: "A bacteriologist asked a woman who did not usually have to go on very dirty streets if he might make an experiment on one of her skirts. It was a comparatively new one, and, of course, received the daily brushing too. He found on part of the skirt-binding at the hem the following small menagerie: Two hundred thousand germs, many bearing diphtheria, pneumonia, and tonsillitis; also collections of typhoid and consumption microbes. The owner has been converted to the short skirt." We would ask how the germs were counted, and also in what way they are supposed to "bear" diphtheria, pneumonia and tonsillitis? There is some danger of overdoing the germ theory.

ANOTHER SUIT AGAINST CHRISTIAN SCIENTISTS.—We learn that a Mr. Tuttle, of Baltimore, finds cause for a suit of \$20,000 against the sect of Christian Sci-

tists. We quote his reasons as given in a daily paper. It is reported that from September 12th last until Christmas Eve, Mr. Tuttle was under the treatment by the method of "word argument," and that under it he became worse, his limbs and body swelling and gangrene resulting. On December 30th Mr. Tuttle was so near death that his family called in a regular physician, who diagnosed his case as asthma and gangrene. Cure No. 2 says: "Health is not a condition of matter, all action is of the one mind. This treatment will and must reach the right spot. Argue this silently and then realize the presence of health, and you will find that it will be so." Mr. Tuttle claims he did not find it so.

PLAGUE IN HAWAII.—It has recently been discovered that rats about sugar warehouses at Kahului have been dying in a suspicious manner. Investigation has shown after death the presence of plague bacilli, and prompt measures have, in consequence, been taken to quarantine and, if possible, disinfect the buildings. The Board of Health has in addition ordered a rat-proof fence built around the whole town of Kahului, including the Hawaiian commercial store and warehouse. A patient died of plague in Kahului, February 25th. In Honolulu the situation is encouraging. There have been no new cases for several days prior to March 6th.

TWO HUNDRED AND FORTY-SEVEN CASES OF LITHOTOMY.—The *Missionary Herald* reports that Dr. D. M. B. Thom, the medical missionary of the American Board of Foreign Missions at Mardin, in Eastern Turkey, has had during the twenty-six years of his connection with the station 247 cases of lithotomy. This is a large number of cases for any one man to have had, and is explained by the fact that Mardin is the central station for a very large region where stone in the bladder is common. The question naturally suggests itself whether Dr. Thom practises the more modern methods of crushing.

A CONDEMNATION OF WATER GAS.—Dr. J. S. Haldane has recently read a paper on the "Use of Carburetted Water Gas for Domestic Lighting Purposes," before the Society of Medical Officers of Health, of London. His statistics should be conclusive as to the vastly greater danger of water gas as compared with coal gas, a fact which Boston has had ample occasion to realize.

HOME FOR CONSUMPTIVES IN DENVER.—It is reported that arrangements are being made to establish a National Baptists' Home for Consumptives in Denver, Col. This phase of medical charity, from all appearances, is not likely to be neglected in the future.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, March 21, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 64, scarlatina 31, measles 50, typhoid fever 6.

INFLUENZA IN BOSTON.—During the week ending March 17th, 21 additional deaths from influenza were reported, which makes the total number 31 for two weeks. The number of deaths in Boston last week was 341, as against 195 the corresponding week last year. This was the largest weekly death list since January 18, 1890, when the number was 116; the next largest being 357, for January 11th, and 318, January 4, 1890. A considerable proportion of the deaths have occurred in almshouses. That the disease is no respecter of persons is shown, however, by the fact that the nurses registered at the Directory have all been called into service. It is probable that many of the cases regarded as uncomplicated influenza are due to a mixed infection rather than to the organism now recognized as specific for the disease.

SMALL-POX AT SHEFFIELD SCIENTIFIC SCHOOL, NEW HAVEN.—Considerable alarm is still manifested over the appearance of small-pox at the Sheffield Scientific School. A number of students have left New Haven temporarily until danger of contagion is past. There appears to be some difference of opinion among members of the faculty as to the advisability of temporarily closing the school.

"DR." TRUTH'S "ABSENT TREATMENT."—"Divine Healer" Francis Truth seems so far to have allied himself with the sect of Christian Science as to be an ardent believer in their method of so-called "absent treatment." In fact, so ardent a devotee of this method has he become that he is reported to have realized in the neighborhood of \$30,000 a week from its practice.

THE MERCHANTS' CLUB'S DINNER.—The Merchants' Club of Boston entertained representatives of the medical profession at their monthly dinner at the Algonquin Club on Tuesday, and listened to remarks from Drs. Councilman, Bowditch, C. J. Blake, Whittier and M. H. Richardson.

A NEW ENGLAND CENTENARIAN.—Mrs. Emyle Hyde Grinnell, of Colchester, Vt., has died at the age of one hundred and three years and eight months. Longevity is said to be a characteristic of her family.

NEW YORK.

HOSPITALS FOR TUBERCULOSIS.—The Senate Finance Committee has recommended the appropriation of \$150,000 for the establishment of a State Hospital in the Adirondacks for the treatment of incipient pulmonary tuberculosis. At a meeting of physicians and officers representing the hospitals in the Boroughs of Manhattan and the Bronx, and also some of the suburban hospitals, which was held recently in the library of the Charity Organization Society, a resolution was unanimously adopted urging the passage of the bill which provides for such an institution. In the discussion on the resolution, it was pointed out that it is becoming increasingly difficult for tuberculosis patients to secure admission into the existing hospitals, and the State is confronted with the fact that there are 14,000 new cases of the disease each year, with practically no hospital accommodations for them. The percentage

of those who are cured, even under the present unfavorable conditions of treatment, is most encouraging, and indicates what might be done by hospitals in which tuberculosis patients could be adequately treated. On March 14th Dr. Henry, of New York, introduced in the Legislature a bill for the establishment of a tuberculosis hospital in or near New York City. The bill provides that the hospital shall be in charge of the Department of Health and that the corporation counsel, upon a written request from the Department, shall take the necessary steps to secure a site; while the controller is directed to issue corporate stock to the amount of \$100,000 to pay for a site and \$250,000 for construction.

A SOLOMON ON THE BENCH.—One day last week a physician was called into the Supreme Court, Brooklyn, to decide between a husband and wife as to which should have the custody of their eleven-months-old baby. The mother had applied to Justice Jenks, on *habeas corpus* proceedings, for the custody of the child, which was in the custody of the father, and her counsel contended that as it had not yet been weaned it would be injurious to separate it from its mother. The judge, after puzzling over the situation for a moment, directed an officer to go around among the courts and see if he could find a physician. The messenger returned with Dr. Wilson Small, and when his advice had been asked the court delivered the following wise opinion: "Having consulted with a physician indifferent to either party, I shall abide by his opinion. He believes that it would be injurious to the child to take it away from its mother at this time. I shall, therefore, deliver the child to the mother as the custodian appointed by the court, and she shall be responsible for it to the court until the matter is decided."

LEPERS.—One of the most interesting themes that will be considered at the Ecumenical Missionary Conference in New York, April 21st to May 1st, relates to the work done for lepers in various parts of the world. It is to be specially reported on by Wellesley C. Bailey, Secretary and Superintendent of the Mission to Lepers in India and the East, and by Miss Mary Reed, a missionary to the lepers. The Mission to Lepers in India begun in 1874 found an important sphere of work among this large and afflicted class.

A CENTENARIAN.—On St. Patrick's Day Richard Monahan, a native of Dublin, who resides in the Borough of Richmond, celebrated the one-hundredth anniversary of his birth. He came to America when a boy, and is proud of having served with General Scott in the Indian war in Florida. On the same day another New Yorker, a female, died within three months of the age of one hundred.

CONTAGIOUS PNEUMONIA.—In New York four children in one family recently died of pneumonia. In a single household in a rural settlement in Sussex County, N. J., near Port Jervis, three members of the family have died of pneumonia, and three others are reported as seriously ill with the disease.

DEFEAT OF THE HENRY BILL.—March 15th the Henry Bill for the regulation of the hours of drug clerks was defeated in the Senate. The vote was twenty-one yeas to twenty nays, which is an unconstitutional majority.

Miscellany.

THE IMPORTANCE OF RESTRICTING MEASLES.

ATTENTION was directed last week to the demand for a measles ward in connection with the Contagious Department of the Boston City Hospital. Apropos of this appeal, we notice that the secretary of the Connecticut Board of Health, in the *Monthly Bulletin* of the Board for February, emphasizes the prevalence of measles as a disease, its frequent sequelæ and its important effect upon mortality records in the following judicious paragraphs:

There is an increasing prevalence of the malady since the year began. It is a serious error and very widespread in the public mind that measles is a comparatively trivial disorder and the precautions to prevent its spread are unimportant and not worth the trouble. To show the fallacy of this belief and how dangerous it is to act upon it, it is only necessary to refer to the published reports of vital statistics.

In the last four years there were only 239 deaths from scarlet fever in Connecticut, while there were 427 deaths from measles. Yet both diseases have been prevalent through the State all that time.

In the report of the Registrar-General of England for the decade 1888 to 1897 the deaths from scarlet fever numbered 57,226, while those from measles were 128,043, more than double the mortality of scarlet fever.

The report of the Registrar-General of Ireland for the same period is similar — scarlet fever 5,272, measles 8,842. It is true, the direct mortality from measles is not large in proportion to the whole number ill with it, but it has been observed for generations that following an epidemic of measles there is always an increased mortality from pneumonia, bronchitis and consumption. Is it a trivial disease that destroys more lives in ten consecutive years throughout both England and Ireland than the united victims of scarlet fever and diphtheria? Deaths from measles in those countries were 136,885. Deaths from scarlet fever and diphtheria together in England and Ireland during the same ten years were 135,681.

From these facts it must be conceded that measles is not a trivial malady, but that its importance as a factor in public health ranks well up among the most dangerous diseases.

Is it a preventable disease? Yes. Inasmuch as its continued prevalence depends upon contagion it is preventable. But it is not so easily prevented as some other diseases. Its prevention and restriction depend much upon the ready and willing co-operation of parents and physicians.

A TRIBUTE TO DR. W. H. H. HASTINGS.

The physicians comprising the staff of the Boston Dispensary wish to express their sense of loss in the death of their superintendent, Dr. William H. H. Hastings.

The changes in the staff have been so many and Dr. Hastings' incumbency so long, that the superintendent became the senior of almost all the staff and acquired

an almost paternal relation towards the majority of us. Nearly all of us have received our original appointments at his hands, and all of us have felt that our work was watched and weighed by him. In his relation of superintendent, he has always seemed to aid and encourage each one. New ideas and new methods have always received his careful consideration, and it has been his aim that the Dispensary should profit by advances in medicine and by the enthusiasm of its younger physicians. Honesty, faithfulness, self-abnegation and courtesy have always marked his dealings with us.

We believe that our work has been better done for his example and it shall be our aim to preserve the spirit which he, by example rather than by precept, has inculcated, so long as we continue to work here, and to hand on to our successors the traditions which he has helped to establish.

ABNER POST,
EDWARD O. OTIS,
ROBERT W. GREENLEAF,
GEORGE S. WHITESIDE,
HENRY JACKSON,

Committee of the Staff of the Boston Dispensary.

HYDROPHOBIA IN ATHENS.

It is interesting, says the *Medical Press*, to peruse the statistics of the Pasteur Institute in Athens, where from August, 1894, to the end of 1897 no fewer than 997 persons underwent the anti-rabic treatment. Among the whole number so treated there were only two deaths, or a percentage of .25. In five persons, however, the disease developed within fifteen days after the last inoculation. Among those not treated at the institute there were 40 persons who died of hydrophobia; in 27 of these the incubation period varied from twenty to one hundred and twenty days; in two, from five to six months; in one, from six to seven months, and in one beyond a year. These figures undeniably show a preponderance of results in favor of Pasteur's method. Of course it might be argued that many of the cases treated by this method would probably never develop hydrophobia in any case, but we do not regard such a contention as a reason for failure to submit to the only method of the prevention of the disease which science has been able to elaborate.

Correspondence.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

BALTIMORE, MD., March 12, 1900.

MR. EDITOR:—I have just read in your issue of March 8th "Spectator's" letter from Paris. Of course such a diatribe as this against France and everything French can have no influence in dissuading American physicians from attending the International Medical Congress because it happens to meet in Paris. I only want to correct one possible misunderstanding; namely, that the Congress is not to be held "in a light shell of a building of great size, marked: *Palais des Congrès*," but on the contrary, the general sessions are to sit in the great amphitheatre of the Sorbonne and

the sectional gatherings in other rooms of this University, at the Collège de France, the Faculté de Médecine, the Hôpital Necker, the Hôtel Dieu, and similar convenient and appropriate places.

Very truly yours,
HENRY BARTON JACOBS, M.D.,
Secretary American National Committee.

[Any reader is naturally at liberty to give as much or as little weight as he sees fit to our correspondent's ("Spectator's") statements. Some of these are statements of fact and some are statements of opinion. His knowledge of Paris cannot be questioned. His Paris in August we have ourselves involuntarily experienced on more than one occasion. Those who attend the Congress will do well, instead of chasing the twenty-nine sections, to sit quietly in the Sorbonne and absorb the beauties of Puvion's Chavannes's noble mural painting, whilst some of the sections come round to them. — Ed.]

THE OLD RÉGIME HAD MERITS.

BOSTON, March 15, 1900.

MR. EDITOR: — The writer of your editorial on "Medical Teaching," in to-day's issue of the JOURNAL, misconstrues my letter of the same issue. I do not "defend the old régime," for I am in entire accord with the present movement. I merely call attention to the fact that the old lectures were not the useless, futile things they were distinctly stated to have been by President Eliot and Dr. Councilman.

Very truly yours,
J. G. MUMFORD, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 10, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York . . .	3,654,594	1773	607	11.50	26.25	2.65	.95	1.50
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	280	72	17.64	28.48	3.24	2.16	—
Baltimore . . .	506,389	212	69	14.57	19.74	2.35	.47	—
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	—	—	—	—	—	—	—
Washington . . .	277,000	99	24	16.16	7.07	1.04	—	1.01
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	86	35	62.64	48.72	1.16	2.32	10.44
Nashville . . .	87,754	36	11	19.39	30.47	2.77	—	2.77
Charleston . . .	65,165	29	8	10.35	10.35	—	—	—
Worcester . . .	111,732	25	6	8.00	8.00	4.00	—	—
Fall River . . .	103,142	38	21	15.78	26.31	—	—	—
Cambridge . . .	92,520	37	7	27.02	27.02	8.10	—	—
Lowell . . .	90,114	42	17	14.28	26.18	—	—	—
New Bedford . . .	70,511	18	8	33.33	27.77	—	11.11	—
Lynn . . .	68,218	24	5	8.30	20.75	—	—	—
Somerville . . .	64,394	29	5	20.64	30.96	—	10.32	—
Lawrence . . .	59,072	18	7	11.11	22.22	5.55	—	—
Springfield . . .	58,266	24	5	20.75	4.15	4.15	—	—
Holyoke . . .	44,510	14	4	—	—	—	—	—
Brockton . . .	38,759	—	—	—	—	—	—	—
Salem . . .	37,723	23	4	4.35	43.47	—	—	—
Malden . . .	36,421	9	1	—	33.33	—	—	—
Chelsea . . .	34,235	9	2	11.11	11.11	11.11	—	—
Haverhill . . .	32,651	14	4	14.28	14.28	—	—	—
Gloucester . . .	31,426	4	—	—	—	—	—	—
Fitchburg . . .	30,523	6	2	16.66	33.33	—	—	16.66
Newton . . .	30,461	9	1	11.11	44.44	—	—	—
Taunton . . .	28,527	9	3	22.22	44.44	—	—	—
Everett . . .	28,102	13	2	19.34	19.34	—	—	—
Quincy . . .	24,578	10	—	—	40.00	—	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	12	3	16.66	8.33	8.33	—	—
North Adams . . .	21,583	8	2	25.00	12.50	—	—	—
Chicopee . . .	18,316	7	2	—	—	—	—	—
Medford . . .	17,190	—	—	—	—	—	—	—
Newburyport . . .	15,036	9	3	—	11.11	—	—	—
Melrose . . .	14,721	5	1	20.00	20.00	—	—	—

Deaths reported 2,947; under five years of age 951; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 527, acute lung diseases 801,

consumption 263, diphtheria and croup 91, measles 44, scarlet fever 30, whooping-cough 26, diarrheal diseases 19, cerebrospinal meningitis 18, erysipelas 17, typhoid fever 16.

From whooping-cough New York 18, Providence 3, Boston 2, Washington, Nashville and New Bedford 1 each. From diarrheal diseases New York 10, Fall River 3, Baltimore 2, Boston, Washington, Cambridge and Springfield 1 each. From cerebrospinal meningitis New York 6, Boston 5, Providence, Worcester, Lowell, New Bedford, Springfield, Haverhill and Everett 1 each. From erysipelas New York 15, Baltimore and Providence 1 each. From typhoid fever New York 6, Providence 2, Boston, Baltimore, Washington, Cambridge and Springfield 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,286, for the week ending March 31, the death-rate was 21.2. Deaths reported 4,729; acute diseases of the respiratory organs (London) 360, whooping-cough 121, measles 115, diphtheria 75, fever 40, scarlet fever 32, diarrhea 32, small-pox (West Ham) 1.

The death-rates ranged from 14.8 in Gateshead to 31.2 in Blackburn; Birmingham 25.1, Bradford 21.3, Cardiff 17.7, Croydon 15.9, Huddersfield 20.0, Hull 19.4, Leeds 21.0, Liverpool 31.2, London 19.0, Manchester 28.0, Newcastle-on-Tyne 19.8, Nottingham 16.8, Portsmouth 18.5, Sheffield 22.5, Sunderland 18.4, Swansea 17.3.

METEOROLOGICAL RECORD

For the week ending March 10th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'n'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S. . . . 4	30.21	36	46	25	62	46	54	S.W.	S.W.	14	8	O. C.	.03
M. . . . 5	30.44	29	39	19	74	57	70	N.	N.E.	12	6	O. C.	.03
P. . . . 6	30.20	28	37	19	93	100	96	S.E.	W.	10	8	N. R.	.03
W. . . . 7	30.17	36	44	28	60	53	56	W.	W.	26	13	F. C.	.28
T. . . . 8	30.54	32	40	23	63	60	62	N.W.	S.E.	14	10	C. C.	.05
F. . . . 9	30.19	39	51	27	5	84	71	S.W.	S.	6	13	C. C.	.05
S. . . . 10	29.68	42	52	32	80	56	68	W.	W.	9	13	C. C.	.05
☾	30.20	—	44	25	—	—	69	—	—	—	—	—	.36

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☾ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 17, 1900.

- B. L. WRIGHT, assistant surgeon, commissioned assistant surgeon from May 13, 1899.
- R. W. PLUMMER, assistant surgeon, commissioned assistant surgeon from June 17, 1899.
- O. M. EAKINS, assistant surgeon, commissioned assistant surgeon from October 31, 1899.
- H. E. ODELL, assistant surgeon, commissioned assistant surgeon from November 8, 1899.
- J. S. TAYLOR, assistant surgeon, commissioned assistant surgeon from November 8, 1899.
- E. DAVIS, assistant surgeon, commissioned assistant surgeon from November 21, 1899.
- O. DIEHL, surgeon, detached from the Naval Recruiting Rendezvous, Philadelphia, Pa., and ordered home and to wait orders.
- C. H. T. LOWNDS, passed assistant surgeon, ordered to the Naval Academy, March 14th.
- F. E. McCULLOUGH, assistant surgeon, order of March 8th, detaching from the "Nero" and ordering to the "Independence," revoked; detached from the "Nero" and ordered to the "Philadelphia" immediately.
- T. M. LIPPITT, assistant surgeon, detached from the "Baltimore" and ordered to such other duty on the Asiatic Station as the commander in chief may assign.
- F. WOOD, pharmacist, detached from the Washington Navy Yard and ordered to be examined March 15th, for retirement, and thence home and to wait orders.
- C. F. STOKES, passed assistant surgeon, detached from the Naval Hospital, New York, March 24th, and ordered to the "Buffalo," April 2d.
- B. R. WARD, passed assistant surgeon, detached from the "Independence" and ordered to the Naval Hospital, Mare Island, Cal.

C. D. BROWNELL, passed assistant surgeon, detached from the "Solace" and ordered home and to wait orders.

R. SPEAR, assistant surgeon, detached from the "Constellation" and ordered to the Naval Hospital, New York.

O. M. EAKINS, assistant surgeon, detached from the Naval Academy, March 24th, and ordered to the "Buffalo," April 2d.

J. T. KENNEDY, assistant surgeon, ordered to the "Independence."

J. STEFF, assistant surgeon, detached from the Naval Hospital, Mare Island, Cal., and ordered to the "Solace."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 15, 1900.

GEDDINGS, H. D., passed assistant surgeon. To assume temporary charge of the hygienic laboratory. March 13, 1900.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for four days from March 20th. March 13, 1900.

CUMMING, H. S., passed assistant surgeon. To proceed to Millboro, Va., for special temporary duty; then to rejoin station. March 12, 1900. Granted four days' extension of leave of absence. March 12, 1900. Four days' extension of leave of absence granted by Bureau letter of March 12th, revoked. March 13, 1900.

WILLE, C. W., assistant surgeon. Upon being relieved from duty at Boston, Mass., to proceed to the Cape Charles Quarantine Station and report to the medical officer in command for duty and assignment to quarters. March 9, 1900.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted leave of absence for fifteen days from March 15th. March 9, 1900.

SOUTHARD, F. A., hospital steward. Relieved from duty at the port of New York, N. Y., and directed to proceed to Baltimore, Md., and report to the medical officer in command for duty and assignment to quarters. March 14, 1900.

WARHANIK, C. A., hospital steward. Upon being relieved from duty at Baltimore, Md., to proceed to New York, N. Y., and report to the medical officer in command for duty and assignment to quarters. March 14, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, March 28, 1900, at 8 P. M.

Papers: Dr. E. S. Boland, "Immediate Repair of Perineal Tears."

Dr. F. H. Davenport: "The Mortality of Hysterectomy for Fibroids."

Drs. Malcolm Storer and M. T. Thurber: "Repeated Tubal Pregnancy, with Operation in Each Case."

R. A. KINGMAN, M.D., *Chairman*.

C. H. HARE, M.D., *Secretary*,
285 Marlborough Street.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The Executive Committee finds that The Jefferson, the most desirable hotel in Richmond for the purposes of the Association, is engaged for the week May 7th to 12th. The Council has decided, therefore, to again postpone the meeting until May 22d, 23d, 24th, 25th.

Later and fuller notice will be mailed to members.

C. B. BURR, M.D., *Secretary*.

CONGRESS AGAINST TUBERCULOSIS.—By desire of the Neapolitan branch of the "League against Tuberculosis," this Congress, of which her Majesty the Queen of Italy has been graciously pleased to become the patroness, will meet at Naples on April 25-28, 1900, under the presidency of his Excellency Minister Baccelli. The General Committee, presided over by Senator Prof. de Renzi, and of which Prof. A. Rubino is the secretary, superintends the arrangements of the Congress, the aim of whose labors is the same as that first set on foot at the Congress of Berlin. It will be divided into the following sections, each of which has a separate committee of management: (1) Etiology and Prophylaxis; (2) Clinical Pathology; (3) Therapeutics; (4) Sanatoria. In this Congress are entitled to take part: Physicians, naturalists, engineers, as well as representatives of the social and philanthropic sciences. The subscription for each person is twenty francs (Italian) and entitles to the members ticket and badge of the Congress, as well as to the reduced fares on the Italian railways and steamboats, to the transactions of the Congress, and all publications connected with the same, as well as the free entrance to the museums, Pompeii, Herculaneum, etc.

Ladies connected with members of the Congress can, on payment of the same sum of twenty francs, take part in the Congress.

During the Congress numerous festivities will take place:

Reception by the Municipality of Naples, gala performance at the theatre of San Carlo, excursions, with luncheons, to Pompeii, Sorrento and Capri, excursion to Palermo and visit to the sanatorium "Hygeia," founded by Commendatore Florio.

The exact programme of these festivities will be communicated to the members of the Congress with the least possible delay. The applications as well as the entrance money are to be sent to the secretary's office of the General Committee, I. Clinica medica della R. Università di Napoli (*Ospedale Clinico*).

WARREN TRIENNIAL PRIZE.

The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in physiology, surgery or pathological anatomy; the arbitrators being the physicians and surgeons of the Massachusetts General Hospital.

The subject for competition for the year 1901 is some subject in physiology, surgery or pathology.

Dissertations must be legibly written and must be suitably bound so as to be easily handled. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation.

Any clue given by the dissertation, or any action on the part of the writer which reveals his name before the award of the prize, will disqualify him from receiving the same.

The amount of the prize for the year 1901 will be \$500.

In case no dissertation is considered sufficiently meritorious, no award will be made. A high value will be placed on original work.

HERBERT B. HOWARD,

Resident Physician, Massachusetts General Hospital.

MÜTTER COURSE OF LECTURES ON SURGICAL PATHOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The course of Mütter lectures for 1899-1900 will be delivered in the Hall of the Mütter Museum of the College of Physicians, northeast corner of 13th and Locust Streets, Philadelphia, by Dr. John B. Roberts, on Tuesdays and Fridays, from March 27th to April 27th, at 8.30 P. M.

Subject: "The Surgical Treatment of Congenital and Pathological Disfigurements of the Face."

Lecture I, March 27th.—"A Brief Review of the Development of Reparative or Plastic Surgery."

Lecture II, March 30th.—"A Rapid Survey of the Anatomy (Constructive, Regional and Artistic) of the Human Face."

Lecture III, April 3d.—"Characteristic Features of the Operative Surgery of the Face. The Fundamental Principles of Successful Plastic Operations."

Lecture IV, April 6th.—"The Removal of Disfigurements due to Pigments, Cicatricial Distortions, Fistules, Congenital Fisures and Errors of Development, Tumors and Skin Diseases."

Lecture V, April 10th.—"The Correction of Deformities of the Mouth and Lips."

Lecture VI, April 13th.—"The Reconstruction of the Lips and Cheeks."

Lecture VII, April 17th.—"The Correction of Deformed Noses."

Lecture VIII, April 20th.—"The Construction of New Noses. (Total and Partial Rhinoplasty.)"

Lecture IX, April 24th.—"The Operative Treatment of Deformed or Deficient Ears."

Lecture X, April 27th.—"The Cosmetic Surgery of the Eyes."

JOHN H. BRINTON, M.D., *Chairman*,

GEORGE McCLELLAN, M.D.,

FREDERICK A. PACKARD, M.D.,

Committee on Mütter Museum.

RECENT DEATHS.

ARTHUR A. BEEBE, M.D., died Sunday, March 16th, at his home in Boston, at the age of twenty-eight. He was graduated from Harvard College in the Class of '94, subsequently received his degree of M.D. at the Harvard Medical School and had within a few weeks completed his service as surgical house officer at the Massachusetts General Hospital.

THOMAS H. BAILEY, M.D., of New York, died on March 17th, in the fifty-second year of his age. He was a son of the late Dr. Joseph H. Bailey, U. S. A., and was graduated from Bellevue Hospital Medical College in 1869.

SAMUEL H. PENNINGTON, M.D., of Newark, N. J., the oldest living graduate of Princeton University, died on March 14th. He was born in Newark in 1806 and graduated from Princeton in 1825. He was for many years a trustee of the University and was at one time president of the New Jersey State Medical Society.

WILLIAM MACNEIL WHISTLER, M.D., a brother of the well-known artist, died in London a short time ago. He was a surgeon in the Confederate Army during the Civil War.

Original Articles.

TYPHOID SPINE.¹

BY R. W. LOVETT, M.D.,
Surgeon to the Boston City Hospital,

AND

CHAR. F. WITHERINGTON, M.D.,
Physician to the Boston City Hospital.

THE name "typhoid spine" was given by Gibney to a condition at times following enteric fever, which was characterized by great pain and sensitiveness of part of the vertebral column, simulating rather closely Pott's disease. Gibney described four cases and subsequently a fifth, but only the first three can be accepted as authentic instances of this condition. Gibney believed it to be due to a perispondylitis, meaning an acute inflammation of the periosteum and the fibrous structures which hold the spine together. Osler analyzed Gibney's paper, and reported three cases of his own under the title, "On the Neurosis Following Enteric Fever. Known as the Typhoid Spine." He was rather inclined to regard the condition as a neurosis, in some cases at least, on the ground that prolonged periostitis lasting for weeks and months and not coming to suppuration was unlikely. He may be quoted as follows: "While, of course, it would be very illogical to assume that all of the instances are due to the same cause, yet I cannot help feeling that many of them are examples simply of the painful neurosis formerly known as spinal irritation." The three cases observed by him he was inclined to regard as neurotic in character. Quinke reported two cases, like the others in every respect, under the name of "spondylitis typhosa." As to its nature he was inclined to believe that Osler was partly right, although he thought that Gibney's view might have a correct basis. Another case was reported by Kōnitzer, where a blacksmith, twenty-five years old, four or five months after the beginning of a severe typhoid, was seized with very severe pain in the back, which kept him in the hospital some two months. The case presented nervous phenomena, but no unusual symptoms, and followed the general type of the cases of Quinke and Gibney.

These apparently are all the contributions of literature on the subject. The nine cases (three of Gibney, three of Osler, two of Quinke and one of Kōnitzer) reported are all much alike and present the following characteristics, so far as one can generalize from so few cases. The patients affected are young adults (males in all reported cases). The spinal affection occurs late in the convalescence, or after it is apparently ended, often after the patient has returned to work. It may follow an accident or may occur spontaneously. It affects the lower dorsal or lumbar region. It is attended by curious nervous symptoms, such as paresthesia, variation in surface reflexes, etc. Pain is excessive and rigidity of the spinal column is due more to voluntary muscular contraction, holding the spine steady, than to the involuntary muscular spasm, as in tuberculous spondylitis. No system of treatment has been formulated. The prognosis is favorable.

The case to be reported is of interest in connection

with previously reported cases for the following reasons: Deformity resulted, which must have been due to a destructive osteomyelitis; nervous phenomena of two kinds were present: first, certain signata of hysteria; second, phenomena of another kind, showing pressure. Taken altogether, it would seem that in this case, at least, the lesion was a mild, self-limited osteomyelitis of the bodies of the vertebrae, which for some reason is attended with nervous symptoms of a character simulating hysteria, yet having some basis in pressure phenomena.

The patient is a physician, aged thirty-five years; tall, rather spare, with good muscular development, and at one time a teacher of physical training. He belongs to a family of rather exceptional longevity and vigor, and is one of ten children, all of whom, with the exception of three who died in infancy, are, with the parents, living and well. One aunt on the father's side died of epithelioma of the breast, and another of sarcoma of the humerus. An aunt on the maternal side died at twenty-five of pulmonary tuberculosis, this being the only instance of that disease in the family. The patient has had no illnesses except pneumonia in 1886 and dysentery in 1891. He had never had any trouble with his back. He was assistant surgeon of United States Volunteers during the Spanish War and served in the Cuban campaign. In camp before Santiago he was taken sick July 17, 1898, and had a continuous high temperature with watery diarrhea for two weeks, and an intermittent temperature for two weeks more, during which the bowels were more regular. The diagnosis of the division hospital was tropical malaria. On August 14th he left Santiago for Montauk, being at the time very weak, but free from fever. After remaining there in the same condition for five days, he came to his home in Central Massachusetts, arriving there on August 26th. The next day he had a sharp chill, but it was not repeated and he began rapidly to gain strength.

About the 25th of September he began to notice lameness in the lumbar region, and October 6th, after getting very tired, had severe cramps in the same region, which required a hypodermic injection of morphia. He remained in bed for three days, then rapidly improved and began medical practice. He continued to feel perfectly well till November 26th, when he had a slight chill. That day he came to Boston. The next day the cramps in the back returned and grew rapidly worse. He remained in bed at a hotel till December 3d, when he entered the City Hospital.

The physical examination at his entrance was for the most part negative. Though there had been occasional chills, the temperature was normal. The abdomen was tense, tympanitic and slightly tender; no rose spots. A search for plasmodia was made on December 3d, and again on December 13th and 30th, but with negative results. He complained chiefly of severe pain in the lumbar region, coming on in spasms of great intensity. These were much aggravated by getting out of bed, which, as he was unable to use the bed-pan, he had to do daily. These dorsal pains were very excruciating and several times required the use of morphia. The effect of massage was to aggravate the pain, partly because the treatment involved his turning upon his side, which was likely to start up the cramps. Faradism

¹ Read at the meeting of the Boston Society for Medical Improvement, December 1, 1899.

also proved useless or injurious, and day after day the pain continued to be distressing, with some loss of sleep. Blood examination soon after entrance showed 7,450 whites, and on December 30th a characteristic typhoid serum reaction was present, clumping occurring in two minutes. Throughout the month of January the pain was still complained of; at times, especially toward the end of the month, the patient thought it was less intense when at rest, but all attempts to sit up in bed or move at all caused great distress.

Examination, January 30th, showed on the outer surface of both thighs, extending from trochanter to knee, an area of diminished sensation to pain and touch, most marked on the right leg. Patellar reflexes lively; plantar and abdominal, normal; cremasteric, sluggish. The spines of the lower dorsal and the upper lumbar vertebrae were tender to pressure. The muscles of the loin were rigid. Three or four days later there was noted a tenderness over the posterior part of the ilium. No swelling to be seen. Considerable muscular spasm. No prominence of any vertebral spines at this time. On being made to stand, patient cannot hold himself erect, and after standing a minute the pain in the back becomes worse. On sitting in an armchair he rests his weight as far as possible on the elbows. Cannot bear to sit up without such support. After an hour in this position the pain becomes severe but passes off when he goes back to bed. He contrives to sit up altogether about two hours per day. No rectal or vesical symptoms. Eats and sleeps well.

February 5th. Patient walks about a little with a cane, but moves with great slowness and caution. Rises with much difficulty from the chair, and gets his balance slowly and carefully. In the course of the next four days he could walk the length of the corridor with two crutches, showing some gain in the ability to use the lower extremities. About this time a distinct projection of the spines corresponding to the eleventh and twelfth dorsal and first lumbar vertebrae was for the first time noticed. There was also noted a considerable tenderness over the transverse processes of the second lumbar vertebra, worse on the left side. Meantime the patient continued to walk slowly and stiffly with crutches daily. He felt more comfortable when standing or lying than when in a chair. After a day or two he himself discovered the "knuckle" and was much alarmed thereat.

The patient was first seen by Dr. Lovett in consultation with Dr. Withington February 11, 1899. At that time he was in bed most of the time and was able to go about with crutches. There was a well-marked prominence of the spinous processes in the lower dorsal and upper lumbar region, involving apparently two or three vertebrae; the spine was almost absolutely rigid in passive and active movements; getting from the bed into the erect position was accompanied by intense spasm of the spinal muscles and very severe pain, more so than in Pott's disease, even of a severe type; the knee-jerks were moderately increased and motion in the legs was apparently good. A provisional diagnosis of "typhoid spine" was made. As movement was evidently attended by great irritation and pain, it was decided to put on a plaster jacket, which was applied on February 17th, with the patient lying prone in a hammock. Less relief followed than is customary after the application of the jacket to pa-

tients with Pott's disease, although the patient was somewhat better.

As the patient was evidently hospitalized, he left the hospital on February 24th and went to a hotel. At this time, although movement was attended with less pain than without the jacket, he was still very uncomfortable and the erect position was painful. He walked fairly well with crutches.

The temperature chart, which was carefully kept during his hospital residence, showed for the first two weeks a slight irregularity with elevations not exceeding 99.6°. About December 17th a more marked febrile movement began, accompanied by slight chills on four occasions, December 22d, 23d, 28th and January 4th. As already remarked, repeated examination failed to reveal the plasmodia. The fever during the twenty-five days following December 17th ranged mostly from 100° to 102°, only three times exceeding the latter figure. After January 10th the curve returned to about the same character as during the first two weeks, only once reaching as high as 100°, but showing a constant diurnal variation from about 98° in the mornings to 98½° or 99° in the evenings. After he left the hospital the evening temperature, which was taken at intervals, was always found to be normal.

On March 1st the plaster jacket was opened, a strip cut away to allow it to be brought tighter and it was fastened with straps, but with this he was less comfortable than with the fixed jacket, and on March 8th a second jacket was put on, again in the hammock position. This jacket was purposely put on very tight and each turn of the bandage pulled with all reasonable force. Improvement in the pain immediately followed and he was able to be about more, although able to do very little. As soon as he began to be freer from pain it was noticed that the power in his legs was poor and that he was evidently suffering from some muscular impairment of motion. His knee-jerks were decidedly increased and he had some ankle clonus. At this time another test of the blood gave a positive Widal reaction.

On March 10th he was seen by Dr. Withington in consultation with Dr. Lovett. He was found to be walking with crutches a little better than when he left the hospital, but the getting out of bed and assuming an erect attitude was attended with great difficulty, apparently not so much from pain as from loss of power. When lying recumbent he raised the legs from the bed with great difficulty, the paresis in each being equal. Muscular sense was good. Tactile sensation good, except in the areas on outside of the thighs before noted. No impairment of sphincters. No atrophy. Patellar reflex increased, slight ankle clonus. No rigidity or contractions of legs. Appetite and other bodily functions good. Patient cheerful and hopeful.

On March 11th he was seen by Dr. Morton Prince in consultation with Dr. Lovett. Examination showed very much increased knee-jerks, slight ankle clonus, two anesthetic patches, one on the outside of each thigh, and impaired muscular power in the movements of the legs. In addition to this there was a greater disability in getting about, rising from a chair, etc., than seemed to be explained by the impairment of muscular power. According to Dr. Prince the signs found were confusing, somewhat contradictory, and not characteristic of any type of spinal lesion; at the

same time the anesthetic patches were constant and definite, and Dr. Prince felt that there had been compression present, which accounted for part of the symptoms, but that the present condition as a whole, apart from this, was rather to be classed as hysterical. The patient in other respects although, not a hysterical man, showed the effect of long confinement in bed and severe pain in mental excitability and dread of pain. Dr. Prince's diagnosis was, therefore, some form of compression, with hysterical symptoms. At his advice massage to the legs was given daily and the patient improved rapidly.

The third jacket was put on April 1st, and at that time photographs of the back were taken showing deformity. At this time another examination of the blood showed a positive Widal reaction. The patient left for Virginia on April 6th. On April 11th, 13th and 15th he had chills and high temperature, probably of malarial origin. At the time that he left for the South he was able to walk with crutches or for a short distance with canes.

In July, 1899, he reported to Dr. Lovett, still wearing his jacket. For a month previous to this he had been able to walk a mile or two without assistance, he could play golf, and was unconscious of any pain whatever in his back so long as the cast was applied. The cast was cut and fastened with straps, and on the succeeding day, as the cast was soft and afforded improper support, he began to feel fatigue and discomfort in his back again. An accurately fitted leather jacket, re-enforced with steel, was then made, which immediately relieved his symptoms, and the patient returned South again.

On October 3d, he reported, still wearing the leather jacket. At this time he was able to ride horseback, walk long distances, hunt, and had gained about thirty pounds in flesh. The deformity was still present, although less evident on account of the better development of the muscles. The movement of the spine was perhaps two-thirds of the normal in all directions. When standing with the knees straight he could stoop so that the hands came within sixteen inches of the floor, he had no pain in movements and very slight tenderness in the spine; what there was remained chiefly over the transverse processes of the second lumbar vertebra. At this time he returned to the practice of medicine, the only restriction being that he should lie down for an hour and a half in the middle of the day.

On November 16, 1899, he reported again. He was engaged in the active practice of medicine and was able to do his full work without discomfort or fatigue. The movements of the spine had improved, and he could go without his jacket two or three hours without discomfort, and with the knees straight he could stoop to within thirteen inches of the floor. Tenderness of the back had disappeared, but the anesthetic patches on the outside of the thigh persisted to a slight extent.

On December 2, 1899, he reported that he was getting along very comfortably, was able to do his full work and that he had no discomfort in his back, was still wearing his leather jacket and spent one hour and a half a day in the recumbent position.

The first questions which arise are whether the patient had typhoid fever, and if so when? To the former we can at once reply affirmatively, on the strength of the unusually prompt and positive response to the

Widal test on December 30th, which seems to be the first date at which the test was applied. This was confirmed by subsequent tests. That he had never had typhoid prior to his Cuban experience we can be sure. Did, then, his typhoid occur in Cuba or soon after his residence at Montauk (where typhoid prevailed), or was it first present during the tubercle-movement which occurred in the hospital? None of the signs of the disease, in the way of roseola, spleen or diarrhea were noted while he was in the hospital, and it is more reasonable to suppose that his attack in Cuba was, like that of many other soldiers, a mixed infection by malaria and typhoid. The fixing of the disease in July would also be more consistent with the first occurrence of the spinal symptoms in October, and the fever curve of December and January, if not typhoid and not malaria, is quite explainable by the spondylitis, as will be seen by comparison with other cases mentioned hereafter.

With regard to the exclusion of tuberculous disease of the spine it may be said that the clinical aspect of the case was not that of ordinary Pott's disease. The muscular rigidity seemed largely voluntary, the pain was excessive, tenderness of the spine was present and there was pain referred to the peripheral ends of the nerves. The tuberculin test was negative. The Widal test was positive. The subsequent history of the case and the rapid recovery, good mobility of the spine returning within nine months of the most acute period, is not characteristic of severe Pott's disease in the adult.

The so-called typhoid spine means, according to different authors, either (1) a neurosis or (2) a spondylitis or perispondylitis. The former view is held by Osler, the latter by Gibney, and in part by Quinke. In our case some of the symptoms would correspond to a neurosis, as, for example, the distribution of the areas of anesthesia on the thighs, the increased reflexes, ankle clonus, etc. But the character of the projection of the spinous processes of the vertebrae made it evident that in this case there must be present a destructive inflammation of the vertebral bodies in the lower dorsal region. As may be seen in the picture, the projection was of considerable size, the spinous processes could be easily made out and their angular projection could only be accounted for by the giving way of some part of the weight-bearing portion of the vertebral column. A periostitis could not explain it; one must assume an osteomyelitis to have been present. So far as the writers have been able to learn, this is the only case of well-authenticated typhoid spine accompanied by deformity.

The cases of Quinke are of special interest in this connection. In the first case the fever was over on the fifteenth day. On the twenty-first day occurred a relapse, which lasted a week. On the thirty-fourth day occurred a rise of temperature and lumbar pain. There was pain on rising in bed and tenderness over both sides of the spinal processes. This lasted but a few days and the patient sat up at the end of seven weeks. In a day or two the symptoms returned with greater violence and lasted altogether from two to three months. There was chill, irregular fever, swelling in the right lumbar region, girdle sense, retention of urine, and for a short time diminution of the patellar reflex. In the second case the typhoid was milder but more protracted. Towards the end of the fever there was a transient periostitis of the parietal

bone. The vertebral disease showed itself ten weeks after the defervescence, and several weeks after the resumption of work (blacksmithing). During the period of the spondylitis there was fever of an intermittent type. In both cases the lumbar spine was chiefly involved, but covering a large area, namely, four to six vertebrae. In both there was visible swelling of the soft parts and tenderness of the vertebral spines and bodies. Both cases showed paresthesia of the lower extremities and slight rigidity in some of the leg muscles. The limitation of movements was due chiefly to the pain, but it was not certain that there was any true paresis. Quinke concludes from analogy of the visible changes in superficial bones that there was in these cases an inflammatory swelling of the periosteum, with serous infiltration on the inner as well as the outer surface of the vertebral column which compressed the nerve roots of the cauda equina in the second case, while in the first case (in which the process involved the lower dorsal vertebrae), there was also compression of the inferior part of the conus medullaris, which would account for the bladder and rectal paresis in that patient.

Numerous observers have now demonstrated the occurrence of the typhoid bacillus in bone marrow, and this organism has come to be recognized as one of the many morbid agents concerned in bone inflammation. In those cases of "typhoid spine," therefore, in which spondylitis has a part, the latter may be considered as one phase of the bone involvement of typhoid, which in the case of the tibia, the ribs and the femur we have learned to expect. It is, therefore, interesting to recall that in one of Quinke's cases there had been earlier in the typhoid a periostitis of the parietal bone, which had undergone resolution. If we are to assume, in addition to the massing of typhoid bacilli in the vertebra, some local strain or injury involving those parts, it is likely that laborious work, undertaken before the bodily strength is fully re-established, may serve as such a factor. In one of Quinke's cases such a strain might have come from the occupation of the patient, who walked and climbed stairs carrying a peddler's pack, and in the other from his trade as a blacksmith, in which he had resumed swinging a heavy hammer for some time before the onset of the spinal symptoms. The same is true of Könitzer's patient, also a blacksmith. In our patient the active practice of medicine had perhaps been taken up too soon. In Gibney's first case the pain in the back began during convalescence; in the second case after a railroad journey undertaken during convalescence; in the third case spinal symptoms began after a fall in skating after convalescence seemed ended. In these cases there is no mention made of any unusual nervous condition.

Is the so-called typhoid spine a neurosis or a bone lesion? Two of the prominent authors who have recently answered this question have given their replies in accordance with their respective points of view, Osler, from the medical side, considering it a neurasthenic phenomenon, and Gibney, from the surgical, a perispondylitis. Osler's minor cases² especially suggest neuroses, in the brevity of their course and their onset at about the beginning of typhoid convalescence. His first group of cases,³ however, are more similar clinically to Gibney's, coming on from three to eight

weeks after convalescence, and lasting each for several months. He also includes a case in which there was diminished sensation in the legs with paresthesia, but no pain or tenderness of the spine, occurring in an alcoholic and venereal subject, after typhoid.

The longevity of the typhoid bacillus in certain parts of the body is well known, as for example, in the gall-bladder and in bone marrow of some of the typhoid bone lesions.

Dr. Parsons⁴ emphasizes this lateness in the evolution of typhoid osteitis and periostitis, saying that they vary from one to sixteen months after the fever. With one exception they have never been known to



occur during the course of the fever. Necrosis and suppuration do not always take place. Parsons thinks that such cases as Gibney's perispondylitis are perhaps to be considered as belonging to the same category with the more common typhoid lesions in the tibia, and other long bones, the sternum, etc., though the bacteriological proof is wanting.

The case upon which this paper is based had been considered, up to the time of the development of the knuckle, to be a post-typhoid neurosis. Had the deformity not appeared it would probably have continued to be so regarded. Reasoning from the analogy of

² Johns Hopkins Hospital Reports, vol. v, p. 315.

³ Ibid, vol. iv, p. 73.

⁴ Johns Hopkins Hospital Reports, vol. v, p. 417.

other post-typhoidal bone lesions, we may conclude that an osteomyelitis or possibly periostitis of the vertebrae is present in some of the cases which have been supposed to belong in the neurotic class of typhoid spines.

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IDIOPATHIC PNEUMOHEMATOTHORAX, WITH RECOVERY AFTER ASPIRATION.¹

BY ELISHA S. BOLAND, M.D., SOUTH BOSTON.

Mr. T. is thirty-four years of age, married. Born in Maine. Never seriously sick, except some eight years ago, when he was confined to the house two or three weeks with the "grip." During early manhood he followed the sea, and at this work gained the summit of his weight, 170 pounds; present weight about 150 pounds. After he gave up going to sea he worked as a marble cutter for some time, but gave this up by the advice of his physician, as there was some premonition of lung trouble. Of late years he has been at work in a grocery and provision store, meat cutting, etc. Sometimes has felt pain in right side when he had to shoulder or carry a heavy quarter of beef. He is erect, spare, active and strong, of temperate habits, and takes good care of himself. Family history is negative as to phthisis. Father alive and well at sixty-four; mother died at thirty-five; cause of mother's death not known. He was in his usual health and did his work on July 20, 1899. That evening, while sitting near an open window—it being very warm—he felt some pain about the waist on the right side. After this he remembers he got up, stretched himself vigorously and went to bed, where he slept a few hours. When, during the night, he awoke he felt very severe pain in the right chest in front, and had "a feeling of wind escaping there," and found motion of any kind made it worse, and felt weak and was feverish and short of breath, and suffered much until morning.

When I found him at 8.30, July 21st, he was lying on his left side, and could not sit up or turn without great pain and dyspnea. Pulse 108, temperature 102°, respiration 28 and shallow. There was a pale, cyanotic tint in the face. Most free from pain when lying quiet in bed, and found the changes of position needed for a physical examination very severe. Pain most severe over the right chest, a little below and rather internal to the nipple. In this area could be heard a peculiar amphoric sound to be detected nowhere else in the chest. Over the right apex and thence down about two inches below the clavicle a modified respiratory murmur could be heard, and in the corresponding area in the axilla and back also. Over the entire lower part of the right chest, front, side and back no respiratory sounds could be heard; no fremitus nor tubal breathing. Percussion gave a tympanitic note over the area. The physical signs were so marked that, though I had never seen a case of pneu-

mothorax before, I had no doubt of the diagnosis here. The dominant symptoms being pain and dyspnea on motion, he was given small doses of morphine and antifebrin and kept in bed, with mild counterirritants over the affected area.

The next day he was somewhat easier as to pain, and pulse and temperature were both a little lower. On getting him into an erect position, however, it was evident that some effusion was accumulating in the lower part of the air-filled chest cavity. He was less markedly cyanotic and when quiet in bed he was so easy that it was hard to get him and his wife to realize the gravity of his condition and my urgent request for counsel was only reluctantly acceded to. As he was feeling even easier the next day when Dr. Vickery was kind enough to call and see him in consultation, the welcome we got was not effusive. Not wishing to bias Dr. Vickery's mind I told him nothing of what I had found; in fact, unintentionally misled him by telling him the left side was at fault. The doctor, however, very soon sized the case up, as his notes will show, and, in fact, it was hard at this stage not to be struck by the pronounced pathological conditions present,—the effusion having increased in amount and, owing to the large air chamber above it, shifted its level with every change made in the patient's position. (We speak of the liquid as an effusion here, as at this time neither of us believed it was other than the usual pleuritic fluid.) Some tiresome cough having come with the development of pressure from the fluid a sedative mixture was advised, as also the continued use of the rubefacients. As the pain was less sharp since the fluid came and the dyspnea no worse, the patient was allowed to sit up and, as it was warm, to go out in a limited way. He was beginning to eat and his pulse and temperature did not go up, nor were there any rigors. At Dr. Vickery's suggestion, aspiration was delayed in the hope of absorption. However, at the end of twenty-two days, as his general condition did not improve and there was no evidence of the fluid receding, it was thought best to aspirate. The largest needle of the aspirator, after being boiled, was introduced in the posterior axillary line between the seventh and eighth rib, and held, after penetrating the chest wall, approximately parallel with the diaphragmatic floor. As soon as the vacuum was connected I was dismayed to see a stream of dark red blood pour into the bottle, where only serum or, at most, pus was expected. Visions of anomalous venous channels flashed through my mind, and I heartily wished I had continued to temporize, but I felt I was in for it, and had better make the best of it, as I could not be held responsible for anomalies. The large needle caused great pain, and after about thirty-four ounces had been withdrawn and the flow was becoming intermittent, the needle was withdrawn and the puncture sealed up aseptically with sterile cotton and collodion. No air was withdrawn and after the immediate pain of the operation was over the patient felt easier, and in a day or two was out and about again. The line of flatness was reduced by this aspiration about two and one-half inches. At the end of fifteen days the effusion had reaccumulated and the line of flatness was as high as ever. The resonant air layer seemed practically unchanged—possibly a little less.

A second aspiration was done with the large needle in the seventh interspace, but a little further posteri-

¹ Read at the meeting of the Boston Society for Medical Improvement, December 18, 1899.

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?¹

UNSELECTED CASES OF FRACTURE TABULATED IN ORDER TO SHOW THE RESULTS MANY YEARS FOLLOWING TREATMENT.

BY CHARLES L. SCUDDER, M.D., BOSTON,

Surgeon to the Massachusetts General Hospital, Out-Patient Department; Assistant in Clinical and Operative Surgery, Harvard University.

(Concluded from No. 12, p. 293.)

TABLE I.

FRACTURES OF THE HIP. RESULTS TWO AND ONE-HALF TO TWENTY-FOUR AND ONE-HALF YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Time Spent in Hospital.	Time Elapsed since Accident.	Present Condition.	Examination.
1	Male. 60.	Unimpacted, left.	3 weeks.	2 years, 8 months.	Rheumatism. Cripple; walks around yard only.	One inch shortening; atrophy of thigh, $1\frac{1}{2}$ inches; atrophy of calf, $\frac{1}{2}$ inch. Movements are much limited by rheumatism. Cannot raise hand to mouth; very lame.
2	Adult.	Right.	6 weeks.	4 years, 3 months.	Not as good as before accident. A little stiff.	One and one-eighth inches shorter. Right knee bends only to right angle. Movement of hip limited.
3	Male. 42.	Outer part of neck.	$8\frac{1}{2}$ weeks.	2 years, 7 months.	Practically as good as ever. Slight grating in joint at times. Walks as well as ever.	
4	Male. 44.	Left.		4 years.	Much atrophy. Pain, hip to knee on walking and at night in the fracture.	
5	Adult.	Impacted.	4 months.	14 years.	Pain in hip and from sole of foot up to hip. Leg is swollen and weak. Pain in walking.	
6	Male. 47.	Unimpacted, right.	3 months.	1 year, 5 months.	Amputation of thigh below the hip for subsequently fractured leg. Some pain in hip.	
7	Male. 60.	Unimpacted, left.	8 weeks.	7 years, 2 months.	Not as good as before accident. Pain on going upstairs and on stooping.	Atrophy of left gluteal muscles. Slight limp; walks with foot slightly everted. Left foot lies on outer side (marked eversion). Flexion, adduction and abduction very slightly limited; rotation inward limited two-thirds. Length of left leg, $35\frac{1}{2}$ inches; length of right leg, $36\frac{1}{2}$ inches; circumference of left thigh, $16\frac{1}{2}$ inches; circumference of right thigh, 16 inches; circumference of left calf 12 inches; circumference of right calf, 12 inches.
8	Female. 45.		9 weeks.	18 years.	Not as good as before accident. Pain according to weather.	
9	Female. 55.		8 weeks.	23 years.	Limp; short leg; uses a cane. Always feels it slipping; pain on stepping forward.	
10	Male. 46.	Unimpacted.	7 weeks.	6 years, 2 months.	Limp; pain.	
11	Male. Old.	Left.	4 weeks.	6 years, 4 months.	Weak; lame; uses a crutch.	
12	Male. 45.	Unimpacted.	3 weeks.	7 years, 2 months.	Yes, as good as before accident. Aches in stormy weather.	
13	Female. 50.	Unimpacted.	10 weeks.	6 years, 9 months.	Hip is turned. Pain all time.	
14	Female. 65.		9 weeks.	10 years, 8 months.	Lame; pain hip to knee.	
15	Male. 50.		10 weeks.	24 years, 7 months.	Nearly as good as ever. One and one-half inches shorter.	
16	Female. 46.	Unimpacted, left.	32 weeks.	6 years.	Walks with crutch. Pain in hip all the time.	Left, 2 inches short. Rotation, including all motion, limited.

TABLE II.

FRACTURES OF THE THIGH. RESULTS ONE AND ONE-HALF TO SEVEN YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Seat of Injury.	Treatment.	Time Spent in Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally.	Examination of Cases Reporting.
1	Male. 48.	Supracondylar.	Wired.	6 weeks.	6 weeks.	6 weeks.	4 years, 6 months.	Absolutely perfect.	
2	Female. Adult.	Middle one-third, right		9 weeks.	19 weeks.	8 weeks.	4 years, 10 months.	No trouble, motion one-half way.	
3	Male. 15.	Supracondylar.		$4\frac{1}{2}$ weeks.	8 weeks.	6 weeks.	5 years, 7 months.	Absolutely perfect.	
4	Male. 30.	Middle one-third, right.	Wired.	17 weeks.	21 weeks.	6 weeks.	1 year, 5 months.	Stiffness of knee.	One and three-eighths inches shortening. Knee stiff and weak in going down hill and upstairs.

¹ Read at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

TABLE II. (Continued.)

No.	Sex. Age.	Seat of In- jury.	Treatment.	Time Spent In Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally	Examination of Case Reporting
5	Male. 14.	Middle, right.		11 weeks.	8 weeks.	6 weeks.	3 years, 5 months.	Absolutely per- fect.	
6	Male. Child.	Separation of lower femo- ral epiphy- sis.		10 weeks.	8 weeks.		3 years.	Some stiffness at knee, but strong and no trouble.	Motion in knee perfect; no de- formity.
7	Male. 38.	Middle.	Hip splint.	5 weeks.	10 weeks.	4 weeks.	3 years.	Absolutely per- fect.	
8	Female. 2.	Junction of middle and lower one- third.	Suspension.	7½ weeks.	4 weeks.		2 years, 9 months.	Perfect.	Perfect.
9	Male. 57.	Junction of middle and upper one- third, right.		10 weeks.		8 weeks.	4 years, 6 months.	Not quite as good as before acci- dent. Pains wet weather.	One-half inch shortening, knee to right angle only
10	Female. 45.	Right.	Wired.	12 weeks.	10 weeks.	8 weeks.	5 years.	Not as good as be- fore accident. Knee is stiff and lame. Leg is weak.	
11	Male. Adult.	Middle one- third, left.		8 weeks.	16 weeks.		5 years.	Not as good as be- fore accident. Knee is stiff.	
12	Female. Adult.			8 weeks.	10 weeks.		4 years, 10 months.	Not as good as be- fore accident. Pain at times; weak.	
13	Male. 7.	Middle, left.		8 weeks.	6 weeks.	5 weeks.	2 years, 4 months.	Absolutely per- fect.	Perfect. No atrophy.
14	Male. 47.	Middle, right.		10 weeks.	40 weeks.	9 weeks.	3 years, 7 months.	Perfect. Bony deformity.	Right 2½ inches short. Knee flexion slightly limited. Re- fractured three times.
15	Male. 22.	Middle, left.		9 weeks.	12 weeks.	8 weeks.	2 years, 9 months.	Slight shorten- ing (1 inch). Pains wet weather. Tired in walking.	
16	Male. 18.	Right.		20 weeks.		6 weeks, first fracture. 7 weeks, sec- ond fract- ure.	4 years, 6 months.	All right. En- listed in the army.	
17	Male. 3.	Junction of lower and middle one- third, left.	Suspended.	8 weeks.	8 weeks.	4½ weeks.	3 years, 8 months.	Some stiffness and aching.	
18	Male. 7.	Middle.		8 weeks.		5 weeks.	4 years, 6 months.	As strong, not so straight.	
19	Male. 58.	Junction of upper and middle one- third.		13 weeks.	11 weeks.	11 weeks.	2 years, 4 months.	Strong. Knee, whole thigh stiff. Lame. Cannot dress foot. Rhen- matic.	
20	Male. 40.	Upper one- third.		13 weeks.	10 weeks.	5 weeks.	2 years, 9 months.	Painful in walk- ing. Motions normal.	
21	Male. 65.	Junction of lower and middle one- third.			6 months.	No union.	6 years, 4 months.	False joint. Pain in knee. Limp. Cane.	Three inches shortening; 1 inch atrophy of thigh and calf.
22	Male. Adult.	Middle.		12 weeks.	8 weeks.	6½ weeks.	5 years.	Knee painful go- ing up and down stairs. Great stiffness following in- jury.	Length same; no atrophy, no deformity.
23	Male. 18.	Supracondy- loid, left.		12 weeks.		4 weeks.	6 years.	No trouble.	One-half inch atrophy of left thigh, no callus or deformity.
24	Male. 2.	Middle, right.		4 weeks.	6 weeks.		6 years, 1 month.	No trouble.	
25	Male. 21.	Middle one- third, left.		18 weeks.	6 months.		1 year, 7 months.	Muscles weak; ache occasion- ally.	
26	Male. 15.	Middle, left.		16 weeks.	14 weeks.		1 year, 6 months.	Slight shorten- ing. Stiff- ness of knee; 45° flexion.	Three-fourths inch shorten- ing; 3 inches atrophy of left calf, consider- able deformity.
27	Male. 59.	Junction of lower and middle, ob- lique, left.		9 weeks.	13 weeks.	3 weeks.	3 years, 7 months.	Used cane and crutch. Pain in using.	
28	Male. 7.	Just above middle, left.		6 weeks.	5 weeks.	3 weeks.	3 years, 8 months.	Perfect.	Perfect.
29	Female. 3½.	Below middle, right.		3 weeks.			1 year, 6 months.	Perfect.	Left ½ inch longer.

TABLE II. (Continued.)

No.	Sex. Age.	Seat of Injury.	Treatment.	Time Spent in Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally.	Examination of Cases Reporting.
30	Male. 40.	Below middle, left.		5 months.			1 year.	Delayed union. Weak. Knee stiff. Swelling of leg.	Bravny knee and calf; patella movable; slight motion at knee only.
31	Male. 9.	Junction of upper and middle one-third, right.		5 weeks.	9 weeks.	4 weeks.	1 year, 8 months.	When runs for a long time pains a little. Yields to it a little.	Perfect.
32	Male. 11.	Middle, right.		6 weeks.	3 weeks.	7 weeks.	6 years, 9 months.	Perfect.	Perfect.
33	Female. Young. Adult.	Middle, left.		5 weeks.	8 weeks.		5 years, 4 months.	Perfect. Slight forward and outward bowing.	Right thigh, 1 inch atrophy; right calf, $\frac{3}{4}$ inch atrophy; slight limp; $\frac{5}{8}$ inch shortening of right.
34	Male. 9.	Junction of upper and middle one-third, left.		5 weeks.			5 years, 3 months.	Perfect.	
35	Male. 53.	T into joint.		8 weeks.	3 months.		3 years, 5 months.	Swells and pains when stands much upon it.	

TABLE III.

FRACTURES OF THE PATELLA TREATED BY THE NON-OPERATIVE METHOD. RESULTS ONE AND ONE-HALF TO TEN AND ONE-HALF YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Accident.	Present Condition.	
1	Male. 36.	Transverse, no separation. Direct violence.		5 months.	8 weeks.	2 years, 1 month.	As strong as before accident. No pain; limited in motion; slight beyond right angle.
2	Male. 21.	Right, comminuted. Left stellate. Direct violence.		6 weeks.	3 weeks.	10 years, 7 months.	As good as before accident. Good motion.
3	Male. 21.	Right and left, muscular violence.		6 months.	7 weeks.	7 years, 9 months.	Not as good as before accident. Crack and feel stiff. Half of normal.
4	Female. 44.	Right, transverse, middle.		3 months.	5½ weeks.	4 years, 1 month.	Not as good as before accident. Aches and burns on sitting. Motion much limited.
5	Male. 19.	Right, transverse, no separation. Direct violence.		6 months.	5 weeks.	2 years, 10 months.	Just about as good as before accident. Not as strong; some atrophy of muscles. Motion slightly limited.
6	Male. 38.	Left, oblique, $\frac{1}{2}$ inch separation. Direct violence.		7 months.	8 weeks.	5 years, 2 months.	Not quite as good as before accident. Motion normal.
7	Male. 28.	Right at middle. Direct violence.		5 months.	6 weeks.	5 years, 2 months.	About as good as before accident. Weak; motion almost normal.
8	Male. 26.	Right, lower part, $\frac{1}{2}$ inch separation. Muscular violence.		10 weeks.	10 weeks.	4 years, 5 months.	Not as good as before accident. Stiffness in damp weather; slight limitation of flexion.
9	Male. 29.	Middle transverse, $\frac{1}{2}$ inch separation. Direct violence.		9 months.	4 weeks.	6 years, 7 months.	Not as good as before accident. Flexion limited half.
10	Female. 38.	Right, transverse. Muscular violence.		6 weeks +.	6 weeks.	3 years, 5 months.	Not as good as before accident. Weak; trouble in going up and down stairs. Motion normal.
11	Male. 37.	Right. Direct violence.		3 months.	4 weeks.	6 years, 6 months.	Not as good as before accident. Weak; pain after unusual exertion and in damp weather. Motion to right angle.
12	Male. 33.	Left, compound, oblique. Thigh too.		18 months.	8 weeks.	6 years, 9 months.	Not as good as before accident. Motion limited to 3°, much atrophy of calf; fractured thigh as well; upper one-third oblique. Union 8 weeks.
13	Male. 21.	Left, 1 inch separation. Indirect violence.		8 months.	4 weeks.	6 years, 5 months.	As good as before accident. Motion unlimited.
14	Female. 47.	Indirect violence.		13 months.	8 weeks.	10 years, 1 month.	Not as good as before accident. Weak and stiff. Motion less than to a right angle.
15	Male. 61.	Right, 2 inches separation. Direct violence.		6 months.	12 weeks.	8 years, 2 months.	Right hemiplegia; blind. Knee quite stiff.
16	Male. 19.	Right, transverse. Direct violence.		6 weeks?	6 weeks.	1 year, 4 months.	Not as good as before accident. Motion half-way, right angle; stepping up a height difficult. Right thigh, 1 inch atrophy. Right calf, $\frac{1}{2}$ inch atrophy.
17	Male. 11.	Left, 3 inches separation.		6 months.	4 weeks.	8 years.	As good as before accident. Motion normal.
19	Male. 58.	Right. Direct violence.	Several years.	4 weeks.	5 years, 11 months.	Not as good as before accident. Motion half flexion.	
20	Male. 34.	Right compound, leg, patella. Direct violence.		3 months.	6 weeks.	5 years, 2 months.	Not quite as good as before accident. Kneeling is painful; motion normal.
21	Male. 54.	Left. Direct violence.		8 months.	9 weeks.	7 years.	Weaker. Motion nearly normal.
22	Female. 36.	Right, double fracture. Left, transverse at middle. Direct violence.		6 months.	5 weeks.	9 years, 5 months.	As good as before accident. Motion perfect.
23	Male. 28.	Left. Indirect violence.		6 months.	3 weeks.	5 years, 1 month.	As good as ever.

TABLE III. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Accident.	Present Condition.
24	Male. 30.	Right, transverse, junction of middle and lower one-third. Indirect violence.	8 weeks.	8 weeks.	10 years, 4 months.	Almost as good as before accident. Stepping on irregular surfaces causes pain in knee. Motion slightly limited.
25	Male. 32.	Right, transverse, middle, $\frac{1}{2}$ inch separation. Indirect violence.	8 months.	5 weeks.	2 years, 1 month.	Not as good as before accident. Motion less than half; pain and stiffness going up and down stairs.
26	Male. 42.	Left, transverse, lower down, $\frac{1}{2}$ inch separation. Direct violence.	6 months.	5 weeks.	4 years, 6 months.	Not as good as before accident. Weak, no pain. Trouble in going up and down stairs; cannot run with it. Flexion and extension normal; not strong in extension; 2 fingers' separation in extension, 3 fingers' separation in flexion.
27	Male. 44.	Right. Muscular violence.	6 months.		2 years.	Flexion right angle, extension normal; $\frac{1}{2}$ inch separation.
28	Male. 32.	Left, transverse, middle, $\frac{3}{4}$ inch separation. Muscular violence.	9 months.	5 weeks.	7 years, 9 months.	Almost as good as before accident. Left, more than finger's breath separation. In running is hindered, cannot lift legs quickly; can walk up and down stairs all right. Right, less than a finger's breath separation.
29	Male. 28.	Right, transverse, middle. Muscular violence.	9 months.	8 weeks.	10 years, 2 months.	Flexion and extension, normal distance.
30	Male. 21.	Right compound, $\frac{1}{2}$ inch separation	8 months.	4 weeks.	2 years, 3 months.	Almost as good as before accident. Flexion to right angle; $\frac{1}{2}$ inch separation; 2 inches atrophy of thigh; $\frac{3}{4}$ inch atrophy of calf.
31	Female 37.	Right, transverse, above middle. Indirect violence.	6 months.	4 weeks.	6 years, 7 months.	Not as good as before accident. Gives way in walking and falls. Motion limited.
32	Male. 27.	Transverse.	6 months.	4 weeks.	7 years, 4 months.	Not as good as before accident. One-half finger separation. Fragments larger than normal patella.
33	Male. 23.	Right, transverse.	2 months.	5 weeks.	7 years, 10 months.	Just as good as before accident. Motion slightly limited. Cold at times.
34	Male. 30.	Right, transverse, $\frac{3}{4}$ inch separation.	15 weeks.	6 weeks.	7 years, 9 months.	Almost as good as before accident. Motion limited; bad at times.
35	Male. 24.	Right.	6 months.	9 weeks.	9 years, 4 months.	Almost as good as before accident. Favors it. Flexion about normal.
36	Male. 30.	Left, lower one-third. Direct violence.	6 months.	3 weeks.	5 years, 9 months.	Nearly as good as before accident. Aches and pains at times. Flexion slightly limited. Left calf and thigh slightly atrophied; up and down stairs perfect. Kicks and runs the same.
37	Male. 19.	Left, transverse, low, 1 inch separation. Direct violence.	1 year.	3 weeks.	5 years, 3 months.	Almost as good as before accident. Walks up and down stairs. Motion about normal. Separation less than finger. Kicks and runs perfectly.

TABLE IV.

FRACTURES OF THE PATELLA TREATED BY OPERATION. RESULTS AFTER FROM ONE TO NINE YEARS.

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
1	Male. 24.	Right, compound, three pieces.	Wired. Operator, C. B. Porter.	11 weeks.	2 years, 4 months.	About as good as before accident. Cannot kneel down on it. Has motion beyond a right angle.
2	Male. 28.	Right, transverse. Direct violence.	Wired. Operator, C. B. Porter.	4 weeks.	2 years, 4 months.	Almost as good as before accident.
3	Male. 31.	Refracture, $\frac{3}{4}$ inch separation.	Expectant 12 months. Wired. Operator, C. B. Porter.	5 weeks.	5 years, 2 months.	Not as good as before accident. Pain after over-exertion and in cold weather. Motion slightly limited.
4	Male. 41.	Right. Indirect violence.	Wired 1 week after injury. Six months. Operator, C. P. Porter.	6 $\frac{1}{2}$ weeks.	2 years.	Not as good as before accident. Soreness and painful at times. Motion much limited. One-eighth inch separation.
5	Male. 27.	Left, almost no separation. Indirect violence, etc.	Wired 1 week after injury. Five weeks. Operator, W. M. Conant.		3 years, 3 months.	Practically as good as before accident. Trouble in going up and down stairs. Cannot run. Cannot get on and off cars without difficulty. Motion to right angle in flexion. Enlarged left patella. Bony union. Wire felt through skin. Measurements of thigh and calf the same.
6	Male. 18.	Indirect violence, transverse, lower, $1\frac{1}{2}$ inches separation.	Wired. Seven weeks. Operator, C. B. Porter.	4 weeks.	3 years, 9 months.	Not as good as before accident. Cannot kneel on it. Rides bicycle. Bony union. Wire felt. Slight limitation of flexion. No muscular atrophy. Aches occasionally on going up and down stairs.
7	Female. Adult.	Old fracture, direct violence 5 years before.	Wired. Skin fascia capsule divided. Operator, C. B. Porter.	6 weeks.	1 year.	As well and as strong as before accident. Limited in flexion.
8	Male. 27.	Left, indirect violence, junction of lower and middle one-third.	Wired. Six weeks in splint. Operator, C. B. Porter.	3 weeks.	1 year.	As good as before accident. Flexion slightly limited.
9	Male. 45.	Indirect violence, wired.	Eleven weeks in splint. Operator, F. B. Harrington.	3 $\frac{1}{2}$ weeks.	2 years, 4 months.	Almost as good as before accident. Very slight limitation of flexion.

TABLE IV. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
10	Male. 24.	Ligamentous union after fracture in 1897; separation then $\frac{1}{2}$ inch, now $1\frac{1}{2}$ inches separation exists, and is increasing.	Wired. Operator, S. J. Mixer.	4 weeks.	1 year, 4 months.	Not as good as before accident. Limitation of flexion.
11	Male. 65.	Compound comminuted. Direct violence.	Wired, 7 months. Operator, C. L. Scudder.	3 weeks.	2 years, 2 months.	Not as good as before accident. Weak. Motion slightly limited.
12	Male. 19.	Left. Indirect violence.	Wired, 4 months. Operator, J. C. Warren.	3 weeks.	5 years, 7 months.	As good as ever. Stiff after sitting. Motion slightly limited.
13	Male. 32.	Left. Direct violence.	Pins. Operator, J. C. Warren.	3 weeks.	9 years, 2 months.	Not as good as before accident. Not as strong. Cannot run and jump. Motion normal.
14	Male. 31.	Indirect violence, 1 inch separation.	Sutured with cat gut. Six months in splint. Operator, J. Homans.	$3\frac{1}{2}$ weeks.	7 years.	Not as good as before accident. Some stiffness. Some pain. Motion limited.
15	Male. 39.		Sutured with silk. Two months. Suppurated superficially. Operator, J. Homans.	11 weeks.	7 years, 1 month.	Not quite as good as before accident. Aches above the knee. Motion limited.

TABLE V.

FRACTURES OF THE LEG. RESULTS ONE YEAR AND FIVE MONTHS TO TEN YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Duration of Treatment.	Time Spent in Hospital.	Time of Union.	Time Elapsed Since Accident.	Present Condition.
1	Male. Adult.	Left compound, tibia, middle.	16 weeks.	4 weeks.	Wound healed, 4 weeks.	4 years, 2 months.	As good as before accident. Left thigh $\frac{3}{4}$ inch smaller. No trouble. Perfect functionally.
2	Male. 22.	Left compound, both bones at middle third, oblique.	17 weeks.	6 weeks.		9 years, 4 months.	Not as good as before accident. Sore and lame in fracture. Able to work perfectly. Left thigh, $\frac{1}{2}$ inch atrophy. Left calf, $\frac{1}{2}$ inch atrophy. Slight flat-foot on left side.
3	Male. 42.	Right. Both, 2 inches above ankle.	8 weeks.	2 weeks.		2 years, 8 months.	As good as before accident. Right thigh, $\frac{3}{4}$ inch atrophy. Pain with weather changes.
4	Male. 36.	Left tibia 2 inches above ankle, oblique. Left fibula $4\frac{1}{2}$ inches above ankle. Right fibula $2\frac{1}{2}$ inches above ankle.		10 weeks.		5 years.	Not quite as good as before accident. Cramps at night, right calf. Left shorter. Left thigh, 1 inch atrophy. Right, flat. One year ago injured right ankle again. Since then pain in it in wet weather.
5	Male. 27.	Both compound. Junction middle and lower one-third.	8 weeks.	6 weeks.	Solid 10 weeks, wound closed 6 weeks.	5 years, 4 months.	As good as before accident. Cannot run quite as well as before.
6	Male. 60.	Both compound 2 inches above ankle.	18 weeks.	3 weeks.	Wound closed 2 weeks.	6 years, 5 months.	Not as good as before accident. Some deformity. Pain on long standing.
7	Male. 36.	Left tibia and fibula near ankle, astragalus?	4 weeks.	4 weeks.	5 weeks union, ankle motion.	3 years, 2 months.	Not as good as before accident. Ankle is quite stiff.
8	Male. Adult.	Both compound, transverse.	18 weeks.	3 weeks.		3 years, 9 months.	The leg swells, so that it must be bandaged. The skin does not get hard over the fracture.
9	Male. 49.	Right compound 3 inches above ankle.	21 months.	11 weeks.		7 years, 3 months.	Not as good as before accident. Leg is weak. Stiffness in the ankle and foot.
10	Male. 11.	Left. Both same level, 4 inches above ankle.	4 weeks.	4 weeks.	4 weeks.	1 year, 5 months.	As good as before accident.
11	Male. Adult.	Tibia. Junction middle and upper one-third.	2 months.	2 weeks.		3 years, 1 month.	As good as before accident.
12	Male. 57.	Left. Both transverse, 3 inches above ankle.	4 weeks.	3 to 4 weeks.	4 weeks.	9 years, 1 month.	Not as good as before accident. Pains and is stiff.
13	Male. Adult.	Right. Both compound comminuted. Left. Pott's.	6 months +.	9 weeks.		5 years, 6 months.	Not as good as before accident. Leg is weak. Ankle pains. Right leg pains after work. Left perfect.
14	Female. 42.	Both high. Epiphyseal line.		5 weeks.	4 weeks.	4 years, 2 months.	Not as good as before accident. Pain in calf high up. Flexion limited just beyond right angle. No shortening.
15	Male. Adult.	Left. Both compound, 3 inches above ankle.	3 months.	6 weeks.	4 months solid.	3 years, 7 months.	Not as good as before accident. Rheumatism. Swelling of the foot.
16	Male. 50.	Right. Both compound, 3 inches above ankle.	$5\frac{1}{2}$ months.	7 weeks.	Wound healed, 3 weeks. Two and one-half mos. springy union. Five months solid.	2 years.	Not as good as before accident. Ankle weak and painful.
17	Male. 19.	Both bones. Tibia 3 and 6 inches above ankle.		4 weeks.	Springy 6 weeks, firm 8 weeks.	2 years.	As good as before accident. Pain in leg.

TABLE V. (Continued.)

No.	Sex, Age.	Injury.	Duration of Treatment.	Time Spent in Hospital.	Time of Union.	Time Elapsed Since Accident.	Present Condition.
18	Male, 20.	Inner malleolus.	6 weeks +.	2 weeks +.		8 years, 3 months.	Not as good as before accident. Weak after long standing. Pain in damp weather. No limp. As good as before accident.
19	Male, 26.	Left. Compound, tibia, upper one-third transverse.	6 weeks.	9 weeks.		10 years.	As good as before accident.
20	Male, 6.	Left tibia 2 inches above ankle, transverse.	4 weeks.	5 weeks.	5 weeks.	4 years, 6 months.	As good as before accident.
21	Male, Boy.	Both. Junction lower and middle one-third, transverse.	8 weeks.	10 days.	3½ weeks.	3 years.	As good as before accident.
22	Male, 6.	Right tibia, 3 inches from tubercle, oblique.		10 days.	7 weeks.	3 years.	As good as before accident.
23	Male, 7.	Right compound. Both 2 inches above ankle, oblique.	12 weeks.	8 weeks.	3 weeks. Wound healed 8 weeks.	8 years, 7 months.	Not as good as before accident. When walking painful.
24	Male, 42.	Right tibia, 1½ inches below knee.	4 months.	4 weeks.		3 years.	As good as before accident, but still a little. Motion normal.
25	Male, 28.	Pott's. Left lateral ligament.	5 weeks.	1 week.		3 years.	Ambulatory treatment used. As good as before accident, excepting that it sometimes swells with rheumatism.
26	Male, Adult, Old.	Right fibula, 1½ inches above knee.				4 years, 6 months.	Stepping on uneven surface troublesome; soreness and lameness. (Left femur too compound.)
27	Male, 34.	Right. Both 1 inch above ankle; 4½ inches above ankle.		4 months	3 months +.	1 year, 5 months.	Not as good as before accident. Foot turns in; swelling leg. Not strong. Thrombosis of veins. Left leg weak too. Heart is weak. Cannot bear weight on foot.
28	Male, Adult.	Both. Right, junction middle and upper one-third.	2 months.	11 days.	6 weeks.	3 years, 8 months.	Pain, refracture 6 months later.
29	Female, 60.	Left. Both compound. Lower 2 inches above ankle. Foot backward.	3 months.	4 weeks.		3 years.	Not as good as before accident. Crooked. Motion of ankle limited. Walked in 4 months. Foot swollen.
30	Male, Adult.	Right. Both compound comminuted, junction lower and middle one-third.	18 months in splint.	12 weeks.	12 weeks. Union soft. Wounds healed.	5 years.	Not as good as before accident. Post-tibial nerve torn out. Ankle limited in motion. Cramps in leg. Useful foot and leg.
31	Female, Adult.	Left. Both compound, 2½ inches above ankle.	4 months.	6 weeks.		3 years.	Not as good as before accident. One-fourth motion present. Lame. Septic bone removed.
32	Male, 33.	Left. Pott's.		5 weeks.		1 year, 8 months.	Not as good as before accident. Numbness in sole of foot. Pain in foot when first up and about. Some limp. Talipes equinus. Ankle broad. One and one-fourth inches shortening of leg. Not as good as before accident.
33	Female, 78.	Right tibia, middle.	2 months.	6 weeks.	5 weeks.	5 years.	
34	Female, 59.	Both. Lower one-third.	10 weeks.	4 weeks.	3 weeks +.	4 years, 2 months.	Not as good as before accident. Aches and pains and feels sore at times.
35	Male, 22.	Both. Below middle, oblique.		6 days.	5 weeks.	2 years.	As good as before accident. Some pain in cold weather.

TABLE VI.

A SERIES OF WIRED FRACTURES. RESULTS STATED.

No.	Age, Sex.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed since Operation.	Present Condition.
1	Male, Adult.	Jaw.—Fractured symphysis and body half-way to angle.	Symphysis wired. Operator, S. J. Mixer.		5 years, 4 months.	As good as before accident.
2	Male, 12.	Jaw.—Fractured body.	Wired. Periosteum sutured. Operator, W. M. Conant.	4 weeks.	3 years, 6 months.	Not as good as before accident. Troubles in eating.
3	Male, 19.	Clavicle.—Almost compound; small wedged-in piece.	Wired. Four weeks banded. Operator, S. J. Mixer.	3 weeks +.	1 year, 4 months.	Not quite as good as before accident. Cannot put hand above head as well.
4	Male, Adult.	Humerus.—Ununited and musculospiral paralysis.	Broken, 1893, united. December, 1893, no union. 1895, wired, musculospiral sutured. 1899, wired. Operator, M. H. Richardson.		9 months.	No union. Musculospiral paralyzed.

TABLE VI. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
5	Male. 10.	<i>Humerus</i> .—Compound left, low down.	Wired. Operator, H. H. A. Beach.		10 months.	Left humerus, some shortening. Flexion limited about one-half. Extension normal. Greenstick deformity. Slight atrophy of forearm. Slight atrophy of upper arm. Not as good as before accident.
6	Male. 35.	<i>Forearm</i> .—Ununited ulna, 5 months; 3 inches below olecranon.	Wired. Eight weeks in splint. Operator, H. H. A. Beach.	4 weeks.	1 year.	Not as good as before accident. Cannot turn wrist as before. Tired quickly.
7	Female. 40.	<i>Femur</i> .—United 15 months; anterior and exterior swing; 3 inches short, right.	Wired. Twelve weeks +. Operator, J. C. Warren.	3 months.	5 years, 11 months.	Not as good as before accident. Knee is stiff and painful. Leg is $\frac{1}{2}$ inches shorter.
8	Male. 36.	<i>Femur</i> .—Wired. Ununited.	Wired. Thirteen weeks. Operator, J. W. Elliot.		1 year, 6 months.	Not as good as before accident. Stiff knee and weak. Foot inverted. Right calf, $\frac{1}{2}$ inch atrophy. Knee flexion to right angle.
9	Male. 30.	<i>Femur</i> .—Middle. Ununited and deformity, 3 months; $\frac{3}{4}$ inch shortening. Knee feels stiff.	Wired. Operator, C. B. Porter.		1 year, 11 months.	Not as good as before accident. Stiff knee. Not as strong. Slight limp. Right $1\frac{1}{2}$ inches shortening. No deformity. Slight limitation of flexion.
10	Male. 25.	<i>Femur</i> .—Left. Compound. Lower third splintered.	Wired. Operator, C. L. Scudder.	6 weeks.	3 years, 11 months.	No limp. Left 1 inch shorter. Left thigh, 1 inch atrophy. Left calf, $\frac{1}{2}$ inch atrophy. Very slight limitation of flexion in left knee. Slight hyperextension in left knee. Lowering of left ankle arch. Went to work too soon.
11	Male. 48.	<i>Femur</i> .—Supracondyloid fracture.	Wired.	6 weeks.	4 years, 6 months.	Perfect.
12	Male. 53.	<i>Legs</i> .—Both compound. Right compound comminuted, oblique 5 inches above ankle. Left compound 5 inches above ankle. Kicked.	Wired. Right, when 12 days old. Left, when 1 year old.		Right, 1 year, 8 months. Left, 7 months.	Right, anterior and posterior deformity; solid. Not as strong. Flexion limited one-half. Left, slight motion. Uses crutches.
13	Male. 65.	Compound comminuted of both bones. Kick $3\frac{1}{2}$ inches above joint.	Wired. Three months.	9 weeks.	11 months.	Splints on left leg. Not as good as before accident. Bone (8 pieces) out. Local pain and swelling of leg. Two-inch increase in size of calf. Gets about with difficulty.
14	Male. 50.	<i>Leg</i> .—Ununited, 6 months.	Wired Three-quarters inch shortening. Ten months in cast. Operator, S. J. Mixer.	4 weeks.	1 year, 4 months.	Leg perfect. Foot troubles much.
15	Male. 56.	<i>Leg</i> .—Both bones $5\frac{1}{2}$ inches from tuberosity of tibia; backward bowing of tibia.	Nine weeks. Operator, M. H. Richardson.	2 weeks.	2 years.	Not as well as before accident. Gathers and breaks down.
16	Female. 18.	Compound of both bones 4 inches above malleolus.	Operator, C. B. Porter.		4 years, 11 months.	Some deformity. Pain. Swelling.

(Continued from page 321.)

only. This time the patient sat erect and the fluid was of the same kind as before — blood, but dark blue — and it flowed freely until about thirty-nine ounces had been withdrawn. As this aspiration was nearing the end, the patient experienced great pain and became conscious of a fresh invasion of the pleural space with air. From the position of my needle, below the level of the fluid, I am sure I did not puncture the lung, nor was any air aspirated from the pleural cavity. I finished the operation at once, as the patient was near fainting, occluded the needle puncture, and on percussion confirmed what he had felt, that though the bulk of fluid had been withdrawn, the pleural cavity was as full of air as on the first examination; about seventy-three ounces in all was withdrawn. The patient soon rallied and the air seemed to give him less pain and discomfort than at first. There was also some temporary recurrence of the effused blood, but no further aspiration was deemed necessary, as the general condition of the man improved rapidly, and tonics, open-air life and extra nourishment seemed to be all that was needed further.

Three or four weeks after the last aspiration he

went on a vacation to Nova Scotia, and a few weeks on a farm seemed to advance him very much. When he returned about October 1st, I found the lung had expanded and advanced almost to its original limits. He had gained from 135 pounds after the last aspiration, to 146 pounds, and felt so well he resumed his old position after an absence in all of eleven weeks. There are still some pains in the chest on making certain motions, but these are not made worse by his working up to the present time. I believe he has fully recovered.

The aspirated blood was liquid and remained free from coagulation after exposure to the air. It was about as dark as menstrual blood; was free from odor and remained homogeneous after standing in column. Under the microscope it was neither more nor less than blood. As far as I could estimate there was the usual ratio of red and white corpuscles. I regret that no exact blood count and no bacteriological tests were made. That there was some ordinary pleuritic fluid mixed with it I can neither affirm nor deny, but if present, it was in relatively small amount.

At the risk of being tedious I have gone into these details because of the rarity of this condition, as a

primary affection. Dr. Herbert B. Whitney, in the "Twentieth Century Practice," says it never occurs as a primary condition. So, too, says Dr. Frank Donaldson in "Pepper's System of Medicine," 1885.

The few writers whom I have been able to look up agree in stating it is always subsequent to trauma, aneurism, tuberculosis or other gross disease in contiguous structures. They say further, and truly no doubt, that the prognosis is always bad. Pagenstecher has demonstrated that the pleural cavity has the power of preventing coagulation of blood injected aseptically therein, that it is readily absorbed therefrom and that its presence therein does not excite pleurisy. This case bears him out.

I have called this idiopathic pneumohemothorax, and to all appearances it was so in that there was no objective or subjective evidence of pre-existing trouble. How then can we explain the sudden ingress of air and more gradually of blood afterward into the pleural cavity? Possibly at some time before he had had an adhesive pleurisy with an unusual vascular development in the adventitious tissue. His stretching that evening might have torn away some bronchial terminal, together with some small veins, and so opened the way for both air and blood at the point designated when the amphoric sounds were heard, a hypothesis similar to that accepted to explain non-traumatic subdural hemorrhages, barring the air element in the case of the pleura. A certain writer whom I cannot name has said that air in the terminal pulmonary vesicles is, aside from tubercular bacilli, practically sterile. If this is correct it would explain the non-infection of the pleural cavity and contents by the large volume of air with which it was twice distended. I believe he would have recovered without aspiration, though possibly it may have hastened the recovery. In any clinically similar case, where sepsis is not manifest, aspiration ought to be tried before resorting to any more radical measure, for some empyemas recover after aspiration. This case suggests: (1) We can have (practically) a primary pneumohemothorax; (2) that without diagnostic aspiration we cannot be sure of the nature of any pleural effusion; (3) that aspiration may precipitate an influx of air into the pleural cavity even if the lung is not touched by the needle; (4) that the pleural cavity can unaided take care of aseptic blood as well as of air.

Clinical Department.

BRADYCARDIA, WITH INTERMITTENT ALBUMINURIA.¹

BY ANDREW H. WHITRIDGE, M.D., BALTIMORE, MD.

PATIENT came to the dispensary complaining of shortness of breath. Family history good; no tuberculosis, Bright's disease, or heart trouble. Personal history: Had measles, whooping-cough in youth, typhoid fever in fall of 1894; no complications. Had one attack of rheumatism; both knees were swollen, inflamed, and painful. He uses tobacco, smokes and chews. Drinks whiskey to excess, using half-pint daily, often getting on a spree. Had gonorrhoea six times; denies lues. Was operated upon three times; in the first and in second operation ether was used.

¹ From the Dispensary of Johns Hopkins Hospital.

No albumin was found in urine before or after operation. Heart normal; pulse normal, 70 to the minute. Last operation, November 23, 1898, was for lipoma of the neck in the cervical region on the right side; cocaine was used. Incision five inches long between the sternocleidoid and trapezius muscles. The vagus was not exposed during the operation. The urine on admission, November 23, 1899, had albumin and fatty casts in it. Four days after the last operation no casts or albumin were found in the urine. Pulse then 70 to the minute. This is the last record of his pulse and urine until his admission to the dispensary, February 11, 1900.

Patient passes large quantities of urine during the day and is obliged to urinate frequently during the night, when he passes large quantities of urine. Has noticed occasionally in the past two months some puffiness under the eyes in the morning; has no nocturnal cramps in muscles of the legs, no swelling of the legs.

Present illness.—Three months ago patient noticed while going upstairs some shortness of breath; no dizziness or palpitation, and never lost consciousness. Accidentally at this time patient counted his pulse, and noticed for the first time it was 32 to the minute at the radial. Since then, two months ago, he has frequently counted his pulse and never noticed it above 32. He has no paralysis of the muscles and feels as strong and well as ever, with the exception of slight shortness of breath on exertion.

Physical examination.—Patient is an exceedingly intelligent man, not drowsy or in any way stupid. He is sixty years of age, of large frame and well developed. Skin anemic, but not waxy in appearance. Some puffiness under the eyes. Eyes react readily to light and accommodation. Pupils equal. Pulse good volume, increased tension, regular in force and rhythm, not compressible; at the radial 32 per minute. Heart's action at the apex is also 32 per minute. The pulse is therefore synchronous with the heart's action. Lungs negative on auscultation and percussion. Heart point of maximum impulse not palpable or visible, but determined by auscultation to be in the fifth interspace, 11 centimetres in the mid-sternal line within nipple line. Here both sounds are audible, first followed by soft systolic murmur, transmitted outward into the axilla. This murmur is not heard over the body of the heart. Aortic and pulmonic area is clear; no murmurs; both sounds well heard. Area relative to cardiac dulness begins at the upper border of the third rib and extends four centimetres to the right of the mid-sternal line. Spleen not palpable. Liver edge can just be felt below costal margin. Pulse 32 to the minute. Vessel wall distinctly thickened and can be rolled on the finger. Urine when first examined was voided just before patient had retired on the night previous to admission to dispensary. Was of a dark amber color, cloudy, and had a heavy white granular sediment. By Heller's test the most pronounced ring was observed; also albumin was demonstrated. Centrifugalizing specimen of urine, hyaline and coarsely granular casts were found; no sugar.

Two days after this first admission, February 13, 1900, patient returned. Pulse 32 to the minute, regular; heart's action regular, 32 at the apex. Specimen of urine voided at 7 A. M., just as he got up out of bed, was light amber color, clear; specific gravity,

1.020; mucous sediment; no albumin was present nor any casts; no sugar.

Being rather confused in my mind, since I had informed the patient two days previously that he had a contracted kidney, made him void a second specimen, which he did at 11 A. M., four hours after the first. Since the first and second specimens, patient had his breakfast and walked to the dispensary. Second specimen showed a dark, amber-colored urine, cloudy, heavy white sediment. Specific gravity could not be determined—too small amount. Large amount of albumin by heat and nitric-acid tests; no sugar.

This case is of interest, for there are four etiological factors that can cause this bradycardia. As this patient has arteriosclerosis, occlusion of the coronary arteries may play an important rôle in the slow pulse, due to failure of nutrition of the muscles of the heart.² Patient's heart is also enlarged to some extent, but the sounds are well heard at the apex and over the base of the heart. Pulse is regular, good volume and tension. Myocardial changes are often cause of slow pulse and must be thought of in this case as one factor.³ Bright's disease or any wasting disease is the most important of all these etiological factors.

The last factor in the cause of his bradycardia is the irritation caused by the removal of the lipoma of the neck, causing stimulus to vagus nerve. Dr. Thomas Clifford Allbutt, in his excellent "System of Medicine," in his article on functional disorders of the heart, refers to irritation of vagi as a probable cause of slow pulse in children. Why is it not possible, owing to the extent of the operation which was done by subcutaneous injections of cocaine in the cervical region, that a part of a nerve is caught in the scar and reflex irritation is causing slow pulse?

On reviewing the etiological facts of the case, I think myocardial changes can be excluded on account of the pulse, which is regular in force and rhythm, of good volume and tension, not easily compressible. The heart sounds are loud and regular, not intermittent, and heard distinctly in the aortic pulmonic areas. The area of cardiac dulness is increased to some extent to the right of the mid-sternal line.

This case is of interest, for there is a period of permanent bradycardia of three months, with intermittent albuminuria of over two years' duration.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."—SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

THE MANAGEMENT AND CONTROL OF INFECTIOUS DISEASES.

*A Contribution to the Study of Epidemic Diarrhea.*¹

UNDER the foregoing title, Dr. Newsholme contributes an excellent paper upon the subject of "Epidemic Diarrhea," illustrated with diagrams and a brief

² Whittaker: Twentieth Century Practice of Medicine.

³ Osler: Lancet, February 27, 1897.

¹ Public Health, London, December, 1899, p. 139.

statement of the prevalence in the disease in the principal cities of Great Britain for a series of years. As a result of these investigations, the author concludes:

(1) That epidemic diarrhoea is chiefly a disease of urban life, but not necessarily bearing any relation to density of population (as measured by the number of persons per acre).

(2) As a fatal disease, it is a disease of the artisan, and still more of the lower laboring classes to a preponderant extent.

(3) Towns which have adopted the water-carriage system of sewage disposal, have, as a rule, much less diarrhoea than those which retain other methods of removal of excrement.

(4) Towns with the most perfect scavenging arrangements have the least epidemic diarrhoea.

(5) *Influence of soil.*—In houses having a solid rock foundation, with little or no superincumbent loose material, the diarrhoeal mortality is low, probably because polluting fecal and other organic impurities do not cling to or soak into such soils. On the other hand, over a loose soil, the diarrhoeal mortality is apt to be high.

(6) Given two towns equally placed, so far as social and sanitary conditions are concerned, their relative diarrhoeal mortality is proportional to the height of the temperature and the deficiency of rainfall in each town, particularly the temperature and rainfall of the third quarter of the year.

The fundamental condition favoring epidemic diarrhoea is an unclean soil, the particulate poison from which infects the air, and is swallowed most commonly with food, especially milk. In other words, epidemic diarrhoea is like typhoid fever, a "filth disease."

The author accounts for his omission of any reference to milk as a cause by the following pertinent statement: Milk is not the actual cause of diarrhoea. It is a vehicle of infection, just as mosquitoes are a vehicle of malaria, or rats of plague; and our ultimate research ought to be directed towards elimination—if it be practicable—of the actual conditions under which the contagia of these diseases are able to live. If we throw further light on these primal causes, we are in a better position to attack the vehicles of infection, and, failing removal of the primal causes, we can then to the best advantage break the chain of causation at a point nearer the sufferer. If A = the favoring climatic conditions, in the absence of which the contagium of diarrhoea does not multiply, B = the domestic and municipal cleanliness (removal and prevention of organic dust), which prevents the accumulation of this contagium, and C = the milk to which this contagium gains access, and along with which it enters the alimentary canal, B and C are evidently the factors of causation which we can hope most successfully to combat.

*The Prevention of Tuberculosis.*²

"In the first place, there can be no doubt that phthisis should be made a notifiable disease (as has been done already in South Australia). No other form of tuberculosis should be notifiable, and the register should be declared confidential as regards names. Next, the

² On the Guidance of Public Effort Toward the Prevention of Consumption, by J. Ashburton Thompson, M.D., Ph.D., New South Wales. Public Health, January, 1900, p. 248. See also article on The Compulsory Notification of Phthisis, by Bramwell, in the Medical Magazine, June, 1899, p. 515; also other papers on the same subject in the same journal in July, 1899.

State should provide for the free bacteriological examination of sputa, and this also should be a strictly confidential transaction between medical men and the central health authority. Thirdly, it should make the disinfection of rooms from which consumptives have been removed, or in which they have died, before they are reoccupied by any other person, obligatory on owners and occupiers of houses, and should require such disinfection to be done to the satisfaction of a legally qualified practitioner of medicine, who should be required to certify it in writing. Fourthly, district registrars should be required to notify every death from phthisis as soon as registered by them. Fifthly, good building laws should be enacted, and steadily enforced. Much beyond that I do not think the State should go, at all events at first, but the central health authority should forward by post some brief pamphlets of instructions to the persons whose names are notified to it. That, I dare say, seems to some little enough for a government to do. But it contains what is essential. It furnishes the means of learning what the number of sufferers is, and the facts as to incidence of the disease on classes, occupations and localities, and this knowledge is the indispensable foundation of practical measures of prevention. In order to remove the all-important secondary causes of consumption most expeditiously and most economically the faulty spots must be identified, and occurrence of cases of the disease furnishes the best index to them.

"Try to imagine for a moment a police charged to control unruly characters, but entirely ignorant of their appearance, habits, haunts and journeyings. It is scarcely possible to do so. Yet that is the position of most States in relation to living consumptives among the population. The information furnished by a well-ordered scheme of notification, after being carefully compiled, abstracted and charted, would in a few years furnish the requisite guide to effective action, and by being communicated to the public, would gradually render effective action more completely possible."

*Tuberculosis among Cattle and Children.*³

In an excellent paper upon this subject Dr. Scurfield makes the following suggestions that the Government should enact:

(1) That injections of tuberculin be only made by duly qualified veterinary surgeons. (2) That every veterinary surgeon who employs the tuberculin test be bound under a penalty to brand every animal that reacts. (3) That the tuberculin, and the services of a veterinary surgeon to perform the test, be offered free of charge to any farmer or breeder who will agree to isolate the sound from the reacting animals, and that compensation be paid for any of the branded reacting animals, which, on being slaughtered within a reasonable time—say one year—is found to be unfit for food. (4) That the sale of branded animals, except for slaughter, be prohibited. (5) That any obviously tuberculous animals found among the stock on the arrival of the veterinary surgeon to perform the testing be slaughtered without compensation, except in cases of failure of diagnosis. (6) That any butcher buying a branded animal be obliged to apply to the meat inspector of his district for the purpose of

ascertaining whether the carcass is fit for food, and what organs require to be destroyed, condemnation to be meted out on the lines laid down by the last Royal Commission. The duties of meat inspector would naturally fall to the veterinary surgeon appointed for the purpose of the Contagious Diseases (Animals) Acts. (7) That the milk of the branded cows be not sold for human consumption unless an arrangement be made for their periodical inspection by a veterinary surgeon, to ascertain that the udders are free from disease. (8) That local authorities be empowered to compel the slaughter of cows suffering from tuberculous disease of the udder, or advanced tuberculous, compensation only to be paid in the case of wrong diagnosis and animals branded under Enactment 2. (9) That the local veterinary surgeons carrying out the provisions of the Contagious Diseases (Animals) Acts be appointed to carry out these enactments. Part of the extra salaries required could be obtained by doing away with the travelling inspectors of the Board of Agriculture, who, without any technical training, go about the country in case of swine, fever outbreaks, etc., to perform work which could be much more efficiently and promptly done by local veterinary surgeons. The local veterinary surgeons would thus be practically veterinary medical officers of health. In France there is, I believe, such a veterinary health officer in each district. (10) That after the lapse of, say, five years from these enactments becoming law, (a) no compensation for condemned carcasses be given; (b) the sale of milk from any tuberculous cow be forbidden, and local authorities be empowered to use the tuberculin test, any animal reacting to the test to be isolated and fattened for the butcher as quickly as possible without compensation; and (c) all cattle be sold with an implied warranty that they are free from tuberculosis.

*The Tuberculin Test in Cattle.*⁴

The value of this test is well illustrated in the account given by Prof. J. M'Fadyean, of the Royal Veterinary College, of the results of its application to a herd of dairy cattle on her Majesty's home farm at Windsor. The herd numbered 40 animals, all of which were apparently healthy and in good condition. The premises in which they were kept are "probably the best in the kingdom from the point of view of cubic space, light and ventilation." After inoculation with tuberculin, 34 animals gave a definite temperature reaction, the temperature rising within fifteen hours from the normal to about 102° F. or higher; in two animals the temperature reaction was held to be doubtful, the rise reaching 103.6° F. in one case, and 103.8° in the other; in the remaining four animals no temperature disturbance was observed. In view of these results, it was decided to slaughter the whole herd, and a very careful post-mortem examination was made in case of each animal, exact details of which are given. Of the 34 animals which gave a definite temperature reaction, 33 were found to be undoubtedly tuberculous; in the remaining cow no anatomical evidence of tuberculosis was found, but the uterus was in an unhealthy and inflamed condition. Tubercular lesions of limited extent were found in each of the two animals in which the temperature reaction did not quite reach 104° F. Of the remaining four animals, in which no temperature disturbance had occurred,

³ On the Use of Tuberculin for Lessening the Prevalence of Tuberculosis among Cattle and Children, Is this a Matter for Government Interference? By Harold Scurfield, M.D. Public Health, October, 1899, p. 39. See also paper by Meredith Young on the same subject. Public Health, June, 1899, p. 612.

⁴ Journal of Comparative Pathology, 1899, Vol. xii, Part I.

three were apparently free from tubercular disease, whilst the fourth showed in a mediastinal gland a caseous nodule about the size of a pea, which contained fairly numerous tubercular bacilli.

The Discovery of Typhoid Fever Bacillus in Well Water.

Dr. Kübler and Dr. F. Neufeld⁵ were called upon in the month of June, 1898, to examine three samples of water which were regarded as likely to be infected with typhoid germs. They were obtained from three different places in a farmstead, situated in an isolated village of the district of Neumark. In two cases the test furnished negative results; but from some of the gelatine plates cast from the third sample, described as "well water," some pure cultures of a rod-shaped freely-moving bacillus were obtained, which when compared with pure cultivations of genuine typhoid-fever bacilli corresponded in every particular. The various tests are described; but the one regarded by the authors as decisive was that of Pfeiffer, carried out upon guinea-pigs, using serum having strong powers of conferring immunity. About four weeks later a second sample from the same well again yielded cultures, which, in respect of appearance, mobility and behavior under chemical and other tests when compared with genuine typhoid bacilli, corresponded in every particular; but when injected into living animals (guinea-pigs) the bacilli proved to be non-pathogenic, and as the authors point out, may well, during the interval, have lost or diminished in virulence. It is probable, looking to the facts of the case, that this may be the first occasion on which it has been possible to demonstrate the presence of typhoid germs in drinking-water with absolute certainty. Though infected water has often been examined before, the investigations have generally been undertaken too long after the introduction into it of the germs, and therefore, as would appear from this case, after the germs had disappeared or had parted with their virulence. The history of the outbreak is given; the total number of cases was only 13, and from the facts recorded by the authors it is probable that the germs were conveyed into the well by the urine of the first patient having percolated through the subsoil. After the use of the well water had been prohibited, a stranger passing by, who knew nothing of the outbreak and had no contact with any of the inhabitants, drank some of the infected water and sickened with typhoid fever on the 11th of June.

*Rabies; German Laws for its Prevention.*⁶

A brief summary of the German laws for the prevention of rabies presents the following principal features:

The law of August 8, 1835, states the importance of restricting hydrophobia by diminishing the number of dogs. § 93: Requires the destruction of all mad dogs. If a dog has even the slightest symptoms of madness he must be killed, even though he has bitten no one. § 94: Requires notification of the police. § 95: If a dog has bitten any one, a physician must be called, and the dog must be tied up and placed under observation, to ascertain whether he is mad or not. § 97: This section deals with the burial of the bodies of dogs. § 98: Disinfection of the objects touched by the mad dog, and their destruction, if necessary. § 99: Requires immediate killing of every dog bitten

by a mad dog, even when the fact of biting is not fully established. § 100: Mad dogs, and dogs bitten by them are not to be treated by laymen, and veterinarians may only attempt a cure by permission of the police. § 101: Mad cats, foxes and wolves are also to be killed. § 102: Deals with the treatment of horses, cattle and other domestic animals when bitten. § 103: Such animals not to be slaughtered for food. § 104: Requires the killing of such animals if they become mad. § 105: Their burial. § 106: Disinfection of stables and other objects with which the mad animals may have come in contact. § 107: Rules concerning the appearance of hydrophobia in men. § 108: Disinfection of articles which have come in contact with sick men.

By the law of July 2, 1856, all dogs must be provided with nose muzzles in the open streets. Dogs without muzzles are killed and their owners punished. A dog may be recovered on payment of a definite fee. In Düsseldorf, if rabies appears, all dogs must be tied, or led with a leash, or supplied with muzzles, and those without masters must be shot.

By Section 10 of the imperial law of 1880, concerning cattle diseases, hydrophobia is classed among such diseases, and its notification is made compulsory.

Section 38 prescribes a danger period of three months, during which all dogs in a district must be kept tied. The district includes all places where the infected dog has been seen, and all other places within a distance of four kilometres (two and one-half miles). This regulation is in force when a sick or suspicious dog has been running loose.

Section 39. The cadavers of dead animals must be rendered innocuous at once, and must not be skinned.

Malaria in the Province of Rome.

Prof. S. Santori's⁷ object in writing this paper was (1) to ascertain the monthly prevalence of malarial fever in the province of Rome for the period in question; (2) to find its relation, if any, to the rainfall; (3) to illustrate its distribution upon a map of the province. A series of charts is presented showing for each district the rainfall of each ten-day period and the prevalence of intermittent and pernicious fever.

The results of these observations show: (1) Two distinct periods, an endemic period from January to the first ten days of July, and an epidemic period for the remainder of the year from that time until December; (2) in the endemic period the disease is mild in character, the cases few in number, and its course is uniform or regular; (3) an epidemic in spring is almost unknown; (4) the epidemic period always begins suddenly after the first ten-day period of July. It appears to bear no relation to climatic phenomena nor to other hitherto known factors; (5) the severity of the epidemic may have relation to the same factors; (6) the rainfall of August and September has no influence upon the development of the primary fever, and has effect only upon the recurrent form.

Isolation Hospitals in England.

The principle of hospital isolation for infectious diseases has reached its highest development in England, where there are now several hundred of these useful establishments. Sir Walter Foster, M.P., in an address at the opening of a new hospital of this character in Enfield, Eng., stated that "the local debt

⁵ Zeitschrift für Hygiene, vol. xxxi, 1899, p. 133.

⁶ Vierteljahrsschrift f. öff. Gesund., xxxi, 4, 2, p. 774.

⁷ La Malaria nella Provincia di Roma (1882-97): sua ripartizione nei Comuni e suoi Rapporti con la pioggia Caduta. Annali d'Igiene Sperimentale, ix, 3, 1899, p. 354.

of the country is £252,000,000. Of this amount £1,500,000 have been expended in affording hospital accommodation. In 1898, 20,849 cases of infectious diseases were admitted to hospitals, and whereas in 1890 only 33½ per cent. of infectious diseases could be isolated, in 1898 the percentage was doubled. Further, with enlarged isolation accommodation, mortality from scarlet fever and diphtheria, especially, was greatly diminished. The last twelve years saw the former reduced one-half, and the latter yet more diminished."⁸

(To be continued.)

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting Monday, December 18, 1899, DR. R. H. FITZ in the chair.

DR. WILLIAM A. MORRISON showed a man who by diet and training had reduced his weight from four hundred and ten pounds to two hundred pounds.

DR. DEBLOIS: I have found that I can get rid of fifteen pounds at any time. Any of these things, such as iodides, alternating salts, extract of thyroid, etc., will reduce from fifteen to twenty pounds and there the reduction will stop. I follow a partial diet, take no sugar, use saccharine instead, use no milk in tea or coffee. I take cauliflower, Brussels sprouts, squash and all those things that I dislike very much indeed; on the contrary I am very fond of potatoes and rice. I was brought up on rice — never took a meal without rice in some form. I take as little as I can, and take what exercise I can, but leading a sedentary life it is difficult to take sufficient exercise. We know the Turkish bath is of no benefit, because you take on in the plunge what you lose by perspiration in the hot room.

ANATOMICAL SPECIMENS.

DR. TENNEY: The first of these is simply an anatomical specimen, the arch of an aorta where the two carotids are first given off from a common trunk. The next branch is the left subclavian. The third branch is the right subclavian, which passed round behind the esophagus and trachea, and then off on the right side, as in the usual course.

The second specimen is a heart which it seems to me is rather interesting in connection with what we hear of functional murmurs, a heart with an open foramen ovale, and yet the opening is closed by a valve, fairly competent. Dr. Councilman says they are not uncommon. He thinks he finds an opening of this sort in about 10 per cent. of the cases. Dr. Magrath has records of 240 autopsies, and says he has seen only four. In my dissecting-room experience, I never before have seen one so large. It easily admits the whole handle of the forceps and will almost admit the little finger.

The next two specimens are interesting. The first shows a male bladder, with an enlarged middle lobe in the prostate; in fact, two or three little lobes which can drop down and produce a valvular action. When

put on the stretch the trabeculae show strongly. The dilatation had gone on until the urachus itself had become somewhat opened up.

In direct contrast with this bladder and of decidedly another type is one here which is sacculated. The bladder is otherwise normal. The fact that the sacculation was not produced by stricture is proved by a cast of the urethra. The sac opens on the right wall of the bladder about half-way up. Its capacity is nearly an ounce.

DR. E. S. BOLAND showed a case of

IDIOPATHIC PNEUMOTHORAX¹

which was cured by aspiration.

DR. VICKERY: I have listened with great interest to the report of Dr. Boland. There are two things I would like to speak about: One is about the etiology of such a case as this. Perhaps it comes down to a merely verbal difference, but I myself would have thought likely that this attack was secondary to adhesions, which in their turn were the result of a tubercular process which the patient might have had years before, attaching a small portion of the lung to the parietal pleura. While he did not have any active disease, he had this pathological adhesion, and then the strain of his work broke it apart. Secondly, about treatment in such a case, one reason we thought best to delay aspiration was that it was very evident there had been an unnatural opening and that early aspiration might tend to reopen that place if it were beginning to close, hence if there were no great distress or signs of sepsis, it seemed wiser to wait two or three weeks so as to fortify the lung against the strain which aspiration would bring upon it.

DR. F. C. SHATTUCK: This is a very interesting case. I have never seen one exactly like it. I have seen two cases that might be called primary pneumothorax, both of them absolutely dry. One was a maid servant in a house where I was visiting a patient. I was told that she seemed to be short of breath. On examining her chest, to my surprise I found one side of the chest was absolutely full of air and the lung compressed, and yet she was about the house attending to her work. She had no cough and could not fix the time when this came on. It evidently had come on gradually. In Dr. Boland's case the man was well one day and taken in the night, and, therefore, could fix the time at which it occurred. I tapped the chest several times, drawing off the air under water. There never was any fluid at all. She recovered.

Another patient was sent to me from Springfield with the diagnosis of aneurism, and he had a pneumothorax — one chest entirely full of air; nor could he fix the moment at which the rupture occurred. The escape of air must have been gradual in his case also. He had had a tremendous cough and I always supposed that the origin of the pneumothorax was rupture as result of this violent cough. There had been a small tear with valvular opening and a little air kept escaping until the chest was full. He came down to the hospital under my care and I tapped him, allowing the air to escape under water. He has recovered perfectly. I have seen him since and he is perfectly well.

DR. SAMUEL WEST, of London, if I remember aright, reported a number of cases, not a large number abso-

⁸ The Sanitary Record, February 16, 1900, p. 142.

¹ See page 321 of the Journal.

lutely, a large number relatively, because it is a rare affection, of what he called idiopathic pneumothorax. I think the presumption always is that in default of trauma—and I suppose my second case can be classed as trauma because the man had a violent cough—there is probably a tubercular process in the background.

DR. MORSE: In the last few weeks I have been over the records of the City Hospital and looked up all the cases of pneumothorax in the last eighteen years. Leaving out the comparatively small number of cases due to trauma and to acute processes, like abscess or gangrene of the lung, certainly the very vast majority of the cases were due to tuberculosis. As yet I have not been able to follow up all the cases that left the hospital relieved, but every one that I have been able to follow up is now dead. Practically all of those that died in the hospital, and some not proved to be tubercular by autopsy, had tubercle bacilli in their sputum or a well-marked history of tuberculosis. This has made me feel very strongly that pneumothorax not due to trauma or acute processes is due to tuberculosis. A point that struck me in the histories of these cases was in how large a proportion of them the pneumothorax came on insidiously, the patient not being able to state when the perforation occurred. I should say more cases came on insidiously than acutely.

DR. FITZ: My impression is that blood which is poured into the thorax—that is pure blood—is likely to clot. In Dr. Boland's case it seemed to me probable that there was a certain amount of extravasated blood mixed with so much fluid as to prevent the formation of a firm clot; the fluid is not likely to have contained abundant fibrin owing to the absence of a clot. I should agree with reference to the possibility of a tubercular basis for the hemothorax, not necessarily an extensive tuberculosis of the lung. The occupation, persistent cough, and sudden onset without violence are in favor of the view which Dr. Boland has presented that there might be some localized tubercular process in the lung, so small as not to give rise to characteristic symptoms or signs and yet sufficient to produce weakening of the surface of the lung. Such a lesion would not account for the associated hemorrhage unless there were also a small aneurism or thin-walled vessel involved in the rent. The return of the bleeding suggests the supervention of a hemorrhagic pleurisy corresponding to the hemorrhagic pachymeningitis so often associated with hematoma of the dura mater.

I recall a case of spontaneous or idiopathic pneumothorax which was in the hospital some time ago, the man being apparently in vigorous health at the time of its occurrence. Some slight muscular strain was followed by the sudden invasion of the pleural cavity with air. He recovered after a number of weeks. There was no pleurisy and there was no evidence of disease of the lung after the removal of the air had taken place.

DR. CHARLES F. WITHINGTON and DR. ROBERT W. LOVETT read a paper on

TYPHOID SPINE.¹

DR. GRAHAM: The history of the first case interested me very much. In 1884 I laid down as a contraindication for massage, tonic muscular spasm, de-

pending upon an acute irritation of spine, spinal cord, or anywhere else; and the use of massage early in this case certainly bore out that principle. What I was afraid of was that massage having proved of no value at this stage it would not be used again, for most people would naturally say it had been tried and had done no good. I was much pleased when the reader got to that part of his paper where Dr. Prince showed his good judgment by advising massage at a later stage and more appropriate time when there was impairment of motion and disturbed sensation in the absence of neurotic irritation.

DR. SHATTUCK: I should like to ask whether three milligrammes is his usual dose of tuberculin for diagnostic purposes?

DR. WITHINGTON: It is not. I am willing to admit that that was not a perfectly satisfactory test in this case. I am sorry that the amount given was not larger. It was given just before he went away with the expectation it might be repeated afterwards, using five to ten milligrammes. That was not done. It is not absolutely conclusive that he would not have reacted to a larger dose, though I have seen several cases that have reacted to three milligrammes and some to even less than that.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting Wednesday, December 20, 1899,
DR. C. B. PORTER in the chair.

DR. J. J. PUTNAM read a paper entitled

A CASE OF PERIODIC PALSY, WITH SUGGESTIONS AS TO THE PATHOGENESIS.

The patient was a young man of great muscular development, who had been subject ever since twelve years of age to attacks of paralysis of almost all the voluntary muscles, coming on usually during the night and passing off at the end of one or several days. During these attacks the patient is unable to move hand or foot, or even the head, and the electrical reaction of the muscles as indicated by the results of one examination is greatly diminished, probably, indeed, lost during the height of seizure, as in the case reported a year and a half ago by Dr. Taylor and in the others collected by him.

This disease has usually been considered as due to toxemia, but the reader advanced the view that an undue inhibitory action analogous to that which plays a part in normal life might be the cause. Thus it is nowadays maintained that the relaxation of the muscles in general is not simply a passive but an active, or, so to speak, an inhibitory, process and experiments were cited to show that electrical irritability may be arrested temporarily by influences of a similar character. It is true that some cause would have to be found for the increased inhibition itself, but it is simpler to assume that we have to deal in these cases with tissues having characteristics analogous to those met with in normal states than to assume an entirely new cause. Thus the question presents certain analogies to other conditions usually classified as neuroses, which are themselves best understood if regarded as caricatures of normal states.

¹ See page 317 of the Journal.

DR. CLEGHORN: I suppose Dr. Putnam wishes me to speak from the physiological side of the case. What Dr. Putnam has said with regard to inhibition is very true, particularly the statement that we shall not know the nature of it until we know the nature of nerve force. The phenomena of inhibition can be shown to exist in the lowest form of life. If we take two poles of a battery, anode and cathode, and bring them into contact with an amoeba, we find that when the anode comes in contact with the organism it will contract, and on the cathode side it will elongate. Inhibition in the body under normal circumstances has only about one or two really pure examples. The first and main one is of course the well-known action of the vagus nerve on the heart. A good deal of work has been done on the cortex of the brain, stimulation of which has given peculiar results pointing to inhibitory effects. For example, Bubnoff and Heidenhain found that when they threw a portion of the body into tonic contraction, by a subminimal electrical stimulus, a slight sensory stimulus applied to the contracted portion would immediately produce relaxation. That was only in some stages of anesthesia produced by morphia, however. Sherrington has found that when he stimulated the motor areas of the cortex he produced not only a contraction of the muscles supplied from that area, but he also obtained an active relaxation of the antagonistic muscles. Gotch and Horsley have found that stimulation of the cortex gave rise to an electrical change in the spinal cord, and Ranke has shown that even reflex movements can be inhibited by passing a current through the cord in different ways. But Richet's work is probably the most interesting. He stimulated the cortex, producing a movement of a certain set of muscles; but if he applied another stimulus to the same spot on the cortex a certain time after the first one, he would have a decided inhibition, that is, the movement would be checked. If, on the contrary, he let a certain time elapse, about three-quarters of a minute, he would obtain an augmented contraction. His results were conclusive and seemed to point to the fact that a stimulus could have two different effects on contracting muscles. Direct stimulation, causing a contracted muscle to relax, has been done by Kaiser and some others. Fiek has shown that when he had the abductor indicis muscles voluntarily contracting against a spring, the contraction being as complete as possible, the voluntary impulse being pushed to the extreme, when he electrically stimulated the muscle it directly relaxed. If the voluntary contraction was not a complete one when he applied the electrical stimulation, then the stimulation was added to the voluntary impulse and the force of the contraction was increased. These experiments point to the fact that similar stimuli may give rise to two entirely different effects, in one case causing contraction, and in another relaxation of the muscles. Inhibition is a difficult thing to study and a difficult thing to discuss. Years ago Lauder Brunton, I think, pointed out that inhibitory phenomena were due to interference of stimulation waves—attempting to explain the matter simply on physical grounds.

DR. TAYLOR: My small knowledge of the subject is purely of a clinical sort, and in my paper, to which Dr. Putnam has alluded, and which was a superficial one so far as any conclusions were concerned, I did not attempt to go into detail on the etiology of this

extraordinary condition. It is certainly very true, as Dr. Putnam has said, that the poisoning theory in this particular disease has been worked to the last extreme. Not only has Mitchell here in America made a most careful, but unavailing, search for a toxic cause, but some years ago Goldflam, to whom we owe the earliest complete description of the disease, made a series of investigations also, with practically absolutely negative results. In view of these facts, it seems to me that Dr. Putnam's position is a perfectly correct one, that it is desirable to branch off as far as may be from the toxic theory and to investigate certain other possible causes as explanation of the phenomena observed in periodic paralysis. So far as the inhibition theory goes, I am in perfect ignorance regarding it, excepting what I have learned to-night. If that can be applied to this condition it will be a very valuable step in progress.

Regarding the clinical side of the manifestations, Dr. Putnam has spoken to-night of the dissimilarities in the described cases. It is also of interest to note the very extraordinary similarity of symptoms in the typical cases, which would seem to point almost conclusively to an identical cause. In my case there was a definite involvement of the facial nerves, not previously described. In another case, the sister of the young man whom I particularly described, the patient had had very few attacks, but of a very severe character. In one of these the phrenic nerve was involved, and there was great danger of suffocation from respiratory failure; she was, in fact, obliged to have artificial respiration for several hours before a sufficient power was regained to resume breathing in the ordinary way, and, if I am not mistaken, Goldflam has recently reported one case in which death resulted in an attack. As a rule, however, the condition is not fatal to life. Dr. Putnam spoke of the fact that in the majority of cases, allaying it thereby to migraine, the condition passed off toward the middle period of life. I think that is not an absolutely correct statement. So far as I am aware, in nearly all the cases the condition has remained fixed throughout life, comes on near puberty and in most of the reported cases has persisted to death. In the family I have described the paralysis did pass off at the middle period of life. Goldflam has attempted to ally this affection with certain of the pseudohypertrophic conditions of the muscles and has claimed that changes were found in the muscle which to his mind demonstrated the alliance of the two disorders. That seems to be an untenable position, in the first place, because his pathological conclusions are not to be taken without modification, and, in the second place, if it is allied to pseudohypertrophic paralysis, that does not in any way explain the periodicity of the attacks and the peculiar muscular state during the attacks, which are what constitutes the disease as we now know it.

DR. PRINCE: I do not feel that I can add anything to the subject. I have had no clinical experience with this disease, and such knowledge as I have has come entirely from reading the literature and particularly from the papers of Dr. Taylor and Dr. Mitchell, and the paper to-night. I have had no opportunity to study it personally. But looking at anything I might say as purely of a speculative nature, there are one or two thoughts that have occurred to me regarding it, and one of them is the analogy to another kind of paralysis, which the reader did not mention

to-night. As he says, we gain a great deal if we bring together different groups of diseases into one class. In all but one particular it seems to me these paralyzes resemble very strongly nocturnal paralysis. I would like to ask Dr. Taylor if he knows whether the muscles have ever been examined in nocturnal paralysis?

DR. TAYLOR: That has been suggested as a possible analogy, but, so far as I know, they have no points of identity except the fact that both occur usually at night.

DR. PRINCE: It seems to me, on the contrary, excepting in the electrical reactions, which I do not know anything about, there is a very marked analogy. I think if any one has seen or has had nocturnal paralysis, as I have had as a child, and felt the absolute loss of power of the muscles, he would recognize in the description of periodic paralysis something which is very like nocturnal paralysis. I have seen also many cases of nocturnal paralysis, and as described to me by patients the clinical descriptions as given by them resemble these cases. One patient says she lies hours absolutely helpless from head to foot, unable to move. I don't know what the electrical reactions are, but barring the electrical reactions, speaking purely of analogy, I don't know what stronger analogy we want. The person to whom I am referring lies three hours unable to move hand or foot, as she says; the paralysis passes off after a number of hours only to come again another night — it gives me a picture very like that of the other variety. It all depends whether there is or is not an absent electrical reaction. That does not contradict or uphold the theory suggested by Dr. Putnam. For all we know, nocturnal paralysis may be due to inhibition. In one sense it adds nothing to our knowledge to say that vertigo is epilepsy, but when you bring it from the unknown to the known class it adds considerably to our knowledge. I wish somebody would take the opportunity to examine the electrical reactions of nocturnal paralysis. I remember, as a child, waking up with nocturnal paralysis, not knowing what it was and finding my arms almost helpless, not able to move even the hands; it was a most strange feeling.

Regarding this theory of inhibition, I feel very grateful to Dr. Putnam for having brought this subject up, for I think it is a field in which in the future many discoveries are destined to be made. In a single field hardly any act takes place that does not involve the inhibition of other mental states. Probably scarcely any physiological act takes place that does not mean, the inhibition of other associated mental states. I suppose I am right in saying that the whole principle of counterirritation is inhibition. I think it is Sir William Broadbent who published some time ago a very interesting article on nerve force in which he argued very strongly, and I thought very suggestively, that all nerve force was merely the resultant of two forces, and not simply that the nerve force which resulted in contraction of the muscle was a force sent in a single direction, but two forces, one from the periphery to the centre and another from the centre to the periphery, and whichever was the stronger so the reaction would be. I suppose this conception involves the theory of inhibition very largely, and if his theory is correct I think it probably would have a very strong bearing in this class of cases and the theory of inhibition suggested by Dr. Putnam to-night.

In the line of what Dr. Putnam spoke of in his paper, namely, the inadequacy of the usual explanation of exhaustion from discharge, in corroboration I would suggest a clinical phenomenon commonly observed, and that is the aphasia that sometimes follows an epileptic attack. Epileptic attacks may be followed by complete aphasia. There is a complete suppression of function of certain specialized local areas. That cannot be due to exhaustion, as there can be no discharge in such cases. I had occasion a short time ago to see a very remarkable case of this kind, a case of epilepsy in which there were no real convulsions, but which was followed by complete motor aphasia, although the patient retained the power of writing. The patient and I were able to carry on a conversation by means of a pencil, and yet he was absolutely and completely dumb, — could not say a single word. There was a condition which corresponded to paralysis and was not due to exhaustion of such centres. That, it seems to me, is one fact in corroboration of what Dr. Putnam has said. Such a thing may be due to inhibition, or something like inhibition, whatever inhibition may be.

DR. SMITH: I have never had any experience with this affection, and I do not feel that I can add anything to what has been said. It is one of exceeding interest to me, from Dr. Putnam's paper and Dr. Taylor's, which I read a while ago, and also Dr. Mitchell's, but having had no cases, and having learned all I know of the disease from the literature, I don't feel that I can say anything that would be entertaining to the audience. I am glad that some other method has been suggested of studying these cases, because the toxic theory certainly ought to have been exploded years ago, not only for this, but for many other neuroses.

DR. COURTNEY: I should like to ask Dr. Putnam at what point he makes his inhibition active. I ask the question on account of the electrical and trophic changes which are present in the class of cases under discussion.

DR. PUTNAM: I can only answer by saying that I do not know. The suggestion of Dr. Meltzer was that it was some influence acting immediately on the spinal cord as a whole. Oddi discusses the cocaine experiments at some length, and thinks the inhibitory action comes on so quickly that it probably is not of chemical nature, more especially as it occurs when the cocaine is applied above the point where the electrical stimulation is applied. He suggests that cocaine anesthesia may likewise be an inhibitory phenomenon.

DR. COURTNEY: Dr. Putnam's inhibition theory appeals to me very much. We know from the experiments of Hoffa and others that the paresis and atrophy observed in the extensor groups going to affected joints is often due to a "strike" — so to speak — and nothing more on the part the cells of the ventral horns of the cord. This being so, it is certainly permissible to assume that the same sort of strike is on during the attacks in cases of family periodic paralysis. I am delighted at Dr. Putnam's handling of the autotoxemic theory in reference to cases in point, for it has long been my feeling that the present habit of attempting to drown the outcry against our ignorance of the real genesis of many nervous phenomena with loud-sounding cant about a mysterious and elusive autotoxin, should be overcome.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

MEETING of March 13, 1900, the President, Dr. CLEMENT CLEVELAND, in the chair.

DR. CLEVELAND showed a specimen of a ruptured ovarian cyst which he had removed. The patient gave a history of a fall. At the operation a great deal of fluid was found in the abdomen and a tense cyst, at the side of which was another ruptured cyst or possibly part of a multilocular cyst. There was a peritonitis present, so drainage through the cul-de-sac was established. Dr. Skene's clamp was used satisfactorily in the removal of the tumor. Despite all efforts, the patient's bowels could not be made to move and pain and nausea became continuous. Finally forty-eight hours after the operation, the lower bowel was distended by oxygen gas up to the point of pain. After this, the twist or obstruction evidently being relieved, the patient passed gas, the distention disappeared and the abdomen became flat. The patient is now in stupor and the prognosis is bad. The reason for reporting the case is to speak of the method of distending the lower collapsed bowel in the hope of relieving the obstruction higher up, which must be useful in other cases. In reply to questions by Dr. Boldt, Dr. Cleveland said that he had used oxygen in preference to carbonic-acid gas because it was present.

DR. BROTHERS called attention to the feasibility of employing the gas in an inverted siphon of seltzer water.

DR. CLEVELAND replied that he had used the inverted siphon in a case of intussusception.

DR. WILLIAM R. PRYOR showed

A CYSTOSCOPE

modified from Dr. Chetwood's. The light is concealed, the handle is changed so as to reduce to a minimum the danger of wetting the wires, and the lumen of the tube is free for the passage of instruments. The chief advantage is in the freedom of mirrors and lenses to be adjusted. It can be used without anesthesia. It is preferable to have the patient under ether and in the Trendelenburg position. The patient is placed in the lithotomy position, the tube is introduced without the lamp and used as a catheter. The table was then lowered into the Trendelenburg position and the lamp introduced. The only necessary caution in its use is to prevent bearing hard against the sides of the bladder.

DR. ABRAM BROTHERS read the paper of the evening on

SOME POINTS IN THE DIAGNOSIS AND MANAGEMENT OF CYSTITIS IN THE FEMALE.

The author referred to the symptomatology of the disease in its acute and chronic forms and emphasized the facts that with the modern means of exact diagnosis of vesical conditions, obscure lesions were no longer a mystery. "Irritable bladder" is now a myth. The author has been working chiefly with the Nitze cystoscope and believes it to have advantages over the Kelly instrument in that the bladder is directly illuminated and a large area can be seen in each field. The position of the patient, too, is easy, and no preliminary dilatation or anesthesia is necessary. Further, the interior of the bladder is dis-

tended by a fixed quantity of an antiseptic, transparent medium (boracic-acid solution). The author then related the various visible changes in the bladder in disease, and accepted Casper's classification: (1) Change in color and lustre; (2) increased capillary circulation; (3) swelling; (4) changed secretion. The inspection of the bladder is positively contraindicated in acute inflammations, but is allowed in all forms of subacute and chronic inflammations. Dr. Brothers narrated in detail the treatment of the various forms of vesical inflammation, insisting upon as early an examination of the bladder cavity as is permissible for the establishment of the exact diagnosis. He then showed the Nitze instrument, comparing it as he exhibited it with the instruments devised by Kelly. He claimed simplicity and greater ease of manipulation for the Nitze cystoscope.

DR. ALEXANDER J. C. SKENE, in opening the discussion, said that he agreed with the reader of the paper that instrumental investigation is seldom necessary to make a diagnosis of cystitis. He referred to the necessity of the general practitioner treating cases of cystitis intelligently. In speaking of the differential diagnosis of cystitis, Dr. Skene said that a slight displacement of the bladder could cause frequent urination and pain in the erect position, while a complete prolapsus would not. The degree of cystitis can be determined by the condition of the urine clearly and definitely. But in some forms of ulceration, secondary pericystitis and neoplasms a cystoscopic examination is necessary because the urine does not always show in these cases characteristic changes. The speaker referred to the possibility of doing great injury to the bladder by instrumental examination during an acute cystitis. He spoke of the fact that the Kelly endoscope of to-day was only a modification of the rubber one devised by Dr. Robert Newman many years ago. He said that for examination of the ureters the endoscope was no better than the cystoscope and was more difficult to introduce. Dr. Skene finds that a cystoscope with a slight curve is easy to insert and can be used for ureteral work with as great facility as the Kelly endoscope. In closing, the speaker said that the fountain syringe was to be preferred to the piston syringe, which the reader of the paper had advocated; the possible introduction of air into the bladder was always to be avoided, if possible.

DR. HIRAM N. VINEBERG compared the Kelly and the Nitze instruments. He said that the Kelly endoscope has the advantage of sterilization and allows of direct examination. It permits of therapeutic application under the eye and the removal of small foreign bodies, the snipping off of small growths and the ennetting or cauterization of the vesical mucosa. By the use of a Kelly instrument the character of the fluid issuing from the ureteral orifice can be easily seen, which is impossible with the Casper or Nitze instrument. By the employment of Kelly's endoscope urine may be collected from either ureter, thus obviating the necessity of ureteral catheterization.

DR. G. T. HARRISON said that the prognosis in chronic cystitis was favorable if pains were taken. The gradual dilatation of the bladder under pressure could be regulated by the use of a funnel.

DR. VINEBERG said that in chronic cystitis the use of scale pepsin dissolved to any percentage desired for each case was beneficial. It is especially soothing to the inflamed mucous membrane.

DR. SKENE said that he feared the traumatism caused within the bladder much more than he did the introduction of bacteria. If the mucous membrane be intact, bacteria will be taken care of. For topical applications the endoscope is to be preferred, but not for the removal of growths. In this procedure the base will continue to bleed; if not it will continue to break down under the influence of the urine and in time a calculus will form. The speaker doubted the necessity of catheterizing the ureters unless there is disease of the pelvis of the kidney or the ureters which needs attention. By the use of Harris's instrument, the urine from each kidney can be obtained separately. The great damage done by such catheterization is by injury, not by the introduction of germs.

DR. JOSEPH BRETTAUER agreed with Dr. Skene on the wisdom of not catheterizing the ureters. He finds it necessary in few cases. He narrated a case of tubercular kidney in which the kidney had likewise been infected by an attempt to catheterize the ureter. Although the instruments were clean and everything was done in an aseptic manner, the patient showed the new infection within twenty-four hours. The speaker endorsed the use of the Harris separator as fulfilling every purpose.

DR. E. B. CRAGIN spoke of Dr. Skene's attitude on the danger of infection of the bladder by dirty catheters and asked if Dr. Skene feared injury to the bladder more than he did the introduction of bacteria.

DR. SKENE replied that he did fear infection of the bladder, but he is equally afraid of traumatism.

DR. BROTHERS closed the discussion by urging that, with care, gradual dilatation of the bladder by the piston syringe was no more harmful than by the fountain syringe, and one knew the exact amount of fluid introduced.

Recent Literature.

A Manual of Modern Gastric Methods, Chemical, Physical and Therapeutical. By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Materia Medica and Therapeutics in the School of Medicine of the Royal Colleges, Edinburgh, etc. With a chapter upon The Mechanical Methods Used in Young Children, by JOHN THOMSON, M.D., F.R.C.P. (Edin.), Assistant Physician, Royal Hospital for Sick Children, Edinburgh. New York: William Wood & Co. 1899.

This book forms a very excellent and adequate manual upon the subject of which it treats. The outlines upon the clinical methods of examination of the stomach contained in most hand-books of clinical diagnosis or clinical chemistry are inadequate, as they fail to include a clear statement of the *rationale* of the methods.

In this book the descriptions are quite as adequate as those contained in the larger text-books upon the diseases of the stomach and in a much more condensed form.

We are glad to see that the author gives due consideration to the subject of the relations of the quantities of free and combined acids in the gastric contents. This point is of considerable importance in the understanding of the physiological chemistry

of the stomach. Yet though it has been for a long time emphasized by Martius and Luttke and Hayem, it is absolutely overlooked in most of the modern text-books upon the stomach. The author's own method for analysis of the contents is certainly an adequate one, but much less simple and, in our opinion, for purposes of clinical work, less adequate than the Töpfer method or some modification of this latter.

The objection to the Töpfer method urged by the author can be easily overcome by slight modifications. Thus, the reading of the dimethyl-amido-azo-benzol test for free HCl can be controlled by the use of 00 tropeolin so as to give accurate results. The alizarin test may be replaced by the Congo-red method. With these modifications this method is, in our opinion, greatly superior to any other for practical work.

Christian Science. An Exposition of Mrs. Eddy's Wonderful Discovery, Including its Legal Aspects. A Plea for Children and Other Helpless Sick. By WILLIAM A. PURRINGTON, Lecturer in the University and Bellevue Hospital Medical College, and in the New York College of Dentistry, upon Law in Relation to Medical Practice, etc. Pp. 194. New York: E. B. Treat & Co. 1900.

Mr. Purrington is a writer of unusual vigor of expression; he uses no unnecessary words, and leaves in the reader's mind not the slightest doubt of his meaning. He is particularly at home in his searching criticism and scathing denunciation of the cult of so-called Christian Science, to which this small volume is devoted. We most cordially recommend the book to our readers who desire a candid legal expression of opinion on this subject, which is becoming of so much social as well as medical importance. The relation of Christian Science to the law, to which the author devotes considerable space, is a matter about which knowledge is apt to be vague. A concise exposition of the subject may be found in these pages. Among the concluding sentences are the following: "But after all, that which will destroy Christian Science is the true exposition in the reviews and daily press of its absurdities, its vulgarities, its false pretences, as well as its dangers. It does not seem possible that a sane or reverent mind, or one with any sense of humor, could accept seriously the preachment of the exceedingly shrewd, but very ignorant and ungrammatical, old lady, once of Lynn, but now of Concord." The book is satisfactorily bound and has an index.

The Year-Book of the Nose, Throat and Ear. The Nose and Throat edited by G. P. HEAD, M.D. The Ear edited by ALBERT H. ANDREWS, M.D. Chicago: Medical Book Co. 1900.

This is a book of 250 pages, arranged in the familiar year-book manner. It is convenient in size, well arranged and unexpectedly interesting to read. The abstracts are well selected and well written. Too much would be worse than too little. This volume contains perhaps too little; of this, however, the authors are aware, and hope to make succeeding issues more complete and valuable.

INTERNATIONAL CONGRESS OF PUBLIC ASSISTANCE AND PRIVATE CHARITY.—This congress, the third, will be held in the "Palais des Congrès" of the Exposition in Paris, from July 30th to August 5th, under the presidency of M. Casimir-Perier.

THE BOSTON

Medical and Surgical Journal.

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THE PROPER SEATING OF SCHOOL CHILDREN.

THE comparative excellence of the school furniture of Boston schools was formerly a matter of justifiable civic pride, and it will be remembered that as long ago as at the Vienna World's Fair, the exhibit of Massachusetts school desks and chairs elicited favorable European comment and stimulated efforts at improvement. Since then much attention has been given to this question in several countries of Europe, and genuine progress has been made towards its solution. This is also true of some cities in our country. In the meantime, here in Boston, our school authorities have been, comparatively speaking, inactive, or active to but little good purpose. At the present time the school furniture in several cities in this country and abroad is superior to that which is found in Boston.

It is true that in 1892 renewed interest was manifested by the Boston School Committee in the matter of school seating, an interest shown by the Committee's appointment in that year of three physicians from its own members to serve as a special committee on the seating of pupils, and there was at that time an experimental introduction of adjustable desks and chairs into a new primary school at the instance of the special committee. In the same year an able and thorough report by Dr. Charles L. Scudder, entitled "Investigation into one of the Etiological Factors in the Production of Lateral Curvature of the Spine; Reasons why the Seating of School Children should receive very Careful Supervision," was published by the committee as School Document No. 9. Supervisors and the directors of physical training were ordered to aid and advise teachers in the seating of pupils and to report their observations and suggestions to the School Committee. Dr. Hartwell's studies of the seating question were published as School Document No. 8, 1894, and No. 4, 1895. And yet up to this last year of the century, as we have previously said, but little genuine recent progress has been made towards the proper seating of the great majority of the school children of Boston.

There is a general agreement among physicians and hygienists who have investigated the subject, that faulty school furniture is in an eminent degree responsible for the production of spinal deformities, muscular weakness, nervous debility and impaired vision among school children.

The subject was previously presented in 1895, and is to be again presented at the next meeting of the Boston Society for Medical Improvement, with the demonstration of improved chairs. It is to be hoped that this meeting will receive the hearty support of the medical profession, for it is doubtful if symmetrical development in our children is generally compatible with the present method of school seating; and it is impossible to obtain the best intellectual effort in children afflicted with contracted chests and twisted spines, nor can the community hope for the best from the descendants of such.

No question of any individual's profits, or of the claims of a patent with a "push" or a "pull," should be allowed for an instant to stand in the way of the adoption for the public school children of the most serviceable school furniture which a union of science and skill can devise.

THE PATHOLOGICAL INSTITUTE OF THE NEW YORK STATE HOSPITALS.

WE regret to learn that the continued existence of the Pathological Institute of the New York State Hospitals is being threatened. Should this laboratory be closed before a full opportunity has been offered to demonstrate its usefulness, we are convinced that a serious blow will be struck at the spirit of broad-minded research, so much needed, particularly in the line of work which it has been the aim of this Institute to cultivate. The scope of the work as outlined by its director, Dr. Ira Van Gieson, is comprehensive and goes far beyond what we are wont to regard as the field of psychiatry. Herein lies its claim to a generous recognition, and herein also lies an opportunity for criticism, of which its opponents have apparently not been loath to avail themselves. It is natural and quite inevitable that the results of investigation into the nature of mental disease should be slow in appearing. What we now want is good work; we have enough and to spare of the superficial variety, and we can only congratulate the Institute that it has withstood the clamor from various quarters for more publications. The work which has appeared has, on the whole, been valuable, and significant of what we are to expect in the future. Though we do not profess agreement with every detail of the plan of the correlation of sciences toward the definite end of meeting the problems of psychiatry, we see every reason to commend its main features as a most essential step in progress. To overthrow a laboratory which is striving to carry out so admirable a plan, before it has had time hardly to begin the work, except for reasons of the most conclusive character, is a step against which

all who are interested in the progress of scientific medicine should protest. We are quite aware of the fact that a strong tendency now observable in the study of psychiatry is the closer observation of patients, and a constantly increasing scrutiny of their symptoms to the end of better classification. No one doubts the advisability of this method and least of all, we presume, the director of the Pathological Institute in New York, however his opinions may have been distorted by individual interpretations. What Van Gieson claims, as we understand him, is simply a broad conception of the needs and requirements for the proper study of psychiatry, which is only to be gained by approaching the subject from the standpoint of various more or less closely related sciences. Into this scheme he would fit the clinical phenomena in their proper place, by no means ignoring them, and on the other hand, not giving them a prominence which fuller knowledge may show to be erroneous. For our part, we hope the better judgment may prevail in this matter of closing the doors of this really valuable adjunct to medical science, and the Institute be allowed to expand and grow along those lines which widening experience will undoubtedly demonstrate to be at the same time most broadly scientific and most completely practical.

DUST PNEUMONIA.

THERE is not the slightest doubt that dust is a nuisance of the very worst sort, as a residence in Boston during the past winter has amply demonstrated. That it has actually been as deleterious to the health as to the temper of the community has not been so completely shown, yet there is considerable evidence to prove that disease germs may be carried in dust to the extent of exciting certain specific diseases, among them pneumonia. In connection with a general discussion of pneumonia which has appeared in the current number of the *Practitioner*, a paper by Dr. Alfred Hillier is devoted to a consideration of the effect of dust in the etiology of the affection. Alluding to the prevalence of an inflammation of the lungs following the violent dust-storms of the subtropical countries, he thinks there is nothing inherently improbable in the supposition that a true pneumococcus pneumonia may be aroused, the dust acting as a contributory cause. Of his own experience he writes: "A Johannesburg or Kimberley dust-storm may sometimes continue for days, and during the storms a considerable number of cases of pneumonia not infrequently occur. I have myself been conscious of a considerable degree of thoracic pain, during a dust-storm, such as irritating particles of inhaled dust might conceivably produce, and a medical colleague and intimate friend of my own developed pneumonia, following just such a sensation as I have described, during a series of dust-storms in Johannesburg. He has held the view most strongly ever since that dust was the cause of his attack. . . . Chronic fibroid effects

on the lung produced by dust have long been recognized, and they are frequently forerunners of phthisis, which subsequently becomes established. Is it not also possible that dust may be capable, under certain conditions, of exciting an acute inflammatory condition of the lung, in which pneumonia rapidly follows, or, it may be, simultaneously occurs? The statistics quoted by Dr. Newsholme from the Registrar-General's returns, and the belief which the experiences of medical men in South Africa have given rise to, would seem to indicate that this is probable. There is, of course, also the possibility that besides the mechanical irritation of dust particles, pneumococci may also, like tubercle bacilli, be inhaled with dust."

In general, it may be said that more investigation on the whole subject is desirable, and likely to be productive of positive results, with the means of accurate observation and experiment now at our disposal. It is not unreasonable to hold that even when specific germs are not present in dust itself, the action of dust upon the mucous membranes makes them hospitable culture fields for such germs, from whatever quarter they may come.

MOSQUITOES AND MALARIA.

THE campaign, so auspiciously begun, to determine the relation of a certain genus of mosquito to malarial infection is not likely to rest until it is carried to complete success. To this end several ingenious practical experiments have been devised, under the direction of Dr. Patrick Manson, in connection with the London School of Tropical Medicine. Dr. Manson is having built on the marshes of the Roman Campagna a bungalow, in which two observers and their servants are expected to live from May to October. The hut will be protected in every possible way from the inroads of the mosquitoes by nettings, in order that bites may be obviated. If the dwellers in the hut escape malarial infection, the assumption will be justified that the mosquitoes are the carriers of the infection, and valuable negative testimony will be gained. It is further suggested, as positive evidence, to breed malaria-free mosquitoes in London, which will then be taken to Rome and fed on the blood of persons infected with the disease. On their return to London these mosquitoes will be allowed to bite healthy individuals, and the result carefully noted. Should the disease be produced in this way, knowledge of positive importance will be gained. We suspect, however, that the problem is not so simple as the foregoing experiments would imply, and that other factors than the omnipresent mosquito will be found to have a share in the production of the disorder. We cannot help wondering, also, whether this method of experimentation will please the antivivisectionists. Man will at least, be the only sufferer, unless it proves necessary to attempt the extermination of the race of mosquitoes, as a result of the positive evidence gained from the experiments.

The most lethal and most commercially available methods so far discovered for sacrificing these lower orders of life we give elsewhere.

DESTRUCTION OF THE MOSQUITO FOR THE LIMITATION OF MALARIA.

CELLI and Casagrandi¹ have made many experiments with reference to the action of different substances in destroying and preventing the development of the mosquito, either in the larval state in the water, or in its perfect form as a flying insect. Their paper contains many tables of different substances, showing the length of time required for killing the insects the quantity, the cost and other particulars. Their general conclusions are as follows:

(1) The condition in which the mosquito is most readily destroyed is either that of the larva or of the winged insect (not the egg). In the first case they are destroyed the more easily the younger they are.

(2) For destroying the larva the following substances have proved efficient in the order named:

(a) Among mineral substances, anhydrous sulphuric acid, potassic permanganate, common salt, potash, ammonia, carbonate of lime, bichloride of mercury, chloride of lime, sulphate of iron or copper, lime, and others of less efficiency.

(b) Among organic substances, powder of chrysanthemum flowers (pyrethrum), tobacco, petroleum, formalin, cresol, aniline colors and tar.

Considering, however, the doses necessary to destroy the insects, and the questions of practicability and price, all mineral and some organic substances must be disregarded, and vegetable powders, petroleum and aniline colors only can be considered.

(3) To destroy the winged insect, odors, fumes or gas may be employed. Among odors are turpentine, iodoform, menthol, oil of nutmeg, camphor and garlic. Among the fumes are those of tobacco, pyrethrum, fresh leaves of eucalyptus, quassia. Among gases, anhydrous sulphuric acid. It is to be noted, however, that these gases, odors, etc., in order to be efficient, must fill or saturate all the surrounding air, otherwise they only cause apparent death, or at best the flight of the insects, by which means they are sometimes useful in protecting man from mosquito bites, and preventing the insects from settling in habitations and sucking the blood from malarial patients.

(4) The problem of destroying mosquitoes can be solved experimentally, but practically only when economic considerations demand it. In the latter sense it is worthy of note that the antiquated use of petroleum for killing the mosquito has never become general even in districts where it is very cheap, and it is probable that such substances will be preferred as will also destroy other forms of aquatic life which are injurious to agriculture, and such as may be cultivated on the spot. For example, if the cultivation on a large scale of the chrysanthemum cinerariæ is car-

ried on, it may happen that the very spot infected with malaria will produce the material needed for the destruction of the mosquitoes which infest it.

(5) The best time to destroy the larvæ is the winter season, when they are few in number and new generations are not being produced. Destruction of the mosquito in houses is always possible, but work on a large scale may be best conducted in winter. A better knowledge of their habits, places and times of breeding will facilitate their destruction, which will, even in the most favorable cases (that is, when the drainage of the soil shall have been effected), be an undertaking not as easily accomplished as some have imagined. Nevertheless, we may hope, in view of the vast sums spent by nations in preserving the grapevine from noxious insects, that something may yet be done for saving the life of man from the malarial mosquito.

To this paper the authors have added an appendix containing the results of later experiments, with a new aniline color known as *larycith III*, a substance of unusual culicide action and comparatively low cost, when used for the destruction of larvæ.

MEDICAL NOTES.

AMERICAN MEDICAL ASSOCIATION. SECTION ON DISEASES OF CHILDREN.—At the next annual meeting of the American Medical Association to be held at Atlantic City, N. J., June 5-8, 1900, a session of the Section on Diseases of Children will be devoted to the consideration of school children. The following papers will be presented: E. Stuver, Fort Collins, Col., "Symmetrical Development, or Does our Present School System Develop the Highest Powers of the Child?"; J. Henry Bartlett, Superintendent of the Friends' Select School, Philadelphia, "School Break Downs"; Thomas H. Fenton, Philadelphia, "Eye Strain"; Louis J. Lautenbach, Philadelphia, "The Care of the Ear in School Children"; Dr. Grace E. Spiegle, Philadelphia, "The Physician's Responsibility in the Physical Education of School Children." Summary: "Medical Inspection of School Children, its Purpose, its Results; Health Supervision of School Children; Attitude of Family Physician toward the School Authorities, Teachers, Parents and Child." Another session will be devoted to the consideration of contagious diseases.

PLAGUE.—Three deaths have occurred in the Chinese quarter of San Francisco of a disease which the Board of Health regards as plague. Precautions have been taken to prevent a spread of the disease in this unsanitary portion of the city. There is no great alarm among the white residents, since there is little communication between Chinatown and the remainder of the city. A correspondent of the Associated Press, writing from Honolulu, March 15th, states that but one case of plague had appeared during the preceding eleven days and that the rigid quarantine regulations

¹ Annali d'Igiene Sperimentale, ix, 3, p. 317, 1899.

were being modified. Two hundred and fifty thousand dollars more has been asked for, to meet the many expenses incurred during the prevalence of plague. The natives are said to be in great destitution.

A NEEDLE IN THE APPENDIX.—According to the *Medical News*, a sewing-needle, two and one-half inches long, was recently found in the vermiform appendix of a patient operated upon at Hartford, Conn., for appendicitis. The young woman remembers having swallowed a needle several years ago.

DR. BYROM BRAMWELL A CANDIDATE FOR THE EDINBURGH PROFESSORSHIP OF MEDICINE.—Dr. Byrom Bramwell, of Edinburgh, is a candidate for the chair of professor of medicine in the University of Edinburgh, made vacant by the death of Prof. Grainger Stewart.

A NEW LABORATORY FOR CORNELL UNIVERSITY.—A new laboratory for physiology and anatomy is projected at Cornell University. Eighty thousand dollars has recently been given for this purpose.

RESIGNATION OF DR. JOHN ASHURST, JR.—The resignation of Dr. John Ashurst, Jr., from the chair of surgery in the University of Pennsylvania is announced.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, March 28, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 73, scarlatina 30, measles 75, typhoid fever 1, small-pox 1.

DEATH-RATE IN BOSTON.—The death-rate in Boston for the week ending March 24th again shows increase, being 34.1 as against 20.3 for the corresponding week in 1899. The total number of deaths for the week reported to the Board of Health is 366, an increase of 154 over the corresponding week last year. There was an increase of 19 deaths from influenza over the previous week, making 40 for last week and a total of 71 for three weeks. Of the 40 deaths from influenza last week only 5 were non-complicated; 22 were in connection with pneumonia, 5 with bronchitis, 2 with heart disease, 2 with old age, 2 with cerebral diseases, and 1 with marasmus. The number of deaths from pneumonia last week was 100, as against 21 for the corresponding week last year. It is well to bear in mind that a large part of the mortality attendant upon such an epidemic of influenza is among the aged and the infirm with a feeble hold upon life. In so far as this is the case, the present increased death-rate is likely to be followed by a diminished death-rate later in the year, the poorer lives having been eliminated a little earlier than they otherwise would have been.

BOSTON SOCIETY OF MEDICAL SCIENCES.—A meeting of the Society was held March 20th, at which the following papers were presented: Dr. J. H. Pratt spoke on the "Histology of Acute Pneumonia," being the result of the study of a large number of autopsies

at the Boston City Hospital; Dr. Thomas Dwight demonstrated a specimen showing "Absence of the Vena Cava Inferior below the Diaphragm," and spoke on the development of that portion of the circulatory system concerned in the anomaly; Dr. C. S. Minot spoke on "The Solid Stage of the Intestine in the Chick"; Dr. F. B. Mallory read a paper for Dr. W. T. Councilman on "The Lobule of the Lung and the Relation of the Lymphatics to It," illustrated with lantern slides of photomicrographs.

A GIFT OF \$75,000 FOR THE MASSACHUSETTS GENERAL HOSPITAL.—It is reported that the Massachusetts General Hospital has received a gift of \$75,000, conditional upon the same amount being raised in addition, to be used for a new out-patient building. The gift has been formally accepted. Should this whole sum of money become available it will provide, as far as this one hospital is concerned, "for establishing on a proper basis the dignity of its out-patient departments and according them the measure of esteem which their work for the community and for scientific progress demands." We repeat the closing sentence of our last week's editorial on this subject.

NEEDS OF THE NEWTON HOSPITAL.—Owing to the number of cases of contagious disease during the past winter, the trustees of the Newton Hospital are urging an increase in the size of the contagious wards or the building of new ones. It is estimated that an appropriation of \$40,000 to \$50,000 is desired to meet the requirements, an amount which it is improbable will be granted this year.

ANTIVIVISECTIONISTS HAVE LEAVE TO WITHDRAW.—The committee of the Massachusetts Legislature to whom was referred the Bill for the Further Prevention of Cruelty to Animals reported unanimously, March 26th, leave to withdraw.

NEW YORK.

BILL REGARDING EFFECTS FOUND ON THE DEAD.—A bill which has been recently passed by the Assembly makes it a misdemeanor to publish any letter, telegram, or private paper secured from the clothing or homes of the dead or seriously injured, the only exceptions being when the coroner deems that publication will serve the ends of justice. This, it has been pointed out, would still leave much to official discretion, but it would also impose a considerable amount of responsibility for the exercise of that discretion in a defensible manner, and the consequences of the statute's enforcement could hardly fail to be commendable. As the law now stands, almost every case of mysterious death, and many cases of death merely sudden or accidental, are made the excuse for giving wide publicity to any letters or other private documents found among the deceased's effects, whether or not such material has any relevancy to the mishap or crime under investigation.

SMALL-POX AT COLUMBIA UNIVERSITY.—Columbia now has its small-pox scare. On March 22d a student in the Law School of the University was dis-

covered to be suffering from the disease, and was removed from his boarding-house to the hospital for contagious diseases on North Brother Island. Nearly four hundred professors, students and employes were vaccinated, and all the students who boarded in the same house or had called to see the patient were excluded from the University and its grounds, until they could produce certificates from the Board of Health, to the effect that all danger of contagion was passed.

A FUND FOR THE "MAINE" AND THE RED CROSS SOCIETIES. — As the result of a concert given at the Metropolitan Opera House on March 22d, by members of the Maurice Grau Company, the sum of \$12,000 was realized for the American hospital ship *Maine* and the British and American Red Cross Societies. Among those present were the Governor-General of Canada and Lady Minto.

FREE PUBLIC BATHS AND GYMNASIUMS. — The Sanders Bill to establish free public baths and gymnasiums in cities, villages and towns of the State has been passed by the Assembly; also Dr. Henry's bill amending the military code, and establishing a new hospital corps in the State Militia.

QUARANTINE AGAINST RABIES. — The Governor has signed the bill providing that the State Commissioner of Agriculture may quarantine a district in which rabies is prevalent, and exempting from liability any person who kills an animal affected with the disease.

Miscellany.

EXPENSE OF MEDICAL CONSULTANTS IN SOUTH AFRICA.

COMMENTING ON certain medical phases of the South African War, the *Practitioner* says: "A daily paper professes to think that the fact of Sir William MacCormac receiving pay detracts from the credit due to him for his patriotism. This is sheer cant. Sir William gains nothing in money from his appointment, and makes an enormous sacrifice of time and comfort, and too probably of health. The appointment was not of his seeking; he was, as I happen to know on the best authority, asked to go, and from a sense of duty he went. It is no light matter for a man of his age to expose himself to the manifold risks of such a war as is now being waged in South Africa. As a mere matter of business, however, I am inclined to doubt whether all this expenditure on consulting surgeons is justifiable. These gentlemen are being paid collectively at the rate of £35,000 a year. The question is certain to be asked in Parliament at some time or another. Does the country get its money's worth? The men, of course, are worth it, and more than worth it. But is the work which, in the peculiar circumstances of the case, they are able to do worth it? The Royal Army Medical Corps have shown themselves, in spite of the Cassandra-like vaticinations of Professor Ogston, fully capable of dealing with all the emergencies of the battlefield and the base hospital. There must, therefore, be comparatively few cases in which there is any particular need for the in-

tervention of the consulting surgeon. Consequently these gentlemen must either take work which could be done more cheaply by the medical officers, or they must waste their scientific sweetness on the desert air. Of course the moral effect of their presence must be taken into account, but this hardly enters into the calculations of the economist."

It must, however, be remembered that the different point of view which such civilian surgeons bring to bear upon the problems of administration in the medical service of the army may be a matter of considerable consequence and value. At the recent 127th anniversary dinner of the Medical Society of London, Surgeon-General Jameson spoke very highly of the new departure of attaching civil consulting surgeons of eminence to the Army Medical Corps at the front. They were, he considered, not only of the greatest use in consultation over perplexing cases, but were also sources of strength in defence from adverse criticism. On the other hand, Surgeon-General Jameson stated that he and those on the spot were fully convinced that female nurses were out of place at the front; that a field hospital, to be of any use, must be perfectly mobile, and this was impossible with female nurses.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, MARCH 17, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,654,594	1622	532	20.16	26.34	.54	3.54	1.08
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	580	181	23.29	15.30	2.89	4.08	4.42
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	341	96	19.72	33.35	1.16	3.48	1.16
Baltimore . . .	506,389	234	76	16.31	24.08	.43	1.29	.43
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	—	—	—	—	—	—	—
Washington . . .	277,000	130	31	18.48	17.71	1.54	2.31	.77
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	86	30	26.68	24.36	—	1.16	5.80
Nashville . . .	87,754	43	9	13.98	25.63	—	—	—
Charleston . . .	65,165	29	8	13.89	17.25	3.45	—	—
Worcester . . .	111,732	43	12	16.44	20.88	—	6.96	—
Fall River . . .	103,142	59	26	11.83	30.42	3.38	—	—
Cambridge . . .	92,520	28	9	3.57	42.13	—	—	—
Lowell . . .	90,114	33	13	24.24	18.18	—	6.06	—
New Bedford . . .	70,511	26	8	23.10	26.95	—	—	—
Lynn . . .	68,218	28	8	10.71	17.83	—	3.57	—
Somerville . . .	64,394	28	6	10.71	24.56	—	—	—
Lawrence . . .	59,072	23	9	13.05	17.40	—	8.70	—
Springfield . . .	58,266	18	3	33.33	5.55	—	—	—
Holyoke . . .	44,510	9	5	—	22.22	—	—	—
Brockton . . .	38,759	18	4	5.55	5.55	—	—	—
Salem . . .	37,723	16	4	6.25	12.50	—	6.25	—
Malden . . .	36,421	14	5	21.42	—	—	7.14	—
Chelsea . . .	34,235	20	7	10.00	—	—	—	—
Haverhill . . .	32,651	13	2	7.69	30.76	—	—	—
Gloucester . . .	31,426	—	—	—	—	—	—	—
Fitchburg . . .	30,523	8	3	—	37.50	—	—	—
Newton . . .	30,461	13	3	30.76	7.69	—	—	7.69
Taunton . . .	28,527	18	2	22.22	5.55	—	—	—
Everett . . .	28,102	13	2	7.69	30.76	—	—	—
Quincy . . .	24,578	11	3	18.18	27.27	—	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	6	2	16.66	—	—	—	—
North Adams . . .	21,583	10	5	—	10.00	—	—	—
Chicopee . . .	18,316	10	8	—	20.00	—	—	—
Medford . . .	17,190	6	2	—	16.66	—	—	—
Newburyport . . .	15,036	10	1	—	20.00	—	—	—
Melrose . . .	14,721	3	—	—	—	—	—	—

Deaths reported 3,475; under five years of age 859; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 701, acute lung diseases 859, consumption 380, diphtheria and croup 113, measles 55, typhoid

fever 36, whooping-cough 34, scarlet fever 28, diarrheal diseases 24, erysipelas 19, cerebrospinal meningitis 12.

From whooping-cough New York 19, Providence 5, Boston and Washington 3 each, Philadelphia, Baltimore, Taunton and Clinton 1 each. From scarlet fever New York 15, Boston 7, Philadelphia 3, Baltimore, Washington and New Bedford 1 each. From diarrheal diseases New York 11, Boston, Providence, Fall River and Lowell 2 each, Baltimore, Washington, New Bedford, Lawrence and Springfield 1 each. From erysipelas New York 14, Philadelphia 2, Boston, Baltimore and Malden 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending March 10th, the death-rate was 20.4. Deaths reported 4,553: acute diseases of the respiratory organs (London) 378, whooping-cough 131, measles 120, diphtheria 85, scarlet fever 33, fever 32, diarrhea 23.

The death-rates ranged from 13.0 in Huddersfield to 32.4 in Salford; Birmingham 22.9, Bradford 17.3, Cardiff 16.6, Gateshead 18.6, Hull 22.3, Leeds 20.9, Liverpool 19.5, London 18.8, Manchester 26.9, Newcastle-on-Tyne 18.2, Nottingham 18.7, Portsmouth 19.0, Sheffield 23.2, Swansea 14.3, West Ham 14.9.

METEOROLOGICAL RECORD

For the week ending March 17th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S...11	29.88	22	33	11	46	30	38	N.W.	N.W.	22	22	C.	C.
M...12	30.07	17	27	7	43	26	34	N.W.	N.W.	18	16	C.	C.
T...13	30.06	21	31	11	61	67	64	N.	E.	8	9	C.	F.
W...14	29.88	36	47	26	67	52	60	W.	W.	6	14	F.	C.
T...15	30.06	26	32	19	57	93	75	N.W.	N.E.	12	14	F.	N.
F...16	29.47	41	58	24	96	55	76	S.	W.	34	21	R.	C.
S...17	30.06	24	36	12	58	44	51	S.W.	N.W.	13	23	C.	C.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉—Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 24, 1900.

J. D. GATEWOOD, surgeon, detached from the "Lancaster" and ordered to the Bureau of Medicine and Surgery, Navy Department.

F. WOOD, pharmacist, retired from active service, March 20, 1900.

E. THOMPSON, assistant surgeon, detached from the "Celtic" and ordered to the "Nashville."

M. K. JOHNSON, assistant surgeon, detached from the "Nashville" and ordered to the "Celtic."

H. H. HAAS, assistant surgeon, detached from the "Baltimore" and ordered to the "Don Juan de Austria."

W. B. GROVE, assistant surgeon, detached from the "Brooklyn" and ordered to the "Scandia."

F. L. BENTON, assistant surgeon, detached from the Naval Hospital, Yokohama, Japan, and ordered to the Naval Hospital, Cavite, P. I.

J. S. TAYLOR, assistant surgeon, ordered to the "New Orleans."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 22, 1900

PURVIANCE, GEORGE, surgeon. Granted leave of absence for fifteen days from March 24th. March 22, 1900.

GLENNAN, A. H., surgeon. To proceed to Port Townsend, Washington, as inspector of quarantines. March 17, 1900.

WHITE, M. J., assistant surgeon. To proceed to Reedy Island Quarantine Station for special temporary duty. March 16, 1900.

STEPHENSON, CHAS. W., hospital steward. To proceed to Chicago, Ill., and report to the medical officer in command, for duty and assignment to quarters. March 21, 1900.

APPOINTMENTS.

W. THEO. WAS, appointed acting assistant surgeon, for duty at Fernandina, Fla. March 17, 1900.

CHAS. W. STEPHENSON, of Ohio, appointed hospital steward. March 20, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, April 2d, at 8 o'clock.

The Society will consider "The Proper Seating of School Children."

Dr. Jas. S. Stone will read a paper upon the "Injurious Effects of Improperly Constructed Chairs."

Prof. Edw. F. Miller, of the Massachusetts Institute of Technology, will demonstrate a "Chair Devised to Meet the Anatomical Requirements."

Dr. Edw. M. Hartwell will describe "Previous Attempts to Solve the Problem."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, April 4, 1900, at 8.15 o'clock.

"Actinomycosis, with Report of Cases," by Dr. C. A. Porter.

"Report of Cases of Actinomycosis," by Dr. J. C. Munro.

"A Case of Tendon and Nerve Suture," by Dr. F. B. Lund.

F. G. BALCH, M.D., Secretary, 279 Clarendon Street.

RECENT DEATHS.

JOHN B. HOFFMANN, M.D., of Union Hill, N. J., died of pneumonia, on March 18th, at the age of thirty-five years.

RICHARD HARRIS, M.D., of White Plains, Westchester County, N. Y., died on March 19th, in his seventy-third year.

BOOKS AND PAMPHLETS RECEIVED.

Albuminuria and Its Relation to Diseases of the Eye. By Alex. W. Stirling, M.D., C.M. (Edin.), D.P.H. (Lond.), Atlanta, Ga. Reprint. 1899.

Reports of the Trustees and Superintendent of the Butler Hospital for the Insane, Fifty-sixth Annual Meeting, January 24, 1900. Providence, R. I.

Strangulated Hernia: Some Practical Remarks Concerning Its Diagnosis and Its Proper Management. By Parker Syms, M.D., New York City. Reprint. 1900.

Boston Normal School of Gymnastics, Eighth Annual Catalogue of the Instructors, Students and Graduates, with a Statement of the Course of Instruction, 1898-99.

Some Considerations in Sugar-Testing, with Description of a Method for the Detection and Estimation of Sugar in the Urine. By Arthur R. Elliott, M.D. Reprint. 1900.

Neue Mitteilungen zur galvanokaustischen Radikalbehandlung der Prostatahypertrophie per vias naturales (Bottini'sche Operation). Von Dr. Albert Freudenberg, Berlin.

Transactions of the Mississippi Valley Medical Association, Twenty-fifth Annual Session, Chicago, Ill., October 3, 4, 5 and 6, 1899. Vol. I. Printed for the Association. 1899.

Contribuzioni allo Studio dello Sviluppo dei Nervi Encefalici nei Mammiferi. In Confronto con altri Vertebrati. Del Dott. Giulio Chiarugi. Tip di G. Carnesechi e Figli. 1894.

Sul Decorso delle Vie Afferenti del Midollo Spinale, Studiate col Metodo delle Degenerazioni, dai Dottori Ruggero Oddi, Umberto Rossi. Firenze: Coi Tipi dei Successori le Monnier. 1891.

Contributo allo Studio della Struttura, della Maturazione e della Distruzione, della Uova degli Anfibi (Salamandrina perspicillata e Geotriton Fuscus). Del Dott. Umberto Rossi. Tip di G. Carnesechi e Figli. 1895.

The Year-Book of the Nose, Throat and Ear. The Nose and Throat edited by G. P. Head, M.D. The Ear edited by Albert H. Andrews, M.D. Chicago, Ill.: Chicago Medical Book Co. 1900.

Hand-Book of Physiology. By W. D. Haliburton, M.D., F.R.S., Professor of Physiology, King's College, London. Fifteenth edition, illustrated. Philadelphia: P. Blakiston's Son & Co. 1899.

Veneral Diseases, their Complications and Sequelæ. By Edward L. Keyes, A.M., M.D., and Charles H. Chetwood, M.D. Illustrated by eight full-page plates in black and colors and 107 engravings. New York: William Wood & Co. 1900.

How Far Has Specialism Benefited the Ordinary Practice of Medicine? Imperfect or Deficient Urinary Excretion as Observed in Connection with Certain Diseases of the Skin: A Study based on Two Thousand Urinary Analyses. By L. Duncan Bulkeley, A.M., M.D., New York. Reprints. 1899.

Original Articles.

ON DISTORTION OF THE SPINE; WITH THE REPORT OF TWO CASES OF DIPLEGIA BRACHIALIS DUE TO THIS CAUSE.¹

BY J. W. COURTNEY, M.D., BOSTON,

Assistant in Nervous Department, Boston City Hospital; Visiting Physician to the Home for Incurables, Dorchester.

DISTORTION or, as it is sometimes called, diastasis of the spine, may properly be defined as the result of the operation of a traumatizing force which, had it continued to act, would have produced a true luxation. The result to the spine itself is a transitory yielding of one or more articulations consequent upon a more or less complete tearing of their capsular and other ligamentous investments. A very good example of this ligamentous rupture is to be found in the accompanying illustration, which I have sketched from the recent work of Wagner and Stolper on injuries of the spine and cord.

From the topographical relation of the vertebrae both to the spinal cord and to its roots, it is obvious that from the variety of spinal injury under consideration there may result simultaneously lesions of the cord or nerve roots, or both.

In distortion thus interpreted we have the only rational explanation of those nervous lesions which, during the dark ages of neuropathology and surgical neurology,—if the latter term be permissible,—were classed as concussion of the spine. During the reign of this now obsolete concussion theory, the nerve lesions were explained on the ground of the violent jerking backwards and forwards of the cord against its containing canal. To make such a theory tenable, it would be necessary, as Thornburn has pointed out, that the resultant nerve lesions be diffuse, since the cord would naturally move *en masse*; whereas, in point of fact, such lesions are nearly always, though not invariably,—as in Thornburn's experience,—limited to the region of origin of the last four cervical and first dorsal roots, a region corresponding to the bodies of the fourth, fifth and sixth cervical vertebrae and the one which forms the summit of the arch of the cervical curve. It is therefore obvious that it is much more rational to consider the nervous lesions as the result of a pathological exaggeration of the movements which the above-indicated portion of the spine normally possesses, and such pathological exaggerations may be enumerated as hyperflexions, either anterior or lateral, hyperextension and hyperrotation.

As already stated, a distortion is to be looked upon as a pause in the act of luxation, so that the distinguishing feature between them is that in the former a hooking or cogging of the vertebrae or their processes sufficient to cause a fixation of the distorted portions never takes place. Distortions may occur in the lower portions of the spine, though less frequently in the dorsal region, and still less in the lumbar. Nevertheless, as Wagner and Stolper say, it is on the basis of distortion that we are often forced to explain the pains complained of by persons who have

suffered falls or abnormal bendings involving the latter region.

The phenomena which accompany the bony and ligamentous lesions of cervical distortion are, naturally, in part, similar to those observed in luxation. The patient complains of sharp pains in the neck; and the head, which previously was freely movable, is held stiffly in a fixed position. If the lesion is bilateral, rotation or other abnormal fixation is absent, but if unilateral, the head is so held that the ear of the affected side is drawn toward the shoulder, while the face is turned toward the opposite side. The most prominent symptoms are the stiffness and the sharp pains when the head is moved passively. On the whole, the pain is greater than in true luxation, since in luxation the ligaments are completely torn and, consequently, no longer stretched by movements, while in distortion only a portion of the ligaments are torn and the rest put on the stretch. Distortion is, therefore, more painful, although the injury is less. Pain may also be elicited by pressure and is usually found to be of maximum intensity in the neighborhood of the distorted joint. It may also be elicited, however, by pressure on the lateral processes and spines of the vertebrae in the immediate neighborhood of the injured joint, or even by pressure upon the head, since all such manipulations tend to alter the vertebral contour. As pain is the most prominent symptom in all forms of spinal injury, it is necessary to bear in mind that the pain accompanying distortion is not only more severe than that which one discovers in other lesions, but that it has a further characteristic. This Kocher illustrates as follows: If one is dealing, for example, with a left anterolateral luxation of the atlas, the head cannot be further drawn to the left but can be drawn somewhat toward the right, and the pain evoked is less when one attempts the left movement, since motility is less in this direction. In distortion, on the other hand, exactly the converse is true and it will be found that whereas movement occurs more readily toward the affected side, it excites much more intense pain than movements in the opposite direction. This contrast is, naturally, not always so sharp, since in a case of bilateral distortion rotation toward either side is limited and painful.

The nervous lesions accompanying distortions have many characteristic features, and every surgeon should be familiar with them, since they often in themselves give a direct clew as to the nature of the spinal lesion, and always determine the prognosis in a given case. Oftentimes injury of the spinal nerves alone occurs, and the damage may be further restricted to either their sensory or their motor roots. If sensory roots alone are damaged we get such irritative phenomena as tingling, formication and radiating pains, the latter in the form of burnings or severe neuralgic attacks, and the diagnosis is more certain when, in lesions at the level of the cervical enlargement, pains occur only in the region of the arms, without any manifestations in the trunk and legs. Especially characteristic of sensory root lesions is the occurrence of those phenomena of disturbed sensibility known as analgesia hyperaesthetica and anesthesia dolorosa.

Injury of motor roots shows itself, in distinction to that of sensory, less by irritative phenomena than by a disturbed motility—either paresis or paralysis—which is immediately or gradually regressive. This

¹ In the preparation of this paper free use has been made of the excellent works of Kocher: Die Verletzungen der Wirbelsäule zugleich als Beitrag zur Physiologie des menschlichen Rückenmarks, in Mittheilungen aus den Grenzgebieten der Medicin und Chirurgie; and of Wagner and Stolper: Die Verletzungen der Wirbelsäule und des Rückenmarks, in Deutsche Chirurgie, Stuttgart, 1898.

tendency to regression is also characteristic of the sensory disturbance. In spite of it, however, previously paralyzed muscles may soon atrophy.

Kocher inclines to the belief that the nerve injuries in these cases are often the result of pressure from the effused blood of extramedullary hemorrhage, but this view, as well as the other of this author which makes the pressure of extramedullary bleeding responsible for many of the transitory cord symptoms also observed in these cases, seems to the writer more than debatable. Many reasons for such scepticism might be alleged, prominent among which would appear the fact of the noteworthy absence of extramedullary bleeding in the majority of cases of severe crush of the cord from fracture or luxation.

The distinguishing feature of most cord lesions accompanying distortion is their incompleteness. Their



Distortion of spinal column: (a) Rupture of ligament between the second and third cervical vertebrae.

symptomatology is accordingly characteristic. Pathologically, they are to be looked upon as hemorrhagic in origin, and, as a rule, they have their seat in the central gray matter. Hence arises a symptomatology which indicates a softening with more or less permanent damage to the tissues immediately involved in the hemorrhagic focus, with transitory pressure and irritation of tracts which are contiguous. It is to this pressure and irritation of the crossed pyramidal tracts, for example, that we may ascribe the paralysis or paresis of the whole or a large motor territory below the point of lesion, with loss of sphincteric control.

The incompleteness of lesion is often evidenced by the onesidedness of the symptoms, such as where arm and leg of the same side have suffered more than those of the other, or where, as accompanying lesion of both the arms, one leg showed marked paralysis.

Finally characteristic, in contradistinction to total transverse lesions, are the motor irritative phenomena—which usually occur late—such as twitchings and contractures. The vasomotor symptoms usually fully parallel the motor lesion both in seat and extent, though not invariably, since with paresis of the fibres going to the muscles, irritation of the vasoconstrictors may occur, with vascular contraction and consequent coldness of the paralytic limbs. The sensory disturbances in partial cord lesions from trauma are even more characteristic in their incompleteness than the motor; consequently sensory irritative phenomena are common. It is not unusual to have sensibility retained in the presence of transitory or permanent complete paralysis of one of the lower portions of the body, or altered merely quantitatively and qualitatively. In case, therefore, sensory paralysis is absent or incomplete in the sense that its distribution does not cover an area which is represented in the cord as high as that which presides over the paralyzed muscles, the surgeon may be sure that he is dealing with a partial cord lesion only.

Of equal significance is, with distribution over the territory of several nerves or nerve roots, the varying implication of the different forms of sensibility, with the result that, for example, simple anesthesia with or without synchronous disturbance of the thermal sense is present over a large area, with retained tactile and pressure sense. The occurrence of merely analgesic areas alongside of completely anesthetic ones in such fashion that one finds analgesia beginning rather high up on the body and extending to the point of lesion, while the anesthesia reaches only to a far lower level, or vice versa, is also diagnostic of incompleteness.

The chronological order of appearance of sensory, motor and irritative phenomena is a further diagnostic point of importance in determining the presence of partial cord lesions. In such lesions the march of symptoms is usually such that with the disappearance of the disturbance and the restoration of conduction, transitory hyperesthesia follows on anesthesia, radiating algesic phenomena on analgesia, twitchings on complete paralysis. This order, it should be remembered, is exactly antipodal to what follows in slowly developing cord lesions, since in the latter the irritative phenomena, as a rule, precede the paralytic.

The behavior of the deep reflexes, more particularly the patellar, is of great importance in determining the extent of the lesion transversely. As it is now a generally accepted fact that a persistently absent knee-jerk (after trauma) denotes a complete transverse lesion of the cord, the surgeon may safely assume in the case where this reflex is preserved that the lesion is only partial and capable to a certain extent of repair. In the great majority of partial cord lesions, where a combination of marked motor disturbance with decidedly less sensory is the rule, the deep reflexes are increased; and even in those cases where, on account of a temporarily more pronounced cessation of conductivity, they are abolished, this abolition is only transitory and gives place to excessive activity. This excessive activity often outlasts the paralysis in point of time.

Urinary retention is practically never absent in complete traumatic transverse lesions of the cord, whereas in the partial variety, even where total paralysis of the lower extremities is present, it may fail to

manifest itself. This is a fact which the surgeon should bear prominently in mind, since certain observers have gone so far as to rule out a cord lesion in traumatic cases where bladder and rectum have not been involved. The rule is, however, that even partial lesions of the cord are accompanied by *retentio urinae*. In such cases it may require a searching examination to prove that the crush of the cord is not total by showing that the bladder palsy is in itself only partial. The fact is that in partial lesions with urinary and alvine incontinence complete sensibility of the bladder, rectum and anus may be preserved. Furthermore, this sensibility of the bladder and urethra, together with that of the rectum and anus, may, like that of the other paralyzed parts, be markedly increased, so that very painful calls to urinate or defecate may be experienced, although the contents of the bladder and rectum cannot voluntarily be voided. This is due to irritation of certain fibres in the cord.

Priapism is a fairly constant accompaniment of high transverse lesions of the cord; in fact it may be said never to fail in young individuals with such lesions. It is, on the contrary, very seldom an accompaniment of partial lesions and may be absent, even where total paralysis of the lower extremities exists. Spontaneous painful erections, however, sometimes occur in the course of partial lesions of the cord, and indicate a hyperesthesia in the territory of the urogenital nerves. When true priapism does occur, its rapid disappearance, like that of urinary retention, is a strong point in favor of a partial cord lesion.

The above differential aspect of the nervous symptomatology has been given in detail on account of its paramount importance in the question of prognosis as well as of treatment, but before speaking more fully on these two points a further word with regard to differentiation of the spinal lesion *per se* is necessary.

The determinate factor in the diagnosis of distortion as against fracture or luxation of the spine is the absolute failure to discover, either on examination through the mouth or by thorough palpation of the spine from all sides, any change in its contour or abnormal mobility. Occasionally the surgeon can at once come to the diagnosis of distortion by finding that the neck movements which cannot be performed at all voluntarily may be executed in all directions passively, although with great pain.

In hysterical paralysis of the neck muscles every position of the head may occur which is found in distortion and luxation, and as this form of paralysis is often attributed to injury, the danger of mistaking it for a spinal traumatism is apparent. As it occurs most frequently in young children and is usually accompanied by other stigmata of the psychosis, a close analysis of the circumstances under which it has arisen and a careful search for the other stigmata will often serve to differentiate.

Even so chronic a process as carious spondylitis is often referred to a recent traumatism, and the surgeon may be misled by the position of the head, which may simulate that observed in distortion and luxation, into thinking that he is dealing with one or the other of these affections. Differential factors of importance are the slighter intensity of the pain in spondylitis and the generally tuberculous *habitus* of the patient.

The writer recalls a particularly interesting personal experience where a rotation position of the head,

together with right brachial monoplegia, followed the backward fall of a child out of a toy cart. As the child was alleged to have been well previously, the diagnosis of distortion with nerve-root injury was first made. This was subsequently changed, owing to the further course of the case, to cervical caries. The child died some weeks later and the necropsy revealed a glioma of the cord at the level of the affected nerve roots.

There still remain to mention such possible sources of error as the acute inflammatory processes in the neck: deep cervical phlegmona, burrowing abscesses from otitis and the parotid inflammations; all of which occasionally give rise to the holding of the cervical vertebrae observed in distortion.

As has been hinted, the accuracy of the surgeon's prognosis in distortion is infallibly commensurate with the thoroughness of his physical exploration. One might even say that the outcome of a given case is capable of being forecast with almost mathematical precision. If the spine alone has been injured, the pain and stiffness will usually disappear and the patient be able to perform the accustomed movements within a short time. If, however, the injured individual be of tubercular taint, it will be found not infrequently that the acute process after a time passes over into a more chronic one; and here the surgeon, granting that his examination has been sufficiently searching to enable him to rule out absolutely both fracture and dislocation, may be practically certain that he is dealing with a complicating tubercular spondylitis, since such complication is far more common after distortion than after the severe forms of spinal injury.

If nerve or nerve root injury is the only primary complication, one merely needs to alter the prognosis in accordance with the time-law regarding the recovery from a peripheral neuritis of limited extent. Finally, knowing as we do that where the cord is involved the lesion lies primarily in the central gray matter, one has only to estimate the ultimate damage as of this gray matter simply, and may safely regard the phenomena resulting from disturbance of neighboring tissue as transitory.

The treatment as regards the spine proper is perfectly simple and consists of rest in bed with support and immobilization of the neck, with very slight extension of the spine. This may be necessary for a period varying from a few days to three or four weeks. In the tubercular it should be kept up until every vestige of pain and impaired mobility has entirely disappeared.

The two cases which follow were seen by me at the Boston City Hospital within four months of each other, and I take this opportunity to thank Drs. Cushing and Thorndike, on whose services they occurred, for the liberty to report them. Their chief interest centres in the fact that, besides the spine, nerve roots only were injured and that the lesion in the two cases differed practically only in the degree of severity. In both instances the accident occurred while the patient was intoxicated, and the mechanism of the injury (hyperflexion of the head in falling) was in all probability the same.

CASE I. Male, sixty-five years, first seen by me June 9, 1899. The rather unsatisfactory history given by him was as follows: Eight days previously, after drinking more or less whiskey, he had fallen

backwards down several stairs, striking the back of his head and shoulders. He was unconscious several hours, and when he came to he could move his legs perfectly, but could not rise on account of the pain in his back. His arms he could not move freely, but had more control of the right than the left. He had lain in bed ever since, and during this time had had no trouble with his sphincters, but his neck had been very stiff and sore and he experienced pain in the left shoulder, and paresthesia in both arms. The shoulder was still painful.

Physical examination showed a fairly well developed and nourished individual of good color. The pupils were equal and regular, and responded normally to light and to accommodative efforts. The ocular and facial muscles were normal; the tongue, covered by fairly thick whitish coat, protruded straight. On the left shoulder were still visible remains of an echymosis. The spine showed no abnormality on exploration through the mouth or otherwise. Pressure over the region of the sixth cervical vertebra was, however, painful, and flexion and extension of the head elicited pain in this region. The holding of the head was not characteristic. In the upper extremities the only movements possible were elevation of shoulders, adduction and abduction of arms, flexion and pronation of forearms. The grasp on both sides was practically *nil*. The lower extremities were of good strength, the deep and superficial reflexes within normal limits. Sensation in all forms normal. The temperature was 99.2° on entrance and ranged from 98° to 99° throughout. The pulse varied from 60 to 88.

My diagnosis was distortion of the spine with symmetrical injury of the motor roots of the seventh and eighth cervical and first dorsal nerves; and rest in bed with immobilization by plaster was advised.

A note made by house officer three days later reads: As patient was soon free from pain and could move his head from side to side without difficulty it was decided to do nothing.

Subsequent notes are as follows: On June 16th, general condition improved. Moves both arms better, and grasp has increased in strength. Takes nourishment well. On June 20th, improving daily. Strength in arms much better; no pain. On June 24th, sitting up; feels all right. On June 30th, patient up and about ward. Movements of arms and grasp slightly, if any, restricted. Discharged. Total stay in hospital, twenty-one days.

CASE II. Male, thirty-nine years, admitted October 10, 1899. Family history negative.

Previous history.—Was in this hospital twelve years ago for typhoid; gonorrhoea seven years ago; denies syphilis; alcohol to excess.

Present illness.—Last night while intoxicated he attempted to get off a moving electric car and fell backward, striking on the back of his head. Was taken to police station in the ambulance and transferred here this morning. He complains of loss of power in his arms and pain in backs of forearms and tips of fingers.

Examination by Dr. Eddy (house officer) on admission is as follows: "Well developed and nourished. Lies on left side with head turned to left. Skin warm and dry. Alcoholic odor to breath. Pupils equal and moderately enlarged; react to accommodation but not to light. Scalp wound over right

parietal eminence. Holds neck stiffly inclined to left side. Tenderness along cervical spine as far as seventh vertebra. Over fourth, fifth and sixth this tenderness seems more marked and is most intense on either side of the spinous processes. All motions of upper arm accomplished, but not freely. Sensation normal; lower extremities normal. Knee-jerks lively, with ankle clonus on right. Case seen shortly after noon by Dr. Courtney and the following dictated: "Patient in bed breathing quietly, the thorax moving with respiration. Position of head same as noted above. Pupils regular and equal, moderately dilated and respond sluggishly to artificial light; normally to accommodative efforts. Tongue, facial and ocular muscles normal. The shoulder and upper-arm movements are executed normally on both sides, the only paralysis being in the groups supplied by the seventh and eighth cervical and first dorsal nerves, namely, the extensors of wrist and fingers, the extensors of elbows, the flexors of wrists and fingers and the small muscles of the hands; this being more marked on the right. The lower extremities retain full power and motion. The deep and superficial reflexes are within normal limits except that patellar twitch, together with a spurious clonus, the latter not constant, are present on the right. Sensation is absolutely normal throughout, and the bladder and rectum are not affected so far as known. There is marked tenderness to pressure over the cervical region as noted by Dr. Eddy, but no deformity of the spine is discoverable either by digital palpation through the mouth or otherwise. Temperature 99.5°, pulse 60."

A diagnosis of distortion with injury of the above-indicated spinal roots was made, and immobilization of neck with sand-bags advised.

Seventeen days later I examined the patient, who was still in bed. He still complained of pain in the backs of his forearms and finger-tips, but not so much as formerly, especially on the left. All movements of the left arm and hand could now be executed with some strength, although there was evident atrophy of the interossei, the abductor indicis and the thenar and hypothenar groups. On the right the atrophy was much more marked and all movements were just barely possible. A moderate degree of flexor contraction was also present on this side, involving more particularly the middle, ring and little fingers. Sensation was normal. Quantitative changes to faradism were present in the extensors of the right wrist and fingers and in the atrophied small muscles, and were much more marked on the right. The neck could be moved, but not freely without pain. Five days later the condition was about the same. The pain in the spine still continued to trouble him, and he had fainted the day before on attempting to sit up in a chair.

A note made in hospital records November 7th says simply: Patient has been up for the past few days. Discharged to Long Island.

The total stay in hospital in this case was twenty-eight days. During this time the range of pulse and temperature was practically the same as in the first case reported.

Through the kindness of Dr. Taylor, I was enabled to examine this case at Long Island nearly three months later. I then found him still complaining of some pain in the same regions as before, but he said that it came only at times. The arms I found to be

practically normal in strength and the grasp powerful. The atrophied muscles had nearly regained their normal volume and the flexor contracture of the fingers had entirely disappeared. I made no electrical tests. As for the spine, I could elicit no pain on pressure, and restriction of movement was absent, but extension of the head was somewhat painful. The deep reflexes were lively but within normal limits, and the gait, station and pupils were all right.

THE CONSERVATIVE OPERATIVE TREATMENT OF FIBROIDS; REPORT OF THREE CASES.¹

BY W. L. BURRAGE, M.D., BOSTON.

CASE I. ABDOMINAL MYOMECTOMY; REMOVAL OF ELEVEN SUBPERITONEAL NODULES AND RIGHT OVARY, WEIGHING TOGETHER ONE AND ONE-HALF POUNDS.

K. R., twenty-seven years of age, single, American, entered the Carney Hospital in February, 1898. She complained of almost constant backache and headache and occasional crampy pains in the left lower abdomen, which she had had for the preceding two years. Two months previous to entrance she had noticed a bunch in the right lower abdomen, and this had increased in size since her attention had been first attracted to it. With the above exceptions, her general health had been good, and she had been able to follow her occupation of laundress. The catamenia began at fourteen, had been regular, painless, of three days' duration and moderate flow.

Physical examination showed a well developed and nourished girl. Abdominal walls of moderate thickness, and soft. In the right lower abdomen, midway between the median line and Poupert's ligament, could be felt a hard mass, which raised the abdominal wall a little; in the left lower abdomen a similar but smaller mass; both extremely hard. The cervix was somewhat low in the pelvis and the uterine cavity measured two and one-half inches in depth. The crampy pains were referred by the patient to the upper margin of the mass on the left side. Considering the apparent rapid growth of the tumors and their great density, the probable diagnosis of sarcoma of the ovaries was made.

Operation, February 10th.—On incising the peritoneum a moderate amount of clear, straw-colored fluid was found in the peritoneal cavity. The two masses proved to be very dense subperitoneal fibroid nodules, united by a band of tissue and springing from the anterior and left face of the fundus uteri by a pedicle about three centimetres broad and one centimetre thick. Uterus slightly enlarged and extremely congested. To the left of the pedicle was a crop of five small nodules, the largest two centimetres (seven-eighths inch) in diameter, and on the posterior surface of the wall of the uterus, near the region of the internal os, was a nodule the size of a pea. The right ovary was enlarged to twice the normal size by cysts and a recently ruptured corpus, which bled freely. Left ovary and both tubes normal.

A piece of mesentery of the small intestine was adherent to the upper aspect of the left-hand mass for a length of seven centimetres (two and three-fourths

inches) and a breadth of two centimetres. The capsule of the tumor was incised along the border of the mesentery, and the mesentery and a portion of the capsule sponged off the tumor; oozing in the mesentery controlled by a continuous catgut suture. There were no other adhesions. The different nodules were successively enucleated by incising the capsule at one side and shelling out the tumor with the handle of a scalpel, and as fast as one was out the bleeding bed was closed in by a continuous suture of chromicized catgut No. 1, passing the stitch deeply at first and ending by a superficial suturing. The hemorrhage was lively until a stitch or two had been passed. The large nodules were left until the last, but the sutures effectually controlled the oozing from the broad base. The right ovary was removed after tying the broad ligament at the hilum of the ovary with a shoemaker's stitch. The uterus having been crowded down in the pelvis by the tumors, it seemed best to suspend it to the abdominal wall, and this was done by passing two sutures of chromicized catgut No. 2 through the fundus from side to side and through the peritoneum and transversalis fascia. The wound in the abdominal wall was closed with tier sutures after the method of La Torr .

The nodules and the right ovary weighed together one and one-half pounds. The largest nodule measured nine centimetres (three and one-half inches) in its long diameter and the next largest, five and one-half centimetres (two and one-fourth inches); the knife went through their structure with great difficulty, and the cut surface showed glistening white bundles of fibres, with very little intercellular substance. The pathologist, Dr. E. H. Nichols, of the Harvard Medical School, pronounced the tumors to be fibromyomata, non-malignant.

The patient made an uneventful convalescence. I saw her in May, 1898, and she was then fat and well. She still had some backache but was able to be at work. The uterus was small and in good position, and there was firm union in the abdominal wound.

CASE II. VAGINAL MYOMECTOMY; REMOVAL OF FIBROID NODULE, THREE CENTIMETRES (ONE AND ONE-FOURTH INCHES) BY ONE AND ONE-HALF CENTIMETRES (SEVEN-EIGHTHS INCH), OF SUBPERITONEAL EVOLUTION FROM THE FRONT WALL OF THE UTERUS BY ANTERIOR COLPOTOMY.

Mrs. C. McC., thirty years old, entered St. Elizabeth's Hospital, June 26, 1895. She had been married two years but had had neither child nor abortion. She had had constant pain in the left inguinal region for several years, but since marriage it had been very much worse. The pain was exaggerated when she was on her feet and when the catamenia were present. She also complained of headaches, worse at the periods, and of leucorrhœa. The catamenia began at seventeen, were irregular, of three to four days' duration, and she used five napkins.

Physical examination showed a well developed and nourished woman. The uterus was large, four inches deep, the body sharply anteflexed, and the cavity very capacious. On the anterior face of the anteflexed body was a fibroid nodule some three centimetres (one and one-fourth inches) long and one and one-half centimetres thick (five-eighths inch), to be distinctly made out by the examining finger in the vagina. Left ovary low in position.

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

Operation, July 1st.—Canal of the uterus easily dilated. Curetting brought away a large amount of fungous tissue, mostly from the posterior wall of the uterine cavity. Irrigation and light packing with gauze. A transverse incision three centimetres (one and one-fourth inches) long was made in the anterior vaginal wall, two centimetres (seven-eighths inch) from the crown of the cervix, and the cellular tissue between the bladder and uterus dissected until the fibroid nodule was reached. The nodule was well embedded in the middle of the anterior face of the body nearly at the fundus. It was seized with double hooks and enucleated. There was a lively hemorrhage from a vessel on the left side, which was finally controlled by forepressure and gauze packing, and the raw surface was closed by a continuous stitch of catgut and the vagina by a submucous stitch of the same. The peritoneal cavity was not opened.

The patient had an uninterrupted convalescence, the gauze being removed from the uterus on the third day, and she went home in ten days. She was seen again on October 19, 1895, and the following note was made of her condition at that time: Now has only slight pain in the left groin; vertical headache and dyspepsia; there is a plug of tenacious mucus in the os uteri; perfect union in the vaginal wound; no tenderness of uterus and canal patulous.

CASE III. MORCELLATION OF SUBMUCOUS NODULE AT FUNDUS, AND POLYP WITH PEDICLE SPRINGING FROM FUNDUS.

M. D., single, forty-eight years of age, was seen in consultation with Dr. G. N. Jones, of Gloucester, December 14, 1896. She gave the following history: Father died of heart disease, otherwise the family history was negative. Had always been well, with the exception that she had suffered all her life with excessive flowing at her monthly periods, and at times she had had some frequency of micturition, but never enough to necessitate getting up at night. It is to be mentioned that she had had facial erysipelas three or four years before. The catamenia had been regular every twenty-one days up to a year before. At twenty-one years of age she soiled fifteen napkins at each period; at twenty-five years, seven napkins; after that never less than twelve. For the last five or six years she had used from thirty to fifty napkins and was weak from the loss of blood. When young she had a great deal of pain with the periods. Latterly had been obliged to give up her position, which necessitated standing, a place she had held for twenty-five years, because of the flowing. Five years ago she had a hemorrhage lasting a week, in February, 1895, another, and six weeks ago a third, and since then she had soiled three or four napkins every day. For five or six years she had had a watery, unirritating vaginal discharge when not flowing. She also complained of palpitation, headaches and pain about her heart.

Physical examination.—A well developed and nourished woman of average height, very pale and sallow; pulse wiry and rapid; urine negative; heart negative. Uterus retroverted in the second degree, freely movable, large, and of irregular outline; cervix small, and in the os, which was the size of a finger tip, could be felt a polyp. Examination with the sound showed that the pedicle of the polyp was situated well up in the uterine cavity, which measured three and three-quarters inches in depth. Vagina narrow.

Ether was administered by Dr. Jones. The cervix was dilated with the Wathen uterine dilator and the polyp was seized with a double hook forceps and twisted until it came away. It measured one and one-half by three centimetres (five-eighths by one and one-quarter inches). Very little hemorrhage. Further dilatation of the cervix was obtained and a finger introduced into the uterus for purposes of exploration. It was evident that the pedicle of the polyp had sprung from the right side of the fundus, and furthermore that there was situated alongside of the stump of the pedicle a submucous fibroid nodule the size of a large pea. Much difficulty was experienced in reaching the fundus with the finger, because of a tight contraction of the uterine tissues in the body of the uterus about the small pedicle of the polyp. In other words, the body of the polyp had dilated the lower uterine canal, but the upper part of the canal closely hugged the small-calibered stalk of the polyp. The constricted portion was so far from the external os that it was hard to dilate. The stump of the polyp and the submucous nodule were removed piecemeal with polyp forceps, Emmet curette forceps and the Sims sharp curette, and the rest of the uterine cavity curetted. This is a case where my uterine cutting forceps would have been extremely useful, in fact, it was one of a series of cases which led me to devise the cutting forceps a year later. There was no hemorrhage to speak of. The cavity was swabbed with pure carbolic acid after irrigation with weak corrosive solution, the uterus replaced in its proper axis in the pelvis, and the vagina packed with iodoform gauze.

In February, 1897, Dr. Jones told me that the patient had done well in every respect. The uterus remained in place without a pessary and there had been one normal catamenia since the operation was performed.

These three cases have been selected as illustrating the different sorts of conservative operations on fibroids which have fallen under my observation. There is still another sort, the morcellation of large fibroid nodules of submucous evolution, which will be considered by the gentleman who is to follow, from his large experience with this class of cases.

It is my belief that all operations on the uterus and ovaries and tubes should be conservative in the strict sense of the word. It is a greater glory to patch up a diseased organ, to put a crippled member in fair working condition, or at the least prevent it from being a menace to the health of the rest of the economy, than it is to remove an organ because it may cause trouble in the future. During the menstruating life of woman the uterus should be removed only when it is the seat of an ineradicable disease. Fibroid tumors should not be so classed unless they distort the uterus excessively or invade its tissues to such an extent that the uterine cavity cannot be preserved while at the same time the tumor is taken away.

In cases in which fibroids cause symptoms necessitating operative treatment it is my custom to remove the tumors either through the uterine cavity, through the vagina or through the abdomen. I think that most patients are better off even if all the nodules are not found and the operation is not complete, than they are with their entire uterine organs gone. I do total ablation in young women as a last resort and with great reluctance.

During nearly every myomectomy operation some

one among the spectators says, "May not other fibroid nodules develop where these have been removed; may there not be other foci that have been overlooked? Would it not be much wiser to do hysterectomy?"

To this I say, "Suppose they do develop. They are benign growths and may be operated upon at a later day should they cause symptoms. We do not remove the scalp because wens grow in it, nor the brain when it is the seat of tumors. We are satisfied with eradicating the tumors and preserving the function of the organ. In the case of the brain such a course is imperative. Isn't there too much of a tendency among operators to consider the uterus an unnecessary organ because it may be removed with comparatively little danger to life?"

In patients who are near the menopause or who have passed it, hysterectomy is preferable to myomectomy, because the uterus ceases to be of any great importance in the body after the change of life. When the cervix is torn or shows signs of disease, I make it a rule to remove the entire uterus in patients near the menopause. In younger women I prefer to repair a torn cervix and remove fibroid nodules by myomectomy rather than sacrifice the uterus.

As to the technique of myomectomy I have little to say. Dr. Howard Kelly has devised several dissecting spuds for use in shelling out the tumors. I have tried one of them and found it very useful for this purpose. Two years ago I invented a uterine cutting forceps for removing pedunculated submucous nodules situated at the fundus uteri and for use as a vulsellum forceps in the removal of large fibroid nodules of soft texture, tissue which it is impossible to hold with ordinary vulsella or hemostatic forceps. These forceps I have employed in both classes of cases and have found them to be a very valuable addition to my armamentarium.

The continuous stitch of catgut has proved efficient in controlling oozing after the enucleation of the tumor. Sometimes two or even three tiers of sutures have been necessary in the case of a tumor situated deeply in the uterine tissues. It is essential that all wounds in the uterus should be carefully closed.

I have found that it is sometimes possible to enucleate several nodules through one incision in the peritoneum covering the uterus, by burrowing along a trifle under the peritoneum.

As regards the best mode of approaching these tumors, my rule is as follows;

(1) If the tumor is of small size, of submucous evolution, and projects into the uterine cavity, dilate the uterine canal by a series of sterile laminaria or tupelo tents placed in the canal under strict antiseptic precautions, beginning twenty-four hours before the time set for operation. In this way a more thorough and more gradual dilatation is obtained. Thorough dilatation avoids splitting the cervix, a procedure absolutely necessary in the case of a long and rigid cervix when rapid dilatation is attempted. Splitting the cervix is often an unnecessary mutilation, and, in the case of sloughing fibroids, it offers a fresh cut surface for septic absorption. If time does not serve for gradual dilatation dilate when the patient is under ether with the stout steel dilators until the canal will take the operator's finger. Remove the tumor by twisting, snaring or by morcellation, according to its situation and character.

(2) If the tumor is of subperitoneal or subvaginal evolution and is in the cervical region, and the vagina is of good size, perform either anterior or posterior colpotomy and enucleate the tumor without opening the peritoneum, if possible, closing the incision with buried sutures of catgut.

(3) If the tumor is of subperitoneal evolution in the region of the fundus, and in all other cases, open the abdomen, incise the capsule of the tumor along one side and enucleate it; then close the bleeding surface left with buried continuous sutures of catgut.

At the present time I seldom have occasion to do curetting without other operation in fibroids. Steaming of the uterine cavity in fibroids is not advocated by those who have had the most experience with this method of treatment.

Electricity, if it may be classed as an operative mode of treatment, is of use in relieving hemorrhage and pain, but has no lasting effect on the tumor.

Removal of the tubes and ovaries to produce an artificial menopause has been abandoned as an operation in fibroid tumors, since it has been determined that the menopause does not always cause a shrinkage, but on the contrary the tumors continue to grow in some cases after the change of life.

Ligature of the uterine arteries through the vaginal vault has been advocated and practised by a few operators, with the purpose of cutting off the blood supply of fibroid tumors. Although it is reported to have given good results in certain cases, we ought not to expect very much from it, because of the abundant collateral circulation of the uterine organs. We often find the ovarian artery larger than the uterine in these tumors, and occluding the uterines would, in all such cases, lessen the blood supply to the tumor less than half.

In discussing the question of myomectomy we must bear in mind that in a large proportion of cases of fibroids there is also a certain amount of disease of the ovaries and tubes, especially the former. Those who advocate hysterectomy in all cases put this fact forward as an argument in favor of hysterectomy. In an abdominal myomectomy it is possible to resect a diseased ovary or tube, or to remove a badly diseased one at the same time that the tumor or tumors are enucleated, leaving at least a piece of an ovary, and this, to my mind, is an argument in favor of myomectomy.

To the argument that there may be more hemorrhage in myomectomy than in hysterectomy it may be said that the hemorrhage may be controlled by an elastic ligature about the cervix during the process of enucleation. Such elastic compression is indicated where a very large nodule is of intramural evolution and firmly embedded in the uterine tissues. Even in those cases where a large nodule encroaches on the uterine cavity, and in its removal it becomes necessary to remove a portion of the endometrium, I am in favor of myomectomy if the major portion of the endometrium can be preserved.

In contrasting myomectomy with hysterectomy, I think we must admit that myomectomy is the more difficult operation and requires a higher degree of skill for its successful performance, and would, other things being equal, take a longer time, depending on the skill and experience of the operator. We should bear this in mind in operating on a weak and exsanguinated patient.

TWO CASES ILLUSTRATING CONSERVATIVE OPERATIONS FOR UTERINE FIBROIDS.¹

BY R. A. KINGMAN, M.D., BOSTON,

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THE attitude of the medical profession toward fibroid tumors during the past twenty years has shown repeated fluctuations between conservatism and radicalism. At the beginning of that period, the general opinion was that fibroids were rarely of sufficient importance to demand more than palliative treatment and usually atrophied after the establishment of the menopause. Later, with the increasing ease and safety of operative treatment, hysterectomy and myomectomy came rapidly to the front in the estimation of the leaders in thought and action. Then came the teachings of Apostoli as to the possibilities of electricity in curing, or at least relieving symptoms, and a halt was at once called in the progress of the radical operation. Again the pendulum swung and hysterectomy was perfected almost to the point of absolute safety. At least it was made as safe as electrical treatment and, of course, vastly more certain in its results. Having conquered this field, operators are now striving to attain a still higher goal, by trying to cure rather than to sacrifice, — to conserve rather than to remove organs.

It is not the province of this paper, as it is not the intention of this evening's discussion, to decide in what class of cases operation shall be undertaken, nor is it intended to consider the general subject of fibroid tumors in any of its aspects. We are here to seek light upon this higher ambition; to learn if possible to how great an extent and under what conditions and limitations, the essential organs of generation may be spared, while removing the actual disease and restoring the patient to health and functional activity.

Personally, I do not intend to consider castration in this paper, though formerly I practised this operation to a limited extent with success and satisfaction, because the old reasons for that operation can almost never be found operative in the present day, and because it violates the fundamental principles which underlie this present goal. It sacrifices important organs and puts a stop to functional activity.

It is my purpose merely to cite two cases, illustrative of the possibilities and advantages of the conservative operations, each being a simple case of single fibroid, which yet seemed to present such difficulties in the way of removal as to suggest the necessity of hysterectomy.

The first case is that of a young lady thirty years of age, whose only complaint was of menorrhagia, as a result of which she was completely blanched. She had previously been cured by a member of this Society, without benefit. The uterus was found moderately enlarged, globular, and with nothing to indicate the location of the small fibroid which was suspected to be the cause of her trouble. After entering the hospital, the cervix was dilated with laminaria tents so as to admit the forefinger. At the fundus there existed a slight convexity, which was the only indication of the presence at that point of the small fibroid. It was at once evident that while the fibroid was small, its location, together with the narrowness of the vaginal and cervical canals, rendered it exceed-

ingly difficult of removal by any of the ordinary means. It was for just such a case as this, however, that Dr. Burrage designed his morcellation forceps, which he exhibited to this Society about two years ago. With these forceps it was possible to completely remove the fibroid inside of five minutes, without risk of perforating the uterus and practically without shock. The patient left the hospital well inside of two weeks, and since that time has been absolutely free from symptoms.

The second illustrative case is in many respects identical with that reported by Dr. Washburn before the Obstetrical Society and referred to this evening. The patient, Mrs. T. H. L., was thirty-eight years of age, and had been married three and one-half years without having had children. Her symptoms were not very definite, consisting of flatulence, persistent constipation, with increasing pain and soreness in the lower abdomen, where for the past year she had at times noticed a hard bunch, now evidently increasing in size. Menstruation was regular, without excessive flow and with only moderate pain. She felt that she was losing ground and found that she tired easily upon exertion.

Upon examination the uterus was found uniformly enlarged, the cervix being deep in the pelvis and the top of the mass at the level of the umbilicus. The mobility was much diminished.

Owing to desire to have children, it was agreed that myomectomy should be done if possible, and this operation was accordingly performed at St. Elizabeth's Hospital, April 28, 1899. Upon opening the abdomen it was found that the only indication of the locality of the fibroid, as distinguished from the uterus itself, was the fact that the tubes entered the mass on its anterior face. Splitting the uterus and capsule on the back of the mass, the former was found to be only from an eighth to a quarter of an inch in thickness. The tumor was rapidly enucleated with the finger, not more than three or four minutes being required and no hemorrhage occurring during that time. There was an opening made into the uterine cavity about the size of a half dollar. Almost immediately the tumor cavity began to ooze, the hemorrhage becoming rapidly excessive. A rubber tourniquet was thrown around the lower part of the uterus, while the cavity was closed with buried sutures of chromicized catgut. The opening in the mucous membrane was closed with two mattress sutures, the rest of the cavity being obliterated with four or five layers of continuous suture. When the peritoneal surface was reached, the tourniquet was removed to see if the bleeding was controlled, but to my surprise the hemorrhage seemed more free even than at first. The tourniquet was at once reapplied and, even though I expected to be compelled to remove the uterus, I put in a continuous superficial suture of catgut. Again loosening the tourniquet no hemorrhage occurred, and throughout the remainder of the operation the wound did not ooze a drop. Both ovaries were much enlarged and were cystic throughout, but by careful resection a small portion of comparatively healthy ovarian tissue was saved on each side. The tubes were somewhat hypertrophied, but were otherwise normal.

Convalescence was rapid and without special incident. For two months after the operation the patient was given small doses of ergot and hydrastis. On

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

June 16th, examination showed the uterus to be decidedly smaller and more freely movable. There was slight tenderness about the right ovary, but nothing abnormal could be discovered. The patient's general condition was good. She was seen twice in September on account of a mild attack of indigestion. All pelvic symptoms had ceased, menstruation was regular, normal in amount and without pain. The uterus showed only slight enlargement, was in normal position, and nothing could be felt in the pelvis to indicate that any operation had been done.

These are only two cases selected from a considerable number in each class, to illustrate in a concrete manner the nature of the difficulties to be overcome and the great subsequent advantages to be anticipated in cases permitting such conservative work.

Concerning the scope and limitations of vaginal work I have little to say, as there is little to be gained by opening a discussion which is likely to lead only to a ventilation of partisan championship, but within certain limits harmony of teaching and practice ought to be possible. We can at least all agree that submucous pedunculated tumors can be best removed *per vaginam*. These can commonly be twisted off and removed, either with or without morcellation. But to how great an extent can submucous sessile fibroids be removed by the same route? I believe that the percentage of cases in which this procedure should be elected could be much increased were digital exploration of the uterine cavity more frequently employed. In past years, so strong an aversion to tents was justly acquired, that even now the profession will rarely consent to their use. Probably many present in this room have never inserted a tent, and yet it is impossible to rightly diagnose certain cases without the advantage of digital exploration which they offer. I have examined a case in consultation with a colleague, preliminary to a hysterectomy, in which a tent inserted at my suggestion made it possible to locate and easily enucleate the submucous fibroid which had been the cause of the persistent hemorrhage from which the patient sought relief.

Submucous fibroids of even many pounds' weight can usually be removed by the vagina, by morcellation and enucleation. For use in this connection, the forceps devised by Dr. Burrage cannot be too highly commended. It adds almost perfect safety to great efficiency, for while it will not wound a flat or concave surface, it will cut or strongly seize any projecting mass. It can therefore be used unguarded by the finger, in places where it would be dangerous to use knife, scissors, spoon saw, or curette. The only bad result which I have seen follow such removal of fibroids was due to iodoform poisoning and in no sense the result of the operation. The gauze packing was really unnecessary and the alarming symptoms following it taught me a useful lesson.

Through the abdomen we ought to be able to remove simple pedunculated fibroids and fibrocystic tumors, regardless of their size. Upon this all will agree. It will also be agreed, probably, that small, subserous nodules, unaccompanied by deeper tumors, and in the absence of serious disease of the appendages, should be treated by myomectomy rather than by hysterectomy.

On the other hand, there can be no question that in the presence of such a mass of tumors as to obliterate all evidence of a uterus; when the uterine tumors are

complicated by the presence of suppurative disease in the pelvis, or by such disease of the appendages as to demand their removal; in the presence of certain grave diseases elsewhere, such as phthisis or valvular heart disease; and in patients past the menopause, hysterectomy should be the operation of election.

Aside from the conditions mentioned above, each case must be judged upon its own merits, with the inclination always strongly towards conservatism. Especially in young women should our endeavors be towards the preservation of functional integrity of the pelvic organs. Neither size nor number of tumors should be necessarily a bar to this attainment, nor, in my opinion, should the fact that at a single sitting we cannot entirely clear the uterus of nodules compel the sacrifice of that organ.

In the case mentioned as having suffered from iodoform poisoning, I believe there is now present in the uterus at least one small fibroid, but the young lady is still at her studies, with life before her, and looking forward with fond anticipation to marriage and maternity. Rather than at once and finally to renounce such hopes, she would gladly submit to many such operations.

As for the operation itself, the preparation is the same as for hysterectomy, and few difficulties are likely to present themselves which are not common to other abdominal operations. The chief danger, both during and after the operation, is from hemorrhage, so that careful closure of all uterine wounds must be our especial duty. The cavities left by the tumors must be sealed from bottom to top by buried sutures of catgut, any points of arterial hemorrhage being ligated with the same material. The table should be lowered to the horizontal position for a sufficient length of time before closing the abdomen to enable the operator to assure himself that all oozing is permanently checked. During the operation it is often necessary to use a rubber tourniquet about the cervical portion of the uterus, so permitting a bloodless operation, but it should be borne in mind that hemorrhage is very liable to recur upon the restoration of the blood pressure in the severed vessels, and exceptionally careful closure and prolonged inspection of such wounds is demanded.

The frequent association of ovarian disease with fibroid tumors will make it necessary at times to resect, or do other conservative operation upon one or both ovaries, for it must not be forgotten that removals of the new growths will be followed by uterine involution and by greatly improved conditions in the appendages as well. Do not be afraid to trust nature in this respect, for it is astonishing how much she can both do and undo when given opportunity.

A PECULIAR CASE OF ADENOCARCINOMA OF THE BODY OF THE UTERUS.¹

BY AGNES C. VIETOR, M.D.,
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A LADY, sixty-seven years old, widow, mother of two children, passed uneventfully through the menopause at the age of fifty-four, thirteen years ago. The pelvic organs apparently became perfectly quiescent, there being no leucorrhœa—nothing to make the pa-

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tient conscious of their existence. She was also perfectly well in general health. This state of affairs continued for nine years, then, about four years ago, she noticed a slight show every now and then, lasting a few days. Being unusually well-informed of the possibilities of danger in any irregular pelvic manifestation at her time of life, she consulted a well-known gynecologist of this city, telling him she was about to go to Europe for a couple of years, but that she would change her plans according to his advice. She says he curetted her in his office without an anesthetic, and reported that "examination showed there was no cancer," and that she might go to Europe as she wished. This she did, the slight show continuing.

After about a year, she one day had a free flowing which made her feel a little weak; this free flow returned about every three months; then, gradually, the interval decreased to once a month; later, a moderate flow continued all the time, day and night. April 1st of the current year, the flow amounted to a hemorrhage, which lasted three days and caused great prostration, from which she never fully recovered strength, flesh or color. After this hemorrhage, the colleague mentioned again curetted her as before, and again reported that "examination showed there was no cancer."

Coming under my care in August, I found the patient a little pale but not cachectic, giving an impression not of feebleness but rather of limited strength. She gave no general symptoms except the slight tissue changes in the direction of emphysema and endarteritis to be expected at her age. The urine was negative. She said she felt perfectly well, only weak and tired of the annoyance of the flow. I give this condition of hers rather in detail because I think it cannot be too much emphasized that this is an everyday picture, and that it is a terrible tragedy that both physicians and patients look upon it as an instance of the vagaries of "change of life."

Examination of the pelvis showed a fair discharge of dark red blood, having a little the odor of normal lochia. The vagina was large and rather short, with senile, thinned walls. The uterus was softer than normal, symmetrically enlarged and markedly retroverted, but freely movable; on attempting to measure the canal, the internal os appeared closed. Combined abdominovagino-rectal examination showed a hard, nodular tumor, about one-third the size of my fist, apparently springing from the posterior wall of the body of the uterus, extending up into the fundus and projecting backwards into the cul-de-sac; it was not sensitive and apparently not adherent to the neighboring tissues. The appendages were not palpable.

The first peculiarity of this case began with this examination. With the left hand on the abdomen, the right forefinger in the vagina and the right middle finger in the rectum, the pelvic organs are as clearly grasped by the examiner as is possible, and given a lax abdominal wall, the diagnostic opportunity is almost ideal. It seemed ideal in this instance, and I cannot imagine anything clearer than the outline of this uterus and tumor as it lay between my two hands.

I fully explained possibilities to the patient, but postponed a positive opinion till our next consultation. In the meantime, I put her on a form of treatment which I am testing in every case of uterine fibroids where operation is not urgent, and the results of which

I hope, at some future date, to report to this Section. I refer to the use of the tablets of mammary substance to which Dr. Shober, of Philadelphia, has drawn attention. After taking these tablets for a few days, the patient began to feel, as she expressed it, more "vigor" and had a desire to go out and do things; the discharge ceased entirely at night and decreased during the day to fully half the former quantity; her face looked fuller and her color was better. On examination the tumor seemed somewhat smaller, less irregular and firmer. We again decided to use the tablets a little longer. Two weeks later the patient reported that her improvement continued, but on examination both tumor and uterus seemed a trifle larger. I then advised an immediate hysterectomy. Curiously enough, a day or two after that the flow increased to its former amount and also returned at night.

The patient entered the Baptist Hospital, and on October 4th I did a vaginal hysterectomy, Dr. Emma B. Culbertson kindly consulting and assisting. The operation was straightforward till, on attempting to deliver the fundus, it suddenly fell to pieces in my hand and I had only a handful of pieces of soft tissue. Not to take your time, I will only say that the operation was completed, and on looking at the specimen, which I show here to-night, I was amazed to find the posterior wall of the uterus perfectly smooth and regular, with no sign of a tumor. On examination, I found the tumor was on the anterior wall and projected into the uterine cavity; the posterior wall was converted into a mass of tissue so soft that it slid away from the depressing finger and left only the intact peritoneum to be carried over the inner surface of the tumor, encasing the examining finger like a glove. It was this thin, enclosing bag, of the thickness of a sheet of paper, that broke at the fundus as I grasped it. In many spots the wall mass was retained only by this paper-like layer of peritoneum.

The occlusion of the internal os was due to the projection over it of the lower nodule of the tumor; this suggests itself to me as an explanation of the preservation of tension in the walls of the uterus, so that, although the walls were everywhere disintegrated, they did not give a boggy or cystic feeling, but rather the sensation of a hyperplasia that is in the infiltration stage as contrasted with the later condition of conversion of the connective-tissue cells into fibres.

The other peculiarity — the apparent temporary improvement of an adenocarcinoma of the body of the uterus under the use of mammary substance — is not an occurrence for which I attempt to offer an explanation, but an observation which I simply put on record.

The patient made an uneventful recovery and has steadily improved in strength and appearance.

Dr. W. F. Whitney's report was as follows: "The specimen from Mrs. ——— consisted of the uterus and adnexa. The body was enlarged, the cavity dilated to a rather globular form, the size of a small orange. Upon opening it, the wall was found to be infiltrated by a new growth of soft, medullary aspect and rather lobulated form, projecting into the cavity as rounded and papillary, extensively necrotic masses; this growth reached almost through the entire thickness of the wall, and occupied the greater part of the fundus but did not reach to the cervix. Its general appearance was one that had started in the mucous membrane over an extensive area. Microscopical exami-

nation showed a true glandular type of growth, which had infiltrated between the muscular bundles which thus separated the glandular masses into alveoli. The epithelium lining the glands was long, quite regular and of the columnar variety. In places the gland type was obscured by solid masses of cells. The diagnosis is an adenocarcinoma. Although the uterus was covered by adhesions which bound the relatively normal tubes and ovaries down to it, there was no evidence of extension beyond the part removed."

Dr. Whitney reported to me later that the hard, nodular tumor projecting from the anterior wall into the uterine cavity was a fibroma.

Clinical Department.

A CASE OF EXTRA-UTERINE PREGNANCY, WITH OPERATION.¹

BY FREDERICK W. JOHNSON, M.D., BOSTON,

Visiting Gynecologist, Carney and St. Elizabeth's Hospitals.

D. H. P., thirty-one, married two and a half years. Menstruation began at fourteen. Always regular; flows four to five days; has always had severe pain, confining her to the bed a few hours during the first day of the flow. Has never had any leucorrhœa. Aborted two months after she was married. From that time she was perfectly regular, every four weeks, up to July 20, 1899. After going six weeks without flowing, was suddenly seized with sharp, shooting pains in the lower abdomen. She was helped home, was covered with cold perspiration, and was very pale. Four days after the attack of sharp pain in the abdomen, she began to flow, and flowed off and on, more or less, until she was operated upon, Thursday, November 9th. After the onset of the severe pain in the abdomen, she was in bed three weeks, suffered constant pain in the left lower part of the abdomen, and at the same time turpentine stupes were used to overcome the tympanites.

Some weeks after the rupture, she came to Boston and was seen by Dr. E. S. Boland, who, from the history and examination of the case, made a diagnosis of ruptured extra-uterine pregnancy, with a mass of old blood filling the pelvis. Just before leaving the hospital the patient told me that she had consulted Dr. John T. Bottomley, and that he also made the same diagnosis as Dr. Boland.

Thursday, November 9th, a laparotomy was done at the Carney Hospital. A tumor, greenish-yellow in color, the size of an orange, was found adherent in the pelvis. To this was attached the thickened right Fallopian tube. On separating the adhesions, the tumor was found to be connected with the left Fallopian tube. The left ovary, much enlarged, and nearly filled with fluid, could be distinctly seen underneath this mass. The tumor, with the left ovary and tube, was removed, the tube being dissected out of the horn of the uterus, and the horn sewed over and over with catgut. The thickened portion of the right tube, with the fimbriated end, which was closed by blood and what looked like inflammatory adhesion, was removed. This left about two inches of healthy tube, which, after removing the adhesions from the

surface of the ovary, and cleaning it of adherent blood, was spread out as much as possible over the surface of the ovary, and fastened there by fine silk sutures.

After thirty-six hours her temperature never went above normal, and she left the hospital three weeks from the day she was operated on. The following is Dr. W. F. Whitney's report: "The specimen from Mrs. D. H. F. consisted of a portion of one tube and the other tube and ovary. The partial tube showed simply a little thickening and occlusion of the fimbriated end by blood clot, which was also present on the surface. The other tube was suddenly dilated into a sac about the size of a small orange, covered with clots and filled with clotted blood. The blood clots were in layers and considerably decolorized, as if quite old. At one end of the mass, quite close to the uterine end, was a little thready tissue. On microscopic examination, there were found fine branching filaments of a fibrous character, terminating in round, enlarged ends. These were similar to the chorionic villi of the first half of pregnancy. In the ovary was a large, cystic cavity filled with blood (corpus hemorrhagicum). No true corpus luteum was found. The diagnosis is a tubal pregnancy ruptured in the early months."

EMPHYEMA OF FRONTAL SINUS.

BY JOHN D. PAIGE, M.D., SAVANNAH, GA.

This case had empyema of the antrum of Highmore on both sides, empyema of the ethmoid cells, bilateral, and empyema of the frontal sinus on the left. The antrums were opened and drained through the alveoli,



the ethmoid cells opened and curetted, the frontal sinus irrigated through the enlarged natural opening, with great relief to the symptoms and discharge. Dr. E. R. Corson, of Savannah, kindly took the accom-

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

panying x-ray (five-minute exposure) with the probe introduced in the frontal sinus, which shows so much better than any I have seen published that I think it will prove interesting. The loss of bone in the superior maxilla from its drilling through the alveolar process and the subsequent resorption show plainly. The dark irregular bodies in the mouth are numerous teeth fillings. The probe in the frontal sinus shows clearly, as does a small exostosis on its superior wall. The opening of the sinus through the nose would not seem so dangerous a performance as some writers would have us believe.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Continued from No. 13, p. 333.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."—SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

THE MANAGEMENT AND CONTROL OF INFECTIOUS DISEASES.

On Bacteriological and Clinical Diagnosis in Relation to some of the Notifiable Infectious Diseases.

Dr. J. W. Washbourn contributes a valuable paper to the *Journal of the Sanitary Institute*⁹ upon this subject.

Cost of bacteriological examination for diagnosis.—Dr. D. G. Davies,¹⁰ states the average cost of bacteriological examinations of material in cases of diphtheria, typhoid fever and tuberculosis in thirty-three London and provincial districts at two shillings and sixpence to five shillings for each examination (60 cents to \$1.25).

Influence of schools in spreading scarlet fever.—Nivens,¹¹ Medical Officer of Health of Manchester, Eng., and Murphy, of London,¹² observe a drop in the prevalence of scarlet fever in the summer holidays. Murphy also believes diphtheria to be spread by school attendance.¹³

Typhus fever.—Littlejohn,¹⁴ Medical Officer of Health of Edinburgh reports an epidemic of typhus, which was imported in August, 1898, and was spread by a "wake." The disease is now so rare that young medical men do not recognize it, and hence it may spread rapidly. Out of 79 cases there were nine deaths.

Diphtheria bacilli in the mouths of well persons who have been associated with the sick have been found in 18.8 per cent. of the cases examined.¹⁵

Mosquitoes and malaria.—The Italian Society for the Study of Malaria quotes an experiment in which a man was selected from a non-malarial district, and subjected to the bites of mosquitoes from a malarial district, with the result of infecting him.¹⁶

Certain Forms of Animal Life as Transmitters of Infection; Methods of Destruction.

After it has once been determined that certain animals are the vehicles of infection, attention is naturally given to the methods of destroying them. Dr. Doriga¹⁷ contributes a paper on the "Prevention of Plague through the Suppression of Rats and Mice." "The French Government has charged the Comité Consultatif d'Hygiène with the investigation of this question. Certain navigation companies have also taken measures for the destruction of rats and mice upon their vessels. The Compagnie des Messageries Maritimes offered a bounty to their sailors for every rat caught on board.

"Instructions have been adopted by the Minister of the Interior. These instructions urge the importance of preventing the access of rats to floating hospitals and ships at the wharves, at sea, and on arrival in port. If the dead bodies of rats are found on board, a bacteriological examination must be made, and if the plague bacillus is found, the ship must be discharged, the cargo of passengers' and crew's baggage disinfected, the vessel fumigated throughout and the dead rats burned."

Mereshkowsky¹⁸ has studied the question of infecting rats and mice with destructive bacilli other than those of plague, with a view to their extermination.

Abel¹⁹ also has experimented in the same direction. It was found necessary to discriminate between wild species and those which live habitually in contact with man. The field mouse, for example, appears to be endowed with slight susceptibility to infection.

RAILWAY SANITATION.

A committee of the French Society of Public Medicine and Professional Hygiene²⁰ has reported the following recommendations for the prevention of the spread of disease by means of railway coaches: The posting of notices in the cars and waiting-rooms prohibiting expectoration upon the floors of cars and stations, the placing of cuspidors in the waiting-rooms and corridors. These should not be filled with sand, but with an appropriate liquid. Wiping of the floors of cars and stations with moist cloths should be substituted for dry sweeping. Carpets or mats in cars should be made of material which can be readily cleaned. Persons suffering with infectious diseases should not be permitted to ride in the ordinary compartments but should be placed in a special compartment, in which no one else should be allowed to travel except the necessary attendants. At its destination this compartment should immediately be subjected to disinfection before being used again. Compartments designed for conveying the sick should be so constructed as to admit of disinfection readily.

*Formaldehyde as a Disinfectant for Railway Cars.*²¹

Dr. John E. Owens, chief surgeon of the Illinois Central R. R. Co., reports a series of successful experiments with formaldehyde by means of sheets (suspended in rooms) upon which solution of formaldehyde was thrown from a bottle, the room being of 500 cubic feet capacity and the solutions of formaldehyde (40 per cent.) being successively eight ounces, four

⁹ London, vol. xx, Part 1, p. 43, 1899.

¹⁰ Public Health, London, June, 1899, p. 602.

¹¹ Loc. cit., September, 1899, p. 787.

¹² Report of London County Council.

¹³ Diphtheria and Elementary Schools, London, 1898, p. 36.

¹⁴ Public Health, September, 1899.

¹⁵ Zeitschrift f. Hygiene, xxxi, p. 463.

¹⁶ Centralbl. f. allg. Gesund., p. 420, 1899.

¹⁷ Revue d'Hygiène, August, 1899.

¹⁸ Centralbl. f. Bakt. xvii, p. 742, xx, pp. 85 and 176.

¹⁹ Loc. cit., xxi, p. 497.

²⁰ Revue d'Hygiène, May, 1899.

²¹ Journal American Medical Association, March 3, 1900, p. 518.

ounces, and two ounces; the time of exposure was five and one-half hours. The tests employed were the bacilli of anthrax, typhoid fever, diphtheria and yellow fever.

He then issued the following instructions governing the use of the formaldehyde apparatus for direct application of the solution in the disinfecting of passenger and freight cars:

(1) Suspend the two sheets, found in the outfit, by their edges from the roof of the car, or the bell-cord, by means of the clothes-pins. The sheets should hang their full length and be placed so as to equally divide the space in the length of the car.

(2) Close the doors and windows.

(3) Saturate both sheets with spray from the bottle, standing with the nozzle about eight feet from the sheet and throwing the spray against it, with the left hand directing the nozzle, supporting the tube where it passes from the bottle, and working the bulb vigorously and rapidly with the other hand. Begin at the top of the sheet, and use half of the required quantity of fluid on each sheet.

(4) For disinfecting passenger and baggage cars, fill the spray bottle with the formaldehyde solution furnished. For disinfecting freight cars, use the bottle half full.

(5) As formaldehyde is quite irritating to the hands and eyes, those using the solution are instructed to exhaust the spray quickly, leaving and closing the car as soon as possible. Caution should be exercised not to get the liquid on the hands or in the eyes, and not to inhale the vapor any more than is absolutely necessary.

(6) Leave the cars locked tightly for at least five hours after spraying and, if possible, allow eight hours to elapse before opening.

(7) On opening, take down the sheets and clean the car in the usual way. If any spots are left on furniture or polished woodwork by the formaldehyde, wipe them off with a wet towel and use furniture polish. If the sheets are still moist, they should be dried in the open air, but not washed until sufficiently soiled.

(8) For disinfecting spaces other than cars, such as baggage rooms, etc., the same method may be used, employing one bottle of the formaldehyde for every 4,000 cubic feet of room space, and one sheet for each 2,000 cubic feet.

INDUSTRIAL HYGIENE.

Miscellaneous Dangerous Trades.

The committee appointed to inquire into and report upon this subject has issued a fourth interim report²² and a final report.²³ Thorpe and Oliver²⁴ have also reported upon similar subjects. The fourth report treats of the occupation of grinding and the danger from bursting stones; also the dangers of file-cutting, the chief danger in this occupation being from lead poisoning. Dr. Littlejohn, of Sheffield, testified that 91 persons had died in that city from lead poisoning, 56 of whom were file-cutters.

Porter, of the Royal Infirmary, referring to the insidious nature of the diseases, says that specific symptoms of poisoning do not occur usually for thirteen or four-

teen years, and that was the average time between the date of the first exposure to the poison and the first specific symptoms, causing them to seek medical advice.

In the final report of the committee, ten different occupations are specified, the most important being those in which danger from lead poisoning exists. These are the chrome works, the use of lead in print and dye works, and the licking of labels in thread mills.

The following sanitary duties are enjoined upon the employers in chrome works: To provide washing conveniences, including hot and cold water, soap, nail brushes and towels; also respirators and overalls for persons employed in dry processes; fans and suitable means of ventilation wherever dust is generated; a sufficient supply of Epsom salts for making the following drink: magnesium sulphate, two ounces; water, one gallon; essence of lemon, sufficient to flavor. No food to be eaten in any part of the works. Working people are also requested to keep a bit of alum in the mouth during working hours.

The report of Thorpe and Oliver on poisoning in pottery manufacture presents the following conclusions:

(1) By far the greater part of earthenware can be glazed without the use of lead; (2) some branches of the pottery industry would find it difficult to dispense with lead. Here the use of an insoluble silicate is recommended; (3) the use of raw lead for glazing or coloring should be absolutely prohibited; (4) since it is difficult to provide an innocuous lead glaze, young persons and women should be excluded from employment, and others should be subjected to systematic medical inspection.

(To be continued.)

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting, Wednesday, December 27, 1899.

DR. R. A. KINGMAN in the chair.

DR. A. C. VIETOR read a paper entitled

A PECULIAR CASE OF ADENOCARCINOMA OF THE
UTERUS.¹

DR. F. W. JOHNSON reported a

CASE OF EXTRA-UTERINE PREGNANCY, WITH OPERA-
TION.²

DR. BOLAND: I do not think I can add anything. The thing that suggested the possible nature of it was the history of a sudden attack of pain. She had been unwell seven or eight weeks before, and at the time when she should have been unwell again there was some dark flow, not similar to anything she had had before. Taking that into account, and the fact that she was several weeks over her time, and the sudden severe onset of the pain, the condition of shock and collapse suggested the diagnosis to me, especially in connection with the mass felt *per vaginam*. The sudden severe onset of pain without any explanation for

²² Fourth Interim Report on Certain Dangerous Trades, London, 1899.

²³ Final Report on Certain Dangerous Trades, London, 1899.

²⁴ Report on the Employment of Lead Compounds in the Manufacture of Pottery, London, 1899.

¹ See page 353 of the Journal.

² See page 355 of the Journal.

it and the absence of fever I think are very suggestive of trouble of that sort. This makes nine cases I have seen. In one of these I did not make the diagnosis. I think in the majority of cases the sudden severe onset of pain in the absence of trauma or colic is a thing that has helped me out more than anything else. I have seen *nine* cases in the last eight years all told. All except one recovered after laparotomy. This one was seen in consultation, and she refused operation until too late.

DR. KINGMAN: It seems to me that statement is very suggestive in the light of the fact that many men say they never see cases. Cases must occur in almost every practice, and the fact that one general practitioner, by careful observation, has found nine cases in eight years should stir us to be on the watch for the same condition.

DR. W. L. BURRAGE read a paper entitled

THE CONSERVATIVE OPERATIVE TREATMENT OF FIBROIDS.³

DR. KINGMAN: In regard to these other cases of morcellation that Dr. Burrage has referred to, I have with me the merest outline of two or three of them. Dr. Burrage very kindly assisted me in most of them, I think two before he invented this forceps. Indeed I believe it was largely the outcome of the second case I shall speak of that led to the preparation of this forceps, for there was not to our knowledge any instrument made or known to medical science that would touch those tumors.

The first was a physician's sister whom I saw about three years ago. She had been more or less of an invalid several years, suffering from excessive menstruation and great pain both at and between the menstrual periods. Her brother had urged her several times to see me, but without success, until she had a more violent attack than ever, when she consented to my being called. She had been flowing for about ten days, as I remember it. I examined her and found a hard mass, a uniform enlargement of the uterus, which extended as high as the umbilicus. Preparations were quietly made to admit her to the hospital and have hysterectomy performed. During the week while we were making the arrangements the whole complexion of the case changed. The pain had subsided and a profuse glairy discharge from the vagina set in which called for another examination, and I found the vagina filled with a mass of slimy, stringy, honey-combed tissue from which came this yellowish discharge. The os was large, and this mass extended up through it into the uterus. Again the word tumor was not mentioned, but she was told a mass was coming away from the inside of the womb which we must remove immediately. She entered the hospital and we attempted the operation. The mass was tough beyond belief and apparently had no capsule. A curette would not touch it, the fingers could not hold it, no forceps would hold it; so stringy was it that bullet or toothed forceps simply tore through it. The only thing that would touch it was knife or scissors. Guarding scissors with the fingers we cut away piece after piece. After finishing the operation the uterus was packed with iodoform gauze for twenty-four hours and daily uterine irrigation with permanganate was practised by myself. She stayed in the hospital six weeks. After the first days she had no symptoms, and from that time has been

in absolutely perfect health without a symptom referable to her pelvic organs.

One year after, I cared for a Mrs. M. R., thirty-seven, married about six months, had had one miscarriage in Geneva, and was attended by a physician who told her everything did not come away; seemed to be something left in the womb in the way of a growth. Temperature and flowing and rapid pulse from that time until I saw her two months later. Pulse never below 100 after I saw her, I think temperature never below 100°. I found a mass reaching to the umbilicus about the size of the previous one; os very slightly opened; finger could be introduced through it, and felt a mass extremely like a placenta. With the history of miscarriage, not knowing whether it was complete or not, and with this soft, somewhat offensive mass at the os, we determined to operate and endeavor to remove whatever was inside of the uterus. Dr. Burrage assisted me. The patient had large bones, tight, narrow pubic arch, very firm, resistant perineum, cervix directed into the hollow of the sacrum, the mass from the anterior wall of the uterus so that we had to turn about three sharp corners to get at it, the same sort of tumor as the previous one. No forceps would take hold of it, curette would not touch it. I don't think I have ever attempted an operation more difficult than that. We worked over it for two hours until the patient was in a state of shock, and both our thumbs were blistered from the use of forceps and scissors in trying to remove that mass, and yet we never thought of the desirability of hysterectomy in such a case. In view of its septic condition, I think hysterectomy would have been fatal. We removed almost every bit of the mass, but she had decided sepsis within a week, the temperature shooting up to 104° or 105° F. Then the uterus was explored by the finger and a mass felt, detached and removed. The temperature dropped to normal at once and she remained perfectly well. The subsequent history was not so favorable. A year ago she became pregnant, went to seven months comfortably; then developed eclampsia and died. That of course had nothing to do with the tumor and the uterus was apparently in a normal condition at that time.

The experience at that time stirred Dr. Burrage and myself to devise something to remove such tumors. It bore fruit in the case of Dr. Burrage, who within a week produced his morcellation forceps.

I will now speak of a case in which I used this forceps, she being also the sister of a physician, with sloughing fibroid not so large as those I have described. The fragments I believe weighed one pound when it was removed. Os easily dilated, and this mass about the size of my two fists was found growing from the posterior uterine wall. Then the value of this forceps was shown particularly, for after portions were loosened from their attachment the forceps could be shut into the mass, taking hold with bull-dog grip, and the mass could be twisted off and pulled out. I think about one-half of that tumor came away in one piece. We knew at the time there was a subserous tumor left in the fundus, but she is practically well and is near the menopause. The symptoms of hemorrhage which existed before, and of course the sepsis which existed at the time I saw her, were relieved by the operation, and she has seen no necessity to apply for further operation for complete removal of all the tumors.

³ See page 349 of the Journal.

DR. GRANT: This specimen is to show the shrinkage which has taken place in a fibroid three years after the removal of the ovaries. It is from a woman forty years old, from whom Dr. Charles G. Cumston three years ago removed both ovaries, for pain in the back and constipation caused by a uterine fibroid the size of an adult head, the condition of the patient not admitting of any more radical procedure. As the symptoms did not disappear, a vaginal hysterectomy was performed two months ago and this specimen removed, the fibroid, as you will see, being about four and one-half centimetres in diameter.

DR. BRECK: There is one form of conservatism that has not been referred to, and that is, doing nothing at all. I should like very much if the leaders of the discussion would favor us with their experience on that point, the observation of patients who have had nothing done, either advised not to or refused to have anything done. I have seen quite a number in which no harmful results seemed to follow very extensive fibroid tumors, and I have had one case in which, in spite of large multiple fibroids, a simple curetting has resulted in absence of all further symptoms, checking very severe flowing.

Another form of conservative operation which I think has not been alluded to is the case of submucous or intramural tumor, not projecting into the interior of the uterus. I have had a limited experience with that class of tumors, in which the cervix was incised and the tumor removed by enucleation and morcellation.

With regard to the use of tents, I want to say a word. It seems to me the use of laminaria tents is unscientific, and for this reason: although your tents may be perfectly sterile, the uterine cavity into which they are introduced is not sterile, and I can also say I have seen one such case in which serious sepsis followed in a few days, leading to pus high up, and a very serious operation which resulted in the death of the patient.

It has been stated that in the vaginal operation for fibroids the uterine appendages cannot be seen and treated, or at least it is difficult. I think, in many cases, they can be seen and treated, and not only the fibroid can be removed, but the ovaries and tubes can be excised, or partially excised, without any special difficulty.

DR. JOHNSON: In reference to the let-alone treatment, I would like to say that I think that in case of fibroid tumors, if they are growing or cause pain from pressure, produce any reflex nervous symptoms or in any way interfere with the patient's health or threaten her life, they should be removed. I think pus tubes are too commonly associated with fibroid tumors to be a mere coincidence. I think the attacks of peritonitis that we see with fibroid tumors with adhesions between the tumor and the omentum, and the tumor and the intestines, are too common to be simply coincidences. Fatty degeneration of the liver is very common with fibroids, heart lesion of some sort or other is very common with fibroids. In 33 cases examined by Ingraham, 14 had some cardiac lesion. Malignant disease is not uncommon with fibroid tumors; irritation caused by them starts up malignant growth in a neighboring part. In Kelley's review of 100 cases of carcinoma, in eight of them myomas were found, six adenocarcinomas of the body, one adenocarcinoma of the cervix, and but one an epithelioma of the cervix, quite

a large number, when we consider the relative infrequency of carcinoma of the body.

It seems to me electricity ought to be considered as one of the conservative methods. In certain cases it will relieve pain and hemorrhage. It almost never retards or stops the growth of the fibroid. It relieves the hemorrhage by cauterization of the endometrium, converting it into scar tissue. The removal of the tubes and ovaries once in a while does stop the growth of a fibroid and causes it to shrivel up, but that cannot be depended upon, and even cutting off the blood supply or supposed blood supply will not always prevent its growth. Whatever operation is done, I believe that the uterus should be saved if it is a possible thing, and enucleation, of course, is the operation that will do that oftener than any other. In cases where hysterectomy seems necessary, I think both ovaries, or one or part of one, should be saved to prevent the menopause, which is always stormy if brought about by operation.

I went over my hospital records for six years, and found I had done 32 myomectomies without a death, removing in all fifty-nine tumors. In one case I removed seven from the same patient on account of sterility. She soon after became pregnant and aborted at the third month, and the uterus was curetted. Soon after, she became pregnant and went to term.

I was surprised to find that the death-rate from sepsis and secondary hemorrhage after myomectomy was large, even in the hands of such men as Martin. Secondary hemorrhage and sepsis mean a careless and dirty operator. I use catgut for ligature material.

DR. BOLAND: This is a subject for the gynecologist, no doubt, but from the standpoint of the family physician, anything that is conservative is easier to carry out, being less terrifying to the patient. I recall one case of fibroid which a specialist saw with me and advised against doing anything. The woman was especially valuable to her family and to the community. She died of hemorrhage. I had an autopsy and found the womb four inches in length and three in breadth, containing a small, submucous tumor with a pedicle. One sweep of the curette would have removed it. If dilatation of the cervix had been a routine procedure, that tumor could not have escaped detection and removal. That case made a strong impression upon me.

DR. TWOMBLY: I have very little to add to the general trend of the papers. They have all been in the same line in which we are working in these days, that is, conservative treatment. If we can save the uterus we want to do so. Dr. Boland has spoken from the general practitioner's standpoint. The papers have spoken from the specialist's standpoint. It cannot be urged too strongly that a digital examination should be made with a dilatation of the cervix, and the finger swept up to the fundus, to determine just what you have in cases of suspected submucous tumor. It will give you the information you need, and if early performed, may save the patient a serious operation. In my case, which has been referred to and which I presented in 1897, a vaginal myomectomy was advocated instead of complete hysterectomy because of such diagnosis, and in that case it was found on splitting the cervix (to make room to get into the uterus) that the tumor could be very easily enucleated after the capsule had been incised. Sewing up the cervix afterward, we had no trouble, no hemorrhage, and the patient made a perfect recovery. As regards the treatment of subperi-

toneal tumors or ones with pedicles, if they are small we can remove them by the vaginal route, and it is wise to remove them if you find they are pedunculated. These do grow longer and longer, become twisted, and complications ensue that may be difficult to overcome. The long pedunculated fibroid is certainly a source of danger, and, as it has been already stated, it seems wise to remove them early. If near the menopause, we can leave the uterus or not, as the case may be, but in a young woman we do not wish to destroy her prospects of womanhood if it can be avoided. We must be conservative with regard to this subject of fibroids and not, as perhaps even five years ago, remove the whole uterus because there are more than one or two fibroids about or in its substance.

DR. BURRAGE: Dr. Breck spoke of leaving the fibroids alone. I understood the discussion was to be on the conservative operative treatment, and leaving them alone is not operative, so I do not think that subject ought to be included in this discussion.

As to the use of tents, I advocated their use, although it may seem to some as if we were going backward. I have seen tents mismanaged a good deal in the pre-septic days when they were used extensively. I remember one case where an operator thought he would get in as many as he could. He put in five, and they, so to speak, tore the uterus all to pieces and there was a disastrous result. If one uses them carefully and puts in a small tent, and then, after giving it a chance to dilate, inspects and cleanses the parts, removes the tent and irrigates and puts in a larger one, I don't think there is much danger, if any, and I think it very essential to have a digital exploration of the uterine cavity where possible. I have seen several cases where hysterectomy was done where a small pedunculated submucous fibroid at the fundus was the only abnormality present. We ought to avail ourselves of every opportunity for diagnosis. I have often found it very difficult to dilate the uterine cavity with the ordinary steel dilator. Dr. Reynolds has a dilator which he uses in dilating the uterus at term — a large steel dilator, which seems to me might be adapted to this work. In the case of a very rigid uterus with thick walls, it is difficult to dilate it with rapid dilatation to a sufficient degree. On that account I advocate tents, but they must be handled carefully and under strict antiseptic precautions.

DR. KINGMAN: I believe the danger in the use of tents, if there is any aside from that due to improper use of them, is largely overcome in cases such as were described, because the use of them will immediately precede operative interference of some sort. We are going to explore the uterus, the uterus will be then irrigated, and probably everted. We ought at that time to be able to remove any infection that may have been made by the tents, or if the sepsis was there previously the operative interference ought to be such as to obviate any serious results.

I want to lay a little more emphasis on the point Dr. Burrage made in regard to using steel dilators in all cases to open the cervix sufficiently for digital examination. In the soft cervix they can be used to give plenty of room for a fair examination, but in the small conical cervix, in the hard cervix of ante flexion with cicatricial plug about the internal os, I believe it to be absolutely impossible without splitting the cervix to gain room in any reasonable time with the use of those dilators for the introduction of the finger.

I want also to say just a word in regard to the point Dr. Breck made, speaking of the possibility of splitting the cervix and removing intramural tumors. I think there must have been a misunderstanding of the cases I reported, thinking the tumors were pedunculated. They were not; they were intramural and some very closely associated with the peritoneum; they protruded into the cavity of the uterus, but were also large enough to extend through the uterine wall, and in one case, at least, the peritoneum was felt as a very thin partition between the finger and the peritoneal cavity. Just there comes in the beauty of this forceps, for with them the splitting of the cervix is not necessary. In the case reported by Dr. Twombly the cervix was split. That tumor could have been removed inside of three or four minutes with perfect ease and without splitting the cervix, had this forceps been available.

I have observed a number of cases in which I have not advised operation. One I attended in past years in confinement. She has symptoms from it, flows excessively, and still her health is not seriously impaired by it. A very important danger connected with letting tumors alone is associated with child-bearing, and I think no woman whom we know to have a fibroid in her uterus should be allowed to marry with our consent. The danger should be pointed out and operation urged. If she is not to marry it is a matter of choice whether to have it removed or not.

DR. R. A. KINGMAN read a paper entitled

TWO CASES ILLUSTRATING CONSERVATIVE OPERATIONS FOR UTERINE FIBROIDS.⁴

Recent Literature.

A Text-Book of the Diseases of the Nose and Throat.
By D. BRADEN KYLE, M.D., Clinical Professor of Laryngology and Rhinology in Jefferson Medical College, etc. Philadelphia: W. B. Saunders. 1899.

THIS is a new text-book on diseases of the nose and throat, covering about 650 pages and containing 175 illustrations. To quote from the preface: "It has been the aim of the author to classify the diseases according to the pathological alterations caused by them. Many things in the book may seem superfluous to the specialist, but the work has been prepared for the student and general practitioner as well. Considerable space has been devoted to certain diseases that are somewhat rare."

It is always interesting to the specialist to have his subject presented to him in a new way, particularly when the argument is founded on pathological rather than on clinical reasoning. Our present knowledge of pathological processes is nowhere near sufficient to explain even some of the most definite lesions; especially is it not an easy task to explain the pathological or neurotic causes of the many disturbances of function or sensation which are constantly met in the upper respiratory tract, and the author is to be congratulated on bringing well-equipped theoretical knowledge to aid his clinical experience. It is very satisfactory to find simple inflammation, syphilis, lupus, tubercle and

⁴ See page 352 of the Journal.

the less common specific diseases of the mucous membrane and other tissues approached in so rational and interesting a manner. Many of the author's deductions will necessarily be out of harmony with many of his readers, because much is still in dispute. It is, perhaps, a little surprising to find, for instance, that he considers the etiology of nasal polypi to be the same as for any other benign connective-tissue tumor, and that inflammation and catarrhal condition in the majority of cases is secondary to the tumor. Some of our most familiar diseases, such as atrophic rhinitis, are subdivided and classified to an extent which would be likely to confuse the clinical if not the pathological student. The descriptions of some others, such as peritonsillar abscess and fibrous tumors of the basillar process, are not clear. It is to be doubted whether common experience would endorse the author's experience that scarification of the tissue or deep puncture in peritonsillar abscess will relieve the tension or sometimes prevent suppuration; or that in early childhood one of the best points of diagnosis between adenoids and other obstructive lesions is irregularity of the teeth; or that the removal of a small portion of the faucial tonsil by the tonsillotome will by the contraction of the scar tissue, which necessarily follows, materially reduce its size, or that in the soft variety a practical form of routine treatment consists in thoroughly cleansing and drying the parts and carefully mopping the tonsillar tissue, as well as the tonsillar crypts, with dilute hydrochloric acid every other day for from ten days to six weeks. Among matters of smaller importance, we might have hoped in so recent a work for a more detailed description of the anatomy of the tonsillar region, the spontaneous escape of cerebrospinal fluid as one cause of hydrorrhoea and the separation of cystic middle turbinates from simple inflammatory processes.

In spite of these the general practitioner will find the book useful and thorough for occasional reference. For the student, the arrangement is not always good, nor the relative importance of different diseases well brought out; he will find the chapter containing a rather meagre description of papilloma of the larynx concealed among eight with the general heading of Diseases of the Anterior Nasal Cavities. Also the relative importance of causes and symptoms is not always clear, for instance, under epistaxis, the fact that in most cases the bleeding comes from the anterior part of the septum and can be very easily controlled is hidden among much rarer possibilities. The book will be found of value to all of the classes of readers by supplementing other authorities in etiology, diagnosis and treatment.

Treatise on Orthopedic Surgery. By EDWARD H. BRADFORD, M.D., Surgeon to the Children's Hospital and to the Samaritan Hospital; Assistant Professor of Orthopedic Surgery, Harvard Medical School, and ROBERT W. LOVETT, M.D., Assistant Surgeon to the Children's Hospital; Surgeon to the Infants' Hospital. Illustrated with 621 engravings. Second revised edition. New York: William Wood & Co. 1899.

A comparison of the second edition of this excellent treatise with the first edition, published nine years ago, confirms the statement of the authors that "the progress of orthopedic surgery during the last nine years has been so rapid that a revised edition of this

work has necessitated very largely the rewriting of the entire book." There will be found scarcely a chapter in the work which has not been enlarged with a wealth of text and illustration additional to that published in the earlier edition, and embodying the truly remarkable advances in theory and practice in orthopedic surgery which have resulted from the industry and enthusiasm of the laborers in that field since the first edition was printed.

The pathology of Pott's disease is illustrated by good reproductions of Nichols's excellent photographs of sections of the spine. An excellent half-tone illustration of distortion of the aorta (after Dwight) is amusingly enough printed and lettered upside down, with the carotids pointing downward and the iliacs upward. The most notable advance in the treatment, "forcible reduction" of the deformity, which has come up since the previous edition, is amply discussed and well illustrated. The various methods of applying plaster-of-Paris jackets in the recumbent position, which has come into vogue since the previous edition, are also well illustrated.

The discussion of the treatment of lateral curvature of the spine is enriched by numerous illustrations of the more recent methods of treatment and forms of apparatus.

The pathology of chronic joint disease is also illustrated by Nichols's instructive sections of diseased joints, and many new photographs illustrate the various clinical manifestations of the disease and the newer modifications of the apparatus for its treatment.

An enumeration of all the chapters to which additions have been made would necessitate mentioning every chapter in the book. Among the more notable ones are the chapter on Congenital Dislocations of the Hip, a most admirable and thorough discussion of the pathology, treatment and results, illustrated by diagrams, photographs and skiagrams, and the chapter on Infantile Spinal Paralysis, to which has been added a discussion of tendon transplantation, with illustrations taken chiefly from Goldthwait. The chapter on Flat-Foot and Other Affections of the Feet has also been rewritten and illustrated by new photographs, drawings and skiagrams. The book is now perhaps the most thorough treatise which has been published on orthopedic surgery, and certainly is the only one in which so large a number of subjects have been brought thoroughly up to date.

The Fifth Annual Report of the Board of Health of the Province of Quebec.

This report comprises the work of the Provincial Board of Health of Quebec for the year ended June 30, 1899. The number of reported cases of contagious disease in the province during the year was as follows, in an estimated population of 1,690,064: small-pox, 14; diphtheria, 2,617; scarlet fever, 1,084; typhoid fever, 1,030; measles, 1,038.

One of the principal topics considered in the report is that of school hygiene, in which the compiler has presented in a condensed form the principles laid down in the works of Arnold Bergemann, Trelate, Lincoln and others. This article is fully illustrated with cuts.

The birth-rate of the province for the year 1898 was 35.7 and the death-rate 17.9 per 1,000.

The following comment is worthy of note: "If we compare the natural increase with those of certain

countries in Europe and in the United States, we have the satisfaction to find that this natural increase in our province is higher than in any other country in the world."

In several of the French Canadian counties, the statistics of which are given, the birth-rates were respectively 50.5, 51, 57.1 and 59.3 per 1,000, and were twice as great as the death-rate.

Practice of Medicine. A Manual for Students and Practitioners. Lea's Series of Pocket Text-Books. By GEORGE E. MALSARY, M.D., Assistant to the Chair of Theory and Practice of Medicine, Medical College of Ohio, Cincinnati. Edited by BERN B. GALLAUDET, M.D. Illustrated with 45 engravings. Philadelphia and New York: Lea Brothers & Co.

This is the third volume of a series of Pocket Text-Books, of which sixteen are promised. They are designed, we are informed, "to give a simultaneous and authoritative voice along the entire front of present-day medical science." We are also told that "the student possessing the knowledge to be obtained in this library will be unusually well equipped for examinations and practice." It is not impossible that he may be, but we venture to think it will not be due to such ownership. One thing is true: such books can be turned out more rapidly than encyclopedias, but a quiz-compend can be turned out quicker still. The present volume is a duodecimo of 404 pages, with index, and is neither better nor worse than a number of other manuals of the same general character devoted to the practice of medicine.

A Compend of the Practice of Medicine. By DANIEL E. HUGHES, M.D., Chief Resident Physician, Philadelphia Hospital; Physician-in-Chief, Insane Department, Philadelphia Hospital, etc. Sixth physicians' edition. Thoroughly revised and enlarged. Including a section on Mental Diseases and a very complete section on Skin Diseases. Philadelphia: P. Blakiston's Son & Co. 1899.

This volume, as issued in this its sixth edition, comprises 625 pages of rather finely printed matter. It has evidently retained its place of popularity and will certainly be found a useful compend, beyond which it makes no claim. A commendable feature of the book is a section on mental disease, which is at least sufficiently comprehensive to give the student some knowledge of this extremely important branch of medical practice. A section on the skin is also acceptable. The book is well bound in flexible covers, and has a copious index.

Home Nursing. Modern Scientific Methods for the Care of the Sick. By EVELEEN HARRISON. Pp. 235. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

This small book is intended for instruction in simple methods of caring for the sick, particularly in those cases in which a trained nurse is not required. It is full of excellent suggestions and will no doubt fill a modest place. The arrangement of the subject matter in headings, easily accessible even to one inexperienced in medical or nursing matters, is a commendable feature of the book. It makes no pretensions, and for this reason will find a warmer reception. In an appendix is given a list of recipes for invalid cooking. An index is also provided.

THE BOSTON
Medical and Surgical Journal.

THURSDAY, APRIL 5, 1900.

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THE LONG ISLAND HOSPITAL, BOSTON HARBOR; REPORT OF THE TRUSTEES.

THOSE who have followed with any degree of attention the development of the Long Island Hospital, in connection with the city almshouse, will before this have come to the conclusion that the institution is now, after many vicissitudes, fairly started on a career of great usefulness. Boston, as we have before had occasion to say, has been slow in recognizing the significance of this institution in connection with its medical charities. There is evidence, however, to show that this time is past, and that the immediate future will see a rapid increase in public interest. It is apparently hard for physicians, as well as laymen, to recognize the fact that a hospital in the modern sense of the word exists on Long Island, provided with a training school for nurses and the necessary accessories for good medical and surgical work. This is, however, the case, as a visit to the institution will, we think, go far to demonstrate.

Like all institutions, however, and particularly those in which a general public interest has not yet been actively aroused, the hospital has needs of a definite sort, which added appropriations can alone satisfy. A hospital is an expensive necessity; to do good work it must be supplied with modern appliances, and granted liberal allowance for proper food and the requirements of the sick. The Long Island institution finds itself in this position: it has, in many respects, attained the dignity of a hospital for chronic disease, but it is still laboring under the misapprehension on the part of the public, as represented by the City Government, that patients suffering from chronic ailments do not require the refinements of care which belong to persons more acutely ill. There is much to be said on the other side of this question. There is at the institution the greatest need of a more liberal provision for the needs of the sick. When a person is ill, the question of social status should absolutely not enter into consideration. We need in Boston a good hospital for chronic diseases, and the opportunity for such a hospital seems to exist at Long Island. To

this end the gradual separation of the Almshouse Department from the Hospital Department must constantly be borne in mind, a fact which we are glad to note the trustees are eager to acknowledge. On this subject, they say, in their report: "An increased expenditure for maintaining the almshouse and hospital at Long Island is very much needed, so we are asking each year for a larger appropriation. Connected with this institution is a hospital that was intended and is used for the chronic and incurable cases of the city of Boston. This hospital had an average daily population during the year of 229. It is the only one of its kind maintained by the city of Boston, and its standard should be raised to compare favorably with other hospitals of the same character. While we do not expect that it would ever cost as much to maintain this hospital as the City Hospital, we do believe that it should approach it in standard of hospital work. At present it is expected that the cost will be kept down to an almshouse basis. This idea should be abandoned, and the hospital gradually brought up to a proper hospital standard; a separate appropriation should be granted for it, and kept distinct from the almshouse. Until this is done the hospital will suffer from its association with the almshouse, and the almshouse will on the surface appear to be too expensively conducted." We have little doubt that these palpable facts will come to be generally recognized and acted upon, to the great credit of the city.

The report of the visiting staff of the hospital urges various improvements: a nurses' home; more platforms for phthisical patients; an added ward to relieve the extreme crowding of the male wing. Regarding the Training School for Nurses, about which there has apparently been some confusion in the minds of physicians, the staff's report reads:

"The Training School for Nurses has been completely organized during the past year, and may now be regarded as definitely established. We are of the opinion that the Long Island Hospital offers an admirable opportunity for the training of nurses in many varieties of disease, and are equally sure that the proper conduct of the hospital demands the continuance and improvement of the school. We look forward with confidence to the time when this Training School will be generally recognized, and the graduate nurses be given opportunity for such post-graduate study as they may care to undertake. In consideration of the fact that the Training School is still young, we feel that satisfactory progress in its development has been made, and that future progress is assured."

With this expression of opinion we should entirely agree. Such an institution affords an exceptional opportunity for general training in the work a nurse is required to do, and we see no reason why this school should not take a high rank, as the hospital makes further claims to general recognition.

Finally, it is to be hoped that legislative action may ultimately be taken, looking to the possibility of permitting suitable patients to enter this hospital without

the declaration of pauperism. Much injustice would thereby be averted, and a significant step in progress made toward the establishment of a hospital for chronic disease, in the best sense.

ON THE EFFECT OF THE EXCLUSION OF CERTAIN DISEASES AS CAUSES OF MORTALITY.¹

We are accustomed to the use of direct methods of reasoning in the consideration of statistics of mortality, but occasionally the introduction of hypothetical processes also facilitates the intelligent consideration of a given subject. Dr. Hayward has employed this hypothetical method in treating the life table of England in order to determine the effects of particular diseases upon human life. He says the most exact and vivid way of bringing into view the effects produced by any one disease is to construct a life table based upon the supposition that this particular disease has been altogether eliminated.

"What would really happen," he says, "if some disease, say phthisis, were entirely abolished, it is difficult to say, for in nature the destruction of one kind of pest, whether animal or vegetable, sometimes leaves the ground free for the more active development of other species. However, as a working hypothesis, we must consider that, if one cause of mortality be done away with, the remaining causes would continue to act with proportionate intensity on those saved from the action of the cause eliminated."

Having worked out these life tables on this assumption of the elimination of certain diseases, the author goes on to measure the effects of such diseases by answering these questions: (1) How much greater would be the chance of living from one year to the next at each age, supposing a given disease to be eliminated? (2) How many more survivors would remain at each age out of a given number supposed to be born? (3) How much longer would be the expectation of life at each age?

The diseases considered are phthisis, the whole group of tubercular diseases, cancer, typhoid fever, scarlet fever, diphtheria, diarrhea, measles and whooping-cough. We have selected the following figures from the columns entitled "Expectation of Life" to show the difference which would be produced by excluding or eliminating entirely each of certain diseases.

The accompanying table may be read as follows, for example: If cancer were eliminated entirely from the causes of death in England, the expectation of life of a boy at birth would be lengthened .39 of a year, or 142 days, and that of a girl at birth .83 of a year, or 303 days. The expectation of a young man at twenty-five would be increased .54 year and that of a young woman of the same age, 1.14 years.

¹ The Life Table of England and Wales (1881-90) as Modified by the Supposed Exclusion of Certain Diseases as Causes of Mortality, by F. E. Hayward, M.D., Medical Officer of Health of Haydock. Public Health, December, 1899, p. 214.

DIFFERENCE PRODUCED UPON THE EXPECTATION OF LIFE AT BIRTH AND AT TWENTY-FIVE YEARS OF AGE BY EXCLUDING EACH OF THE FOLLOWING DISEASES:

	Phthisis.	All Tubercular Diseases.	Cancer.	Typhoid Fever.	Scarlet Fever.	Diphtheria.
Males, at birth.	+2.58	+3.86	+0.39	+0.39	+0.53	+0.24
Females, at birth.	+2.57	+3.72	+0.83	+0.29	+0.57	+0.28
Males, at twenty-five years.	+2.58	+2.73	+0.54	+0.17	0.00	0.00
Females, at twenty-five years.	+2.19	+2.29	+1.14	+0.15	0.01	0.00

A similar result is shown in the table of survivors in Massachusetts, comparing the life tables of 1855 and 1895, forty years apart, in consequence of the lessening in the mortality from infectious diseases in the early years of life. In this table it appears that out of 10,000 infants at birth, 806 more were living at the age of twenty-five according to the table of 1895 than were alive at the same age according to the table of 1855.²

THE "HUMANE" BULLET!

To one who looks at war from the point of view of a layman, military ethics presents many extraordinary anomalies, of which the most extraordinary is the significance attached to the word "humane" in connection with modern projectiles. It appears that it was at some time agreed among those interested in the matter that the stigma of "inhumane" should be placed on certain varieties of small-arm ammunition, and that other projectiles should be arbitrarily considered humane, quite apart from the effects of those projectiles on the human body. This attempt at civilizing warfare has been productive of very astonishing results in practice, results which we confess appear to us wholly inconsistent with this so-called civilizing tendency. For example, we hear no protest raised against the use of shrapnel or explosive shells when discharged by the artillery arm of the service. Lyddite shells are looked upon with high favor by military authorities, in spite of their alleged destructive nature and propensity to give rise to suffocating fumes. No charges of inhumanity are raised when men by the score are torn to pieces by these means. This is what Mr. Treves writes of the wounded after Spion Kop: "As I mentioned in my last letter, the wounded from the battle of Spion Kop on January 24th presented a very large proportion of shell and shrapnel injuries. In spite of every possible care, the shell wounds, almost without exception, have done badly. We had over 30 deaths within the week after the battle, and these were nearly all cases of shell injury. The wounds are of the worst type, contused and lacerated, and very often contain dirt, fragments of stone, and even grass."

This is recognized as legitimate warfare of the modern civilized kind, and although the "wounds were of

the worst type" and "contained dirt fragments of stone and even grass," no one has a word of protest to offer, because some convention has agreed that these means of attacking an enemy are legitimate. In view of these facts, we confess to a sensation of amusement when the whole civilized world stands aghast because explosive or expanding soft-nosed bullets are found in somebody's pocket, or in somebody's body, from which it is forthwith concluded that "the enemy has unquestionably resorted to barbarous methods of warfare," necessitating formal protests and much recrimination. No doubt this is a stage in progress, from which we may gradually merge into a frame of mind which will regard the actual facts in the case, and estimate what is humane and what inhumane from the standpoint of common sense and not of arbitrary authority. In the meantime, however, we must keep abreast of the march of civilization, and frown upon the soft-nosed rifle bullet, while we congratulate ourselves upon the excellent effect of shrapnel and explosive shells in hastening the dawn of a new era of honorable warfare.

MEDICAL NOTES.

REMARKABLE RECOVERY FROM BULLET WOUNDS.—Sir William Stokes, in his report to the *British Medical Journal*, March 17th, from Natal, mentions among other extraordinary recoveries from injuries the case of a gunshot wound in which the bullet struck and penetrated the forehead on the left side high up, and emerged at the vertex a little to the right of the occipital protuberance. The only result of this wound was total blindness of the left eye with optic atrophy. Otherwise, a good recovery was made. A Boer is described who had a bullet wound through the abdomen, shell wounds above and below the left knee, similar shell wounds above the left elbow, and fracture of the left radius and ulna. He recovered.

DEATH OF DR. ST. GEORGE MIVART.—The death of Dr. St. George Mivart, at the age of seventy-three, is announced. He was at one time lecturer on zoölogy at St. Mary's Hospital Medical School, and professor of biology at the University of Louvain. His attainments as a man of science have been generally recognized, particularly in his work on and opposition to the Darwinian theory of the origin of species. After numerous conflicts of opinion with the authorities of the Romish Church, of which he was a member, he finally asserted his right to complete liberty of thought. Dr. Mivart was a member, and at times an officer, of many learned societies.

EXAMINATION OF SCHOOL CHILDREN'S EYES.—A department for examination of the eyes of Chicago public-school children has been added to the child-study system of the Board of Education. Hereafter parents of children with defective vision are to be warned of the possible danger to their children. A similar rule was made two years ago, but has not up to the present time been strictly enforced.

² Report of State Board of Health for 1898, p. 818.

AN ENTERPRISING WOMAN DOCTOR.—It is reported that Hon. Ella Scarlett, M.D., daughter of Lady Abinger (formerly Miss Helen Magruder, daughter of the late Commodore George Allan Magruder of the United States Navy), is going to Korea from London as medical officer of the imperial household.

PLAGUE.—But one case of plague had occurred at Honolulu, previous to March 28th, for a considerable time. Business is being carried on as usual. The deaths in Calcutta in a single day during the last week in March numbered 217, with 157 new cases reported.

DR. OSLER NOT A CANDIDATE FOR THE CHAIR OF MEDICINE AT EDINBURGH.—It is announced through the *Philadelphia Medical Journal* that Dr. Wm. Osler is not a candidate for the chair of medicine at the University of Edinburgh.

A SECOND MALARIA EXPEDITION.—The Liverpool School of Tropical Medicine is about to send a second expedition to West Africa to study malaria.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, April 4, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 67, scarlatina 49, measles 81, typhoid fever 5.

BOSTON HEALTH STATISTICS.—The death-rate for last week, although still large, is less than it was the previous week, probably due to the decrease in cases of influenza. The number of deaths reported to the Board of Health for the week was 316, as against 198 the corresponding week last year, showing an increase of 118 deaths.

LOWERED DEATH-RATE FOR CAMBRIDGE.—Cambridge had a lower death-rate last week than for the week preceding. Thirty-five deaths were reported, as against 60 of the preceding week. The number of cases of contagious diseases reported during the week was 26, of which 13 were of scarlet fever, 6 of diphtheria, and 5 of measles.

NEW YORK.

A COMMENDABLE LEGAL POSITION.—Justice McAdam recently, upon an application to punish one Robert Irwin for contempt of court, denounced in vigorous language the practice of employing "runners" to procure witnesses to testify in accident and other cases. Mary Nestor, who was riding on a New York street car with her sister, was fatally injured while in the act of alighting. Irwin, who described himself as an "accident adjuster," was in the vicinity at the time and rushing up gave the girl a card containing the name of an attorney, with the request that the case should be placed in his hands. A suit was brought by the sister, as administratrix, to recover \$25,000 damages, but the strong preponderance of evidence on

the trial established that there had been no negligence on the part of the motorman, and the verdict was in favor of the company. The charge against Irwin was that he made and delivered to three witnesses a typewritten statement of what they were to swear to, which statements, it was claimed, were untrue, and were furnished to aid the plaintiff in obtaining a verdict by false testimony. Irwin testified that he devoted his time to discovering accidents and inducing the injured to go to a lawyer of his selection to bring suit for damages.

A NEW MEDICAL AND SURGICAL CLINIC.—St. Bartholomew's Parish House is to have a new model building for its Medical and Surgical Clinic, which will be erected on a lot of 50x100 feet, adjoining the Parish House, on East 42d Street. This building, which is to cost \$150,000, together with an endowment fund of \$100,000, is said to be the gift of Mrs. Caroline Hoagland, widow of Joseph C. Hoagland. St. Bartholomew's Clinic, which has now been in existence for some years, is for the treatment principally of diseases of the eye, ear, nose and throat. One feature in which it differs from most other dispensaries is that its hours of consultation are in the evening, so that the poor may come for treatment after the day's work is over.

NEW JERSEY STATE SEWERAGE COMMISSION BILL.—On March 20th the lower house of the New Jersey Legislature passed what is known as the State Sewerage Commission Bill, which had already been passed by the Senate. This measure puts under the ban of the law all pollution of streams and waters of the State, except Newark Bay and the Kills, and gives to a commission of five members the authority to determine when the pollution must cease in any particular case.

ANNUAL APPROPRIATION BILL.—Among the items in the Annual Appropriation Bill, which was passed by the State Senate on March 27th, are the following: State Board of Health, \$37,000; State Board of Charities, \$81,140; Quarantine Commission, \$7,500; State Lunacy Commission, \$3,856,600; State Hospital for Insane Criminals at Matteawan, \$70,800; other hospitals and asylums, \$864,800; Cornell University interest, \$94,428.

RESIGNATION OF REV. DR. BAKER OF ST. LUKE'S HOSPITAL.—At a meeting of the Board of Managers of St. Luke's Hospital, held March 27th, the Rev. Dr. George S. Baker, who had been superintendent of the institution for more than twenty-two years, was retired from that position and appointed pastor emeritus of the hospital on a pension of \$2,000 a year, in recognition of his long and faithful services.

NEW HOSPITAL FOR HARLEM.—A site for the much needed new hospital in Harlem, for the Department of Public Charities, has been selected, a plot of ground extending 200 feet on Lenox Avenue and 310 feet on 135th and 136th Streets. The cost of the

land is \$300,000, and the Board of Estimate and Apportionment has promised \$300,000 additional for the erection of the buildings.

A CENTENARIAN.—Mrs. Mary Cleary Hyland died in Orange, N. J., March 29th, at the age of one hundred and three years, having been born in Kings County, Ireland, in 1897.

ARMY NOTES.

MORTALITY IN THE PHILIPPINES.—Much regret is felt in official circles at the sensational statement, started for political purposes, that the occupation of the Philippines was costing the lives of a thousand soldiers a month. This statement undoubtedly originated through the fact that a large number of contract surgeons have recently been sent to Manila to replace those whose contracts had expired and who desired to return home. It so happened that twenty-four contract surgeons sailed recently from San Francisco on a single transport—men who had been awaiting transportation for several weeks under orders issued in the general routine—and the opportunity to make a story for political capital was not lost. As a matter of fact, since the American occupation of the Philippines, June 1, 1898, to February 17, 1900, the date of the last official compilation, the actual mortality in the Philippines was 65 officers and 1,460 men, a total of 1,525, or 74 per month. This rate is by no means high considering the existing state of warfare, the presence of 65,000 troops in the islands and the arduous conditions of field service and new climatic influences to be encountered. Of the above number, 42 officers and 570 men died by violence, and 16 officers and 693 men by disease; among the deaths from the latter cause, to January 1, 1900, there were 20 from pneumonia, 21 from tuberculosis, 49 from malarial diseases, 149 from dysentery, 53 from bowel affections other than dysentery, 100 from small-pox, and 167 from typhoid fever.

THE HOSPITAL SHIPS "MISSOURI" AND "RELIEF."—In view of criticisms which have been made with regard to the hospital ships *Missouri* and *Relief*, a board of officers has been appointed to investigate all the facts relating to the equipment and fitting up of these ships, including their condition at the time of purchase by the Government, and particularly to report upon the present condition of these ships, their seaworthiness, suitability for hospital purposes, and the sum necessary to place them in a condition to meet the requirements of the hospital service. The board is also to determine the reasons why the vessels are not now seaworthy or fit for the hospital service, if such be the case, and in the event of their usefulness having been impaired by the character of the work done upon them since their acquirement by the Government, to fix the responsibility for their unsatisfactory condition. The *Missouri* is now at San Francisco, and the *Relief* is stationed at Manila. It

is probable that the latter ship will be ordered to San Francisco for inspection by the board. During the recent trip of the *Missouri* around the globe, serious friction occurred between Major Arthur, the medical officer in command, and the ship's officers. This matter has recently been officially investigated by General Shafter, resulting in the discharge from the Army Transport Service of the captain and first and third officers of the ship, and the indication of the position assumed by Major Arthur.

INVALIDING HOME OF SICK SOLDIERS.—The plan has been adopted of invaliding home all sick soldiers whose condition is such that they can scarcely be expected to resume active service in the next few months, it having been found that cases of certain diseases do not do well in the Philippines during the rainy season now close at hand. In compliance with orders from the Secretary of War, General Otis has instructed all commanding officers in the islands to send to Manila such sick as are able to travel, from which point they are to be forwarded to San Francisco on returning transports as rapidly as possible. Large quantities of stores have been distributed throughout the islands by the hospital ship *Relief*, in anticipation of greater sickness during the rainy season. She is to collect sick from outlying stations during her trip and will return to Manila about May 1st.

A PRIZE FOR AN IDEAL ARMY RATION.—The prize of \$100 (or its equivalent in the shape of a gold medal), offered by Dr. Louis L. Seaman, of New York, through the Military Service Institution, for the best essay on "The Ideal Ration for an Army in the Tropics," has been unanimously awarded to Capt. E. L. Munson, Assistant Surgeon United States Army. The board of award consisted of three army officers, Col. John F. Weston, Acting Commissary-General, Lieut.-Col. Charles Smart, Deputy Surgeon-General, and Lieut.-Col. Wm. H. Dougherty, Seventh United States Infantry.

ILLNESS OF COL. CALVIN DEWITT.—Lieut.-Col. Calvin DeWitt, Chief Surgeon of the Division of Cuba, has just suffered a stroke of apoplexy, and Major Valery Havard, long Chief Surgeon of Santiago under General Wood, has been sent to Havana to assume a higher position under his former chief.

Miscellany.

CROOK VS. HORROCKS.

A CASE of much practical importance to physicians has recently been decided in the English courts. The circumstances, as given in the *Lancet*, are briefly as follows:

"A petition was brought by Dr. H. E. Crook, formerly practising at Margate, praying for dissolution of marriage on the ground of the alleged misconduct of his wife with the co-respondent. The jury found that Dr. Horrocks, obstetric physician at Guy's Hospi-

tal, had not committed adultery with the respondent, but were unable to agree with regard to Mrs. Crook. The evidence tendered during the hearing portrayed at once romance and tragedy, and the bitterness of the cup held to Dr. Horrocks was intensified by the fact that he had in his professional capacity attended Mrs. Crook and that Dr. Crook was formerly his pupil. It appears that Dr. Horrocks was consulted by Dr. Crook for some ailment incidental to her sex from which his wife suffered. Of course, the services of Dr. Horrocks were gratuitous. At a later period Mrs. Crook bore a child to which she was devotedly attached, and in fact, according to her husband's statement, she gave up her whole life to its care. Subsequently to this event the petitioner, who had never had reason to suspect his wife's chastity, was induced to visit a female palmist, to whose vaticinations he appears to have turned a not altogether deaf ear. This reader of men's minds by their hands averred to her client that he ought to have been a barrister instead of a medical man, and as a matter of fact Dr. Crook was called to the bar. She told him that he would undertake a voyage, which Dr. Crook, in answer to counsel, said was not unlikely. There can be little doubt that the petitioner was much impressed by his communings with the palmist. He told his wife of his strange experience and gave her the address of the woman. Eventually Mrs. Crook also consulted her, and according to her evidence was told that she would be separated from her husband, 'but not by death,' and that she had broken her marriage vow.

"To what extent the foreboding thus induced was likely to prey on Mrs. Crook's mind — whether it was able to fashion a phantasy of guilt to be transmuted into a 'fixed idea' — we do not deem it prudent to decide, seeing that the case may still be considered *sub judice* so far as the respondent is concerned; but we may safely assert that the prophecies were not calculated to have a bracing effect upon any brain — much less would they act beneficially on one in unstable equilibrium. As time went on Mrs. Crook asked her husband what was meant by 'adultery,' then confessed herself guilty of the offence, and named Dr. Horrocks as her co-partner in guilt. She made a written statement of her infidelity, which was afterwards repeated and amplified. Beyond all reasonable doubt it may be accepted that, truly or falsely spoken, Mrs. Crook at the time believed in her own guilt. From the testimony of Dr. Horrocks on oath it transpired that the first intimation of the charge against him was a letter from the petitioner's solicitor. Further, that from the day that he received that letter until the hearing of the case he had no communication with either Dr. Crook or Mrs. Crook. Dr. G. H. Savage and Dr. G. E. Herman were called as expert witnesses. In the former's opinion Mrs. Crook's confession was the outcome of 'nervous instability,' in fact, on this point she was 'under a delusion.' Dr. Herman believed that the respondent's present statement was true and that her confession was false. To obtain a judgment against a co-respondent the law requires that the evidence of adultery, if tendered by one of the parties, must have corroboration. And rightly so, for otherwise the innocent would be at the mercy of the malicious accuser. In the case under consideration there was no such corroboration in any shape or form. There was simply the confession of

the respondent, which was afterwards negatived by her. She did not deny that she made the confession; nay, more, she testified in court that she believed it when she made it. Dr. Crook had no grounds to suspect his wife's infidelity before she informed him of it, and Dr. Horrocks said that when she consulted him she behaved as a prudent and chaste woman."

In connection with this case the *Lancet* reiterates the frequently made warning that, whenever possible, a physician should insist on the presence of a third person when called upon to examine a female patient.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 24, 1900

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Whooping-cough.	Diphtheria and croup.	Measles.
New York . . .	3,654,564	1729	583	20.81	24.32	1.14	3.54	2.04
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	366	102	19.17	31.59	54	2.43	1.35
Baltimore . . .	506,389	240	78	20.16	26.04	.84	4.62	.72
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	359,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	126	42	18.17	12.64	3.16	2.37	2.37
Washington . . .	277,000	153	41	23.40	21.45	1.95	2.50	1.95
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	84	31	14.28	28.56	2.38	—	3.57
Nashville . . .	87,754	46	9	36.89	19.53	2.17	2.17	—
Charleston . . .	65,165	38	11	15.78	5.26	—	—	—
Worcester . . .	111,732	45	15	8.88	26.66	—	2.22	—
Fall River . . .	103,142	65	27	20.02	32.31	1.54	1.54	—
Cambridge . . .	92,520	60	20	21.58	16.4	—	3.32	—
Lowell . . .	90,114	53	11	17.91	17.01	—	1.99	—
New Bedford . . .	70,511	18	7	16.66	27.77	5.55	—	—
Lynn . . .	68,218	33	4	24.21	18.18	—	—	—
Somerville . . .	64,394	20	8	15.00	40.00	—	5.00	—
Lawrence . . .	59,072	30	12	23.33	23.33	—	3.33	—
Springfield . . .	58,266	29	2	20.80	31.05	—	3.45	—
Holyoke . . .	44,510	17	10	29.49	5.88	—	—	11.76
Brockton . . .	38,759	—	—	—	—	—	—	—
Salem . . .	37,723	25	4	12.00	20.00	—	—	—
Malden . . .	36,421	16	4	18.75	—	—	12.50	—
Chelsea . . .	34,235	15	5	—	—	—	—	—
Haverhill . . .	32,651	16	8	25.00	37.50	8.33	8.33	—
Gloucester . . .	31,426	—	—	—	—	—	—	—
Fitchburg . . .	30,523	10	3	10.00	10.00	—	—	—
Newton . . .	30,461	17	3	5.88	29.40	—	—	—
Taunton . . .	28,527	12	—	16.66	8.33	—	—	—
Everett . . .	28,102	10	1	10.00	30.00	—	—	—
Quincy . . .	24,578	10	4	10.00	40.00	10.00	—	—
Pittsfield . . .	23,410	—	—	—	—	—	—	—
Waltham . . .	22,791	8	2	37.50	50.00	—	12.50	—
North Adams . . .	21,683	10	—	10.00	60.00	—	—	—
Chicopee . . .	18,316	9	5	—	11.11	—	—	—
Medford . . .	17,190	13	2	—	61.52	—	—	—
Newburyport . . .	15,936	13	3	—	53.83	—	—	—
Melrose . . .	14,721	10	2	10.00	10.00	—	—	—

Deaths reported 3,354; under five years of age 1,062; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 661, acute lung diseases 879, consumption 273, diphtheria and croup 99, measles 51, whooping-cough 37, diarrheal diseases 22, typhoid fever 21, scarlet fever 19, erysipelas 15, cerebrospinal meningitis 9.

From diarrheal diseases New York 14, Fall River 4, Baltimore 3, Worcester 1. From typhoid fever New York 8, Nashville 4, Fall River 2, Baltimore, Washington, Providence, Springfield and Haverhill 1 each. From scarlet fever New York 10, Boston 4, Pittsfield 3, Baltimore and Holyoke 1 each. From erysipelas New York 8, Boston 2, Worcester, Cambridge, Lynn, Haverhill and Waltham 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending March 17th, the death-rate was 20.3. Deaths reported 4,525: acute diseases of the respiratory organs (London) 391, measles 141, whooping-cough 124, diphtheria 77, fever 32, diarrheal 28, scarlet fever 20, small-pox (Cardiff) 1.

The death-rates ranged from 12.7 in Croydon to 31.1 in Preston; Birmingham 23.9, Bradford 19.3, Bristol 19.3, Gateshead 18.1, Huddersfield 18.0, Hull 19.0, Leeds 20.8, Liverpool 27.6, London 18.8, Manchester 25.4, Newcastle-on-Tyne 21.1, Nottingham 18.9, Plymouth 23.0, Sheffield 24.1, Swansea 18.8.

METEOROLOGICAL RECORD

For the week ending March 24th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...18	30.22	30	31	10	61	48	54	W.	S.W.	16	11	C.	C.	.20
M...19	29.91	44	59	29	74	81	78	S.W.	S.W.	16	26	F.	K.	
T...20	29.71	45	65	35	87	44	96	S.W.	S.W.	16	13	O.	C.	
W...21	29.99	32	38	26	74	41	58	W.	W.	23	12	C.	C.	
Th...22	30.09	36	47	23	77	54	66	S.W.	S.W.	14	14	C.	C.	
F...23	29.90	44	55	34	72	40	56	W.	W.	14	19	C.	C.	
S...24	29.96	32	38	26	61	38	50	W.	W.	11	13	C.	C.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 31, 1900.

J. T. KENNEDY, assistant surgeon, ordered to additional duty at the Marine Recruiting Rendezvous, San Francisco, Cal.
 J. F. PEARSON, pharmacist, appointed pharmacist from March 26th.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 29, 1900

WASDIN, EUGENE, surgeon. To report at Washington, D. C., for special temporary duty. March 26, 1900.
 WILLIAMS, L. L., surgeon. Leave of absence for two days (paragraph 179, Regulations, Marine-Hospital Service) from March 27, 1900.
 BERRY, I. D., assistant surgeon. To proceed to New Orleans, La., and report to the medical officer in temporary charge for duty and assignment to quarters. March 26, 1900.

APPOINTMENT.

THOMAS D BERRY, of Texas, commissioned as assistant surgeon. March 24, 1900.

SOCIETY NOTICES.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. — The annual meeting will be held at Richmond, Va., May 22-25, 1900.
 C. B. BURR, M.D., *Secretary and Treasurer*, Flint, Mich.
 PENNSYLVANIA SOCIETY FOR PREVENTION OF TUBERCULOSIS — The annual meeting of the Society will be held on Wednesday, April 11, 1900, at 4.15 P. M., at the Academy of Natural Sciences.
 ALEX. HERON DAVISSON, *Secretary*.

RECENT DEATHS.

GEORGE PINKHAM BARTLETT, M.D., M.M.S.S., of Woburn, died March 27, 1900, aged forty-nine years.
 PAUL AUGUSTINE STACKPOLE, M.D., M.M.S.S., died in Dover, N. H., March 28, 1900, aged eighty-six years.
 JOHN COOPER, M.D., said to have been the oldest practising physician in Brooklyn, died on March 29th, at the Seney Hospital, where he had been under treatment for three weeks for gangrene of the foot. He was eighty-five years old and was born in London, Eng. He was graduated from the Royal College of Surgeons in 1837.

BOOKS AND PAMPHLETS RECEIVED.

Report on Leprosy in New South Wales for the Year 1898. Bulletin of the Harvard Medical Alumni Association, No. 14, Catalogue, 1900.
 A Case of Hematometra. By William Gardner, M.D., Montreal. Reprint. 1900.

Electrical Burns. By J. M. Elder, B.A., M.D., C.M., Montreal. Reprint. 1900.
 The Exposé of Weltmerism: Magnetic Healing De-magnetized. By Preston W. Pope, M.D.
 Stone in the Bladder. By H. Wellington Yates, M.D., Detroit, Mich. Reprint. 1900.
 Pneumothorax from Gas-producing Bacteria. By F. G. Finley, M.D., Montreal. Reprint. 1899.
 Three Cases of Ectopic Gestation. By Henry J. Kreutzmann, M.D., and Lois Nelson, M.D. Reprint. 1900.
 The Operative Treatment of Uterine Fibroids. By F. A. Lockhart, M.B., C.M. (Edin.). Reprint 1899.
 Advances in the Surgical Treatment of Strabismus. By Dr. Edmond Landolt, Paris, France. Reprint. 1899.
 The Contagiousness of Pulmonary Consumption. By Ernest L. Shurley, M.D., Detroit, Mich. Reprint. 1899.
 The Diagnosis of Gastric Ulcer, with Report of Cases. By Frank H. Mardoch, M.D., Pittsburg, Pa. Reprint. 1900.
 On the Ætiology of the Nausea and Vomiting of Pregnancy. By David James Evans, M.D., Montreal. Reprint. 1900.
 Further Experience with the Operative Treatment of Ante-flexion. By W. L. Burrage, A.M., M.D., Boston. Reprint. 1900.
 Ueber Fleischsaft, seine Gewinnung und seine Verwendung in der Krankenpflege. Von Prof. Dr. Martin Mendelsohn, Berlin.
 A Rare Form of Pyosalpinx Complicating Uterine Myoma. By William Gardner, M.D., and Maude E. Abbott, M.D., Montreal. Reprint. 1900.
 Stricture of the Esophagus and Electrolysis by a New Esophageal Electrode. By Charles D. Aaron, M.D., Detroit, Mich. Reprint. 1899.
 Twenty-fourth Annual Report of the Managers and Officers of the New Jersey State Hospital at Morris Plains, for the Year ending October 31, 1899.
 Surgical Pathology and Therapeutics. By J. Collins Warren, M.D., LL.D. Illustrated. Second edition, with appendix. Philadelphia: W. B. Saunders. 1900.
 Some Casual Remarks on Prostitution and Venereal Diseases in their Relation to the Public. By Isadore Dyer, Ph.B. (Yale), M.D., New Orleans, La. Reprint. 1900.
 Torsion of the Pedicle of an Ovarian Tumor with Acute Symptoms. Hospital Reports: San Francisco Polyclinic. By Henry J. Kreutzmann, M.D. Reprints. 1898-99.
 Home Nursing: Modern Scientific Methods for the Care of the Sick. By Eveleen Harrison. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.
 The Vital Statistics of Massachusetts for 1897, with a Life Table based upon the Experience of the Five year Period 1893-97. By Samuel W. Abbott, M.D. Reprint. 1898.
 Clinical Studies in Vice and in Insanity. By George R. Wilson, M.D., Medical Superintendent, Marisbank Asylum. New York: The Macmillan Co. Edinburgh: William F. Clay. 1899.
 Transactions of the American Pediatric Society, Eleventh Session, held at Deer Park, June 27, 28 and 29, 1899, with the Constitution. Edited by Floyd M. Crandall, M.D. Volume XI. Reprint. 1899.
 Die Ohrenheilkunde im Kreise der medicinischen Wissenschaften. Akademische Antrittsrede gehalten am 26 Juli, 1899. Zugleich Programm zur Eröffnung der Universitäts-Ohrenklinik. Von Dr. Med. E. Bloch.
 Nordrach at Home, or Hygienic Treatment of Consumption adapted to English Home Life. By Jos. J. S. Lucas, B.A. (Lond.), M.R.C.S., L.R.C.P. Bristol: J. W. Arrowsmith; London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.
 The International Text-Book of Surgery. By American and British authors. Edited by J. Collins Warren, M.D., LL.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. II, Regional Surgery. Illustrated. Philadelphia: W. B. Saunders. 1900.
 The Irrigation Treatment of Gonorrhœa: Its Local Complications and Sequelæ. By Ferd. C. Valentine, M.D., Professor of Genito-urinary Diseases, New York School of Clinical Medicine, etc. Illustrated by 57 engravings. New York: William Wood & Co. 1900.
 Diseases of the Stomach: Their Special Pathology, Diagnosis and Treatment, with Sections on Anatomy, Physiology, Chemical and Microscopical Examination of Stomach Contents, Diets, Surgery of the Stomach, etc. By John C. Hemmeter, M.D., Ph.D. Illustrated. Second enlarged and revised edition. Philadelphia: P. Blakiston's Son & Co. 1900.
 Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College of Philadelphia, etc. Assisted by Charles Adams Holder, M.D. Vol. I. March, 1900. Philadelphia and New York: Lea Brothers & Co. 1900.

Original Articles.

FOLIE À DEUX.¹

BY ARTHUR C. JELLY, M.D., BOSTON.

"ARE you not in great danger of becoming insane because of your association with patients?" Such a question is asked not infrequently of physicians and nurses who live in hospitals for the insane. And surprise usually follows the answer that such a result is rare, except in cases where there is such an hereditary tendency or such an acquired condition that the person might fairly be considered liable to break down in any occupation involving hard work, long hours, and responsibility. Indeed, both sound and unsound minds remain so generally unaffected by the insanity of others that considerable interest is awakened by the exceptional case where such a contagion appears to take place. *Folie à deux*, the term most commonly used to designate this condition, has no exact equivalent in English, since it is used to include some cases which are exactly designated by communicated insanity, other cases for which Hack Tuke has suggested double insanity.

Of etiological factors, heredity is the most important. Women are affected more frequently than men. The young and the aged are more liable to be influenced than persons in middle life.

Varieties.—Two groups show clearly the effects of contagion: (1) Where A, who is insane, infects with the same disorder of mind B, who was previously sane; (2) where A, who is insane, infects with the same disorder of mind B, who was already insane. But in other cases it is doubtful how much of the disturbance is due to actual contagion; for example: (1) Where A and B, living together, suffer simultaneously from the same form of insanity due to the same causes. (2) The effect of contagion is still more doubtful in certain cases considered by Tuke under this class, where B becomes insane from association with A, not necessarily because he accepts A's morbid ideas, but in consequence of the shock produced by the news, or of the pain felt on witnessing the attack, or of the continued strain due to nursing the patient. Of such cases Tuke remarks, "It is difficult to decide how much is due to sympathy and unconscious imitation and how much to actual strain. Such cases must be very rare; and they probably occur only among relatives or near friends, except where there is a predisposition to insanity. Sometimes more than two persons are concerned."

Let us consider, first, cases where the influence of contagion is doubtful. My first illustration is furnished by two sisters who came to the hospital on the same day, one of whom was certified to as "mania" and the other as "melancholia." An hereditary tendency to insanity was denied. The elder, forty-four years of age, single, was said to have been previously in good health. She passed the climacteric one year ago. She had always looked upon the dark side and been very retiring and unsocial. She and her sister were wrapped up in each other and in their home. They had worked together many years in the same shop. One year ago she became puzzled about her work there, gave it up, and tried to work about the house. She gradually developed ideas of having done wrong,

of being very weak, and tired of life. Since her sister showed symptoms of depression this patient has been much more worried. The younger sister, forty-two years of age, is married and has one child. She has had fair health up to six months ago, when her husband left her to be treated for the opium habit. Somewhat worn by her sister's condition, this disgrace was more than she could bear. Shortly afterwards she became very irritable and unsocial, and worried constantly; said everything was wrong and beyond repair; turned against her husband and child. The day before admission said, "We are all a set of lunatics." In the hospital it was recorded that these patients become quite communicative when left alone, but are so suspicious that they will not talk in the presence of others or tell what they talk about. The first is frequently noisy, excited, and destructive; the second is quiet and dull. The first became somewhat demented and died of phthisis five years later. The second is still in an asylum, moderately demented.

In October, 1897, I saw Miss E. F., forty-nine years old, single, school teacher. She had suffered from increasing depression since school closed and was unable to resume her work there. She said, "I have no hope for the future and I would commit suicide if I dared; I cannot work or eat or sleep properly." She went voluntarily to a hospital.

After E. F. had left the room, her sister S. A., fifty-one years old, single, also a teacher, said, "I am more depressed than she is, but I have not yet lost control of myself and can still make myself work." But five weeks later it was deemed necessary for her to go to a hospital. Their mother had melancholia at the climacteric and died in an asylum. Their father appears weak mentally. A brother and a sister are peculiar.

It is evident that there were present here conditions very favorable for the development of so-called double insanity—the same heredity, the same fear of becoming insane at the period when the mother broke down, the same occupation, the same manner of life, the same anxiety about a mortgage. They got along fairly well during the school year, but when vacation came and they were together constantly, each noted unfavorable signs in the other and grew more depressed in consequence; both had suicidal impulses, but neither made any attempt at suicide. Separated from each other, each made decided gain and was discharged improved, after a hospital residence of about eight months. The elder, who showed more strength in fighting the depression, has probably recovered. The younger, who was apparently the first affected, has become worse since her discharge.

In cases of this sort it must always be difficult to decide how much influence the one first affected may have had upon the other. The friends undoubtedly are inclined to conceal hereditary tendencies and to accept the explanation of sympathy and close association. But the physician should not allow himself to be misled in this way. Is it not more likely that, as a rule, we have to deal in such cases with a tendency to break down at a period of stress, due essentially to hereditary and other causes?

Let us turn now to the cases where the contagion is more evident, and consider first the group in which an insane person brings on mental disorder in one previously sane.

In February last, the agent of a tenement house

¹ Read before the Boston Medico-Psychological Society, December 21, 1899.

requested the examination of Mr. and Mrs. T., who were, in his opinion, both insane. His story was that they had occupied the middle tenement for three weeks; that their behavior had led the occupants of the lower story to move out, and the family on the top floor to give notice that they also would move if the T. family remained; that during the recent cold snap the T.'s had opened all their doors and windows, and thus the pipes in the house were frozen and much damage done; that the reason assigned by the T.'s for this excessive ventilation was that they were smothered by poisons coming from the floor above. He stated further that they had injured the floors by chopping wood in their rooms, and had lived in such a filthy way that considerable expense would be necessary to clean the place. Some one had previously reported to the Society for Prevention of Cruelty to Children that the three sons of Mr. and Mrs. T. were neglected and needed care, and the agents of this Society, after careful investigation, were prepared to take charge of the boys, provided the proper court authorized them to do so.

At a visit on February 9th, Mrs. T. appeared a well-developed woman in fair condition. She said her age was thirty-two years. Though at first suspicious and reticent, she soon talked very freely; indeed she and her husband were both talking so loudly at one time that we were obliged to separate them to understand either. She said that for several months certain detectives, "John Joyce, Mike Moore and others," had been working against her; that they had prejudiced the landlord against her, so that he had compelled her to move from her former home; that they had followed her to this house and that she heard and saw them going over the stairs and heard them talking and moving about on the roof; that they said things like this: "Now we will put some on her and she will not be able to do anything"; that then they blew down through the tenement overhead a powder which changed the color of her hair, and mesmerized her so that she became nervous, irritable and incapable of any kind of work; that at night they mesmerized her in a bad way; that frequently at night this influence was so oppressive in the air that she felt smothered and could not breathe except at the open windows. Mr. T. said that he was fifty-four years old (though he looked to us older), that he was a laborer, but had not done anything for a long time. He appeared an easy-going, somewhat demented man. He assented to each of his wife's statements not only in her presence but when alone. He was sure that he had himself heard the men make various insulting remarks about his wife and himself, such as: "We will make his wife silly before we leave them"; he believed that they put things into the food, that they threw lights upon them in the night, and could in this way see through the floor. Both at this time and again ten days later, when seen alone, he appears to have accepted his wife's belief in the conspiracy, and stated positively that he had heard the voices. The youngest child, ten years old, was interviewed in the room with his parents. He was sure of his mother's story and especially about the men going up and down stairs; and he had identified one of them as a man who worked on Broadway. Mrs. T. said that the other two boys knew the story to be true, and would corroborate everything she said. We did not see them.

Something may be inferred as to the infrequency of this affection from the fact that in the records of the Registration Department of the city, from 1870 to date, I have found only six examples of possible *folie à deux*.

In the first, two old maids, one of whom was undoubtedly insane, lived together in a small room, locked themselves in, quarreled, made loud noises, threw things out of the window, annoyed the neighbors, and declined to pay rent or move away. They claimed that Phillips Brooks was taking care of them. The evidence obtained did not warrant the conclusion that the second was seriously affected by the disorder of the first.

In January, 1878, S. B. T. was sent to an insane hospital. She was forty years of age and a widow, without hereditary tendency to insanity. Her husband had died three months previously of pulmonary hemorrhage, when she was out of the room. She became sleepless and distressed and blamed herself with having killed him. She attempted suicide by hanging and by taking poison. In March of the same year this record was made: C. O. S., sister of S. B. T., also a widow, fifty-four years of age, was obliged to go to a hospital. Her husband had died of consumption one year before. Since then she had been lonesome and had worried about money matters. Recently she had compared her condition with that of her sister, whom she had visited at the hospital and who blames this patient for her confinement there, so that the patient fears that she has done wrong in this and other ways, and talks of having committed the unpardonable sin and of taking poison. The subsequent history is as follows: The first of these is demented and now in the Worcester almshouse; the second appeared to recover and was discharged from the hospital three months after entrance, but six months later re-entered the hospital, was excited, noisy, violent, refused food, failed rapidly, and died of exhaustion in a few days.

In June, 1880, an examination was requested of Henry H. and his sister. He was then thirty-four years of age, single; had been at Taunton Hospital at least twice previously, when he was suspicious and had delusions of persecution. For three years his sister had taken care of him, and of late he had been most of the time in bed and was evidently demented. At this time his sister was thirty-eight years of age, single. She said that one month ago she was followed by men, whom she heard talking in the next room subsequently, so that she sat up all night with a hatchet in her hand and had been on watch ever since with the doors locked, windows barred and screened. She said that she heard voices continually. She has been very devoted to her brother until recently, when she has been so absorbed in watching that she has neglected him. The neighbors report that she is frequently up all night, talking loudly and making strange noises, and that recently she was out in the yard all night in her night clothes. She appears thoroughly exhausted. The brother was sent to an insane hospital, and, as far as known, is now in one of the chronic asylums. There is no record that the sister was received at any of the hospitals.

In 1877, examination was requested of R. S. D. and his wife. He was a police officer, forty-seven years of age, and had had several attacks of excitement, in which he was maniacal and expressed religious delusions; was violent and dangerous. His wife

reports that recently he tried to throw their child out of the window. His prominent delusion is that he is Jesus Christ. His wife gave birth to a child five months ago and has been sick and depressed since that time. Her husband has labored with her in an insane way and has tried to convert her, and has impressed his delusions upon her so that she has come to believe his claims to divine power to some extent; has been working too hard and has lost sleep, and has evidently not recovered her strength since the birth of the child. She thinks now that she can never get well. The husband was sent to an insane hospital and the wife to the Boston City Hospital, with the expectation that she would probably have to go to an insane hospital later, but I have been unable to find any record of her in either of the insane hospitals.

In July, 1877, the R. family was examined, at the request of the police. At this time there were at home the mother, age sixty-two, and three daughters: M., thirty-three years of age; J., thirty years of age; and C., twenty-five years of age. J. had had three attacks of insanity and had been twice at the Taunton Hospital. A son, John, committed suicide about a year ago by jumping into a furnace. After his death his sister M., who had been especially devoted to him, became depressed, confused, resistive and suicidal, and was sent to a hospital, where she remained about six months. The daughter C. had an outbreak of excitement in the mill where she worked recently, and was discharged. She then posted placards in various parts of the town, denouncing the widow of her brother John. She believes that John's wife gave him powders and drugs which made him insane and affected the other members of the family, and thus made M. insane. The other members of the family appear to have accepted this delusion. The examining physician saw one of these posters, which contained incoherent threats against John's widow and other people, and indicated a dangerous state of mind. Nothing was done about having any member of the family go to the hospital at this time, but subsequently C. was sent to Danvers and is now at Medfield.

In 1890 A. K. and her two daughters were sent to Worcester. The mother was a widow, sixty-five years of age, who stated that she heard people on the street reviling them and threatening them, that there is a conspiracy against them, and that her daughter, M. K., was kidnapped, drugged and married, gave birth to a child, that was stolen from her, and subsequently her womb was mutilated, and that since her return she has never appeared as well as before. The mother is in constant terror of more frightful things being done by the conspirators. The daughter E. K., twenty-nine years of age, single, is excitable, has various delusions, and is somewhat demented. The daughter M. K., twenty-eight years of age, single, was first examined two years ago, when she was excited, noisy, incoherent. At that time her mother would not consent to her removal to a hospital. Now she appears thoroughly demented. It was not at all clear that the delusions of the mother had been accepted by either of the daughters, but the mother was the superior intellectually, and controlled the actions and conduct of her weak-minded daughters. All three are now at an almshouse.

It is generally admitted that in asylums one rarely sees the insanity of one patient modified by that of another. A very thorough study of two cases has

been made by Finkelstein, who quotes the following authors to show how rare the condition is: Parschappe relates an instance where one patient refused food, and was fed with a tube, and his neighbor imitated him and required feeding in the same way. Marandon de Montyel mentions having seen one patient with delusions of persecution who adopted the hallucination of another patient. Kowalewsky says, "I have practically never had opportunity to see a patient infected with the delusion of another." Jakowenko says, "We have sometimes observed paranoiacs, with delusions of persecution, influencing in a marked way their companions, especially those congenitally weak-minded or with dementia paralytica, and the like. Yet we never once were able to prove that the latter had adopted the system of delusions entire. In one case one paranoiac transferred to another paranoiac a part of his delusions."

The following is a brief outline of Finkelstein's first illustration: Nibung, male, thirty-one years old, in vigorous health, was a case of chronic hallucinatory paranoia. The ravens in the garden joked and made fun of him. His relatives let them loose on him. His food did not go down, but up into his head, and was taken out by the ravens. In stereotyped form he repeated his delusions constantly to everybody. Linnama, male, twenty-six years; said to be naturally a quiet man, easily influenced, who would suffer injustice rather than have trouble. Admitted hallucinations and delusions. Said that he had enemies and was afraid to sleep lest they might do something to him; that he saw black men who wanted to harm him and who assaulted others; that he prayed God to make them good men. Showed weakened power of attention and disorder of association. Nibung took Linnama under his protection, took him about with him, reached things for him at table, put him to bed at night, and declared repeatedly to bystanders that the ravens did not let Linnama sleep night or day. This relation continued from May to July. After July Nibung had nothing more to do with Linnama. In spite of this close relation there was no change in Linnama for about three weeks. He remained sluggish and usually silent. He said he feared the night and the black men, who cried out continually and kept him awake. June 1st there came a great change, shown by a certain pathological tendency to imitation. He was the exact copy of Nibung. They went everywhere together. They did exactly the same things. After this had lasted for one month Linnama first declared that the ravens kept him awake and talked to him just as they did to Nibung. Soon afterwards he adopted Nibung's hallucinations and delusions in stereotyped form. With these transformed delusions he remained till discharged two months later, and never expressed a single one of his earlier delusions and hallucinations. This is the more remarkable when we remember that Nibung had nothing to do with him during the last two months.

Kiernan has reported several good illustrations of this condition, among which the following is an interesting group: A Presbyterian clergyman, liberal education, American, forty years old, married, strong hereditary taint, abstinent, was admitted to the asylum several times and discharged during periods of comparative clearness. The interest of the case lay in the companions by whom he was accompanied, all of whom were permeated with ideas of a delusive

character based on the improvement of the insane and the conversion of them into useful members of society of almost the same character as the ideas of the minister. The first case was a general parietic, one of those wandering cases who come to the front when any popular uprising happens. He attempted to ameliorate the condition of the insane by purchasing five dollars worth of red and blue lead pencils and distributing them among the patients. The second member of the group was a case of chronic mania with imbecility who was very religious and full of ideas of serving God by ameliorating the conditions of the insane. The third individual was a case of hebephrenia who mingled in his conversation religion, regrets for former habits of life, and the delusions already mentioned. The fourth case was a similar form of insanity to the minister, but shading into dementia. The fifth member was an epileptic slightly demented. When again a patient the minister displayed great power of collecting similar groups.

Pathogenesis. — Recognizing my inability to deal with the very subtle problems presented here to the psychiatrist, I shall merely outline the subject and then quote from some of the prominent writers. In this affection we have to deal apparently with the results of sympathy and suggestion. Few men escape being influenced to a certain extent, consciously or unconsciously, by their companions. Intimate association with a case of profound melancholia causes many a man to feel a certain sense of fatigue, which expresses itself in restlessness or increased irritability or a feeling of tension or a desire for relaxation or amusement. And if the sympathy is very great and the heredity the same and the close association long continued, it is not difficult to see how the melancholia of No. 1 may bring about grave depression, possibly amounting to melancholia, in No. 2.

The delusions of the insane, however, are almost always easily recognized as such. Indeed, so generally is this true that for many years delusion was held by the courts to be the test of insanity. In order, therefore, that the delusion of an insane person may be believed by one who is sane, peculiar conditions are necessary to make the suggestion effective. No person will believe a thing which appears to him absurd and impossible, no matter how frequent or how forcible the suggestion. Therefore, the delusion itself must have a certain character; it must appear to the listener probable or at least possible. The individuals concerned may be characterized somewhat thus: The first is relatively the stronger character; he is vigorous, active, aggressive, persistent; the second is comparatively weaker mentally and perhaps physically also. The yielding process is a gradual one.

A child may be made to believe any statement of its parents with comparative ease, because he is accustomed to receive the parent's statements as authoritative, because his imagination is lively, his experience too limited to furnish proper standards for comparison, and his judgment undeveloped. It is not surprising, therefore, that certain of these cases show the adoption of the parent's delusion by a child or youth of limited capacity. Four such are reported by Lasague and Falret, whose entertaining study upon the subject appeared in 1877. In their first case a mother caused her child to accept her insane belief. The little girl, in telling the story of the delusion, softened

it so that it was more readily believed by the neighbors. Having given up certain statements, which they showed her were impossible, she gained more weight for those which she retained, and the neighbors espoused her cause and went to the authorities.

Moreover, the child sometimes makes addition to the accepted delusion. This was illustrated in Case V of Lasague and Falret, where the mother believed that they had inherited a fortune, and the daughter added the delusion that several priests were keeping it from them. As these authors have pointed out, the conditions are different where an elderly person accepts the delusion of a younger person. The imagination is no longer active and experience has furnished certain standards for comparison, and if the judgment fails to correct the error, the resultant belief is usually merely a sort of passive acquiescence, without additions, expressed, perhaps, by such words as these: "From what you say there cannot be any doubt about it."

One of the most remarkable features of this condition is the modification in the story of the originator which takes place under the influence of the other partner, so that the whole presents a much more plausible aspect. Where one insane person adopts the delusion of another we have conditions similar to those we have just been considering, namely, intimate association of two individuals, frequent repetition of a story by one and its acceptance after a time by the other, who is usually the weaker.

A. E. McDonald, in an article upon "General Paresis," writes as follows: "I have myself observed more tolerance of the delusions of others, even amounting to belief in them, among parietics than in the insane of other classes. Ordinarily an insane man will recognize wherein his neighbor is deficient in sense, while strenuously maintaining his own soundness, but a parietic's delusions are extensive enough to embrace all mankind. When one of them has given a summary of his wealth, the others if appealed to will often endorse his statements, but always adding that, wealthy as he is, they are still more so. One of my patients indeed makes this belief the basis for his own extravagant delusion, for accepting the claims to wealth made by his companions as true, and having been before his admission a gambler, he tells me in confidence that he is about to open a faro bank in the ward and so possess himself of their millions. The prominent differences between the general paralytic and those of insane of other forms are seen in their greater extravagance, their want of permanency and in the absence of sequelæ and co-ordination. The delusions of the parietic are absurd and impossible, vary constantly, and are utterly contradictory and incompatible."

Spitzka, writing upon the "Pathological Psychology of Progressive Paresis," expresses this view: The chief intellectual phenomenon of the parietic (during the quiet interval) is a loss of his proper sense of self-consciousness; his sense of self-consciousness depends on his proper appreciation of his surroundings; the appreciation of his surroundings depends on the association of numerous impressions which have acted on him during his lifetime, as the teachings of experience and instructors, and these impressions have become either destroyed, or if they exist, are not associated.

Finkelstein's conclusions are as follows: In both these cases chronic paranoiacs with delusions of perse-

cution were the active persons, and repeated constantly the same delusion in the presence of the passive persons, who were strikingly weak and apathetic subjects. To the cumulative influence of such repetition great weight must be attached. He calls attention to the influence of the will in the production of this condition, and says that this showed the psychic infection first, and not till afterwards came the adoption of delusions and hallucinations. Emphasis should also be laid upon a condition that favors a transformation of delusions, namely, a condition of the emotive sphere in both. It is difficult to speak here of the importance of the psychological elements of personality, since we are dealing with fully developed forms of insanity in which the influence of the intellectual sphere is difficult to determine.

Jakowenko says, "In *folie à deux* it seems now most probable that the intellectual side alone plays a very small rôle if any. Of much more weight is the emotive sphere of the patient, since the intellectual influence is only of such character as to increase the chances of a success already essentially prepared by the emotive state."

Finkelstein adds, "This point of view finds support in both of our cases. Both active agents were energetic, persistent natures, with very intense motor activity, closely associated with their delusions. The psychic infection expressed itself in both cases in the form of pathological conditions of the motor sphere and not till afterward in identity of delusions and hallucination."

These phenomena either did not appear in the cases of Lasegue and others, or received no attention.

Diagnosis.—Separate the individuals and study the story of each. One may be simply yielding to strong personal influence in the presence of the other, or he may not have passed the bounds of excessive credulity. Such credulity is often shown by the friends, who believe very absurd stories told them by patients; but they usually go home and do nothing about the matter. The conduct of No. 2 will usually show whether he is sufficiently affected to be called insane. In our case the husband, when examined alone at the City Prison, showed such marked excitement and demanded so earnestly the arrest and conviction of the conspirators that neither of the examining physicians had any hesitation about signing the paper.

Prognosis.—In general, we may say that the second individual is usually less severely affected than the first, and will probably recover if prevented from associating with the first, especially if removed from the environment where the affection began. Often the recovery is very rapid. This is strikingly shown in a case of Lasegue and Falret. Twin sisters, who had been very unfortunate, were affected. Josephine developed delusions about being punished by the authorities, and after two months Lucile yielded accepted the delusions, and became the more active. On the first day of separation Lucile, who was the one more recently affected, answered timidly and related with hesitation and excuses the events which had preceded the expulsion of her sister. "We were both so tormented," she said, "with the fear of prison, perhaps I even more than she." On the fourth day she said, "It was my sister who had the fear. I believed her and I was mistaken. If I had been

stronger, I might perhaps have prevented her from being where she is."

A similar result was reached in our case. Mr. T., when told by the hospital physicians that such talk was nonsense, showed the case with which he could be influenced by the remark, "Well, you doctors must know. If you say it is nonsense I suppose it is"; and at an interview with his wife shortly afterward, he met her statements about mesmerizing and conspiracy every time by saying, "Don't talk that stuff. Let's be sensible."

A case is cited by Tuke, where a wife was excited, had delusions and hallucinations of hearing, sight and smell, and subsequently the husband was affected with the same hallucinations and delusions, but was not excited. Both recovered without being separated.

It need hardly be said here that a bad heredity would alter an otherwise good prognosis. Moreover, one can readily conceive that a suspicious or deluded adult might so influence the development of a young person that pernicious habits of thought and action would become established; that subsequent separation would not affect these habits; and that in this way a very serious permanent injury might be done, even though actual mental disease did not follow.

Treatment.—For the established disorder, separation is the first requirement; and if the contagion is the essential causative factor, separation will usually be followed by recovery. But in this, as in many other affections, prophylaxis is the field for our work. Separation is demanded whenever it is clear that any other member of the family is feeling the influence of the patient in a serious way. This is especially important where there are children more or less under the control of an insane parent. A relation essentially similar though less striking exists frequently in a household, without receiving due consideration from the family or the physician. I refer to the very large number of instances where one member who is an invalid of some sort exerts a blighting influence upon susceptible companions. The doctor should be all the more alert, because the responsible member of the family usually fails to recognize the existing relation or to appreciate the present and future danger. This proposition holds true in regard to the milder cases, where the influence exerted is merely of a depressing nature, as well as where the suggestion is of suspicions and delusions. When to insist upon separation, and how to convince the friends that it is necessary, are problems that demand for their solution our cleverest judgment and nicest tact.

THE USE OF THE ANGIOTRIBE.¹

BY J. RIDDLE GOFFE, M.D., NEW YORK,

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FOR the introduction of the angiotribe into this country the medical profession probably owes more to Dr. Clement Cleveland than to any other member of the profession. He was the first American surgeon to use it, his first case dating January 9, 1899.

It seems very natural that from the use of the forceps for the control of hemorrhage in hysterectomy

¹ Read at the meeting of the New York State Medical Society held at Albany, January 30, 31, and February 1, 1900.

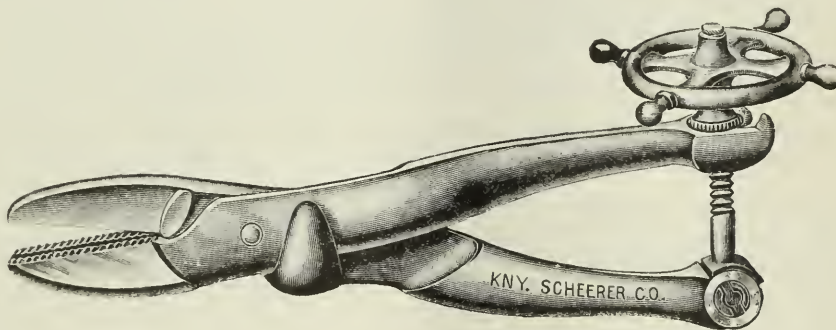
there should be evolved an instrument capable of supplying sufficient pressure in a brief time to accomplish what was done by the clamp forceps in thirty-six to forty-eight hours. Indeed, experience has led operators who were using the forceps to lessen constantly the time that was considered necessary to leave them in place. As the time was shortened it became necessary to use a more and more powerful instrument, until finally it dawned upon the mind of Doyen, of Paris, that an instrument of sufficient power might be used to produce the same effect upon the blood-vessels in two minutes as the light forceps required thirty-six hours to accomplish; hence the angiotribe. The angiotribe, therefore, is simply a strong and heavy artery or tissue clamp. It has found its most general application in gynecological surgery, but there seems no reason why its range of application should not be extended to almost all surgical operations in which the control of hemorrhage from large blood-vessels is involved.

History.—The credit of the invention belongs to Doyen, of Paris. In 1897 he devised a heavy clamp forceps, and reported a number of successful cases with its use. He named it the vasotribe. Thumin, of Berlin, after experience with the Doyen instrument,

from heel to toe, as in scissors. To accomplish this, it was necessary to have the compression surfaces perpendicular to the handles; this, however, made an instrument difficult of application in a small cavity like the vagina, and as you will see in the model, an effort was made to overcome this by tilting the surfaces of application at an angle between the perpendicular and the parallel. It has been found, however, in practice that the scissors' action is satisfactory, although Dr. Bissell, in his perfected instrument, still places the jaws at an obtuse angle to the handle, claiming thereby that the instrument is more convenient of application.

With this powerful instrument the tissues are crushed to the thinness of tissue paper, and the walls of the blood-vessels are compressed to a condition of agglutination. Tuffier claims that he secures, by screwing the instrument down to the proper notch, a pressure of 3,000 pounds. Thumin's instrument gave the same amount of pressure, but Dr. Bissell maintains that he finds in actual practice that a pressure of about 1,000 pounds, which his instrument affords, is entirely sufficient.

All these instruments that I show you are simply heavy clamps, but to accomplish their purpose certain



Tuffier's angiotribe.

made it stronger and heavier at all points and improved the attachment for applying pressure. The peculiarity of Thumin's instrument is that the pressure is applied by means of a lever with an eccentric attachment. In 1898, Tuffier, of Paris, modified the method of applying pressure by means of a screw and nut in the form of a wheel, for ease in screwing it down. Tuffier gave his instrument the name of the angiotribe, or vessel crusher.

In connection with the development of this instrument, it is well to remember that one of our own countrymen, Dr. J. Dougal Bissell, of New York, is entitled to the credit not only of having conceived the idea, but also of having made some experimental investigations looking to the application of this principle. In what I may say, therefore, regarding Dr. Bissell's instrument, it should be understood that it is not a modification of Doyen's or of Tuffier's, but is the outcome of original study, the goal of which was almost within Dr. Bissell's grasp when the description of the Doyen instrument reached this country. I take pleasure, therefore, in showing the model that Dr. Bissell had devised, the first crude instrument which he made. Dr. Bissell realized that the blades, or jaws, of the instrument should approach each other as nearly as possible along parallel lines, instead of

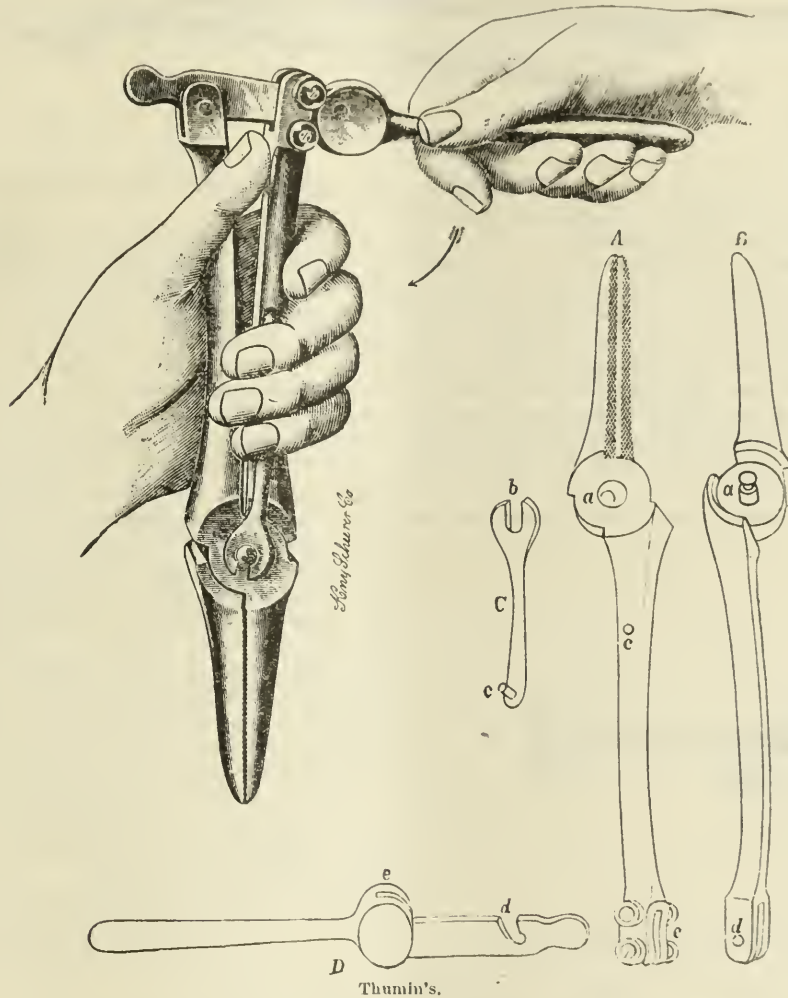
features are necessary. A groove is made along the middle line of each jaw from the heel to the toe; this leaves a short space in the blood-vessel where it is not compressed, and allows the formation of a blood clot there. The outer edges of the jaws should be smooth and rounded. If a sharp edge is left the tissues are apt to be cut and the whole effect of the instrument lost.

In hysterectomy the instrument is applied as any clamp would be, and after the nut has been screwed down to the required point indicated, it is held in position for two minutes; the uterus is then cut away, and my custom is to run my knife right along the edge of the jaws. Some operators maintain that it is better to leave a short stump of tissue extending beyond the edge of the jaws, and Dr. Cleveland makes the point that this is essential to the complete control of hemorrhage on account of the blood clot formed in this tissue. My opinion is, however, that the agglutination of the walls of the vessels at the points of pressure, and the blood clots formed at the groove in the jaws and at the approximal side of the instrument, are the essential hemostatics. If these give way the distal blood clot would be of little avail in withstanding the blood pressure. We have then, in my opinion, four barriers against the escape of blood: the two

compressed surfaces of the blood-vessels and the two blood clots. I have had experience with the Thumin instrument, with Tuffier's angiotribe, and with Dr. Bissell's compressor; all three instruments were successful in controlling hemorrhage, but I have used Tuffier's angiotribe more than either of the others and like it the best. My use of it has been exclusively in gynecological work and embraces 16 cases.

Of these 16 cases, one was a vaginal hysterectomy for multiple uterine fibroids, complicated by cystic ovary and unilateral salpingitis; one case of removal of the ovary and Fallopian tube of the left side for ovarian abscess; 10 vaginal hysterectomies for

index. This ensures a pressure of 3,000 pounds. When the tissue is very thick it requires considerable force to screw the nut down to this mark, and unless the operator steadies the instrument by firmly grasping it with both hands, the tissues are apt to be dragged and pulled about during the turning of the nut by the assistant. To assist in steadying it, I have found it advantageous to press the instrument against the bones of the pelvis at the outlet. After the nut has been screwed down the instrument is held in place for one minute, at the end of which time the uterus is cut away up to the tip of the blades by sliding the knife along the side of the jaws; at the end



double pyosalpinx, and four vaginal hysterectomies for cancer of the uterus. In the case of vaginal hysterectomy, after the vagina is incised around the entire circumference of the cervix, and the bladder is dissected off of the uterus, the angiotribe is passed in, first on one side, and then on the other, grasping the base of the broad ligament in its jaws the full length of the blades. It is important in applying it here to adhere closely to the cervix in order to avoid the ureters. Careful examination is made by sight and by touch to exclude all tissue except the broad ligament. The jaws are then tightened and the pressure put on by the screw to the extent indicated by the

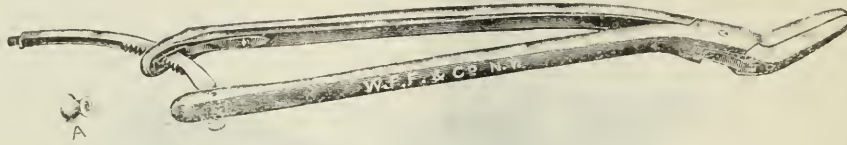
of the second minute — and this is carefully timed by the watch — the pressure is relaxed and the instrument removed. The lower half of the broad ligament on the opposite side is then treated in the same way. The uterine arteries are thus sealed and the uterus is set free from its lower attachments. Time might be saved by using two instruments, applying the second to the tissues while waiting for the first to do its work. It may be found by further experience that the time of applying pressure may be shortened very much and also the amount of pressure reduced.

Great facility is now gained for dealing with the adhesions which may exist about the tube and ovary.

It is my custom then to select for the next step that side of the uterus in which there is the less amount of disease, and the appendages are the more easily brought down. The upper half of the broad ligament is then grasped in the jaws of the instrument as before, reaching now on the broad ligament beyond the ovary and tube, when the instrument is impressed and the tissues cut away as before. Ordinarily the full width of the broad ligament can be included in two applications of the instrument, but if that seems difficult or uncertain of accomplishment, it does not prolong the proceeding very much to crush what tis-

seem to work equally well. The thin ribbons of tissue left by the angiotribe are either revived or wither up and disappear in some inconspicuous way; at any rate, nothing is ever heard or seen of them, and the vaginal discharge after a hysterectomy by the use of the angiotribe is almost *nil*.

In one of my recent cases, by some inadvertence, the instrument was screwed down beyond the signal mark, and when the instrument was removed hemorrhage occurred. I can only account for this accident by the fact that in screwing the instrument so tightly the tissue was cut at the edge of the jaws. I reap-

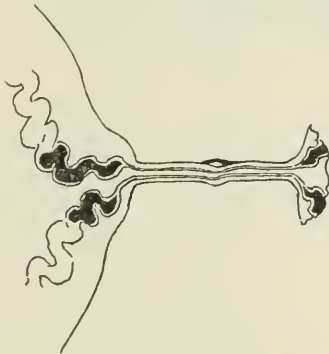


Dr. Bissell's vessel crusher.

sue can be easily reached in the second application, and then go to the free border of the broad ligament in a third application of the angiotribe.

This same method can be repeated on the opposite side, or, as is frequently my custom, the uterus and appendages can now be drawn down into reach and the angiotribe applied down the broad ligament from its free border at the horn of the uterus. In the case in which I removed the appendages of one side only I simply developed the pedicle by dragging these organs down into the vagina through the anterior fornix, and applied the angiotribe close to the horn of the uterus.

In two of the cancer cases I deliberately put the



The ribbon of tissue formed by the angiotribe.

angiotribe to a supreme test. In these two cases the disease had invaded the base of the broad ligament on each side, and I subjected them to hysterectomy for the purpose of discovering the efficiency of the instrument in tissue infiltrated with cancerous disease. I found it fully as successful in controlling hemorrhage as in the other cases. In none of the 16 cases did hemorrhage occur from the tissue compressed by the angiotribe. In one case, however, there was considerable oozing, and it became necessary to pack additional gauze into the pelvis to control a sharp leakage from the posterior vaginal wall.

In one of the advanced cancer cases I made use of Dr. Bissell's compressor, and in the other I used a Thumin on one side and a Tuffier on the other. All

plied the angiotribe immediately and the hemorrhage was controlled.

Advantages.—(1) The superiority of this method of controlling the blood-vessels over the former method of applying forceps becomes apparent at once. By the former method forceps had to be left in place as they were applied, one after the other, in the progress of the operation. These filled the vagina more or less and impeded the progress of work. In the use of the angiotribe, on the contrary, more and more room is gained with each application.

(2) The handles of the forceps protruding from the vagina were a great source of annoyance and discomfort to the patient. Moreover, the forceps had to be removed at the end of thirty-six or forty-eight hours. This was a great annoyance to the patient, and in a certain proportion of cases hemorrhage occurred from the tissue adhering to the forceps and being torn away as they were withdrawn. After the use of the angiotribe none of these disturbances arise; convalescence is smooth and comfortable. Indeed, my experience is that there is very much less pain after using the angiotribe than by either the old forceps application or in the use of ligatures.

(3) It is superior to ligatures in two respects: it is more easily and quickly applied and it is attended by less discharge during convalescence, whether the ligature used is catgut or silk.

In my opinion, the angiotribe has a field of application in dealing with hemorrhoids, and, while I have had no actual experience in this line of work, I believe it will prove to be superior to the ordinary clamp and cautery.

PROGRESS IN GREAT BRITAIN.—At an inquest recently held in Belfast the coroner remarked that the post-mortem examination had been made very satisfactorily by Dr. Harriett Niel, and that this was the first instance on record in the country of such a public duty having been discharged by a woman. Another sign of diminishing prejudice is furnished by the announcement that medical women will be admitted to the Liverpool School of Tropical Medicine on equal terms with men. In view of the fact that many medical missionaries are women, it would seem only reasonable to give them every opportunity to fit themselves for their future work.—*Medical Record*.

THE PROBLEM OF BOSTON'S INSANE.¹

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON,
Secretary of the Boston Insane Hospital Trustees.

THE Boston Society for Medical Improvement took an active part in the movement which ended in placing the Boston Insane Hospital and the insane of the city of Boston under the charge of an independent board of unpaid trustees. It is therefore fitting that the members of this Society who have acted on that board since its formation in 1897 should give an account of their stewardship.

It is my province, however, to speak only of one problem which confronted us when we took charge of the insane in 1897 — a problem which has confronted the city for many years, a problem which still confronts us to-day — the problem of the best method of providing for the insane of the city of Boston. On the 30th of September, 1899, there were 1,636 insane persons having a settlement by law in the city of Boston, unable to support themselves and for whose support the city is liable. The question is, How shall these persons be provided for in the best and most economical manner?

It will be of advantage to review, very briefly, what the city has done for this unfortunate class in the past, although such a review can hardly be flattering either to the medical profession, who should have urged a different course, or to those who had the matter in charge in past years.

Up to 1833 the city's insane were cared for (?) in the workhouse and the jail. In 1765 Thomas Hancock bequeathed £600 to the town "for a convenient house for the reception and more comfortable keeping of such unhappy persons as it shall please God in his providence to deprive of their reason," but the selectmen declined it because there were not enough insane persons in the province to warrant its acceptance. Their foresight reminds us of certain acts of their successors, who have not, however, shown similar reluctance to receive money.

In 1833 the Worcester hospital was opened, and the Boston insane in the workhouse and the jail were sent there. Four years later the Worcester hospital was overcrowded and the Boston patients were sent back again. At that time Mayor Eliot reported that, "while the law required Boston to provide a receptacle for the insane of Suffolk County, humanity required her to provide a hospital for the insane in the House of Industry." With but one dissenting voice it was voted to build such a hospital, and in 1839 the Boston Lunatic Hospital at South Boston was opened — the third insane hospital in the State.

The new hospital stood between the workhouse and the jail, and one board cared for the three institutions. This was not out of the way in 1839, but the hospital stayed next to the jail until 1895, and under the same management until 1897. It may be of interest to note that the insane in the House of Industry had been kept permanently in strong wooden cages on wheels, but as a mark of special kindness, the cages were wheeled out of doors in fine weather, and the patients were wheeled over to the new hospital in these cages, which were promptly destroyed. The new hospital had two three-story wings, each ward consisting of a corridor with six strong cells on each side. A short plank was built into the wall in the

corner of the cell for a seat, and, with a mattress, constituted the furniture of the room — a slight contrast to present customs. One of these seats, however, was still in existence when the hospital was abandoned in 1895. Four years later eight strong cells, like those of a prison, were built in a cottage in the rear. Three years later still, in 1846, the wings were enlarged and associated dormitories instituted, the first of the kind in the United States. This date, 1846, is an important one to remember, for it is the last time on record when the city of Boston has taken the lead in introducing better and more humane methods for the care of its insane.

For forty years the conditions remained practically unchanged. The hospital was overcrowded soon after it was built; it stayed overcrowded until it was abandoned. The monotony of the story is depressing: overcrowding, temporary relief by transfer to the State hospitals; more overcrowding, more transfers, year in and year out. Add to this the increasing difficulty of attempting modern methods in a hospital out of date and out of repair. It is a credit to the staff that the kindness and humanity commended by Dickens in 1842 were still continued. During those forty years this hospital accommodated about 200 patients, and the rest of the city's insane, an ever increasing number, were sent away to the State hospitals. In 1865 an effort was made to provide for all the city's insane in a modern hospital; a farm was purchased in Winthrop, plans were drawn and accepted for a hospital for 500 patients, at a cost of \$500,000; and then, for some unknown reason, the project was blocked, and another plan substituted which resulted in building the Danvers hospital at a much greater cost, nominally for Boston patients, although it contains fewer than any other hospital. It is currently reported that in consequence of this failure to build a modern hospital for its insane the city lost a bequest of \$500,000 for the new hospital.

In 1886 the city made further provision for its insane by remodelling the wooden building at Austin Farm which had been used for female paupers, as a building for the quiet insane. This was a ramshackle fire-trap, wholly unfit for the purpose, denounced by every one who had to do with it, and finally condemned by the new State Board of Insanity, and abandoned a year ago. In 1893 the present building at Austin Farm was occupied, the first building that the city of Boston had erected for its insane in fifty-four years. The following year the other buildings at Austin Farm were occupied, and in 1895 the old hospital at South Boston was finally abandoned and the patients transferred to the new buildings at Pierce Farm.

The hospital as now established, in two divisions over half a mile apart, can accommodate about 500 patients. Although built within the last decade, it is by no means a modern hospital. The buildings are of "slow-burning" construction instead of brick or stone, the administrative, domestic and agricultural buildings are old and inadequate, there is no suitable accommodation for nurses, and the hospital itself is below the standard of the State hospitals. Turin and Bologna, in 1890, had far better equipped city insane hospitals than Boston has to-day, and their hospitals were inferior to the government insane hospitals of Italy, at Imola and Reggio-Emilia.

The city of Boston has thus gone on for fifty years

¹ Read before the Boston Society for Medical Improvement, January 22, 1900.

and more adopting no definite plan of action, neither developing its own hospital into a first-class modern hospital large enough to accommodate all its insane, nor yet abandoning it altogether and sending all its insane to the State hospitals. On the 30th of September, 1899, there were 508 patients in the Boston Insane Hospital and 1,128 supported by the city in the State hospitals, at the cost of \$179,166.67 in the last year. These were distributed as follows:

Danvers	73
Medfield	376
Taunton	77
Tewksbury	69
Westboro	133
Worcester Asylum	80
Worcester Hospital	142
Total	950

In special institutions, not transferable to an ordinary insane hospital:

Boarded out	26
Criminal insane, Bridgewater	35
Dipsomaniacs, Foxboro	40
Epileptics, Monson	22
Feeble-minded, Waverley	40
Hospital cottages, Baldwinville	15
Total	178

About 35 patients in the Boston Hospital paid their board. Meantime the State has built the new hospital at Worcester, and the hospitals at Northampton, Taunton, Danvers, Westboro, Tewksbury, Bridgewater and Medfield, of each of which Boston has paid over one-third the cost, and one of which would have been unnecessary had Boston developed its own hospital.

The cause of this policy—or lack of policy—is hard to seek. First of all, perhaps, we must accuse the lack of interest on the part of the public in the welfare of the insane. Gross cruelty, of course, would not be tolerated, and the public to-day recognizes that it does not exist in our asylums; but the public is unfamiliar with hospitals and their methods and believes complacently that because fifty years ago Massachusetts was in advance in its treatment of the insane, it is so to-day—a comfortable delusion, like that of the efficacy of our public schools, the intelligence of our Congressmen and other stock boasts of our Fourth of July orators. In the next place, we of the medical profession have been and are at fault in not keeping in touch with our hospitals for the insane as well as with our general hospitals, and demanding equal facilities for scientific research and the care and treatment of the sick. The insane hospital needs its special facilities for what has aptly been called “psychical asepis,” as our operating theatres need their facilities for physical asepis. Lastly, both State and city have until the last year or two pursued a policy fatal to progress. The insane have been put under the control of boards which contained no one with expert knowledge of insanity, and whose other duties were so exacting that they had scanty time, even if they had had the knowledge, to conceive or to execute any broad and comprehensive plans for the care of the insane. When, in addition, membership on these boards became of brief tenure and was influenced by political considerations, there was little likelihood of the development of any permanent policy. That has now fortunately been changed, and the last report of our new State Board of Insanity gives promise of a better state of things.

There is, I think, little to be said in favor of the policy which the city has pursued for fifty years and

more. It has been a makeshift, temporizing policy, without any system or intelligent plan. The physicians in charge of the hospital have recorded their protests and their pleas for adequate accommodations annually in their reports and have done their best for the patients entrusted to them in spite of the handicap of their accommodations. There is, furthermore, a manifest injustice in the policy. Why should A, a citizen of Boston, becoming insane, be kept in the city, while B and C, equally citizens and with equal rights, are sent forty miles away? Either the city should give up caring for its insane in its own hospital, abandon the hospital altogether and send all its insane to the State hospitals, or the Boston Insane Hospital should be developed into a first-class modern hospital, capable of accommodating all the city's insane. The latter course is, I believe, the one to be adopted. In spite of the fact that the hospital in Boston is inferior to the hospitals of the State in its buildings and accommodations, patients and their friends invariably prefer it to the State hospitals and are sometimes ready to pay the patient's board in order to keep him there. The reason is obvious. If an insane person be kept in the city his friends can visit him or he can go home to visit his family at a trifling expense. If he be sent to a State hospital the cost of such a visit will be considerable, from \$0.88 to \$2.00 in railway fares for the round trip, besides the loss of wages to the visitor for the time spent on the journey.

If each insane person belonging in Boston and now in the State hospitals were to receive one visit a month from his friends in the city—certainly not an extravagant allowance—they would pay in railway fares, as the patients were distributed on the 30th of September, 1889, \$18,466.56 a year, and, assuming that they lost half a day's pay for each visit at a rate of \$1.50 a day, they would lose \$12,280 a year, a total tax of \$30,746.56, which the city imposes upon its poorer citizens for the privilege of visiting their insane friends once a month.³ It is no wonder that requests for transfers from the State hospitals to Boston are constantly made—requests which, unfortunately, we are compelled to refuse. One or two letters out of many will show the injustice and hardship of the present system.

“I respectfully petition for the transfer of my father from the insane asylum at Taunton to the Boston Insane Hospital for the following reasons: My father is totally blind; my mother and two brothers have died within the past four years, leaving my father and myself the only living members of our family, without relatives in this country. I am in straitened circumstances, barely able to support myself [she earned five to six dollars a week] and cannot visit my father on account of the expense incurred by loss of day's work (\$0.50) and railroad fare (\$1.70), although my father is continually asking for me, and the resident physician has informed my friends that it would be a great blessing and also it would benefit his health if I could visit him quite often.”

In another case a physician writes: “The daughter of the patient earns \$3.50 per week, works steadily and is a well-behaved woman. She visited her mother every week at Austin Farm. Now she cannot afford to go to Worcester to see her mother, as it would cost \$2.00 for each trip.”

It is hardly necessary to say anything of the impor-

³ If weekly visits were made, the cost would be \$132,682.16.

tance of visits to the insane by their friends. In rare instances restrictions may be necessary, but as a rule in the curable cases the visits of friends keep the patient in touch with the world and encourage him in the progress toward recovery, while occasional visits to his home and trial visits during convalescence do much toward hastening that recovery. Even in the chronic and incurable cases visits do much toward alleviating their unfortunate condition. To the friends, afflicted by the illness of those dear to them, visiting proves a solace. To the hospital itself visiting is of great benefit, as the familiarity with the institution does away with much of the old dread and prejudice so disadvantageous to the hospital, and the greater publicity is a check upon abuses. The insane are neither paupers nor criminals, but sick persons, who should have all the help possible to relieve their condition.

Of course the grave objection to adopting this policy is the cost. To construct a proper hospital and to purchase the additional land required would cost about \$1,500,000, assuming that the cost of buildings would amount to \$1,000 a bed. That is equivalent to an annual appropriation of \$30,000 a year for the fifty years that the city did nothing. The city now pays over \$300,000 a year for the care of its insane. If they were all in the Boston Insane Hospital we believe that we could care for them at a considerable saving, perhaps \$50,000 per annum, the interest on two-thirds of \$1,500,000. The saving to the poor would pay the interest on the rest, and the city would then give equal justice to all.

The Boston Insane Hospital is favorably situated, and there is enough unoccupied land about it to provide for the development of a large hospital. Its close proximity to the medical schools, laboratories and hospitals of the city affords special opportunities. With the erection of new and suitable buildings special provision can be made for acute cases, and its situation in the city would render possible the appointment of a regular visiting staff for such cases. The surroundings are such that it will be forever isolated, yet readily accessible, and the wisest solution of the problem of proper provision for the city's insane is the development of that institution into a modern hospital.

THE WORK OF THE TRUSTEES OF THE BOSTON INSANE HOSPITAL, AND THEIR PLANS FOR ITS FUTURE DEVELOPMENT.¹

BY HENRY C. BALDWIN, M.D., BOSTON,
Chairman of the Board of Trustees.

By the Legislature of 1897 it was enacted that the Insane Hospital Department of the City of Boston should be created a department of said city, to be under the charge of a board of seven trustees, at least two of whom shall always be women. This board of trustees were to have the general care and control of the Boston Insane Hospital established in 1839, and all the hospitals that said city has established and may hereafter establish for the care and treatment of the insane. Said trustees were to have all the powers relating to the insane and the institutions in which they were confined conferred by the statutes of the Commonwealth upon the Institutions Commissioner of the City of Boston.

¹ Read before the Boston Society for Medical Improvement, January 23, 1900.

In accordance with this act, the trustees began their work in June, 1897. There were over 1,500 insane placed under their care, over 1,000 of whom had to be boarded in State institutions by the failure of Boston to provide suitable hospital accommodations at home for her insane citizens. Five hundred patients were cared for at the Boston Insane Hospital at Dorchester, which then consisted of two separate institutions.

The first act of the trustees after organizing was to adopt rules and regulations for the government of the hospital. These rules and regulations, which were the result of careful study of the rules and regulations of other hospitals, clearly defined the duties of the trustees and of the superintendents, and by these rules the superintendents were made the responsible heads of their institutions. No alteration or amendment of these rules could be made without the vote of five of the trustees, which establishes their permanency.

The trustees entered upon their duties with no traditions to guide and assist them, and to their wisdom in thus adopting at the start a carefully considered set of rules may be ascribed the fact that there has been harmony in the board as well as freedom of action to the hospital superintendents.

Boston in the early days removed her insane from jails and cared for them properly. The munificence of the city in establishing a model city hospital is well known. It is, therefore, remarkable that the trustees found not only that suitable provision had not been made for over 1,000 insane citizens, but that the general conditions of the buildings of the hospital erected between 1892 and 1894 were below the standard of modern attainment in similar institutions. The old wooden almshouse, in which were 130 women, was unfitted for its purpose and condemned as a fire-trap by the State Board of Insanity in 1898. This building, which had been considered unsuitable and unsafe by the trustees, was at once emptied of patients, and has been converted into an administration and domestic building.

These buildings were lighted by gasoline — both unsafe and unsatisfactory. The water service in case of fire was inadequate. A water service as approved by the Fire Commissioner was established last year, and an electric-light plant is now being installed at the hospital.

Under former management by officials whose terms of office were short and depended upon politics, the needs of the insane were not carefully studied, and no fixed plan of development of the hospital attempted.

The trustees early in their work agreed that the hospital should be used for the acute and recent cases and for the infirm. Formerly the hospital had become largely filled with chronic cases, so that the recent cases had to be sent to State hospitals at a distance. This policy of receiving the recent cases and transferring chronic cases to State hospitals has been steadfastly maintained, though it does not probably receive the approval of the relatives and friends of the chronic insane. Three hundred and fifty-six cases were admitted the past year to the hospital, 110 of whom were discharged recovered or improved. It costs more and is more difficult to care for this class of patients than the chronic insane.

For administrative and economic purposes the two hospitals have been consolidated and run as one institution. A better classification of patients was obtained by making the hospital at Austin Farm a de-

partment for women and the hospital at Pierce Farm a department for men. The names Austin and Pierce Farms have been abolished, being meaningless, and the Department for Women and Department for Men substituted. Before this change was made, the wards for the quiet and convalescent patients were directly over the wards for excited and noisy patients.

GENERAL STATISTICS FOR THE YEAR ENDING DECEMBER 31, 1899.

	Males.	Females.	Total.
Patients in hospital, December 31, 1898	320	252	572
Admitted within the year	150	206	356
Emergency	20	11	31
Voluntary	1	4	5
Committed	129	191	320
Whole number of cases	470	458	928
Discharged within the year	223	209	432
Transferred to State hospitals or asylums	106	72	178
Recovered	19	35	54
Much improved		18	18
Improved	23	15	38
Not improved	30	22	52
Death	42	44	86
Not insane	3	3	6
Patients remaining in hospital, December 31, 1899	247	249	496
Supported wholly by the city	209	196	405
Supported in part by the city	26	29	55
Supported as private patients ²	12	24	36
Number of different persons	467	419	916
Number of different persons admitted	148	204	352
Number of different persons recovered	19	35	54
Daily average	255.32	247.21	502.53

A consulting staff has been appointed, and, at the Women's Department a training school for nurses has been established, which we hope will result in more interested and intelligent care of the patients.

The trustees believe it is for the good of the patients to be employed, and have co-operated with the superintendent and associate superintendent, who have accomplished much in this direction. Our products from the farm the past year have been over \$16,000, and the work has been largely done by patients.

The situation of the Boston Insane Hospital is the best that could be found for such an institution. It is very accessible. Franklin Field, Franklin Park, and a large tract of land forever reserved from buildings, namely, Forest Hills Cemetery and Mt. Hope Cemetery, partially surround the grounds, and ensure large breathing-spaces and freedom from the noises and discomforts of a closely populated district. These open spaces, with the land already owned and land desired, make an aggregate area of 1,000 acres. The city engineer and a landscape gardener were employed to make plans of the land to determine if it were available for building sites, for exercise grounds for patients and for tillage, and from these plans sketches have been made for the further development of the hospital. These sketches were submitted to a committee of eminent experts in the administration of hospitals for the insane, who visited the institution and inspected the grounds. This committee approved of the location of the hospital and the plans submitted for its development.

The city now owns at Dorchester 132 acres of land, at cost of \$127,000; buildings and furnishings (capacity 500 patients), \$732,900, making a total of \$859,900. Self-preservation demands that the balance of the land in the square, about 150 acres, should be acquired, and with this additional land a metropolitan hospital can be built. The detached plan of building allows the gradual growth of the institution. It enables the trustees to know what is most needed, and

the burden of the cost is distributed through a number of years. While the land may cost more, the cost of the buildings will be practically the same whether built in Boston or in some remote rural district.

Within a radius of ten miles of the State House is a population of 1,000,000; the population of the State is but 2,500,000. Such a district should have a suitable hospital nearer than twenty miles distant.

The estimated capacity for the proposed hospital is 1,500. If it were found unwise to increase the number above 1,000, it is possible to follow the plan of the trustees of the School for Feeble-Minded patients, which has been endorsed by the State Board of Insanity, and establish a colony of trusty working patients on a farm lying on the same line of railroad.

In conclusion the trustees ask your co-operation in their endeavors to secure appropriations for the development of the hospital. In 1898 the needs of the improvements for the South Terminal were considered more important than the needs of the insane. In 1899 the act of Legislature appropriating \$200,000 from the city treasury for the Malden bridge took the money which the trustees had reason to expect would be given for hospital development. A bill will be presented to the Legislature this year for permission to take the land required by right of eminent domain. Plans are being prepared for a new building that will accommodate 200 patients, and these plans with specifications will be presented to the City Council. A yearly appropriation of \$200,000 for the next few years will enable the city to establish a model insane hospital.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Continued from No. 14, p. 357.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."—SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

FOOD AND DRUG INSPECTION.

Preservatives.

DR. ALFRED HILL,²⁵ Medical Officer of Health of Birmingham, in the examination of 2,300 samples of food, found preservatives in 460, or 20 per cent., the substances employed being chiefly boric and salicylic acids and formaldehyde. Boric acid was found in butter, oleo, bacon, sausages, and other animal foods. In butter the quantity varied from seven to 84 grains per pound. He also found it in five per cent. of 1,360 samples of milk, in quantities of three to 130 grains per gallon.

The Society of Medical Officers of Health, after listening to Dr. Hill's paper, adopted the following resolutions: "That the Society strongly disapproves the practice of adding preservative chemicals to milk or other foods. That if preservatives are added to any food, a full disclosure as to their nature and amounts, should be made to the purchaser."

On the other hand, Rideal and Foulerton, in the same journal, present a series of experiments on animals and food substances, with the following conclu-

² All who pay over \$3.50 per week.

²⁵ Public Health, May, 1889, p. 527.

sions: " (1) Boric acid (1-2,000) and formaldehyde (1-50,000), are effective preservatives of milk for twenty-four hours; (2) these quantities have no appreciable effect upon digestion; (3) these quantities have an appreciable effect upon the digestibility of foods preserved by them; (4) formaldehyde, in the proportion given above, so far as our investigations have extended, does not appear to have any injurious action on animal tissues, or on nutrition."

Dr. Nivens,²⁶ Medical Officer of Health of Manchester, in a report on food preservatives, quotes E. L. Fleming as follows: "The total annual amount of borax and boric acid used throughout the world for preserving food is about 6,000 tons, of which the United States uses 2,000 tons. The largest amounts we used in curing meat, ham and bacon."²⁷

Transmission of Typhoid Fever by Oysters.

For a full discussion of the question of the transmission of the infection of typhoid fever by oysters, see a recent article by Dr. Mosny, who was commissioned to make an inquiry as to the condition of the oyster-beds on the French coast,²⁸ of a similar character with that which Dr. Bulstrode had prepared for the Local Government Board of England.

Unwholesome Oysters.

A bill was introduced into Parliament²⁹ (England), in May, 1899, having for its object the following provisions: (1) To provide for the inspection of oyster beds or layings, and for analysis of the water of such places; (2) to prohibit the sale of oysters from unhealthy places, except after they have been deposited for ten days in some other and approved places; (3) to prevent the importation of oysters from unhealthy places.

*The Standard of Pure Milk in England.*³⁰

There is no legal standard of milk in England. Different authorities adopt standards of their own, according to their several opinions upon the subject. A circular letter was recently addressed to different local authorities in the metropolitan districts, asking for information as to the standards employed by their analysts, with the following result: The Society of Public Analysts recommend 8.5 per cent. of non-fatty solids, and three per cent. of fat. The Somerset House Laboratory employs the same. The analysts of thirteen metropolitan districts also employ this same standard of 8.5 per cent. non-fatty solids and three per cent. fat, while thirteen other districts employ a lower standard, namely 8.5 per cent. non-fatty solids, and 2.75 per cent. fat. The compiler of these figures adds: "So long as public analysts act in this fashion, so long will the expression 'analysts differ' appear in the public press, thereby causing not only harm to the individuals immediately concerned, but incalculable injury to the analytical profession generally."

Danger from the Use of Milk.

Some valuable experiments have been made at the Storrs Agricultural Experiment Station of Connecticut,

which are published in the eleventh annual report of that institution. Experiments were made by feeding eight calves with milk from tuberculous cows, and that without infecting the former. The report closed with the following deductions: "We know comparatively little regarding the conditions which favor the spread and development of tuberculosis among animals or man. Most of all are we lacking in a definite knowledge of the dangers of this disease to mankind from the bovine race. Many have claimed that the danger to mankind from the spread of the disease through the milk supply is very great. It has generally been thought that one great cause for the spread of the disease among our herds is the feeding of the milk of tuberculous cows to calves. The experiments during the past two years at this station do not substantiate this view. It must be borne in mind, however, that the number of experiments is comparatively few, and that the cows whose milk was used were probably in the earlier stages of the disease. These facts have been carefully considered, and it is, of course, unwise to attempt to draw any definite conclusions from the work, but the following deductions seem warranted:

(1) Bovine tuberculosis is usually a disease of slow development, its progress depending quite largely upon the general vigor of the animal and its power to resist the action of the germs. In the nearly two years and a half that the tuberculous cows have been at the station, only one secondary case has appeared, and this was discovered about six months after the feeding period with milk had ended.

(2) In the experiments here reported eight calves have been fed upon the milk of tuberculous cows for periods varying from three months to sixteen months without developing the disease.

(3) The results of these experiments coincide with the general results of our own observations, and indicate that the danger from the spread of tuberculosis through the milk of cows to man or to other animals is not so great as has generally been supposed. In the earlier stages of the disease, and at all times when the udder is not affected, the danger from the use of the milk is quite limited. Great stress, however, should be laid on the danger of using milk from cows which show any symptoms of udder affection.

*The Bacteriological Examination of Milk from Tuberculous Animals.*³¹

Thirty-three samples were examined, all from cows which had reacted with the tuberculin test. The chemical examination revealed no striking peculiarities excepting a somewhat abnormal excess of mineral matter. All of the samples were submitted to careful microscopic examination, after centrifugalizing the milk, the method being first tested by examining material known to contain the tubercle bacillus, no difficulty being experienced in recognizing it in the test samples. Out of all the samples from the reacting animals, the writer says, "I have not been able to find the tubercle bacillus in a single sample sent me for examination." Other methods were also tried, an attempt being made to cultivate the bacteria in beef broth, with the same result. Still further methods were adopted, but no tubercle bacillus was found. The total solids in the normal milk ranged from 16

²⁶ British Food Journal, February, 1899.

²⁷ See also Journal of Experimental Medicine, vol. iv, No. 1, p. 47, article by Bliss and Mosny, on the Action of Formaldehyde.

²⁸ Des Maladies Provoquées par l'Ingestion des Mollusques, M. le Dr. Mosny. Revue d'Hygiène, vol. xxi, p. 1,05; vol. xxii, p. 1.

²⁹ Public Health, July, 1899, p. 682.

³⁰ The British Food Journal, December, 1899, p. 355.

³¹ Journal of the British Farmers' Dairy Association, quoted in the British Food Journal, November, 1899, p. 331.

per cent. to 12.01 per cent., and the mineral matter from .86 per cent. to .66 per cent.

Dr. Anningson³² makes the following practical suggestions in regard to the best methods of securing the purity of the milk supply:

(1) Eradicate tuberculosis from stock by "breeding it out" as recommended by Professor Bang, namely: (a) Testing all breeding stock with tuberculin; (b) separating the diseased from the healthy; (c) placing the healthy in a clean, healthy, well ventilated and lighted shed; (d) placing the diseased in a disinfected, clean and well-ventilated, lighted shed; (e) branding all reacting animals on the horn or hoof so that they can be readily identified and continuously isolated; (f) keeping separate utensils for their use and even separate attendants; (g) slaughtering at once all those that show signs of advanced disease; (h) fattening and slaughtering of, as soon as possible, all those that show disease of the udder or advanced tuberculosis, and on no account allow the milk to be consumed; (i) removal of all calves born of tuberculous cows away from their parents as soon as born, hindrance to their sucking their dams, and rearing them on healthy cows' milk or sterilized milk; (j) isolation and testing all fresh cows before allowing them to mix with the others; (k) testing the calf as soon as possible, say at one or two months old, with tuberculin; (l) retesting the healthy stock twice during the year, to be sure they are remaining healthy.

(2) Protection of milk supply by (a) compulsory testing of all milch cows used for providing milk for sale; branding all reacting cows; (b) experts to test the milk from reacting cows both microscopically and by feeding guinea-pigs, and when found to be virulent, condemn the cow for milking purposes and mark her with a special brand; (c) sterilization of milk obtained from reacting animals before retailing it to the public, and heating the cream to 85° F. before churning it into butter; (d) prohibition of the use of the milk of cows with diseased udders for food; (e) periodical examination of the cows and sheds by veterinary experts; (f) compulsory notification of any disease of the udders of milch cows and inspection of the same by veterinary inspector; (g) exclusion of persons in an infectious state (including phthisical persons) from all kinds of dairy employment.

Is Sorrel a Poison?

Eichhart³³ reports the case of a boy of twelve, who was taken violently ill after eating sorrel. He had acute hemorrhagic nephritis, with coma, convulsions and death. Oxalate crystals were not found in the urine or in the kidneys. Lewin³⁴ regards this case simply as a *post hoc*, and not one in which there was special proof of poisonous action, since the urine on the ninth day contained a quantity of albumin, and grave symptoms of renal obstruction were present. He does not think the poison could change the structure of the kidneys so rapidly, and hence argues for the innocuousness of the sorrel.

The Detection of Corn Starch in Wheat Flour.

Baumann³⁵ proposes the following method for the detection of corn-starch in wheat flour, the method being dependent upon the rate of swelling of the starch grains under the following treatment: A sample of the suspected flour is placed in a glass with 10 cubic centimetres of a 1.8-per-cent. solution of potash. This is shaken up for two minutes to prevent the starch from settling. The time (two minutes) and the exact amount of potash solution should be carefully

noted. Then four or five drops of hydrochloric acid, 25 per cent., is added and shaken vigorously. The reaction should be alkaline. A drop is then placed under the microscope. The wheat starch appears wholly swollen and the corn starch not affected. Quantities as small as one or two per cent. are easily detected.

By comparing samples with mixtures of known quantities, a fair quantitative analysis may thus be made. A similar proceeding can be conducted with rye meal.

*Supervision of Ice-Cream Manufacture.*³⁶

The British Parliament passed the following act at a recent session:

32. (1) Any person being a manufacturer of or merchant or dealer in ice-creams or other similar commodity who, within the city (Liverpool), (a) causes or permits ice-creams or any similar commodity to be manufactured, sold or stored in any cellar or room in which there is an inlet or opening to the drain; or (b) in the manufacture, sale or storage of any such commodity does any act or thing likely to expose such commodity to infection or contamination, or omits to take any proper precaution for the due protection of such commodity from infection or contamination; or (c) omits on the outbreak of any infectious or contagious diseases amongst the persons employed in his business to give notice thereof to the medical officer of health for the city, — shall be liable for every such offence on summary conviction to a penalty not exceeding forty shillings.

The Typhoid Bacillus in Milk and Butter.

Experiments conducted by Bolling and Field³⁷ showed that the typhoid bacillus does not multiply in butter when the latter is free from buttermilk. The presence of the bacillus in the butter can be demonstrated for ten days. When placed in milk the bacilli were not destroyed by other bacteria already present, and could be demonstrated in the milk for three or four months.

The Tubercle Bacillus in Oleomargarine and Butter.

Morgenroth³⁸ states that "genuine tubercle bacilli are found in margarine and not infrequently. Hence this food should be subjected to careful inspection before it is offered for sale." Rabinowitsch³⁹ presents further observations showing the presence of tubercle bacilli in market butter in Berlin. Two samples out of 15 collected contained living virulent tubercle bacilli.⁴⁰ Obermuller⁴¹ found tubercle bacilli in specimens of German butter.

WATER SUPPLY AND SEWERAGE.

Filtration of Surface Water in German Cities.

Pannwitz⁴² contributes a paper upon this subject in which he refers to certain rules which had been laid down by Koch and Piefke. They proposed a rate of filtration limited to 100 cubic decimetres per hour, per

³² Notes on Guarantees of the Purity of the Milk Supply, by Bushnell Anningson, M.D. Journal of the Sanitary Institute, xx, 4, January, 1900, p. 555.

³³ Deutsche med. Woch., 1899, 28.

³⁴ *Loc. cit.*, 30.

³⁵ Zeitschrift Untersuch. d. Nahr. u. Genussmittel, 1899, p. 27.

³⁶ Parliamentary Powers of the Sanitary Supervision and Control of Ice-Cream Manufacture, by E. P. Manby, M.D., Liverpool. Journal of Sanitary Institute, January, 1900, p. 582.

³⁷ Centralblatt f. Bakt. ii, 4, 24, p. 881.

³⁸ Hyg. Rundschau, May 15, 1899, p. 481.

³⁹ Deutsche med. Woch. No. 1, 1899.

⁴⁰ Hyg. Rundschau, viii, 22, 1898; ix, 2, 1899.

⁴¹ See also Rev. d'Hygiène, pp. 78, 575, 1898, and Zeitschrift f. Hygiene, 31, p. 137, 1899.

⁴² Arbeiten a. d. kaiserlich. Gesundheitsamtes, 14, p. 153.

square metre. The depth of the sand should not be less than 30 centimetres, and special attention should be given to cleansing of the sand. The first effluent of a recently cleansed basin should be rejected, and not used for drinking.

Bacteriological examinations should be conducted daily. When the water of a filter contains more than 100 bacteria per cubic centimetre it should be rejected as drinking water. A description of the filtration plants of twenty-six German cities is presented, with the essential statistics of each. A series of diagrams is also given, in which the results obtained in each place may be compared with those of others.

Treatment of the Crude Sewage of London.

Cloues and Houston⁴³ reported to the London County Council the following conclusions: "The above considerations show that neither on chemie nor possibly on bacteriologic grounds can any serious objections be raised to the introduction of the effluents from the coke beds into a portion of the River Thames, which is cut off by locks from the intakes of the water companies, and the water from which is not employed for drinking purposes and cannot be used for drinking on account of its 'brackish' nature.

"The effluents certainly will not cause any deposit upon the river bed, and will even tend to render the turbid water of the lower river more clear and transparent. At the same time the liquid discharged from the outfall into the river will be sweet and entirely free from smell. Further, it will carry into the river the bacteria necessary for completing its own purification in contact with the aerated river water, and under no conditions can it therefore become foul after it has mingled with the stream. The effluent will in no way interfere with fish-life in the stream."

Bacteriological Examination of Chicago Sewage.

Dr. Gehrman⁴⁴ director of the Municipal Laboratory of Chicago, reviews the results of Klein's examinations of London sewage, including his discovery of the bacillus enteritidis sporogenes, and sought for its presence in the sewage of Chicago. He examined 42 specimens of sewage, also 130 samples of the city water supply and some samples of milk to which river water had been added. From these examinations he concludes "that bacteria of the species described by Klein, or very similar to them, are practically always present in the sewage of Chicago."

He states further, that "it would not appear that search for Klein's bacillus is of great value in determining sewage pollution — at least, not from the Chicago water supply. The results have practically all been negative. This has been true even during a recent period of pollution when bacillus coli communis was abundantly demonstrated.

Effect of Sewage Pollution upon the River Simmat, Switzerland.

Ascher⁴⁵ presents the results of a series of observations made at Arc and at Wettigen, two points on the river Simmat, below Zurich. Samples of water were taken simultaneously at these two points. As a result of these observations the author concludes, with

⁴³ Bacterial Treatment of Crude Sewage and Experimental Treatment of London Crude Sewage in the Coke Beds at Crossness, London, 1899.

⁴⁴ Monthly Bulletin of Chicago Health Department, July, 1899.

⁴⁵ Zeits. f. Hyg. u. Infect. Krankh., xxxiii, 1, p. 33, 1899.

Schlatter, that the so-called bacterial self-purifying process was due mainly to the action of sedimentation.

Provision for Storm Water in Sewage Purification Works.

Engineer Martin⁴⁷ reaches the following conclusions:

(1) That no definite rule as to the proportion of storm water to be dealt with can be applicable in all cases.

(2) That the first scourings of the sewers and surfaces around should pass into the ordinary works before any overflow is allowed to take place.

(3) That the works provided for dealing with storm water should always be ready to receive it at any hour of the day or night.

(4) That reasonable provision may be made for dealing with storm water without adding unduly to the cost of the works.

(To be continued.)

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, January 22, 1900, Dr. E. H. BRADFORD in the chair.

DR. P. C. KNAPP read a paper on

THE PROBLEM OF BOSTON'S INSANE.¹

DR. H. C. BALDWIN gave a report of the

WORK OF THE TRUSTEES OF THE BOSTON INSANE HOSPITAL, AND THEIR PLANS FOR ITS FUTURE DEVELOPMENT.²

DR. HOWARD: I came in rather late. What I have to say, if I have anything, I prefer to say after hearing some of the others who know more about the institution. I have visited Austin and Pierce Farms a great many times. I thoroughly believe in the institution, thoroughly believe they ought to have this land they ask for.

DR. CHANNING: I think the city ought to be congratulated upon having some trustees who are willing to take hold of such an institution as this and try to put it on its feet. I am sure all the members of this Society will endorse these plans that have been presented by Dr. Baldwin. I think that there is no doubt that the Boston Hospital for the Insane should take care of all its city cases. This is the practice in other places, particularly in New York. They have, as you know, now in New York all the insane of the whole State under State care, which was formerly not the case. Within two or three years the insane in the hospitals of Brooklyn and New York have been combined together in one institution, which is called the Manhattan Hospital, and in their last report, which I got only a day or two ago, they had 6,544 cases. They are rather behindhand in some things in the New York public institutions, and among others is in this department of the insane, and the report is two years old. I have no doubt by this time there may be 7,000 altogether in the Manhattan Hospital, and

¹ See page 377 of the Journal.

² See page 379 of the Journal.

⁴⁷ The Provision for Storm Water in Sewage Purification Works, by A. L. Martin, C.E. Journal Sanitary Institute, January, 1900, p. 624

the same questions that have come up here have come up there, and the same arguments are good in both cases. In this report, for instance, especial mention is made of the difficulty formerly of visiting patients who were at a distance, and of the great convenience it is now to have the patients where their friends can easily reach them, but the city is so large that they wish to extend the buildings still more, so that it may be more easy for the friends to get to the hospital.

Another point which has not been dwelt on to-night, but is an important one, is getting patients easily to the hospital. That is one special reason why Boston should take care of as many local cases as she can, and in New York they are trying to have the cases brought directly from their homes instead of going by the way of the pavilion at the Bellevue Hospital.

Their idea is to have an ambulance to bring patients, unless there is some special reason because of their violence, to the hospital from their homes. As the members of the Society know, several of us have advocated having some reception house or some sort of small hospital in the centre of the city, so that cases of insanity should be sent immediately to it instead of going to the police stations and being held there two or three days; and if it is possible with the extension of this new hospital to take cases immediately, and have it large enough to take cases temporarily that may later go to State hospitals, in that way it can help to serve the public and be doing even more good than it would otherwise. I trust this Society will appoint a committee, if necessary, to back up the trustees in what they are trying to do, and I hope it will as a whole recommend that all of the city insane shall be taken care of in the city hospital as soon as it is expedient.

DR. PRINCE: I did not come to say anything, but to listen, but as you have called on me I will say a word or two. I think that all of us who have any familiarity with the history of this insane hospital would corroborate a very large part of what the readers have said regarding it. I think it is perfectly true, as Dr. Knapp has said, that the whole history of the policy of the city of Boston in the conduct of this hospital shows it to have been one without any adequate conception of the needs or wants of a hospital of this kind. There never has been up to the present time any comprehensive plan. This in the past was not, I wish to say, because of any lack of any really honest interest in the hospital,—I refer to the old days when hospitals were under the care of commissioners of public institutions,—but because of the training of the men responsible for its management; they did not comprehend the problems with which they had to deal. I remember being taken through the hospital by the chairman of the commission, and having the hospital pointed out to me with great pride as a model of everything a hospital could be. I shall never forget how really interested he was, what a splendid hospital he thought he had, and I do not believe there was ever a man more surprised than he when he found that we who were inspecting the institution did not take the same view he did. I do wish to say he was enthusiastic, and I think he gave his best endeavors to the city, but he did not have, nor did any of the commissioners at the time have, any true conception of the problem of taking care of the insane.

This question of whether or not Boston should take care of all its insane is not a new question. It has been agitated a long time. It was advocated at the time to which I have just referred with a great deal of earnestness by the then commission, especially by its chairman, who urged over and over again that the city should take care of its insane, and he based his argument on two grounds: (1) That the city could take care of the insane at a considerably reduced cost over what the State charged, and (2) also for the reason Dr. Knapp has advanced to-night, that it was a distinct hardship to the citizens of Boston who had relatives or friends in other asylums of the State to have to go so far and pay so much money. He urged it with a great deal of enthusiasm, but at that time I regret to say that his idea of taking care of the insane was limited principally to dollars and cents, to feeding and lodging, and that could be done in the way it was done cheaper than the State could do it. Those of us who looked into this question at that time felt when we came to make our recommendations to the Mayor that whatever might be the merits of the case, we did not think the city gave that care to the insane as compared with other institutions that warranted us in advising that the rest of the insane should be placed under the care of the city. Now, however, under the good government of the present superintendent and trustees, it seems we have a different order of affairs, and the question has arisen whether the time has come for us to recommend the enlargement of the hospital.

I do wish to say that I think there is another side of the question which should be carefully considered, because it is not entirely a question of the care of the insane. I think we all feel, or ought to feel, the greatest sympathy and interest for the welfare of the insane. I say "ought," for I regret to say there is a decided apathy on the part of the public in regard to the care of these unfortunates. Large numbers of good people shrink from the subject and it is only a few that really will interest themselves in the question. Now what I was saying is that, however much we who know about it feel that everything humanity dictates should be done, there is another side of the question: we ought to consider the burden of those who have to pay the expenses. I think that must be considered if we are practical men. The city pays one-third of the cost of construction of every insane hospital in the State. Now on the face of it, unless it is absolutely necessary, it does seem rather hard that the taxpayers should be called upon not only to pay one-third of the cost of the construction of all the insane hospitals of the State, but to build another hospital at its own expense for the sake of its own insane. It may be necessary, but it does seem a hardship, and before we undertake that tremendous burden we ought to consider it pretty carefully. To build a hospital for 1,000 patients would mean at least \$1,000,000, so that it is a pretty big undertaking.

Now, equity and good business management require that inasmuch as Boston has paid, and in future will continue to pay, one-third of the cost of construction of the hospitals for the care of the State's insane, it is only right and proper that either the State should pay its proportional cost of the construction of Boston's hospital, or should refund to the taxpayers of Boston the amount which they have contributed in the past to the State for the construction of hospitals, and

further, that Boston, if it takes care of all of its own insane, should be relieved of paying any part of the cost of future State hospitals. Can any one, though, be so optimistic as to believe that there is any likelihood whatever of the State reimbursing the city of Boston in this way? There is not the slightest likelihood of any such legislation being passed. This being the case, the expenditure of \$1,000,000 by the city of Boston for the enlargement of its hospital cannot be justified unless it can be shown that the hardships of the present system are so severe as to call for this financial sacrifice on the part of the taxpayers. I do not say that this financial question should necessarily forbid the city undertaking this great expense, but it should not be undertaken unless it is shown absolutely necessary on humanitarian grounds. Now, while I think it is desirable that the Boston Insane Hospital should be near the city, I think it is doubtful whether it is necessary that all the city's insane should be cared for by the city for the purpose of having them near their friends, as there is quite a large minority of patients who have no friends, or at least friends who would visit them, and, therefore, who might very properly be taken care of at a distance from the city by the State. Some time ago we tried to obtain some statistical information on this matter, and obtained from the different hospitals of the State and from the City Insane Hospital statistics giving the number of visits made to the Boston patients during the course of a year by their friends. The information obtained was, it is true, not quite satisfactory, but there was sufficient evidence to show that there is a large minority of patients in all the hospitals, including the Boston hospital, who are never visited, or so rarely that their being far removed from the city cannot be a hardship. So that, under any considerations, there does not seem to be any necessity that the hospital should be so large that all the insane in the city should be housed.

Looking at the question, then, from these practical points of view, I do not believe that the taxpayers of Boston should be asked to pay for the construction of its own hospital, without some equitable adjustment between the city and the State of the financial cost. Furthermore, another and serious objection to the city's undertaking this expense at present is that the plan now under consideration, of having the State take care of all the insane of the State, including those of Boston, is likely to be carried through. This unquestionably is the most desirable plan, and one that has been advocated by many of the medical societies. If this plan should be carried out, the State undoubtedly would locate a large hospital in the neighborhood of Boston, in accordance with the plan which has been so often suggested. How then could we recommend that the City Government shall appropriate this large sum of money with the expectation, or possibility at least, that the State will take over the hospital after construction, and without any guarantee beforehand that the city shall be reimbursed for its outlay? To do this would not be good business management, and I think no city government would be justified in such a course of action. There are distinct advantages in having all the insane of the State brought under one central State management.

Undoubtedly, with our present Board of Trustees, the advantages would not be so great at the present time, but no one can tell how long we shall have as

efficient a Board as at present, and if the Board should deteriorate it is plain that it would be a distinct advantage to have the city hospital under the control of the State Board, so that the same methods would be applied in this hospital as in all the other hospitals of the State. This would solve the financial problem. There is, as I have said, no reason why the State should not take the present Boston hospital and enlarge it sufficiently, provided sufficient land can be obtained, to care for the greater part of Boston's insane. In this way all the advantages of having a local hospital would be given under State management.

I think this question should be looked at in all its details; looked at from the point of view of the taxpayer as well as from the point of view of the patients, their friends, and the physicians. Finally, speaking for myself, I should not be willing to advise the city of Boston to provide for all its own insane, and at the same time pay one-third of the construction of all the insane hospitals of the State, including those to be built in future.

DR. BALDWIN: I should like to say that the Board of Trustees are anxious for State care, and so far as I know, there is not only no opposition on the part of the city officials, but a unanimity of opinion in favor of State care.

DR. LANE: I did not come prepared to make any special remarks. I would like to say one thing. Perhaps the most frequent criticism of this hospital has been its per-capita cost. I agree with the speakers that the cost is a very vital thing, because in a large hospital like this wise management is very necessary, and we should never become careless of the expense, and it is very easy indeed in managing a large institution like this to waste a good many thousand dollars through carelessness, but our per-capita must, I think, always be high with 500 patients, and it is higher than the State hospitals with 700 to 1,000 patients, with a building all under one roof and one central administration of all. Our per-capita cost will vary from \$4.30 to \$4.70 the last few years, and I am frank to tell you all that we do not give for our \$4.60 quite as much as we get out of the State for \$3.25. Our Boston finances cannot be compared with those of State hospitals, as the system of accounts is so different. In our Boston hospital we have only one appropriation. From that it is our duty to spend as wisely as we can and get what we can. It has always been the custom in the city to make little repairs out of the current expenses. Perhaps there is damage done by a storm. These expenses have always been paid out of our appropriation. We are not given, as the State is given, so much money for every patient we have in the house, but we are given about so much money and have that money to expend, and that always includes items amounting to twenty to twenty-five or thirty cents per capita, which in all our reports is charged to current expenses, which is not included in other hospitals. The New York hospitals have twelve items scheduled. I find almost all of those items larger than in our hospital, yet at the end of the year our total per-capita expense may be little above theirs. Fuel must always be higher with us. We have to haul all our coal from the shore, and it costs our hospital nearly a dollar a ton more than the hospitals in the interior of the State. Again, we have two plants a little apart, two kitchens, two boiler-rooms, and that means a

good deal more. I have felt this a long time, and I think the members of the Society should appreciate that fact, that with our two plants our total per-capita will be more, but if the State Board of Insanity should request a uniform financial report it could be shown that in all items except fuel we would not be much above the State hospitals. I believe our present per-capita is lower, however, than it will be in the future, as I believe the standard of living in Massachusetts hospitals will be raised.

DR. NOYES: I don't think I have anything to add to what Dr. Lane has said from the point of view of the internal administration of the hospital. He has been there so much longer than I, and is so much more familiar with the details of it, he is able to present it to you very clearly. So far as Dr. Prince's criticisms go, we are all looking forward anxiously to the time when we can be under the general control of the State, and feel we shall have no permanent peace or satisfactory hope of development until we have that guarantee for the future primarily regarding the quality of the trustees that are to be appointed. The State hospitals have a very high degree of efficiency in their trustees, and if we hope to have that continued in our own hospital I think we must look forward to the fact of being under the stable government of the State.

DR. STEDMAN: I think that the progress which the hospital has made in the last two years of the new régime is remarkable and promises very well for the success of their ambitions for the future. The problem whether it is best to undertake to care for 1,600 patients under advanced methods in the city confines and on 300 acres of land, with all the industries for the chronic class that will be in vogue and are already being adopted elsewhere, is a question which I have not thought over enough to talk satisfactorily about.

DR. BULLARD: It seems to me we should go very slowly in this matter. There are a number of details which should be thoroughly considered and discussed before I certainly should be willing to adopt the views advocated to-day. It seems to me, for one thing, that while the State affords better accommodation at a lower price, and takes better care of its patients, it certainly would be rather unwise to place the patients under a less favorable and more costly administration. If State care is to come, as I hope it may, it seems to me these problems may well be left to the State. The State Board of Insanity have already presented their opinion in favor of State care to the Legislature and it seems to me that any questions of extension such as this proposed should be very thoroughly discussed and considered, and if State care is to come they should be left to the State authorities.

DR. BALDWIN: One point has been brought up in the discussion, namely, per-capita cost. It has sometimes seemed to me that people consider more the question of the per-capita cost than they do the per cent. of cures possible among the insane. The burden of caring for the chronic insane is a very great one, and, of course, the insane of this class should be cared for as cheaply as is possible. In acute cases it has always seemed to me that the question of money should not play so large a part. The average duration of life of a chronic insane person is from twenty to thirty years, and this means an expense of from \$3,000 to \$4,000 for each person who becomes a chronic case. It seems, therefore, important that

everything that would tend to restore mental health and prevent a possible wage-earner from becoming a pauper should be done, even if the per-capita cost were more. I cannot agree with Dr. Bullard in all that he said.

DR. KNAPP: I did not bring in the question of State care at all, because that is entirely foreign to this discussion. The State Board have made their report recommending State care, which our Board of Trustees regard as a very desirable thing, but with the adoption of State care and if the State should take this hospital, there still remains, as I believe, the vital necessity to develop it into a large metropolitan hospital. This necessity is, indeed, still more imperative than if the hospital remained a city institution, because within a radius of twenty miles of the State House is approximately one-half the population of the State. Within a radius of eight miles of the State House there are about 450 insane beside the insane of the city of Boston, in a population of about 1,000,000, making something over 2,000 insane in that radius, and, although within twenty miles there are probably one-half the insane, there is no State hospital in that area. The policy of the State in the past has been to go into the country and buy a piece of land cheap, in the middle of a big plain or on top of a hill, and then to build a hospital at an additional expense for transportation of material and drainage, away from fire departments and from good water supply, and usually at some little place where the train stops every other week, and where you either have to walk three or four miles or hire a private carriage to get from this little station up to the hospital. Thus the State has paid absolutely no regard to the cost of sending patients to the hospital, the cost for the trustees and inspectors to go to the hospital, the cost to the friends visiting the hospital, and the cost of getting the patients away. If State care be instituted there should be a large metropolitan hospital within the city of Boston or close to it, so that it would accommodate a very considerable number of the insane within the ten-mile district. Whether State care be adopted or not, we believe this hospital should be developed. Whether that hospital should be large enough for the whole 2,000 patients or whether it could be made smaller is a question. There are patients who have no friends or whose friends do not come to see them. These can go without hardship to the hospitals somewhere in the country, but there are a large number of patients whose friends do care to come and see them, and it is unjust and a great hardship for the friends to be compelled to pay this additional sum of money simply for the reason that the first cost of the land is a little bit cheaper than to build the hospital in some accessible region.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.¹

J. W. COURENEY, M.D., SECRETARY.

REGULAR meeting, Thursday, December 21, 1899, Dr. R. T. EDDES in the chair.

DR. ARTHUR C. JELLY read a paper on

FOLIE À DEUX.¹

DR. BLUMER: I have under my care at the Butler Hospital a very interesting and remarkable case of

¹ See page 369 of the Journal.

folie à deux in two Irishwomen, mother and daughter, formerly well-to-do, who under the influence of their delusions, have made several trips to Europe and thus impoverished themselves, insomuch that now they are a charge upon the State of Rhode Island. The mother completely dominates the daughter, and the daughter constantly refers to the mother and her opinion in support of her own delusions, and their hallucinations of sight and hearing are almost identical. I was reminded of the case especially when Dr. Jelly spoke of the patient in whose case the ravens played so large a part. In this instance sparrows appear, and their appearance has a significance which is identical in the case of both mother and daughter. These patients, when I first came to Butler Hospital, were in the same ward, were constantly together, and acting and reacting upon each other. They have since been separated, very much to the improvement of their condition.

One fact has struck me in looking over the literature of the subject of communicated insanity, and I am confirmed in the opinion by what the essayist has told us this evening, namely, that these cases occur very largely in this country and in Great Britain among the Irish. My own patients are Irish, and the cases reported in the *Journal of Mental Science* have been inmates of Irish asylums as a rule.

DR. DENISON: I have been quite interested in the paper, and I have recently reported a case at the Connecticut Hospital of Insane, of paranoia, which is quite interesting — a German woman about forty-five years of age. There is no heredity ascertainable, but her parents were not married, lived together without any marriage and whether that indicated any moral degeneracy or was due to circumstances, I cannot ascertain. She came to this country fifteen years ago, and about two and a half years ago became insane, with well marked delusions of persecution, and very soon her husband, about whom we knew little, became infected by precisely the same delusions. Her delusion practically is this: that certain doctors whom she had consulted, never for children, having always employed a midwife and labors always normal, came to the house about midnight or a little thereafter, and gave chloroform and performed some kind of operation on the uterus: as she expressed it, "they moved it round or turned it over," to prevent having any more children. About a year after these delusions, she had a delusion one morning that she felt a sudden bearing-down pain. Soon after that, emptying the bladder, she thought it was clear blood, and she summoned a physician and he stated he could not come that night, would come the next day. About one o'clock this physician, whom she never employed before, came to the house. She could not see him, but heard his voice, felt his hands pressing midway between the axilla and ilium, and he performed some kind of operation on her. She finally, with her husband, visited New York, consulted a well-known specialist there, and he saw at once that they were both insane, advised them to go home, and this woman was taken to the almshouse. Very little is known about the husband, but the probability is that he is a weak man and accepted his delusions through the superior strength of his wife's will, and there is some reason to think that he may recover. When the woman came to an examination, she was very willing to talk, as those cases usually are, and produced various records and notes which she had written, some of

which she refused to show even, some of which she allowed me to read, one of which contained a list of the various changes of residence in the last year and a half, six or eight changes, part of the time because she had been troublesome, and part of the time because her husband. While visiting in New York the husband broke out and said they ought to have protection, and the State of Connecticut ought to furnish means for prosecuting her enemies. She shows thus far no evidence of improvement. We do not expect it.

DR. PAGE: There is another very interesting case at the Connecticut Hospital that might be reported in full perhaps, but I can only give a few of the details at this time. Nearly a year ago, a young man and his mother were brought to the hospital at the same time, and both, of course, were insane. As I recall the case, the young man had managed a farm for some time. They had had a good deal of bad luck. Some of the cattle had died. He thought the milch cows dried up too quickly in the season. He was very suspicious of the people about him, different ones, and there happened to be an adopted daughter in the family, a girl we have never seen, but who, judging from the reports, must be weak-minded, — I think she is epileptic, — and as I recall it she had a sort of trance and would give them information when she was in that state about the cause for their trouble, and the young man and his mother believed what the girl told them, and in this way they had some very peculiar and strange ideas, which were very interesting. At length the young man became so much annoyed that one day, when a neighbor whom he believed to be his leading enemy was driving by the house, he ran out with a shotgun and discharged it at him. Fortunately he did not kill the man, but the mother justified the son, and said that he was justified in shooting the man, and accepted all the delusions that the son gave expression to. The mother was never troublesome at the institution. She was trusted very soon after she came there to go about more or less, worked very well and has now been removed, gone home to her sister's. The son will have to remain probably because of his shooting incident, which will necessitate his being kept there. He says now that he made a mistake in trying to kill this man; at the same time he believes that the man was an enemy of his, and has always said that his mother was not insane and ought not to stay in the hospital, and several times appealed to me to have her discharged. The town authorities were not willing to allow her to go back to the home where she had lived, and finally, within ten days, consented to her discharge, provided she would go with her sister, who lives in another town, and she went away with that sister and is probably with her now.

DR. HARRINGTON: One of the cases that might be referred to in this connection is the celebrated case of Freeman, who killed his child. He influenced his wife and brought her over to his beliefs. While we have his case on quite full record at the Danvers Hospital, and while there are references to this influence which he had over his wife, yet the part which his wife figured in it is not reported very definitely, but still it is a matter of somewhat common knowledge with those who knew Mr. Freeman's case at the hospital, about the degree to which he did influence his wife. He had various delusions and hallucinations, believed that he heard the voice of God commanding him to do vari-

ous things, and that he heard the voice of God giving him certain tasks to perform as a test, and he and his wife talked these matters all over among themselves, and she was a party to his beliefs. When it came to the final act, the killing of his child, she evidently was wholly in sympathy with his belief. He heard the voice of God, or at least by some means the command came to him, that he was to be put to this test, and he went to the child with this knife, and held it over the child, and his wife stayed by his side and the deed was finally done. That is certainly a very marked instance of this sort of case we are discussing. We have, I think, on record that his wife recovered shortly after, within I think something like a month after he was arrested, and Mr. Freeman finally apparently made a complete recovery himself, and was discharged from the hospital at the end of three years.

DR. PAGE: A physician interested in the case at the time he was at Danvers informed me within two years that he had kept track of him and that he had remained perfectly well.

DR. BULLARD: I saw the woman of this T. family of whom Dr. Jelly writes. She gave me a very full history of her troubles and told me about her husband and how he agreed with her thoroughly. I was rather inclined to suppose at that time that she was the stronger character and that she influenced him. He seems to have been a somewhat weak man, and her very definite views and hallucinations had impressed themselves so upon him as to affect him in the way described. I should think that view would be rather substantiated by the fact that the man recovered earlier than the woman.

DR. ABBOTT: There was a rather interesting case under my observation two months ago of a German husband and wife. The husband was rather a neurotic individual, who was also dyspeptic, and he kept having pain after eating certain things. He had the notion, possibly as a result of his dyspepsia, that his food was poisoned, and finally this idea became so strong that he thought he could see the poison in the food he ate. As near as I could elicit from the family and from the patients themselves his wife at first used to say to him: "If you talk like that you will be shut up in an asylum." After a while she too began to believe that there was poison in the food, and finally that she could see it. They kept a little grocery store in one place and they thought many of the groceries they had were poisoned and refused to sell some of them for this reason; many of the things they would not eat. They moved from place to place under the idea that they were persecuted in different ways and that they could both of them detect the individuals who were trying to follow them up. Brought to the hospital, they were separated and not allowed to see one another. For many weeks both maintained with undiminished strength the delusions that the food had been poisoned, that they saw it, that on opening cans of fruit they could see the poison in it, and that the neighbors were trying to poison them and interfere with them. Neither of them had these delusions about the hospital food, but ate it readily, nor were they suspicious of those about them in any way. But both separately maintained these same delusions just as strongly as in the beginning, even after a great many weeks. This is a case of properly so-called *folie à deux*.

Some of the cases reported by Dr. Jelly seem to me

coincidences rather than true instances of *folie à deux*, or communicated insanity. That is, it is not uncommon for different members of the same family to have some mental disease, as melancholia or dementia precox; it is mere coincidence if they have their attacks simultaneously, and some copying of the delusions of one by the other would not warrant us in calling them an instance of *folie à deux*. The complete adoption by a person of otherwise sound mind of the delusions of another person not of sound mind seems to me the criterion for the diagnosis of *folie à deux*. In view of our ignorance of the pathology of the psychoses, the recovery of one of the patients need not invalidate the diagnosis; but it only tends to confusion and indefiniteness of conception to class mere coincidences under this head, and we should be careful not to err in this direction.

DR. LANE: I am interested in this account of these cases. It is rather surprising to me that there seems to be so few of them, because, with our experience that the weaker members of the family believe delusions, it would seem *a priori* there must be many more cases where the weaker members of the family do actually believe the patient's delusions. I do not know that I can recall any more cases. Some of these cases we had at our hospital. I saw the two sisters, the first case reported by the reader, in the morning and advised to have Dr. Jelly see them that afternoon, and they both came to our hospital. The first was melancholy at that time, and the second suffered considerable melancholia and recovered. The younger, a much stronger person mentally, much more decided in her views, with a mind of her own, has apparently degenerated into a chronic delusional state.

Dr. Brackett, who is familiar with the Freeman case, calls my attention to it. Not only was Mrs. Freeman impressed with his views, but quite a little coterie in the same society whom he had impressed his views upon assembled in secret several nights. He believed that the Lord would intervene and not allow the sacrifice to be made, a repetition of the Old Testament history, or if the child was killed it would be resurrected in three days. He not only impressed his wife with that view, but several of the neighbors.

Illustrating the case of delusions being copied, I think it is quite rare. We have seen recently a paranoiac who believes he is God and amuses himself creating worlds, drawing circles on paper, and has so impressed a muscular Christian that he is willing to fight any one who does not believe him. He has taken up the idea that this man is God, and is quite aggressive on the subject.

DR. KNAPP: I confess that I am very skeptical in regard to *folie à deux*. I doubt whether many, if any, of the reported cases can stand the test of close analysis. I think Dr. Jelly has brought out pretty clearly some of the tests which should be applied in order to admit a case into the category of *folie à deux*. Thus, for example, I think that cases of general paralysis occurring in husband and wife, where there is the probability of syphilitic infection in the two cases, should be excluded from such category. Meyer has recently reported the case of a man who was brought in contact with an alcoholic who had the polynuclear psychosis, and developed similar symptoms, but the first case was himself an alcoholic, and, as we know, the clinical picture of the psychosis of alcoholic neuritis is very characteristic and very much the same. So,

too, in various members of one family who are exposed either to the same toxic influence or who are exposed to the same environment it is not surprising, especially if the family be of unstable equilibrium, that several members should succumb. What to me is surprising, when we look at the community at large, is to see how one person, promulgating the most peculiar and extravagant notions, notions which are utterly foolish, can obtain a very large and enthusiastic following, and yet, on the whole, how comparatively seldom it is that a person recognized as insane does influence the people in his or her environment. It would naturally be expected that the weaker and more ignorant people of the insane person's environment would come under the influence of his delusions, and yet it seems to be quite rare.

I recall one instance, a young man now in the Boston Insane Hospital, a Russian Jew, who came to me some years ago at my office complaining of persecution. His story was that he had wished to marry a girl, but her family had objected and wished him to marry the older sister. He did not wish to marry the older sister and wanted to marry the younger, but they gave him a love philter to excite his affection for the older daughter, and it had had a very strange and mysterious effect on him. From that he developed a chain of delusions, many of them of a sexual nature. He felt that it would be a great advantage to him if he could have sexual intercourse, yet, when he attempted it, for some reason or other it proved a failure, and there were various people talking about him, and mocking him and making fun of him. He wished to retire from his family and write a book which was going to revolutionize the world. Finally his delusions began to turn towards his sisters, that his sisters were making improper solicitations and wished him to sleep with them. After some little time his sisters themselves came to see me. One of them came under my care herself. She was a typical neurasthenic, but I found on questioning her that she did not regard her brother's ideas as anything particularly strange, that she thought a love philter was something which could be obtained. Of course she said she did not wish to have her brother come and sleep with her, but yet she did not think it was anything derogatory to her to have him say she wished it. This shows how ignorant, weak people may sometimes be influenced by ideas which others are promulgating incessantly.

Another point which the question of *folie à deux* brings up is a little bit curious. If the teachings of Bernheim and others as to suggestion are as true and as important as they say, why is it that the weak-minded and hysterical are so little susceptible to the suggestion of insane people, with delusions and strange ideas, with whom they come in contact? If suggestion were anywhere near so strong a factor as is represented, I think we ought to see a very much greater number of these cases of communicated, induced insanity.

DR. WORCESTER: Several years ago a young Jew, at least a man of Jewish birth, who had renounced Judaism as a religion, was received into the Danvers Asylum. He had the idea that he received direct inspirations and revelations from the Almighty, which led him to various peculiar acts, for which he was brought to the hospital, and he was visited by a dentist, as I understand, in quite good practice in Bos-

ton, who assured us that he believed that this man was all that he claimed to be, and told us that there was a sort of society that held similar views, and all of them claimed to be more or less under divine inspiration. A few months ago a young woman was received who had been claiming that under divine direction she was required to give up work. She was a servant girl; had been a very industrious girl. She had been directed to go without food for a long time, and to spend a number of successive nights out of doors in the rain, exposed to all sorts of weather, and it was stated that she had given not only all of her own savings, but all that she could borrow from friends, and I think from one or two relatives, to a man who had a strong influence over her, and on inquiry it appeared that he was this same man, Kahn. Kahn was discharged with the understanding that he was to go to New York. I think he was sent to New York by the city authorities, and he had returned to this part of the country and had obtained a strong influence over this young woman, so that she considered herself bound to obey all his instructions, believed him to be divinely inspired, considered she was so to a certain extent herself, but firmly believed in his inspiration and that he was very far superior to herself. He came to see her and obtained admission on one occasion, and came again and was not admitted. She was sent to her friends in Nova Scotia, and I do not know what has become of her. I should judge there were a number of persons in Boston who participated in what were, in the case of this Kahn and in the case of the young woman, insane delusions, and not only in regard to the personality of this man, Kahn, but of themselves.

We have at present a patient in the hospital who came with the history of belief that she had been imposed upon in regard to love affairs. A certain man had offered himself to her in marriage. She was a woman about fifty, and after due deliberation decided to accept him. He, in the meantime, in her opinion, had been influenced by another man, who had circulated slanders, to reject her, and she had been quite demonstrative in regard to both him and the man she considered the cause of her loss. She had also the idea that the organist in the church which she attended was in love with her, had made some advance towards him. Her daughter, a young woman nineteen or twenty years old, who has come to see her, accepts all her ideas fully, but she is at large, and not, as far as I know, considered insane.

I have seen one or two quite peculiar instances in which an attack of insanity in one person appeared to be the exciting cause of a similar attack in another while I was at the Kalamazoo Hospital. Application was made for the admission of a man and his wife. The woman had been attending services of the Salvation Army and had become much excited, and finally became maniacal. Her husband, who had not been particularly interested in these exercises, had been taking care of her, and shortly developed very similar symptoms. The woman recovered within a few months, but the man became permanently demented. There was a similar case in two sisters. One sister had been attending some rather emotional religious services and became insane, and the other came home to take care of her, and in a short time became insane, with similar symptoms — both excited and confused. My recollection is that they both recovered.

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THE RESPONSIBILITIES AND QUALIFICATIONS OF A HEALTH COMMISSIONER.

It is probably quite true that the discovery of the protective power of vaccination "at the very threshold of the nineteenth century," and the introduction of its practice, constituted the real beginning of the art of public sanitation, and that most progress in the improvement in the public health hitherto, and to a great extent later, came from advantages incidental to the march of civilization, such as banishing malaria by draining the land for agricultural purposes.

If the art of sanitation was due chiefly to small-pox, the science of public health owes its origin fully as much to another pestilence, cholera, the first spread of which over Europe and America in 1831 thoroughly aroused Western Europe and America to attempts, for the most part thoroughly crude, for its prevention. Then came the official registration of vital statistics in England and Massachusetts, and later the establishment of local and general boards of health, which began soon to be such in something more than name, and the discoveries one after another in rapid succession of the preventive measures which have practically driven out some of the most fatal diseases and have made the ravages of others enormously less.

And yet only twenty years ago, in one of the classic essays of Dr. John S. Billings, the statement is made that "it can be shown that the direct pecuniary loss to this country on account of preventable sickness and mortality is certainly over \$100,000,000 annually, and this without taking into account expenditures incurred on account of sickness, etc., or the unusual losses due to great epidemics, both from waste of life and injury to commerce. It is evident, therefore, that hygiene is not only a subject of scientific interest to the student, or to medical men, but that to the political economist and to the legislator its problems and discoveries ought to be of great practical importance—greater, in fact, than many of the subjects with which these gentlemen usually occupy themselves."

These problems, as put by Dr. S. W. Abbott, for

cities and towns, are chiefly the management and control of infectious diseases, including notification, isolation, disinfection, vaccination and the supervision of infectious disease hospitals; the inspection and abatement of local nuisances; the sanitary inspection of the food supply, and especially that of milk, provisions and animals used for food; street cleaning; the collection and disposal of ashes, garbage and refuse; tenement house inspection; medical inspection of schools; supervision of foundlings, infant asylums and lying-in hospitals; inspection of plumbing; inspection of bakeries; inspection of barber shops; registration of vital statistics, and supervision of burials; care of public bathing establishments; regulation of offensive trades; regulation of stables; supervision of the municipal water supply, and the system of sewerage and sewage disposal. In seaboard cities, moreover, which are ports of entry, the health boards are charged with very grave responsibilities connected with quarantine.

It should be the duty of boards of health, also, to keep in touch with all the discoveries in sanitary science, to be familiar with every advance in the art of protecting the health of the community and to be able themselves to prepare and devise schemes for minimizing the ravages of disease.

With such duties before the boards of health, it is obvious that the members of such boards must be selected with the greatest care as to their character and qualifications. The community has the right to demand that such responsibilities should be entrusted only to competent persons, and that matters so vital as the lives and health of the citizens should be placed above the plane of political preferment—should never be used as counters in the political game.

PHYSICAL TRAINING AND SWEDISH GYMNASTICS.

If one stops a moment to consider the attention now being given to physical exercise and training in all its manifold forms, one wonders why the nineteenth century has found this systematic cultivation of the body so essential an element in education, when our ancestors were sturdy and rugged and well without it. Our educational system in general seems designed to thwart the efforts of nature in eradicating the weak and unfit. The more unfit for the struggle of life a person is, the more strenuously we strive by the various means which our increasing knowledge provides to correct his weaknesses, and to find a place for him in society. The weak are clearly the pampered element in the community. Even the idiots are likely soon to be made highly useful to their fellow beings, if the comprehensive plans looking to their improvement are carried out. This we call civilization and progress, which no doubt it is, when regarded from an ethical standpoint, and this is the only standpoint which society at present permits. In the second place, with the increasing concentration in cities, and the more strenuous school life to which

children are constantly being subjected, the needs of physical development are continually growing more apparent. The school desk is assuming an importance for the future physical welfare of the race which a few years ago would have been thought quite unreasonable. Hence the necessity for a counteractive influence, both in the way of exercises to correct inevitable defects, and in a more intelligent provision for proper school furniture, as we have insisted in our editorial communication of March 29th. Superintendent of Schools Seaver has stated that the purpose of gymnastics in the schools is to serve as an antidote to the school desk. In any case gymnastics in some form and systematic exercise have apparently come to stay, and unquestionably will fill a more and more important place in the broad scheme of education as the tendencies toward weak bodies grow with the enervating influences of concentration in large cities. Boston now has its Physical Education Society, which finds ample matter for discussion in the problems which the physical side of man's organization presents. The notable advance made in the last few years lies essentially in this intelligent discussion of the whole subject. If physical education is worth developing at all, it is worth developing with the very best light at our disposal. We must eradicate the idea that it is a matter of comparative indifference how the exercise is taken. Intelligent supervision is always necessary to accomplish the best results, a fact which is rapidly coming to be recognized by those interested in the general subject of systematic physical training.

We are glad to call attention to an admirable paper on the subject of "Swedish Gymnastics," by Professor Hough, of the Massachusetts Institute of Technology, and privately printed. Professor Hough reviews the topic from a general biological and yet eminently practical point of view. He points out the possible defects of the Swedish system if improperly applied through uninspiring teachers, but insists that in this system when well taught there is opportunity for excellent results, since it is clearly based on sound physiological principles. Regarding the statement not infrequently made, that the physical side should be developed by play and not work, as gymnastics are apt to be regarded, Hough very correctly says, speaking of deformities of the spine, for example:

"There can be no doubt that such deformities, when not too grave, can be corrected in the manner indicated (namely, by gymnastics), and it is in this field that gymnastic work in our schools does what play alone cannot do. When, for example, stooped shoulders have been acquired by faulty position, spontaneous play gives no stimulus to bring about that contraction of back muscles which will correct the fault. Indeed, in many cases play only accentuates the fault because of the natural tendency to use the stronger muscles and to disuse the weaker ones. This must be especially true of unregulated play, and, even with supervision, attention cannot, in general, be given to

the manner in which a movement is made. Play is, therefore, not a practical method of corrective work."

In his concluding remarks Hough insists that in physical training two aims are pre-eminently important.

He writes as follows:

"(1) The general effects of bodily exercise, including the acquisition of that amount of physical endurance which the special conditions of each individual life demand. I place this first, for it is the chief object of physical training.

"(2) Correction of physical faults, both deformities of the muscular and skeletal systems and deficiencies of the nervous control of the body. I have tried to show that this is rendered necessary by the specialization of life, and is especially necessary with that specialization which marks the period of development, and which may be summed up in the two words, 'the school desk.'

"The primary purpose of the Swedish system of gymnastics is the second of these objects. Its system of movements is based on a most careful study of kinesiology. It studies the effects of the innumerable possible movements upon the development of the body—that is to say, upon form and carriage—and it makes use of such movements as are known to be fitted to accomplish the corrective effects desired. It gives these movements in that way which will best ensure with all members of the class their proper execution and greatest corrective value—that is, in the form of a drill and to the word of command; and it gives them with constant reference to such progression, both in the work of each day and especially in the work of successive days, as to secure the effects of training without undue fatigue or strain."

It is much to be hoped that with all the agitation from various quarters, the much discussed school desk may gradually emerge in some ideal form, which will meet all demands. We require all such prophylactic measures, though we are by no means so optimistic as to believe that the need for systematic physical training will thereby be abolished.

MEDICAL NOTES.

MODERN BULLET WOUNDS.—It appears that wounds inflicted by the Lee-Netford bullet are very similar to those made by the Mauser. There has been an increasing opportunity to observe the effect of the former bullet, as the number of wounded Boers falling into English hands has grown. Sir Wm. MacCormac, in the *Lancet*, sums up the general character of the wounds as follows: "It will again be noticed how many apparently most serious abdominal wounds are recovered from—in one of the cases mentioned above after the formation of a fecal fistula. The chest and lung wounds are quite similar in their consequence to those of the Mauser bullet. I have now seen a very large number of cases of abdominal injury in which recovery has followed an expectant treatment and where

without any reasonable doubt the intestines must have been perforated, a few in which the stomach was traversed, and two or three liver injuries. I myself entertain no doubt that in the future a perforating gunshot wound of the abdomen where from the direction taken by the bullet the intestine has almost certainly been traversed is no longer an indication of the necessity of immediate operative interference." A special correspondent of the same paper also writes: "I have not touched on the subject of bullet wounds this week, as your other correspondents keep you *au courant* with the variety of cases, but they still present the same weird characteristics as regards the courses which the bullets take. The more one sees of them the more one marvels how these missiles can inflict such slight injuries during their erratic progress. After this campaign I am open to believe anything I hear about the courses of Mauser bullets as long as I am not asked to verify their stopping powers when a bone has not been struck or a vital organ reached."

INTERNATIONAL CONGRESS OF ELECTROLOGY AND MEDICAL RADIOLOGY.—It is officially announced that the International Congress of Electrology and Medical Radiology is to be added to the International Congresses at the general Exposition in Paris, and will hold its meetings from July 27th to August 1st.

A UNIVERSITY FOR HAMBURG, GERMANY.—It is said that a plan is being developed to establish a university at Hamburg. The faculty of medicine would have excellent facilities for instruction, on account of the large hospital at Eppendorf.

DR. ST. GEORGE MIVART BURIED IN UNCONSECRATED GROUND.—Dr. St. George Mivart, whose death we mentioned last week, was buried in unconsecrated ground on account of his recent differences with the Archbishop of Westminster.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, April 11, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 61, scarlatina 34, measles 102, typhoid fever 7.

AMENDMENTS TO MASSACHUSETTS REGISTRATION LAWS REFUSED.—The recommendations made by the Board of Registration in Medicine in its annual report recently issued for amendments to the registration laws to further restrict medical practice have been heard adversely by the Legislative Committee on Public Health. The Committee reported "no legislation necessary." The recommendations relate mainly to the educational features of the registration act and to the practice in the border towns by physicians residing in the adjoining States. It would seem that such reasonable recommendations should have received a favorable consideration.

INCREASE IN OUT-PATIENTS AT THE MASSACHUSETTS GENERAL HOSPITAL.—The following statistics show the extraordinary increase in the number of out-patients coming to the Massachusetts Hospital

over a period of twenty-nine years, and serve as a further demonstration of the need of greater facilities for their treatment:

New cases.	Whole number of visits.	Average (daily).
8,567	1870	
16,993	1875, 35,458	116
20,566	1880, 37,245	120
17,016	1885, 39,165	125
22,545	1890, 57,019	182
29,146	1895, 90,663	297
31,003	1899, 104,205	340

A FINAL DECISION REGARDING DUTY ON SURGICAL INSTRUMENTS.—The United States Circuit Court of Appeals has confirmed the decree of the Circuit Court in the case of the Massachusetts General Hospital, in favor of the hospital. The court holds that an importation of surgical instruments made by the hospital for use in surgical instruction to medical students is entitled to entry duty free under an act of 1894, which exempts "philosophical and scientific apparatus, utensils and preparations from tariff duty."

REDUCTION IN BOSTON'S DEATH-RATE.—Returns to the Board of Health show a considerable diminution in the number of deaths during the past week, as compared with those immediately preceding. Deaths attributed to influenza for the week ending April 7th were 21, as against 33 for the week before. There was an increase of only 52 deaths in the entire city for this week over the number for the corresponding week last year, the totals, respectively, being 276 and 224. Last week's death-rate is 25.9.

THOMAS F. ROCHE, M.D.—Dr. Thomas Francis Roche, for fourteen years resident physician at Deer Island, Boston Harbor, died at his home in East Boston, April 8th, after a brief illness. Dr. Roche was thirty-seven years old at the time of his death. He was graduated from the University of New York, and in 1886 was appointed resident physician at Deer Island, during Mayor Hugh O'Brien's administration. Dr. Roche leaves a mother and four sisters.

THE ANN WHITE VOSE HOUSE FOR NURSES: A BEQUEST.—The Ann White Vose House for Nurses, the latest addition to the Boston City Hospital buildings, is completed and was open for inspection Saturday of last week. The building is an elaborate one, and admirably designed for the purpose to which it is to be put. Its existence is due to a liberal bequest from the estate of the late Ann White Vose.

NEW YORK.

CHRISTIAN SCIENCE MUTE.—William A. Purrington, Esq., lecturer in the University and Bellevue Hospital Medical College upon "Law in Relation to Medical Practice," whose book on Christian Science was recently noticed with commendation in the JOURNAL on April 1st made an address at the Broadway Tabernacle, on "The Sophistries and Dangers of Christian Science." In the course of it he said: "It is well settled law that the individual's right to believe does not imply a right to manifest bizarre beliefs in

acts injurious to the physical and moral welfare of others." He also related some correspondence he had with Carol Norton, who is on the Board of Christian Science Lecturers. The following questions were asked the latter: "If material aids to the injured are harmful, what course would you, or Mrs. Eddy, adopt in the following cases? (a) Walking along the street, a brick falls from above and cuts your head, causing blood to flow. (b) A child at table swallows a fish-bone, and is in danger of strangulation. (c) Your child is riding in a street-car, and a person with confluent small-pox sits down beside it. (d) A child in the street is run down by a cable car, and bleeds from a severed artery. (e) A baby falls from a window and fractures its skull." Mr. Purrington read two replies to his questions, which were as follows: "The questions in your letter I will shelve for the present, desiring to do one thing at a time"; and later, after being pressed for an answer: "I prefer to shelve them because to answer them would bring about wholly indifferant results."

THE TENEMENT HOUSE COMMISSION.—In the final days of the Legislature a bill was passed which provides for a Tenement House Commission for the cities of New York and Buffalo, to report to the next Legislature, and in order to ensure its passing Governor Roosevelt on April 2d sent in a message of urgency, the concluding portion of which was as follows: "Against this concrete and mercenary hostility to the needed reform we can marshal only the general sentiment for decent and cleanly living and for fair play to all our citizens. Too often the sufferer himself is dumb, either because he cannot express himself or because he knows not what remedy to advocate. In his interest and in the interest of all our people—above all, in the interests of the State, whose standard of citizenship in the future is partly dependent upon the housing of children in the tenement districts of the present—we should see to the improvement of the conditions which now make the congested districts of our great cities a blot on our civilization. Great good was accomplished in the Tenement House Commission appointed under a similar bill a few years ago. The good is now in part being nullified and a new commission is urgently needed." The reference in the last sentence is to the present building laws, which permit the erection of tenement houses which, though less disreputable in appearance than the old ones, are, because of their immense size and their inferior light and air shafts, worse from a hygienic standpoint.

A DECISION AFFECTING WATER SUPPLIES.—Justice Dickey of the Supreme Court has rendered a decision which will save the city many thousand dollars. The city acquired the bed of Lake Glenside, in Putnam County, together with the waters of the lake, for the sanitary protection of a storage reservoir in the Croton water-supply system which was partially fed by the lake. The commissioners in the proceedings received, against the objection of the Corporation Counsel, evi-

dence tending to show partial ownership of such waters, and made awards to various persons who were vested with the right to draw water for ordinary domestic use. The contention of the city was that this class of evidence would result in the adoption of an enormous measure of damage, and increase the cost of acquiring additional ponds to an amount almost prohibitive. The decision is a refusal to confirm the awards.

STATE HOSPITAL FOR INCIPIENT PHTHISIS.—A second bill, in regard to which the Governor also sent an emergency message to the Legislature, was that providing for the establishment in the Adirondacks of a State hospital for the treatment of incipient pulmonary tuberculosis. It is to be regretted that the bill, before its passage, was amended by the reduction of the appropriation for the hospital originally contemplated to the inadequate sum of \$50,000.

NO MORE TOY PISTOLS.—After the next Fourth of July there are likely to be fewer cases of tetanus having the toy pistol as their primary etiological factor, as Governor Roosevelt has signed a bill which makes it a misdemeanor to sell or give a toy pistol in which blank cartridges are used to a person under sixteen years of age.

DR. EDWARD CHAPIN APPOINTED.—The State Board of Regents has appointed Dr. Edward Chapin, of Brooklyn, a member of the State Board of Medical Examiners, to fill the vacancy caused by the death of Dr. A. R. Wright, of Buffalo.

PHARMACEUTICAL ASSOCIATION.—On April 4th the Greater New York Pharmaceutical Society, with principal office in the Borough of Manhattan, was incorporated at Albany.

TRANSFER OF HOSPITAL.—Another bill passed by the Legislature was one transferring the Brooklyn Homeopathic Hospital to the City of New York.

ARMY NOTES.

ANEMIA AND OTHER DISEASES IN PUERTO RICO.—The valuable work being done by army medical officers stationed in our new possessions has recently been instanced by a circular issued by the Board of Health of Puerto Rico, relative to the anemia so prevalent on that island. It appears that this form of anemia is extremely fatal and in the circular it is shown that not less than 2,000 persons died in Puerto Rico from this cause alone during the two months of October and November last, fifty-seven municipalities reporting 1,000 deaths from this cause in October alone. The cause of this anemia had previously been regarded as an existing malarial infection. Recently, however, it was demonstrated by Lieut. Bailey K. Ashford, Assistant Surgeon United States Army, that this anemia was due to ankylostomiasis, and he was able to determine the presence of the ankylostomum duodenale in 19 out of 20 cases of grave anemia which came

under his care in the Ponce Provisional Hospital. The disease appears to be much more prevalent among the native laboring classes of the rural districts, but Lieutenant Ashford has also observed it in a considerable number of United States soldiers. The circular above referred to, announcing Lieutenant Ashford's discovery, has been sent to all the physicians on the island for their information and guidance. Some months since, Lieut. Walter Cox, Assistant Surgeon United States Army, demonstrated the existence of "Malta fever" in a considerable number of cases of fever in Puerto Rico, which did not present the plasmodium and proved refractory to quinine. Special work in connection with yellow fever is being carried on in Havana by Dr. Aristides Agramonte, Acting Assistant Surgeon United States Army, and investigation along the same lines is being carried on by medical officers attached to the Army Medical Museum, at Washington. Much excellent work is being done in the Army Medical Laboratory at Manila, it being understood that the subjects of bubonic plague and beri-beri are receiving especial attention.

DISINFECTANT VALUE OF "ELECTROZONE." — An investigation into the disinfectant value of "electrozone," the disinfectant used by the engineer authorities in the sanitary regeneration of Havana, has just been completed by Major Walter Reed, of the Army Medical Museum, under instructions from the Surgeon-General. While no official report has as yet been rendered by Major Reed, it is understood that "electrozone," when prepared by the electrolysis of sea-water during a period of eight hours, was found to possess well-marked germicidal properties. On the other hand, it was found that the Havana establishment maintained no standard for "electrozone," and that the time during which electrolysis was continued, as well as the strength of the electric current, was suffered to vary very greatly. Taking into consideration the time required for the production of an effective disinfectant, the capacity of the Havana plant appeared to be much overrated. The original cost of this plant, \$75,000, together with the expense of operation, would seem to render the adoption of this system in other Cuban cities quite inadvisable. It appears that "electrozone" has been used in Havana largely for the disinfection of streets and sewers, and has been but little employed for house disinfection.

REMOVAL OF BODIES FROM THE PHILIPPINES. — The work of bringing home the bodies of soldiers who have died in the Philippines has been completed for the season, and the work of disinterment will not be resumed until next November. Since last November, when the work was begun, about 1,100 bodies have been shipped from Manila to San Francisco. About 500 bodies are said to still remain in the Philippines, nearly all in the vaults of the several cemeteries around Manila. These bodies the War Department would have also removed had not the citizens of Manila objected to their disinterment during the summer months.

PLAGUE AT HONOLULU. — A recent report from Major B. D. Taylor, Surgeon United States Army, in charge of affairs of the Medical Department at Honolulu, states that the outbreak of bubonic plague at that point has been brought under control, although the disease is still present. A case crops up every now and then, and Major Taylor believes that this condition will probably continue for some time to come. One death from plague has been reported from the Island of Mani, but no more from Hilo, on the Island of Hawaii. The health of the troops stationed at Honolulu is reported as being excellent.

Miscellany.

THE HEAT IN ARGENTINA.

WE extract the following surprising details of the recent period of great heat in Buenos Ayres from a daily contemporary :

"The details published in the Argentine papers about the recent heated spell, which was reported by cable dispatches as desolating the whole republic, but principally Buenos Ayres, are quite horrifying. The months of January and February experienced nearly every day heat greater than had ever before occurred in the country. But at the end of the spell the heat was still more tremendous than at the beginning, and no less than 410 deaths occurred in three days in the city of Buenos Ayres. The capital, ever so full of noise and activity, looked, especially during the hot hours, like a deserted place. Stores and offices were closed everywhere. The thermometer went up in the shade to 40° Centigrade (107° Fabr.), and very little rest was brought by the night, for there was not the slightest breeze, and the pavement, heated during the day, prevented the usual coolness from being felt at all. The few people whose business compelled them to appear in the streets fell down as if struck by a mallet, and most of them succumbed to delirium and insanity after a few hours, if they were not killed instantly by the sun's rays.

"The employés of the sanitary service and in the hospitals had not a minute of repose. Provisions were not received from the surrounding country, which was suffering also from the heat, which prevailed along the estuary of La Plata. Ice especially became scarce, and was sold at \$40 instead of \$2.00 in gold, its usual price. In the cemeteries the number of grave diggers was insufficient, though they were assisted by many ordinary laborers. Twenty-five of these grave diggers were taken sick, and had to give up work. The putrefaction of the corpses was almost immediate, and the horrible smell rendered inhumations still more difficult. Numerous corpses were left exposed for twenty-four hours, waiting for identification. The loading and unloading of vessels was suspended during the four or five days of the most extreme heat. The newspaper of ex-Vice-President Pellegrini, *El País*, opened a public subscription for the assistance of the families of the victims of the heated spell, and gathered \$7,605 the first day of the subscription. There was also great loss of life and much suffering in Santa Fé, Rosario, Corrientes and other provinces."

Correspondence.

A CASE OF INTESTINAL OBSTRUCTION FROM A HAIR-BALL.

Boston, April 9, 1900.

MR. EDITOR:—May 30, 1899, I was called to Manchester, N. H., to see the patient, E. B. H., in consultation with Dr. Bontwell. The patient, a girl of ten, had been sick two weeks. The symptoms at first pointed to indigestion. After repeated and unavailing attempts to move the bowels symptoms of complete obstruction came on.

I saw the patient fourteen days after the onset of the attack. She was very much emaciated, with a pinched and anxious-looking face. Her eyes were partly closed. She was lying on her back with her knees drawn up, moaning and partly stupid. Pulse 110, but very weak and irregular. Temperature 99°. The abdomen was not tender on palpation, but was symmetrically distended. Coils of intestines could easily be seen through a thin abdominal wall. In the median line over the region of the bladder was felt a sausage-like mass about the size of half a banana. This was slightly compressible, freely movable and could be pushed from one side of the abdomen to the other.

The diagnosis of intestinal obstruction was made and operation advised. A bad prognosis was given owing to the condition of the child, who was almost moribund.

The patient was moved to the Sacred Heart Hospital where the operation was performed.

On opening the abdomen in the median line above the umbilicus, distended and collapsed intestines presented. The mass was felt up under the liver and was drawn out of the abdomen. It was situated in the small intestine. As it could neither be pushed along the intestine or broken up, the bowel was incised and a mass of hair was delivered. The incision in the intestine was closed by interrupted Lembert sutures of silk, and the abdomen closed with a gauze wick to the intestinal suture.

In spite of a rapid operation, the patient steadily failed and died five hours later.

Subsequently I have learned that the girl had a habit of chewing the ends of two curls which were long and hung over her shoulders. Her teacher at school had tried to break the habit without success.

The hair-ball measured three and one-half inches long and four and one-half in circumference. It was composed of long and short hairs firmly matted together.

Very truly yours,

G. W. W. BREWSTER, M.D.,

Surgeon to Out-Patients, Massachusetts General and Carney Hospitals.

HAIR-EATING CHILDREN AND CONVULSIONS.

Roxbury, Mass., April 7, 1900.

MR. EDITOR:—I give below the account of a case which has considerably interested me:

I was called a short time ago to see a child, of two years of age, with convulsions. The mother gave me a history of whooping-cough for a week. Later that night I was again called for the same reason. The convulsion was over when I arrived. In watching the child I noticed that he picked at the blanket, and pulling off some of the hair, put it in his mouth. The mother stated that it was a constant habit ever since the child was born. He would pick at the carpet, his undershirt, in fact anything of a hairy nature. Thinking that perhaps this habit might have something to do with the convulsions, I gave the child some one-tenth-grain calomel tablets. When I called again the mother stated that the child had passed a ball of hair as large as a silver dollar, together with some smaller masses. It is perhaps needless to say that the child has had no more convulsions.

Very truly yours,

FREDERICK D. LYON, M.D.

DEVELOPMENT OF THE MICROSCOPE.

Boston, April 3, 1900.

MR. EDITOR.—In response to a number of suggestions and requests, I have undertaken to form a collection of microscopes and accessories illustrating the development of the instrument, to be placed in the Museum of the Harvard Medical School. The nucleus of such a collection has already been made by the placing in my hands of several old and extremely interesting pieces of apparatus.

May I ask you to give publicity to the fact that if any of your readers are in possession of microscopes that will illustrate this development, and are willing to deposit them in this collection, I will gladly receive them and see that they are properly labelled, displayed and acknowledged.

Very truly yours,

HAROLD C. ERNST, M.D.,

Harvard Medical School,
688 Boylston St., Boston, Mass.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 31, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,654,574	1626	510	19.62	25.02	2.70	.96	1.86
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	316	67	21.12	34.24	2.56	.96	.64
Baltimore	506,380	240	64	13.86	25.20	2.52	.42	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	359,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	136	34	24.42	32.56	1.48	—	.74
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	114	27	11.44	37.84	1.76	—	.88
Nashville	87,754	40	13	17.80	25.00	—	—	2.50
Charl-ston	65,165	—	—	—	—	—	—	—
Worcester	114,732	37	12	10.80	21.60	—	5.40	—
Fall River	103,142	72	34	8.34	45.87	—	1.39	—
Cambridge	92,520	35	8	17.16	24.74	—	5.71	—
Lowell	90,114	37	11	10.59	7.00	—	—	—
New Bedford	70,511	22	6	32.32	32.32	4.76	8.30	—
Lynn	68,218	32	—	12.50	9.36	—	—	—
Som-er-ville	64,394	29	3	10.35	34.48	—	—	—
Lawrence	58,072	25	3	16.00	12.00	—	—	—
Springfield	58,266	35	8	17.14	20.86	—	2.86	—
Holyoke	44,510	22	8	20.75	30.75	4.15	—	—
Brockton	38,750	13	1	7.09	53.83	—	—	—
Salem	37,723	10	2	—	20.00	—	—	—
Malden	36,721	23	2	17.36	17.36	4.37	—	—
Chelsea	34,235	21	6	9.52	—	—	—	—
Haverhill	32,651	17	1	23.52	17.61	—	—	—
Gloucester	31,426	27	2	14.00	—	—	—	—
Fitchburg	30,523	5	2	20.00	20.00	—	—	—
Newton	30,461	14	2	—	7.14	—	—	—
Taunton	28,527	—	—	—	—	—	—	—
Everett	28,102	10	2	—	20.00	—	—	—
Quincy	24,578	8	4	12.50	37.00	12.50	—	—
Pittsfield	23,441	—	—	—	—	—	—	—
Waltham	22,791	9	1	22.22	11.11	—	—	—
North Adams	21,583	7	4	7.14	14.28	—	—	—
Chicopee	18,316	12	6	16.16	25.00	—	—	—
Medford	17,100	—	—	—	—	—	—	—
Newburyport	15,036	14	2	—	37.50	—	—	—
Melrose	14,721	10	3	20.00	20.00	20.00	—	—

Deaths reported 3,039; under five years of age 855; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 555, acute lung diseases 788, consumption 316, diphtheria and croup 71, measles 36, diarrheal diseases 29, whooping-cough 29, scarlet fever 28, typhoid fever 20, cerebrospinal meningitis 15, erysipelas 11.

From whooping-cough New York 20, Boston 7, Providence and Cambridge 1 each. From scarlet fever New York 16, Boston 3, Worcester, Cambridge and New Bedford 2 each, Baltimore and Hyde Park 1 each. From typhoid fever New York 6, Boston 3, Washington and Providence 2 each, Fall River, Lowell, New Bedford, Malden and Haverhill 1 each. From cerebrospinal meningitis New York 9, Boston, Baltimore, Worcester, Somerville, Brockton and Gloucester 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending

March 24th, the death-rate was 21.6. Deaths reported 4,807: acute diseases of the respiratory organs (London) 456, whooping-cough 141, measles 123, diphtheria 91, diarrhoea 45, fever 38, scarlet fever 33, small-pox (Hull) 1.

The death-rates ranged from 10.7 in Burnley to 36.7 in Wolverhampton; Birmingham 24.2, Bradford 18.2, Croydon 15.5, Gateshead 20.5, Hull 19.4, Leeds 20.5, Liverpool 31.3, London 20.6, Manchester 26.8, Newcastle-on-Tyne 20.2, Nottingham 20.4, Portsmouth 18.5, Salford 26.2, Sheffield 22.4, Sunderland 24.8, West Ham 19.4.

METEOROLOGICAL RECORD

For the week ending March 31st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer.		Thermometer.		Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
	Daily mean.		Daily mean.	Maximum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S..25	29.98		32	43	22	44	34	39	N.W.	N.W.	17	6	C.	C.	
M..26	29.82		37	45	29	56	91	74	S.E.	S.W.	3	4	F.	N.	
T..27	29.72		40	47	32	95	55	75	W.	W.	7	7	O.	C.	.24
W..28	29.81		38	46	31	47	49	48	N.W.	N.W.	14	16	C.	C.	
T..29	29.96		40	47	32	58	34	46	N.W.	N.W.	15	9	C.	C.	
F..30	29.95		37	42	32	38	65	52	N.	S.E.	7	5	O.	O.	
S..31	29.73		36	42	30	62	42	52	N.	N.E.	15	22	O.	F.	.01
															.25

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 7, 1900.

J. C. ROSENBLEUTH, passed assistant surgeon, ordered to the "Wilmington," sailing from New York City, April 5th, to join ship at Rio de Janeiro, Brazil.
 F. C. COOK, passed assistant surgeon, detached from the "Wilmington" and ordered to proceed home by mail steamer.
 F. URIE, surgeon, commissioned from October 25, 1899.
 W. M. WHEELER, passed assistant surgeon, commissioned passed assistant surgeon from May 27, 1900.
 D. N. CARPENTER, passed assistant surgeon, commissioned passed assistant surgeon from October 24, 1899.
 F. L. PLEADWELL, passed assistant surgeon, commissioned passed assistant surgeon from October 25, 1899.
 W. F. ARNOLD, passed assistant surgeon, detached from the Naval Hospital, Norfolk, Va., and granted leave for three months.
 G. D. COSTIGAN, passed assistant surgeon, detached from the Naval Hospital, Chelsea, Mass., and ordered to the Boston Navy Yard immediately.
 D. N. CARPENTER, assistant surgeon, detached from the Boston Navy Yard and ordered to the Naval Hospital, Chelsea, Mass., immediately.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 5, 1900

WASDIN, EUGENE, surgeon. To proceed to Buffalo, N. Y., and assume command of the Service. March 31, 1900.
 STONER, J. B., passed assistant surgeon. Relieved from duty at Buffalo, N. Y., and directed to proceed to St. John, N. B., for duty as medical inspector of immigrants. March 31, 1900.
 YOUNG, G. B., passed assistant surgeon. Granted two days' extension of leave of absence on account of sickness. March 31, 1900.
 DECKER, C. E., assistant surgeon. Granted twenty-nine days' leave of absence on account of sickness from March 2d. March 31, 1900.
 CLARK, TALIAFERRO, assistant surgeon. On being relieved from duty at Tortugas Quarantine, to proceed to New York, N. Y. (Stapleton), and report to medical officer in command for duty and assignment to quarters. April 4, 1900.
 McMULLEN, JOHN, assistant surgeon. On being relieved from duty at Louisville, Ky., to proceed to Tortugas Quarantine and assume command of the Service. April 2, 1900.
 ANDERSON, J. F., assistant surgeon. Relieved from duty at Barcelona, Spain, and directed to proceed to Marseilles, France, for duty. March 30, 1900.

GWYN, M. K., assistant surgeon. Relieved from duty at Chicago, Ill., and directed to proceed to Louisville, Ky., and assume command of the Service. April 2, 1900.
 CORPUT, G. M., assistant surgeon. Upon being relieved from duty at Marseilles, France, to proceed to Washington, D. C. March 30, 1900.
 VOGEL, C. W., assistant surgeon. Relieved from duty at New York (Stapleton), and directed to report to Surgeon L. L. WILLIAMS, Immigration Station, New York, for duty. April 4, 1900.
 ALTREE, G. H., acting assistant surgeon. Granted leave of absence for three days. April 5, 1900.
 BULLARD, JOHN T., acting assistant surgeon. Granted leave of absence for sixty days from April 3d. April 3, 1900.
 FOSTER, S. B., acting assistant surgeon. Granted leave of absence for one month from April 6th. April 5, 1900.
 WOODS, C. H., hospital steward. Granted leave of absence for fifteen days from April 6th. March 29, 1900.
 SCHLAAR, W. F., hospital steward. Granted leave of absence for twenty-five days from April 2d. April 5, 1900.

APPOINTMENT.

ALLAN J. McLAUGHLIN, of New Jersey, commissioned as assistant surgeon. April 3, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, April 16th, at 8 o'clock.
 Subject: "Intestinal Perforation in Typhoid Fever."
 Drs. Geo. B. Sbatnick, J. C. Warren and Farrar Cobb, the committee appointed to consider and collate the cases reported at the meeting of the Society, January 8, 1900, will present a carefully prepared report. The members who reported cases at the previous meeting will take part in the discussion.
 Election of new members, deferred from last meeting, will take place at 9 P. M.
 ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.
 SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will meet at 19 Boylston Place, Wednesday, April 18, 1900, at 8 P. M.
 At 8 o'clock: A short communication by Dr. G. G. Sears.
 At 8.10 o'clock: Dr. J. J. Putnam will present the subject (postponed from December meeting): "The Training in Co-ordination of Ataxic Patients by Fränkel's Method, with Demonstrations."

J. BERGEN OGDEN, M.D., Secretary, Harvard Medical School, Boston.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES — The Association will meet in New York City, May 31st and June 1st and 2d, at the New York Academy of Medicine, 17 West 43d Street.
 C. H. ALDEN, M.D., President, Association of Military Surgeons.

RECENT DEATHS

JOSEPH H. VONDY, M.D., of Jersey City, N. J., died on April 2d, of pneumonia. He was born in 1829, and was graduated from the Medical Department of the University of the City of New York in 1851. He had practised in Jersey City ever since completing his medical studies and was one of the founders of the city hospital there.
 J. STERLING BIRD, M.D., of Hyde Park, Dutchess County, N. Y., died on April 3d, from pneumonia. He was born in Winchester, Conn., August 29, 1835, and had practised at Hyde Park since 1865.

BOOKS AND PAMPHLETS RECEIVED.

An Equation of Responsibility. By Edwin W. Pyle, M.D., Jersey City, N. J.
 Massachusetts Institute of Technology, Boston: Courses in Chemistry and Chemical Engineering.
 Recent Methods in Cardiac Therapeutics by Baths and Exercises. By Thomas E. Satterthwaite, M.D., New York. Reprint. 1900.
 The International Medical Annual and Practitioners' Index: A Work of Reference for Medical Practitioners, 18th Year. New York and Chicago: E. B. Treat & Co. 1900.
 Eighty-sixth Annual Report of the Trustees of the Massachusetts General Hospital, including the General Hospital in Boston, the McLean Hospital and the Convalescent Home in Waverley. Boston. 1899.
 Monographs on American Social Economics: The Past and Present Condition of Public Hygiene and State Medicine in the United States. By Samuel W. Abbott, Secretary, State Board of Health of Massachusetts. Edited by Herbert B. Adams, Professor of History in Johns Hopkins University, and Richard Waterman, Jr.

Original Articles.

ON INTERMENSTRUAL DYSMENORRHEA.¹

BY MALCOLM STORER, M.D., BOSTON,
Assistant in Gynecology, Harvard Medical School.

EVERY gynecologist will doubtless recall a few cases in which there was present at about the middle of the intermenstrual period a set of symptoms, ceasing suddenly after a day or two, much like those associated with menstruation, but without any discharge of blood or quite the characteristic pain. This phenomenon, the *molimen uterin intermenstruel*, *dysmenorrhœa intermenstruelle*, of the French, the *Mittelschmerz* of the Germans, sometimes called "intermediate pain or dysmenorrhœa," if mentioned at all in the text-books, is stated to be very rare. I have, however, met with it no less than 18 times in 400 suitable cases in which I have inquired as to its existence this last summer. Gynecologists are still so at variance as to its causation that a consideration of the subject may be of value.

I present notes of 20 cases occurring in my own experience.

CASE I. *Chronic ovaritis and fibroid.*—L. J., thirty, colored, nullipara. Five years ago dysmenorrhœa and constant pain in the left ovary. A tumor of the right ovary was then removed, but the left one, though in a suspicious condition, was not touched. The left ovarian pain was not helped by the operation, and for the last six months it has been much worse. A few months after the removal of the right ovary she began to experience on the thirteenth and, much more severely, on the fourteenth days after the beginning of menstruation a dull pain extending over the whole abdomen, but with much sharper exacerbations in the region of the left ovary, which, coming on in waves, lasts for an hour or so two or three times daily. These symptoms last from four to six days, and are unaccompanied by any discharge. During actual menstruation the patient feels better than at any other time in the month. Within the last year a fibroid the size of an infant's head has developed, but as that was presumably not present when the abdomen was opened five years ago, it can be dismissed as having no bearing upon the pain.

CASE II. *Adherent retroflexion.*—E. F., thirty-eight, three children, youngest nine. Four years ago began to have backache and dragging pain in left side, and for a day or two before and after menstruation a scratching, tearing pain in the left groin, menstruation coming on every twenty-five to thirty-two days, and the patient feeling better when actually flowing than at any other time. Three years ago began to experience on the thirteenth and fourteenth days from the beginning of menstruation much pain in the lower abdomen and back, but none in the left ovarian region. This pain comes on slowly, is at its maximum for a few hours on the second day, and then gradually dies away. It is not accompanied by discharge. A year ago her perineum was restored and ventrosuspension performed, but while her other symptoms were much helped by the operation, the intermenstrual disturbances were in no wise affected except that the seat of the pain was transferred from the back to deep in the vagina and became of a throbbing character. She is very sure that this change in the seat of the pain occurred at the very first intermenstrual period after the operation. Coitus, at all times a source of discomfort, although the woman is of fair sexual appetite, is quite out of the question during these two days, for, in her words, it feels as if there were a boil between the rectum and the womb. Defecation also is so painful during these two days that it is not to be thought of.

Examination here showed an extremely tender, sharply retroflexed and densely adherent uterus, with much endometritis, but the appendages could not be palpated satisfactorily. We may suppose that they were not much diseased at the time of the ventrosuspension from their not having been removed.

CASE III. *Chronic pelvic peritonitis.*—E. A., thirty-two, severe attack of pelvic inflammation (gonorrhœal) twenty years ago. Four years ago a miscarriage with no immediate bad effects, but ever since irregular bilateral ovarian pain and backache; much dysmenorrhœa; obstinate rectal catarrh, much worse in middle of month.

In June, 1897, I removed the right ovary, which contained a small cyst, the size of a hen's egg, leaving the somewhat degenerated left ovary in deference to the demand of the patient. The appendages on each side were found buried in a mass of very dense adhesions. Afebrile convalescence. On September 1st, catamenia in perfect comfort for the first time in five years. On September 12th, an attack of sharp pain in the pelvis and right side lasting two days. I have no notes of the October menstruation, but the pain recurred November 5th, twelve days after the beginning of menstruation, it being this time on the left side.

Thus from month to month she went on with intermenstrual pain, sometimes on one side and sometimes on the other, but with no regular alternation. A year later I found a mass the size of a fist to the left of the uterus. She was then menstruating with little discomfort, but regularly on the twelfth to fifteenth day she had for three or four days this pain, dull in character, with occasional very sharp twinges. No discharge was associated with it.

In December, 1898, I opened the abdomen again and found a small encysted peritonitis each side, and removed the stump of the right tube, and also the very densely adherent left tube and ovary. The patient's condition forced me to leave the uterus behind. I had arranged to operate upon the day of the pain, but an acute digestive storm forced me to put it off for three days. Through an unfortunate accident the ovary removed was lost, but there was certainly no gross evidence of a recent or approaching rupture of a Graafian follicle. In this case menstruation has continued in spite of the removal of both ovaries, and so also has the intermenstrual pain. But considering the matted condition of the pelvis, I am not surprised that some ovarian tissue should have been left behind.

CASE IV. L. M., twenty-two, virgin. Apex consolidation with T. B. present four years ago; sound now. Lithemic; several attacks rheumatic fever. No pelvic symptoms until last few months. Menstruation in October painful; in November much more so. On November 29th (fourteen days after beginning of menstruation), sudden sharp pain in median line over pubes; feels as if everything were sinking down; considerable leucorrhœa. Careful examination showed no gonococci. The next menstruation was very painful, and after it had lasted ten days, the normal being two, I curetted her and also steamed out the uterus. The appendages examined under ether were normal. Since then she has had no pelvic discomfort of any kind.

CASE V. *Interstitial fibroid, without disease of appendages.*—Mrs. G., forty-two, never pregnant. Menstruation profuse but painless. For ten years has had on the eighth day after the commencement of menstruation, which is delayed two days, a definite pain lasting one day, with a profuse leucorrhœa which lasts three days. This pain is generally on both sides, and is of a dull, heavy character. It stops suddenly and completely. This patient was put on thyroid extract, and at the end of three months the pain had disappeared, although there was no change in the size of the tumor.

CASE VI. *Gonorrhœal endometritis, with no trouble with appendages that can be discovered.*—E. R., thirty-two, one child and two miscarriages. Menstruation normal except for pain in one groin for the first day since it first appeared. For fifteen years has had on the fourteenth day

¹ Read before the Obstetrical Society of Boston, January 16, 1900.

from the beginning of menstruation pain in the same place as the menstrual pain but of a quite different character. This is associated with profuse leucorrhœa, lasts two or three days and then ceases at once and completely.

CASE VII. *Endometritis and very mild chronic salpingitis.*—S. P. (Disp. 2,478). Two years ago a miscarriage, followed by salpingitis. Some months subsequently began to have on the fourteenth day dull pain on the left side lasting two to three days. Menstruation painless. Patient greatly relieved by six months' local treatment.

CASE VIII. *Retraction from parametritis; right ovary prolapsed; both ovaries thickened; endometritis.*—M. B. (Disp. 3,448). Miscarriage one year ago. For the last six months has been having pain on the fourteenth or fifteenth day, lasting for two or three days. No increase of leucorrhœa. The pain is on the left side and running down the left leg; no pain ever on right side. Menstruation has stabbing pain in back of a different character.

CASE IX. *Adherent retroversion, with prolapsed and adherent appendages; endometritis.*—C. S. (Disp. 3,582). Gonorrhœa six months ago; miscarried five months ago. For the last four months has had pain on the fourteenth day from the beginning of menstruation. The pain is in back and around umbilicus much the same as when unwell; it lasts a day or two.

CASE X. *Anteflexion; prolapsed ovary.*—H. C. (Disp. 3,982). Never pregnant. For three years has had on fourteenth day after the beginning of menstruation dull, paroxysmal pain in both groins accompanied by nausea. It lasts two days only and has no discharge. Menstruation is irregular, five weeks to three months, and painless. Patient much improved by sedatives.

CASE XI. *Pelvic organs normal by rectal examination.*—L. K., virgin (Disp. 4,007). Since menstruation began, seven years ago, has had sharp pains in both groins on the fourteenth day; the pain is unlike her cramps with menstruation; it lasts three days only.

CASE XII. *Retroflexion, second degree, adherent; little endometritis, and the appendages apparently normal.*—Mrs. H. (Disp. 4,040). For many months pain over pubes like that of menstruation, only much worse, on the fourteenth day. It lasts only one day and is not accompanied by discharge.

CASE XIII. *Posterior parametritis, with slight retroversion and metritis.*—Mrs. L. (Disp. 4,062). Since the birth of last child ten years ago has had every month a sharp pain on the fourteenth day. The pain is on the left side and exactly the same as when unwell. Leucorrhœa is somewhat profuse but never bloody. The pain has not been helped by repair of cervix one year ago. I removed a neglected stitch from the cervix without effect upon the pain.

CASE XIV. *Slight salpingitis.*—K. N. (Disp. 4,108). Married two years; never pregnant; gonorrhœa two years ago; no history of much pelvic inflammation. For one year pain in womb and over pubes on the fourteenth or fifteenth days, and at that time passes blood with the feces. No leucorrhœa at any time. At menstruation, similar pain but no bloody feces.

CASE XV. *Endometritis.*—K. D. (Disp. 4,189). Syphilis four months. For two months sharp pain on the fourteenth or fifteenth day after menstruation. Pain much like that when unwell, but much worse; great improvement under treatment.

CASE XVI. *Salpingitis, purulent endometritis.* M. G. (Disp. 4,192). Twenty years, one child eighteen months old. Pain on the day after menstruation established. On the fourteenth and fifteenth days from the beginning of menstruation the same pain, associated with an increase in leucorrhœa. This pain stops after a few hours.

CASE XVII. *Retroversion.*—Mrs. B. (Disp. 4,186). On the fourteenth and fifteenth days marked discharge but no pain. In this case the discharge disappeared on correcting the displacement and applying a pessary.

CASE XVIII. *Lacerated cervix; eulometritis; adherent ovaries; slight retroversion.*—L. (Disp. 4,124). Twenty-eight years. Four children; last eight years ago. Men-

struation regular and painful; leucorrhœa for years. For several years pain on fourteenth day like that of menstruation. This vanishes after two or three days and is associated with an increase in leucorrhœa. I removed with the curette a fair amount of hyperplastic endometrium, and after breaking up the few adhesions that bound down the ovaries, excised a piece of one for examination and suspended the uterus. In the two subsequent months she had none of the customary intermenstrual pain, though menstruation was, if anything, more free than before and still painful. Removed specimen negative.

CASE XIX. *Endometritis; retrocession; chronic salpingitis; prolapsed ovaries.*—M. F. (Carney 393). Twenty-eight. Never pregnant. For three years (that is, since marriage) has had on the sixteenth day from the beginning of menstruation, which is regular and painless, pain in the lower abdomen and right side and leg. This pain is paroxysmal, lasting five minutes at a time for one to three days. There is no increase in leucorrhœa.

CASE XX. *Right ovaritis; tender stump on left.*—Mrs. H. (Carney 314). Three years ago left tube and ovary removed for cystic degeneration. A child two years ago. Since the operation, has had every month, about the fourteenth day, pain in back and both sides, coming on suddenly and lasting for two or three days. This is quite different from the discomforts of menstruation.

To these 20 cases of my own I have added 25 more collected from the scanty literature on the subject. An analysis of these 45 cases shows the following facts:

(1) As regards the regularity of the pain, in all it appeared practically every month, except when pregnancy intervened. In 22 the pain always occurred on a definite day, from the beginning of the last menstruation. In 13 there was a variation of two days, and in four of four days. In two, with irregular menstruation, it occurred on a definite day before the next menstruation.

(2) As regards day of appearance, counting from the first day of the previous menstruation, in 20 it appeared on the fourteenth day exactly, in seven it appeared from the twelfth to the fourteenth day, in six from the thirteenth to the fifteenth day, in two from the seventh to the tenth day, in two on the sixteenth day, in one on the fifteenth day, in one on the seventeenth day, and in one on the eighteenth day, menstruation here being five days late. Thus in 41 cases it came from the twelfth to the sixteenth days in 37.

(3) As to its character, in a large number of cases its paroxysmal character was spoken of, the attacks either coming at intervals of several hours and lasting five to fifteen minutes, or else there being constant pain with marked exacerbations, often of the greatest severity, and subjectively much like labor pains. In about half the cases the pain resembles that of menstruation; in the rest it is "entirely different." In nine there was no pain with menstruation.

(4) As to duration, in 10 it lasted two days, in nine three days, in eight one day, and in only four did it last four or more. In most of these it could be inferred that it reached its maximum on the first or second day.

(5) As to seat, in 14 the pain was sharply limited to one side, with fairly regular alternations in two cases (Palmer and Marsh); in 12 it was more general.

(6) As to character of discharge, in none of these cases was there associated with the pain any discharge like that of menstruation, although in two it

was slightly sanguineous. These were respectively cases of easily bleeding fibroids and diseased appendages, with hemorrhagic endometritis; both conditions apt to bleed on the slightest provocation. This lack of characteristic menstrual discharge is the chief reason for objection to the term "intermenstrual dysmenorrhea," as that implies menstruation, and, as I have shown, there is no menstrual discharge, and in more than half the cases the pain is different from that of menstruation. On the other hand, a marked increase of leucorrhœa is spoken of in 10, showing a decided temporary congestion. In my third and fourteenth cases there were bloody dejections during the pain.

From this analysis it will be seen that we are dealing with a phenomenon definite in the time of its appearance, character and seat, which is quite unlike premenstrual congestive pain, or the soreness that sometimes persists after menstruation, and lacking the irregularity of ovarian neuralgia.

As to the causation of this pain, one might suppose, from its frequent location in the groins, that it is due to some affection of the appendages. While in most of the text-books it is dismissed as "ovarian," it certainly is not always so. Croom had a typical case, in which the pain disappeared after the removal of a hydrosalpinx, although the ovaries were not touched. In Fasbender's case there was no pain after the uterus was curetted, the appendages being apparently normal. My fourth case was a similar one; in my fifteenth case the improvement was measured by that of an existing endometritis, the appendages being normal, and in a case of Benicke a stenosis of the internal os was apparently the only lesion, while in at least one of my cases of fibroids and one of retroflexion the appendages seemed free. On the other hand, in 40 cases in which the local condition is stated I find that there was more or less of an inflammatory condition of the appendages in 30 ("ovariitis" 15, salpingitis 12, hydrosalpinx 3). Whether this preponderance is more than a coincidence demands an examination into the various theories suggested to explain this pain, remembering that a phenomenon associated with so many different conditions cannot of necessity be always due to any one, and remembering further that this proportion of inflammatory cases is not much different from that obtained in any series of gynecological patients.

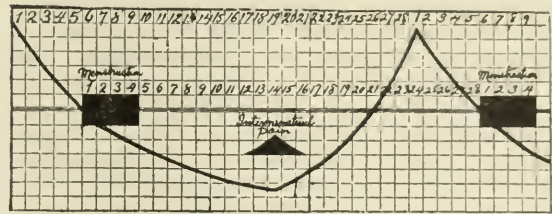
The theories hitherto suggested may be called (1) the mechanical theory—tubes, ovaries; (2) the neurosis theory; (3) the intermenstrual cycle of congestion theory; 4) the intermenstrual cycle of ovulation theory.

The mechanical theory—applied to the Fallopian tubes—supposes the intermittent emptying of a catarrhal accumulation within the tube, the pain being due to efforts to force the contents of the tube through the closed uterine ostium, under which conditions it might be expected that the pain would be paroxysmal. Examining the cases under consideration, we find that a more or less watery discharge was noticed in four, in two of which a swollen tube had previously been felt. The intermittent character of this tubal hydrorrhœa has been explained by supposing that under certain conditions, with the congestion of menstruation, there may be sufficient swelling of the mucosa to produce the temporary occlusion of the tubes with a resulting accumulation of

fluid, and that at the time of the greatest uterine quiescence the pressure within the tube becomes sufficient to expel its contents. In only two of these cases was the diagnosis of a hydrosalpinx proved by operation, and at best this theory would apply to but few.

The mechanical theory as applied to the ovary (by Johnston) is that the pain is due to the stretching of adhesions by the shrinking of the pelvic organs, or to the shrinking of the hard parenchyma of the chronically inflamed ovary, due to the ebb of the menstrual congestion, and inferentially assumes that this shrinking is at its maximum midway between the menstrual periods. If this theory were correct it would be but fair to expect that with such hyper-sensitive ovaries and adhesions, there would also be pain with the congestion that accompanies menstruation, but in nine cases menstruation was painless, and, in fact, in three the patients felt far better during the few days before and during menstruation than at any other time. Furthermore, typical intermenstrual pain was observed in six cases in which the ovaries were freely movable and not sensitive to pressure, and the uterus also was freely movable.

The neurosis theory (Croom, Fasbender, Boulli, Martin) involves ovulation taking place at a different time from menstruation. Assuming that this symptom is generally seen in nervous women, it is held that



"either general irritability of the whole system, or a hypernervous condition of the ovary due to local causes, may produce a discharge of nervous impulses in that organ sufficient to cause the painful bursting of a follicle." While it is possible to assume that in a nervous woman various factors might produce irregular ovulation, this theory does not explain why this discharge of ova should always take place just midway between the menstrual periods, and applying it to the cases under consideration I find only a few of them are spoken of as neurotic. Two of my cases, for instance, were phlegmatic to a degree, and totally without nervous hyperirritability, either general or local, and even in the cases called neurotic it may well be questioned whether the broken-down nerves were not the result rather than the cause of the pain.

The theory of an intermenstrual cycle of congestion assumes that the Stephenson wave is dirotic, so to speak. It will be remembered that according to the careful observations of Stephenson there exists in normal woman a monthly wave of vital energy, of which regular and demonstrable fluctuations of temperature, pulse pressure and amount of urea excreted are the measures. Menstruation does not correspond with the apex of the wave, but occurs five or six days after the decline has begun. Starting at about zero on the first day of menstruation, the wave descends with a fairly regular curve, reaching its lowest point

at about the fourteenth to sixteenth day, then rising until it reaches its maximum on the twenty-fourth, with a rapid subsequent drop again until it reaches par on the day that the next menstruation begins. Now this wave of vital energy, according to Stephenson and Mary Putnam Jacobi, shows sometimes secondary fluctuations, and it has been assumed by certain writers — unfortunately without as yet definite experimental demonstration — that there exists a definite intermenstrual wave — that the Stephenson wave is one of double rhythm, the second beat giving a certain amount of congestion, but not being of sufficient force to compel a discharge of actual blood.

While the large number of cases in which there was an increase of the amount of leucorrhœa, even sometimes tinged with blood during the prevalence of the pain, shows that at this time there may be a certain amount of pelvic congestion, the theory that the pain is of necessity due to such a congestion cannot be maintained, for the simple reason that many of these cases had no pain at all when really menstruating, a time when there is certainly much more congestion than at any intermenstrual secondary wave, and, furthermore, the intermenstrual pain and that associated with menstruation was generally of totally different character. In many other cases there was with the pain no increase of leucorrhœa, such as would follow much congestion of the pelvic organs.

The intermenstrual cycle of ovulation theory brings up the old question of the synchronism of ovulation and menstruation. I think it is now generally accepted that while a certain period of every month — generally approximating that of menstruation — may be regarded as that of ovulation *par excellence*, the ripening and discharge of ova is a fairly constant process, though to a much less degree. These irregular ovulations must be inferred to explain the cases of conception that sometimes take place outside of the limit of "five days before and ten days after" that are avoided by the Malthusian husband. Ovulation is, at least, helped by a congested condition of the ovary. We have seen that in many of these cases there is an increased congestion of the uterus as measured by the amount of leucorrhœa, and therefore presumably of the ovaries, and what more likely, according to this theory, than that the intermenstrual secondary wave of the preceding theory, due on the thirteenth to fifteenth of the menstrual month — counting from the beginning of menstruation, which is the nineteenth to twenty-first of Stephenson's wave, the climax of which precedes menstruation by a week — should be of sufficient force to cause ovulation to take place. The resulting pain would be due to the incarceration of the growing follicle or to the discharge of ova through the chronically inflamed capsule of the gland. Indeed, Marsh goes so far as to formulate the theory that the process of ovulation occurs every twenty-eight days, but that it is normally removed from that of menstruation by an interval of fourteen days, and that ordinarily it occurs in each ovary alternately. This cycle of ovulation is revealed to us, according to him, in the pathological cases by the pain caused by the dehiscence of the follicles, while under normal conditions ovulation would not be manifested by any appreciable signs. In the first place, this theory runs contrary to the experience of mankind that coitus is most apt to be fruitful in the few days closely following menstruation. I am unaware of any observations from the days when

so-called "cystic degenerated" but functionally active ovaries were sacrificed so recklessly that show that ovulation was especially active in any large proportion of cases in which they were removed in the middle of the month. If it is true that intermenstrual pain be due to ovulation occurring in chronically tender ovaries, if ovulation normally occurs fourteen days after menstruation, there should be vastly more cases of intermenstrual pain, considering how numerous such ovaries are. To be sure, occasional cases seem to bear out this periodic intermenstrual ovulation. In an ovary I recently removed on the fourteenth day I noticed a follicle that was within a few hours of rupture, but I question very much whether such coincidences are not to be explained by the fact that ovulation may be taking place at any time. As I have stated, a hasty macroscopic examination of the ovary removed in Case III, three days after the pain, showed no sign of functional activity, while the section of the ovary removed in Case XVIII gave the same result.

That the ovaries function alternately must be regarded as merely a theory until shown to be a fact, in spite of the somewhat striking alternation in the seat of the pain in the cases of Marsh and Palmer. In my own experience, when examining healthy ovaries in the course of abdominal work, they generally seem in about the same condition macroscopically on the two sides, which would hardly be expected were one active and the other resting. As bearing very strongly against March's theory of alternation, I would cite my third case, in which intermenstrual pain occurred every month, sometimes on one side and sometimes on the other, although one ovary had been removed a year previously. Finally, as against the theory that this pain is due to painful ovulation, I refer to the numerous cases in which the ovaries were apparently perfectly healthy, and to the two cases in which the pain disappeared after the uterus was curetted.

As possibly throwing some light upon the subject, I would offer the following theory, which for want of a better name I call the "awakening of menstrual activity" theory. The intermenstrual pain coming about the fourteenth day from the beginning of menstruation, the nineteenth after the climax of Stephenson's wave, occurs just about the time the pressure line has reached its lowest point. Cannot then the intermenstrual wave, if one exists, be one of preparation rather than of subsidence, a nervous explosion, so to say, as if nature were waking up with a more or less violent effort to make ready for the coming activity, whether menstrual or ovarian? We have seen how for nearly three weeks the wave of vital energy has been running down hill and the system has, as it were, got into a rut. Nature suddenly says this decline *must* be stopped, and in the readjustment of forces that ensues as the human machine begins to work again with greater energy, it is not to be wondered that there should be groaning from some of the machinery, which, however, after a day or two finds its bearings again and then works automatically and in silence. This theory would not be incompatible with the fact that this pain occurs under such a variety of pathological conditions, ranging from simple endometritis to pyosalpinx and fibrosis. The pain does not of necessity come from any one organ, but from whatever organ is the most irritable or diseased, will come the loudest protest at the sudden arresting

of the comfortable vital decline. A case of Sorel's shows well how this pain has more relation to the coming menstruation than to the previous one. The pain was always fourteen days before the next menstruation, although this came at very irregular intervals. This case was observed through 147 periods. I have found but one case in which the relation between pain and the previous menstruation was absolutely positive (my tenth). Here menstruation, occurring at intervals of five weeks to three months, was always followed on the fourteenth day by sickening paroxysmal pain in both groins, lasting two days and unattended by leucorrhœa. I regard this case as merely the inevitable exception for which some other explanation must be sought. Both Priestly and Palmer have spoken of the possibility of intermenstrual pain having some relation with the coming menstruation, but offer no explanation of what this relation is.

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TREATMENT OF CANCER OF THE CERVIX OF THE UTERUS COMPLICATED BY PREGNANCY.¹

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If I am correct in interpreting the motive of our excellent host in inviting me to be present at this meeting of your honorable body, as an expression of his desire to afford me the opportunity of enjoying his hospitality and your good-fellowship, and not as dictated by those considerations which vanity might suggest, then this paper is to be regarded as scarcely more than a mere formality — a passport entitling me to entrance upon these coveted pleasures.

I have selected the subject announced in the title as one in which obstetrician and surgeon must be alike interested. In view both of the increased gravity of cancer of the cervix of the uterus when complicated by pregnancy, and of the many considerations which must, in most instances, be taken into account in deciding upon the proper treatment, there is probably no class of cases which demands greater accuracy in observation, wisdom in interpretation, and skill in management. It has, therefore, been somewhat of a surprise to me to find the question so briefly and unsatisfactorily dealt with in the treatises at my disposal. This was one consideration which influenced me in the selection of this subject.

Aside from this, the subject seemed to me a most suitable one for this occasion. The condition whose treatment constitutes the subject of this paper presents itself to the obstetrician and to the surgeon in slightly different lights,—due to their respective points of view,—there being just that shade of difference which is conveyed by the terms employed by each in referring to this condition. To the obstetrician it is pregnancy complicated by cancer; to the surgeon it is cancer complicated by pregnancy. To the

one, a normal physiological process assumes a new phase from the advent of a serious pathological condition; to the other, a pathological condition always grave, but by no means hopeless, is rendered far more serious by the existing physiological condition. In the solution of the problem presented the one considers what measures are demanded by the invasion of the pregnant uterus by a malignant neoplasm; the other, what modification of the procedures regularly indicated in the treatment of a malignant tumor of the cervix must be made when the invaded organ contains a more or less completely developed human being. From these considerations, therefore, it would be natural to predict that the obstetrician would be inclined to defer operative intervention to a later date than would the surgeon, and that the surgeon, on his part, would be disposed to grant to the interests of the unborn child less consideration than would the obstetrician.

But the gravity of these cases is such as to demand that in deciding upon the course of treatment each phase of the case should be accorded its proper significance, unbiassed by the dicta of any specialty. The position in which I am now placed, as a surgeon addressing a society of obstetricians, seems to me peculiarly adapted to the endeavor to formulate for the handling of these cases certain general impartial rules, in which full justice shall be done to the claims of both mother and child. Ignoring the questions of etiology, pathology, symptomatology and diagnosis, let us assume that we have before us a case presenting the condition under discussion. What method of procedure are we to adopt when this fact has been ascertained?

Fortunately, conception rarely takes place in the presence of cancer of the cervix of the uterus, the very nature of the disease almost precluding its occurrence. The onset of the cancer, then, is usually subsequent to conception. Since this lesion is most common in women who have borne one or more children, its earlier symptoms are quickly recognized by them as a departure from the course of former pregnancies; alarm is excited, and advice promptly sought. This results in an early detection of the malady.

Because the course of cancer of the cervix when complicated by pregnancy is more aggressive than otherwise, and for other cogent and obvious reasons, its management demands special consideration. In this consideration we are to take into account the precarious condition of the child, which rarely goes to the full term of intra-uterine life; the constant dangers which beset the woman from hemorrhage and infection; and, finally, at labor, rents which may extend into the peritoneum and lead to fatal peritonitis; or, should the uterine canal be occluded or rendered incapable of even moderate dilatation, there is the possibility of rupture of the uterus, on the one hand, or, on the other, the impossibility of terminating the labor without resorting at last to surgical procedures. Nor should the grave question of the rights of the unborn child be overlooked.

From the above considerations it is manifest that the well-established principles governing the treatment of cervical cancer in general must be modified when pregnancy exists. Our method of procedure will be influenced by a number of factors, chief among which are the extent of the lesion and the stage of pregnancy. On this basis we may divide these compli-

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cated cases into three groups, each having its own indications for treatment:

(1) Those cases in which the cancer appears before the termination of the fourth month of pregnancy and remains limited to the cervix.

(2) Those in which the disease is discovered after the fourth month and remains limited to the cervix.

(3) Those in which, regardless of the stage of pregnancy, the disease has extended to the vagina, and possibly neighboring structures, rendering the condition inoperable.

With our cases thus classified, two prominent points are to be noted: (1) In the first and third groups the indications for treatment are apparent, positive and constant, as contrasted with the second group, in which our method of procedure is variable and can be arrived at in each instance only after intelligent judgment, founded upon the consideration of numerous details. (2) While possessing the above point in common when contrasted with the second group, when compared with each other we find that our first and third groups are exactly opposite in the result sought and in the method of their management. For this reason the indications for treatment can best be brought out by departing from our order of enumeration and considering the third group immediately after the first.

The treatment of the first group of cases—those in which the cancer appears before the termination of the fourth month of pregnancy and is limited to the cervix—is apparent. At this early stage of pregnancy no thought of saving the life of the child can be entertained, and our sole consideration must be the welfare of the mother. We are, therefore, to proceed exactly as we would in dealing with a cervical cancer in a non-pregnant uterus. Hysterectomy is to be promptly performed, preferably by the vaginal route. Usually at this stage of pregnancy the uterus can be easily removed *per vaginam*. Should the calibre of the vagina, or the existence of some other obstacle, not admit of this method, total hysterectomy by the high route must be resorted to.

In the third group of cases—those in which, regardless of the stage of pregnancy, the disease has extended to the vagina, and possibly neighboring structures, rendering the condition inoperable—the indications, while equally as obvious as in the first group, lead to the adoption of exactly an opposite course, and our efforts are entirely in behalf of the child. The disease having reached an inoperable stage, it is likely that the pregnancy is well advanced, except in those rare cases in which the cancer existed prior to conception. In either case the outlook for the mother is utterly hopeless. Our endeavor here must be to sustain her until the end of term, if possible, or at least until the child has reached a viable age. During this time it is essential that she be kept under the closest surveillance; for, in spite of our efforts, intervention may be demanded at any moment on account of exhaustion or hemorrhage or to forestall premature expulsion. If we are successful in carrying the woman to term, delivery then by the natural channel is fraught with such formidable dangers—laceration, hemorrhage, infection, with peritonitis—that Cæsarean section should always be resorted to as less perilous. Should delivery before term be unavoidable, on account of the exigencies above mentioned, Cæsarean section should be performed where

there is the slightest chance of securing a viable child, and it is also the only method to be adopted prior to such time, if it be apparent that the passage of even an undeveloped fetal head through the diseased cervix would end in fatal hemorrhage or a poisoned wound of the peritoneum.

Our course in dealing with each of the two classes of cases thus far considered was clearly indicated by the conditions, and the unavoidable sacrifice of a life in each instance left us unhampered in our efforts to rescue the other—the mother in the first group, the child in the third. Coming now to the treatment of the cases included in the second group of our classification,—those in which the disease is discovered after the fourth month and remains limited to the cervix,—the conditions are more complicated and demand more serious consideration.

Here we recognize the possibility of accomplishing that most desirable object, the saving of the lives of both mother and child, and our efforts should be directed to that end. With these cases our course should be to keep the woman under the closest observation for a time and subject her to frequent examinations. If it is evident, after several inspections, that the disease is progressing with such rapidity that it will advance to an inoperable stage before the child has reached the period of viability, the possibility of saving both lives no longer exists, and the child's life must be sacrificed. Immediate ablation of the uterus is now demanded. In this class of cases the supra-vaginal route is chosen, and the operation is a Porro, continued to complete extirpation.

If, on the other hand, we find the disease to be progressing but slowly, so that it is plain that the mother's cause will not suffer materially by a few weeks' delay, postponement should be recommended. Should we thus feel justified in deferring operation until the completion of the seventh month, or later, if possible, Cæsarean section, followed by complete removal of the uterus, may result in the rescue of the child, and at the same time accomplish for the mother all that could have been hoped for from an earlier operation. The necessity for the practice of this plan grows more imperative as the case approaches the end of the normal period of gestation, so that it becomes a plain duty to give to the child, after it has reached the time of probable viability, as many days of intra-uterine life as may be consistent with the safety of the mother.

The responsibility in this class of cases is especially serious. Though at no period of gestation is the life of the fetus to be lightly considered, or sacrificed save from the conviction that the step is necessary for the rescue of the mother, yet the claims of the child upon us grow more pressing as fetal life advances. On this account the mother should, and usually will, take some hazard upon herself for the sake of her unborn offspring.

I wish to append a report of three cases of cancer of the cervix, complicated by pregnancy, successfully treated by operation. Two of these were of the kind described in the first group of our classification, and the other belonged to the second. They are briefly as follows:

CASE I. Mrs. P., referred by Dr. Devany, of Wakefield, Va., consulted me July 29, 1897. Age twenty-six, married seven years. Two children; youngest four years old. Dates her trouble from birth of last child. At this delivery a laceration was

produced. Ever since has had more or less trouble, such as bearing-down pains, backache, vaginal discharge, sometimes severe itching of external parts. Is now and then melancholy and nervous. All symptoms increased during menstruation.

Menstruation, which had been regular, did not appear the middle of May as expected. The ordinary signs of pregnancy developed in proper order. Believing herself pregnant she was mystified by a constant bloody discharge, on account of which she consulted Dr. Devany. Examination revealed a three and a half months' pregnancy. The cervix was occupied by carcinomatous growth involving nearly the entire vaginal portion. Microscopical findings verified the diagnosis and immediate operation was proposed.

Because of the extensive deposit abdominal panhysterectomy was advised, and accomplished on August 5, 1897. Her recovery was quick and easy and she left the Old Dominion Hospital on September 3, 1897.

A recent examination of this patient shows her in perfect health.

CASE II. Referred by Dr. John T. Graham, of Wytheville, Va., and operated on in his private sanatorium. Mrs. H., age thirty-eight years. Has had five children and two abortions in nine years. Youngest child two years old. Consulted Dr. Graham June 17, 1899. He found a large bilateral laceration of the cervix, which occurred at her first delivery. Had phlebitis in both legs after birth of last child. Dr. Graham found the cervix much enlarged, with great eversion of lips. Menstruation had not been regular, and was now several weeks overdue. Medicated tampons were used to reduce size of cervix with a view to performing trachelorrhaphy. Treatment availed nothing. Points of induration began to break down. Rapid ulceration took place and the true character of the disease was quickly made out. Cancer of the cervix was diagnosed, and on July 16th I saw the patient with Dr. Graham, and on the following day complete abdominal hysterectomy was performed. The progress of her recovery was satisfactory until the fourth week after operation, when she developed phlebitis of her left leg and likewise suffered an acute congestion of the kidneys. Her recovery from this point on was tedious. Finally all symptoms subsided, and she is now entirely well.

CASE III. Mrs. B., referred by Dr. J. P. Haller, of Pocahontas, Va., January 17, 1898. Is twenty-four years old, married six years, one child five years old. Has suffered more or less ever since the birth of her baby.

Dr. Haller says of her in a letter dated January 9th: "She has suffered greatly at menstrual periods. Menstruation ceased five and one-half months ago; since this time uterus has steadily enlarged. Os hard to reach by examining finger. Through a speculum observed bilateral rent. Anterior lip much enlarged but smooth; posterior lip everted and covered with granulations, which bleed on slightest touch." I examined this patient January 17th and found all that Dr. Haller has described. A diagnosis of cervical cancer complicated by pregnancy was given. This was verified by the microscope.

In view of the facts that her general health was superb, the disease was just beginning around the os and was limited to a very small area, and that the pregnancy had advanced to the middle of the sixth

month, it was determined to postpone operation, hoping to resuscitate the child later on. Dr. Haller kept a close watch on her until March 13th, when she returned to the Old Dominion Hospital. It was plain that the disease had made advance, and as the child was considered viable, being now well on into the seventh month, Casarean section followed by complete extirpation was done on March 22d. The child was extracted alive and received the rite of baptism immediately on its removal. It survived two and one-half hours.

This patient made an unusually easy recovery, and returned to her home, four hundred miles away, on May 3, 1898. I had opportunity to examine her August 18, 1899, and found her absolutely well.

THIRD INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY, HELD AT AMSTERDAM, AUGUST 8-12, 1899.¹

BY GEORGE J. ENGLEMAN, M.D., BOSTON.

It seems late in the day to dwell upon the International Congress of August, 1899, and yet I take pleasure in presenting to you, at the request of our President, such of the more striking features of this great gathering of gynecologists as I may now recall.

The attendance was large, some 200. Many governments and national societies were represented, and papers so numerous that it was repeatedly necessary to separate into an obstetrical and gynecological section to accomplish the work planned. French, of course, predominated by reason of the close proximity of France and Belgium. Pinard, Richelot, Doyen, Jacobs, Reverdin, of Geneva, the previous president, and others equally able, added much of interest to the meeting. The English were few in number. Among them were men we love to honor, such as Robert Barnes, Simpson, Alexander, of Edinburgh, Sinclair, of Manchester, and leaders such as these. Our own country was well represented by a membership of 27: Baldy, Edebohls, Fry and King, of Washington, Davis, of Philadelphia, Gordon, of Maine, Palmer Dudley, of New York, Reed, of Cincinnati, Carsons, of Detroit, and others, who took an active part in scientific discussions and business transactions as well, owing in a great measure to the organized and harmonious action of the American delegation.

The absence of the Germans was much regretted, although in no way did it interfere with the interest and success of the Congress. The unfortunate discussion which arose some years ago between Martin, of Berlin, and Treub, of Amsterdam, the President of the Congress, who had mildly objected to the introduction of foreign elements into the faculties of Dutch universities where native talent was available, had become so acrimonious and had so aroused the national feeling of the Germans that no one attended, with the exception of my good friend Ziegenspeck, of Munich, and even those who were to take part officially in the opening of discussions as *rapporteurs*, whose papers had already been distributed in printed form, did not appear, although the feeling was against Treub the Dutch professor, and not against Treub the President of the Congress; it was a purely personal

¹ Read before the Obstetrical Society of Boston, January 16, 1900.

matter, and will in no way influence the position of German gynecologists with regard to the next Congress, in which, I already understand, they will take active part.

As is usual at such large gatherings, nothing absolutely new was presented. The anastomosis forceps of La Place, of Philadelphia, were well received. Robert Bell, of Glasgow, detailed his very successful results in the treatment of uterine cancer in its early stages by thyroid ingestion, and reported favorably on the use of the parotid and mammary gland extracts in uterine and ovarian disease. Goldspohn, of Chicago, explained his combination of the Alexander operation with inguinal celiotomy through the dilated internal ring, for the breaking down of uterine adhesions and other minor interferences, a proceeding which will hardly find general favor by reason of the inherent danger of hernia. Doyen endeavored to impress the advantages of his angiotribe, which dates back to 1897, the Moscow Congress unnecessarily bringing before the meeting his claim of precedence over Tuffier. The cautery clamp of Skene found a warm friend and advocate in Jacobs, of Brussels, who presented it as a much more serviceable instrument than the clumsy angiotribe. German instruments of similar construction, the *Hebelklemme* of Thumin and the *Brennklemme* of Winter, did not appear.

The subjects officially presented for discussion were: *Gynecological*: (1) "The Operative Treatment of Fibroids"; (2) "The Relative Value of Antisepsis and Perfected Technique in Practical Results of Operative Gynecology." *Obstetrical*: (1) "The Influence of Posture on Form and Dimensions of the Pelvis"; (2) "The Indications for Caesarean Section with Reference to Symphyseotomy, Craniotomy, and the Induction of Premature Labor."

Interest centered in the question of the operative treatment of fibroids, some 44 having inscribed their names to take part in the discussions, which were opened by Baldy and Doyen. Schauta, one of the *rapporteurs*, was not present, but his conclusions as they appeared in the abstract merit consideration. He says: (1) Operate only if the tumor causes disturbances *which cannot otherwise be overcome*; (2) total vaginal hysterectomy he looks upon as the safest and easiest, if the tumor is not above the navel and easily pressed into the pelvis; (3) abdominal section for more or less immovable and partially intraligamentous growths; (4) the supravaginal amputation, with intraperitoneal treatment of pedicle, he still adheres to as yet more safe than total hysterectomy, though not so satisfactory in final results; considers it valuable as an emergency operation; (5) enucleation whether by the vaginal or abdominal route is no safer than extirpation; (6) castration; (7) curettement hardly to be considered; (8) the clamp he looks upon as possessing no advantages over the ligature, but often useful in emergency. The propriety of removing the ovaries is questionable, as the unpleasant sequences are not done away with by leaving the organs. If left the symptoms appear at once; if removed they come somewhat later.

The conclusions of Doyen may likewise be of interest by reason of the prominent position he now takes. He resorts to the vaginal operation if the case seems an easy one; to abdominal laparotomy if difficult. Abdominal myomectomy he rarely performs; for large multiple interstitial growths he believes total abdomi-

nal hysterectomy with closure of the peritoneum most advantageous.

In the active and interesting discussion which followed, participated in by so many able surgeons from all quarters, almost every one presented some deviation, some method of his own with its peculiar advantages, and I may prominently mention Jonnesco, the brilliant young Roumanian, professor of surgery in Bucharest, whose method of bringing together the abdominal walls with coaptation of layers, without buried sutures, is most ingenious, always using metallic suture, silver, or preferably bronzed aluminum.

After the close of the afternoon session we were given an opportunity to see a demonstration of the kinematograph as a practical aid in medical instruction and record by Doyen, who has certainly utilized this wonderful instrument to its utmost and presented a series of marvellously perfect living pictures showing his various operations—a removal of the kidney in four minutes, operation on the brain in six minutes, etc. Technically, the demonstration was perfect, but it hardly seemed appropriate when upon a continuance of these attractive pictures, after the close of the session upon the following afternoon, numbers of ladies and children swelled the crowd who had gathered to see the show, and the Secretary-General, Dr. Jacobs, very justly insisted upon having the hall cleared of those whom curiosity had attracted, before the display was permitted to begin. In his operations, performed at the private hospital of Dr. Mendes de Leon in the early morning, so as not to interfere with sessions, he did not display the same rapidity, though it is not just to judge the operator working amid strange surroundings, and at the same time endeavoring to demonstrate his method, but it is that which does not appeal to us—the crushing of tissues with the heavy angiotribe, with its hundreds or thousands of pounds of pressure, and then the ligature in addition, of course an *en masse* ligature, although the crushed tissues were hardly thicker than a strip of parchment. Not one of the patients recovered. At Moscow he was equally unfortunate, I understand, every one of the five operations performed during the session of the International Congress in 1897 terminating fatally. Of three upon whom he operated in Edinburgh, at the meeting of the British Medical Association, one recovered. The Amsterdam cases, his assistant told me later, had been, before operation, in the same room with a patient suffering from tetanus.

Reynier, of Paris, discussed abdominal hysterectomy for cancer in a very able manner, and I mention the fact more especially because it is interesting to see how the American method has assumed prominence, even here where the vaginal operation until recently has been supreme for malignant disease, and quite a strife is now being waged among French surgeons by the various claimants for precedence in this operation, whilst, as far as I can recall, it was Jacobs who first drew attention to the advantages of the abdominal route, after a careful study of the work of American operators.

The influence of posture on shape and diameters of the pelvis was presented by Bonnaire, of Paris, and Bué, of Lille; Pinzano, of Pisa; Lebedoff, of St. Petersburg, and Walcher, who unfortunately, like all the German *rapporteurs*, was absent. A most careful study of the subject has been made, and of extreme interest were the series of experiments made to

determine with precision the variations in size and shape of the pelvis in different positions: in the cadaver, the elasticity of the tissues least, a somewhat greater yielding in the living non-pregnant subject, and greatest in the pregnant and parturient. It is clearly demonstrated that the suspended or Walcher position enlarges the pelvic inlet, whilst it narrows the outlet; *vice versa* a lithotomy position widens the outlet and narrows the inlet.

These facts thus scientifically demonstrated were corroborated by clinical evidence, by successful cases in which delivery had been accomplished in the suspended position where forceps and possibly symphyseotomy would otherwise have been called for.

To Walcher unquestionably belongs the credit of first demonstrating the possibilities of the method, of giving it a scientific foundation and likewise of practically applying it; yet there are some unwilling to allow this, who still refer to the now famous illustrations of Mercurio and Melli, who, in the Middle Ages, pictured a similar position to facilitate the examination and delivery of very fat women. If any reference is made in Mercurio, and in a rather hasty examination I have not found it, of the adaptation of this position to difficult labor from other causes, it is but incidental and can never be compared with the precise and scientific descriptions of Walcher. Such a position has, however, actually been in use for ages in cases of retarded labor, though hitherto neither understood nor appreciated by the obstetrician, and by the way, the only truly suspended position, the one resorted to by primitive peoples, which was first described and pictured in my book on labor in 1882. It is historically interesting, and, like many other of the practices of primitive peoples, presents some points for serious consideration; this actual suspension possessing the advantage of mobility over the fixed Walcher position, thus admitting of the shifting of the pelvic axis and a variation of position with the advance of the head, a point of very decided importance when we consider the narrowing of the pelvic outlet by the Walcher and its widening by the lithotomy position, which must of course follow as labor progresses, if it is to be facilitated in all its stages.

It is interesting to note that Pinard, the warm advocate of symphyseotomy, objects very decidedly to this awkward position, which, I must say, cannot be well adapted to present conditions and to modern obstetrics, however satisfactory it prove. He was one of those who opened the discussion upon the Cæsarean section as compared with craniotomy, symphyseotomy and the induction of premature labor, and spoke of symphyseotomy as distinctly an easy operation. A most fluent, eloquent speaker, always interesting, with an enormous material at his command. He strongly emphasized the importance of discontinuing in our obstetrical practice, (1) the induction of premature labor, as at least 30 per cent. of the children are lost; (2) forceps and version in retarded labor due to resistance of head by bony parts of pelvis; (3) embryotomy on the living child.

The arguments of other speakers rather favored Cæsarean section, as contrasted with symphyseotomy, allowing to each, however, its proper field; the statistics of Leopold and Olshausen were referred to, with a mortality of from seven to eight per cent., expunged 5.8 per cent., Zweifel being quoted with 1.7 per cent. only.

There was much to interest the surgeon in the discussion of the second gynecological topic, "The Relative Bearing of Antisepsis, and the Improved Technique in the Recent Results of Gynecological Operations."

Richelot made a very excellent point, that details of execution decide the question, dexterity with judgment, the combined use of dextrous hands and good common sense, and that antisepsis in unison with improved technique is paving the way for true conservative surgery. He rather disparaged the gloves, shaved face, and the mask now in favor with Germask, and dwelt upon the far greater importance of rapid operation, with brief exposure of tissues and a minimal loss of blood.

Bunn looks upon antisepsis as simple of attainment, that this we have accomplished, that technicalities are difficult and that we have technique, now neglected for antisepsis, yet to learn and to perfect.

The Congress was well managed, without unnecessary red tape, and work was pleasantly relieved by social evenings, luncheons, dinners, and most interesting excursions to Scheveningen and on the winding water ways to the old Dutch town of Edam, with a sail on the quaint medieval boats of the herring fleet of Volendam to the Island of Marken. It was on a Sunday, and everywhere we were greeted by the entire population in their attractive costumes, still adhered to by man, woman and child, and strikingly different in every one of these places. Among the many pleasant recollections of this meeting not the least is the charming hospitality of our Amsterdam friends, which gave us a glimpse of Dutch life rarely granted the stranger.

The International Committee has now definitely accepted the invitation of the British Gynecological Society and the next Congress is to take place in London, 1902. The American National Committee appointed by the American delegation at Amsterdam is: Drs. Engelmann, Boston, Chairman; McMurtrie, Louisville; Reed, Cincinnati; Whitridge, Baltimore; Dudley, New York, Secretary.

GUNSHOT WOUND OF THE ABDOMEN, WITH MULTIPLE WOUNDS OF THE INTESTINE.¹

BY HOWARD A. LOTHROP, A.M., M.D., BOSTON,
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THE following patient came under my care on the service of Dr. George H. Monks, at the Boston City Hospital, and I am indebted to his kindness for the privilege of reporting it. J. T., colored, thirty-one years of age, was brought to the accident room of the Boston City Hospital just before midnight on August 7th, with the history of having been shot in the abdomen. He was perfectly conscious and it was learned that he had been shot at very close range, and that the weapon was a revolver of 32 calibre. He entered the hospital about one hour after his injury. He had been eating and drinking during the evening, but was not intoxicated.

Inspection showed a man of medium height and muscular. He was restless, and was complaining of great pain referred to the abdomen. The mucous

¹ Read at a meeting of the Surgical Section of the Suffolk District Medical Society, January 3, 1900.

membranes of his lips and conjunctiva were rather pale and he was perspiring freely. His pulse was 80, regular, of fair strength, but not of full volume. His respiration was slightly increased and was costal rather than abdominal. The abdomen was only slightly distended, but the muscles were perfectly rigid, and there was extreme general tenderness, which made palpation of little value. On percussion the abdomen was everywhere tympanitic except in the flanks, where there was a suspicion that more than the normal dullness was present. About three inches above the anterior superior spine of the left ilium was a nearly circular, finely ragged wound, somewhat less than a quarter of an inch in diameter. There had been only slight hemorrhage from this wound, which was apparently free from shreds of clothing, and it had allowed nothing to escape from the abdomen. There was no other bullet wound to be found, nor was the bullet to be discovered subcutaneously. There was no direct evidence by which the direction of the bullet could be determined, although it seemed obvious that certain of the abdominal viscera had been injured. The wound was not probed. The patient had not vomited, nor had his bowels moved since the shooting, so that the question of blood in the stomach or lower bowel could not be determined. He was catheterized and a normal urine obtained.

The nature of his injury was explained to him and an immediate celiotomy was performed under ether narcosis, two hours having elapsed since his injury. A median incision five and one-half inches long was made, extending from just above the umbilicus nearly to the os pubis. The peritoneal cavity was everywhere filled with blood and clots, and the streaks of bright blood showed that hemorrhage was still going on. On everting the left abdominal wall, the wound showing where the bullet had entered the peritoneal cavity was discovered. The skin and the peritoneal wounds were so placed as to show that the wall had been penetrated obliquely, and the projection of a line connecting these two points showed that the course of the bullet was directed downward and to the right toward the true pelvis, which contained much blood and was evidently the source of fresh hemorrhage. Exploration showed that the bullet had entered the right true pelvic wall and fresh blood was rapidly coming through the wound in the pelvic fascia. Without further exploration of this wound it was packed with gauze and the hemorrhage easily controlled. The abdominal cavity was then carefully irrigated with copious amounts of warm salt solution and the free blood and clots removed, and there seemed to be no further source of alarming hemorrhage.

During this procedure it was observed that the intestines were markedly collapsed, and wounds in the small intestine had been observed, through which much of the intestinal contents had entered the peritoneal cavity. The bladder was not injured. From the fact that bullets take a straight course through the abdominal cavity it was decided that the only viscera exposed to injury in this instance were the intestines, together with their mesenteries and the great omentum.

Starting from the ileocecal region a systematic exploration for perforations of the small intestine was begun and the first group of perforations was about five inches from the lower end of the ileum. The bullet had evidently passed through a knuckle of the

bowel, making four perforations close together and injuring the mesentery. As the gut was nearly severed, enterectomy was performed, thereby removing about six inches of intestine, together with a portion of the mesentery, and the ends united by interrupted Lembert sutures of fine silk. The ends were held in approximation by about six sutures and then inverted and a second row of Lembert sutures applied about three-eighths of an inch apart, particular care being exercised at the mesenteric attachment. About 18 inches further up the ileum was another group of four perforations, which had practically severed the bowels. Here a second resection was performed and the ends united as above. The intestine was then further explored by running the coils through the hands within the abdominal cavity, and at no time were any coils exposed on the surface of the abdomen except those which were wounded and needed sutures or resection. About 10 feet from the ileocecal region was a third group of perforations. There were two circular holes and about four inches distant was a ragged wound about two inches long parallel with the intestine. The mucous membrane was much everted and injected. The small wounds were closed transversely with interrupted Lembert sutures, but the longer wound was sutured longitudinally. No further perforations were suspected, but the search was continued toward the jejunum, and at about the middle of the jejunum another group of wounds was discovered and this coil was pulled down from the left hypochondrium. Here were two pouting circular bullet wounds, which were closed transversely. Near by was a contused area parallel with the intestine and about an inch and a half long, where only the serous coat seemed to be intact; it was of a dark-blue color and very thin. The serous coat was invaginated and sutured longitudinally, thereby constricting the lumen of the intestine somewhat. The rest of the jejunum was intact. The ileocecal region was intact. No wound was found in the descending colon and the transverse colon was above the track of the bullet. A superficial wound of the serous coat of the sigmoid flexure was then discovered and sutured. The bullet had passed anterior to the rectum, which was found to be intact. It seemed evident that no further viscera had been wounded. Manipulation and peristalsis had changed the position of the intestinal coils so that none of the perforation remained along the track of the bullet.

The temporary gauze packing was still in the wound in the pelvic wall, and there was no hemorrhage from any source. This packing was now removed and the wound explored with the finger. The bullet had passed through the pelvic fascia and the obturator internus muscle, and was felt deeply imbedded in the body of the ischium. The sacral plexus was uninjured and the finger in the track of the bullet detected pulsation in the branches of the internal iliac artery. An attempt was made to dislodge the bullet which was ineffectual, as the bullet was deep and firmly imbedded. The wound was deep in the pelvis and these manipulations had started fresh hemorrhages of considerable magnitude, which could be controlled only by packing. On account of the length of time consumed in the intestinal repair, it was thought best to control this hemorrhage by tampon. During the operation the abdomen was irrigated from time to time with hot salt solution, and all fecal extravasation and clots removed as far as

possible. About thirty quarts of salt solution were used for this purpose. At the close of the operation the abdomen was left full of this solution and the upper portion of the wound closed, leaving a small opening below, through which extended strips of gauze into the pelvic fascia to the seat of the bullet.

The duration of the operation was about two hours. As the patient was suffering from shock consequent on the early hemorrhage, infusion of salt solution in the pectoral regions was begun as soon as he was etherized, and three quarts were thus made to enter the circulation. During the operation he received subcutaneously, strychnia, one-fifth of a grain; tincture of digitalis, 48 minims; brandy, one ounce. At the close of operation the pulse was 140, regular, and of fairly good strength and volume, and he was perspiring profusely. He recovered well from his ether and did not vomit. Rectal alimentation and stimulation were begun at once and continued for three days. The stimulant enema consisted of a pint of salt solution and an ounce each of brandy and black coffee; the nutrient enema of two ounces each of peptonized milk and beef juice, one egg, ten grains of pepsin, and five minims of tincture of opium. These enemata were given alternately every four hours. The lips and mouth were moistened occasionally, and he was allowed small pieces of cracked ice sparingly.

Eight hours after the operation, the pulse was 120, and he was recovering from his shock. He remained quiet and made no complaints during the day. His urine was removed by catheter for the first forty-eight hours.

August 9th. Patient was very comfortable. Temperature 99.5°, pulse 90; abdomen soft and not tender; no vomiting; bowels moved by a cleansing enema.

August 10th. Comfortable. Temperature 100°, pulse 95; normal movement of bowels.

August 11th. Liquids by mouth in drachm doses. Highest temperature this p. m. was 101.8°, pulse 92.

August 12th. Convalescing without particular incidents. Temperature 99.5°, pulse 78; abdomen lax, not tender. Two of the four original strips of gauze removed, followed by moderate hemorrhage which stopped at once on the insertion of a third strip.

August 14th (one week after operation). Convalescence uninterrupted. Liquid diet continued; bowels moving regularly, about twice daily. The original gauze strips were removed to-day; not followed by any hemorrhage; fresh gauze packing. Temperature 99°, pulse 76; stitches removed.

August 16th. There was considerable hemorrhage this morning so that the dressing was fairly saturated. The gauze packing was renewed, and the bleeding easily controlled. Patient continues perfectly comfortable, with normal pulse and temperature.

August 17th (ten days after injury). Still on liquid diet and bowels moving regularly, with no signs of leakage at points of suture. Wound healed except at lower end, which is kept open by the strips of gauze for drainage. Abdomen lax and patient perfectly comfortable. During the dressing this morning the gauze wicks were removed as usual, and a single one carefully inserted. For the last few days there has been considerable discharge of a dark color, presumably from broken-down blood clots, but no fecal extravasation. The wound was not irrigated or disturbed beyond the renewal of the wicks. Shortly

after the wick was inserted, fresh blood was seen to rise slowly to the surface, and in a moment it welled up with great force and the hemorrhage was alarming. The index finger was at once inserted into the wound directed toward the site of the bullet, so as to serve as a guide, and then several long wicks were rapidly forced into the wound. This procedure was, of course, extremely painful, but was demanded in order to save the life of the patient, and had to be continued boldly, notwithstanding his cries of pain. Meanwhile ether had been called for and administered, in case it should be necessary to renew this packing. No further hemorrhage followed, however, and it was considered best not to disturb this packing.

August 18th. Patient has been much frightened and nervous since yesterday, but suffers no pain. There has been no further hemorrhage, and the abdomen appears normal and not tender. The temperature rose to 101.5° and the pulse to 130.

August 20th. Temperature has reached normal and pulse remains at 100, and patient is very comfortable. Bowels still moving regularly. Diet increased to solids.

August 24th. The gauze tampons introduced for the hemorrhage of seven days ago removed for the first time. There is much discharge of decomposed blood clot, but no fresh blood followed this dressing. The wound was carefully irrigated and fresh wicks introduced. Patient is comfortable, and is on a general diet. Intestinal wounds remain intact and bowels move regularly. Temperature and pulse continue normal.

August 26th. On account of the unsatisfactory drainage with gauze packing and the marked tendency of the abdominal wound to close, a short rubber drainage tube was inserted and the wound irrigated. No further signs of hemorrhage.

August 29th. Convalescence continues uninterrupted. Patient is on full diet, bowels move daily, the pulse and temperature continue to remain normal, the abdomen is soft and not tender, and no further trouble seems imminent.

August 31st (twenty-five days after the injury). For three weeks this patient had been watched very carefully on account of the tendency to hemorrhage, and his life was saved on the tenth day from what would have been a fatal hemorrhage had not proper assistance been at hand. Two weeks had elapsed since this hemorrhage, the patient was convalescing without incident, and no further trouble was anticipated. At 4 a. m. he observed that his dressing was stained with blood, and he found it difficult to speak loud enough to attract the attention of the orderly in charge. The house surgeon was immediately summoned. He found the patient lying on his back and slightly turned on his left side. The dressing was saturated with blood and there was a long pool of blood in the angle between his body and the mattress, extending from the axilla to the knee and about an inch deep. No radial pulse could be detected, and he presented the symptoms of acute hemorrhage. On removing the dressing only a little blood was seen issuing from the wound, but, nevertheless, gauze packing was at once inserted. Immediate infusion and stimulants were resorted to and he rallied feebly, but failed to react very perceptibly to continued stimulation. Eight hours later he was comatose, and he

died fourteen hours after the occurrence of this hemorrhage.

The autopsy was performed by Dr. F. W. Draper forty hours after death, and to him I am indebted for the following facts selected from his full report: "Inspection of the wound showed no source of hemorrhage. Upon internal examination many of the intestinal loops were found firmly agglutinated, the opposing surfaces being adherent to each other and to adjacent organs and requiring some force to separate them. These inflammatory adhesions were mostly confined to the pelvis, and the intestines otherwise were fairly free from adhesions. In the pelvic region, behind the fundus of the bladder, was a limited peritoneal surface, which was red, velvety and blood-stained. Careful search was made for any blood-vessels in this region which could be the source of the hemorrhage, but the search was fruitless. The bullet was found firmly imbedded in the body of the ischium, considerably battered and with its tip presenting. This position of the bullet may account for the large size of the intestinal wounds consequent on a large frontage as it passed along. The obturator internus muscle was much infiltrated with blood, but no evident source of hemorrhage could be detected in this vicinity. There was no peritonitis. At two points (under the spleen and in the left iliac region) pockets of stringy, glairy pus were found, formed by opposed intestinal folds, and containing each about two fluid ounces. These pus collections had thick walls and were quiescent and becoming absorbed. The resection wounds were found well healed and showing no active lesion. At other points in the loops of the small intestine there were puckered areas where sutures, still plainly visible, had brought the edges of the perforating wounds together firmly, leaving some slightly blood-stained tissue as their only active objective remnant of the primary injury. There was no appreciable change in the lumen of the gut. All tissues of the body were exsanguinated."

Gunshot wounds of the abdomen involving the intestines are not uncommonly met with in hospital practice, and the treatment of such cases varies in the hands of different surgeons. Certain facts which are of value in deciding what is best to do in these cases seem to be reasonably established.

Bullet. — (1) All sizes are dangerous to a high degree with slight practical variation. A small bullet may change its axis and thus present a considerable frontage; (2) extent of injury depends, for the most part, upon the direction and power of penetration; (3) the "explosive action" or "zone of lateral expansion" is a factor in wounds caused by bullets of high velocity (rifle), but it is not a factor to be considered in wounds caused by the ordinary pistols and revolvers.

Diagnosis. — There will be one or two external wounds. The course of the bullet is a straight one in the abdomen, hence the direction whence the bullet came, the position of the victim at the time and a knowledge of the regional anatomy are valuable factors in drawing conclusions. Additional knowledge as to viscera injured may be derived from the vomitus, stools, expectoration and urine. The order of frequency of lesions in the abdominal viscera is as follows: small intestine, large intestine, liver, stomach, kidney, spleen and pancreas. Combined lesions are common. The average number of perforations of the

small intestine made by a single bullet is from three to eight. The maximum number observed is over twenty.

Dangers. — The dangers are, (1) immediate; (2) remote. The immediate dangers are from shock and hemorrhage. Shock is rarely fatal and its extent is no guide as to the extent of the injury. There is always some hemorrhage and it is often an alarming complication, but is not commonly fatal unless the aorta or some large trunk is severed, when death will follow shortly after the accident. The remote dangers are peritonitis and secondary hemorrhage and are the usual complications resulting in a fatal issue. Peritonitis is the usual sequel to gunshot wounds of the intestine in a large percentage of cases, whether treated expectantly or by celiotomy. Secondary hemorrhage is at present an unusual cause of death in these cases. It is to be feared most during the second week, consequent on the rupture of an eroded vessel or the softening of a thrombus.

Prognosis. — During the Civil War gunshot wounds were treated expectantly, and of all cases the average mortality was about 90 per cent. Of all cases treated at the present time by expectant methods — rest, opiates, etc. — the mortality is about 70 per cent. In a series of 154 cases of gunshot wounds of the intestines, including all degrees of severity, treated by celiotomy the rate of mortality was as follows: Operation within five hours after injury, 52 per cent.; ten hours after injury, 74 per cent.; twenty hours after injury, 74 per cent.; after twenty hours from time of injury, 78 per cent. Operation was generally useless after a general peritonitis had developed.

The prognosis of intestinal gunshot wounds depends upon several factors. The general health of the patient is an important factor. An empty condition of the bowels is a fortunate circumstance, for this reduces fecal extravasation to a minimum. Profuse irrigation is of great value in early cases in order to cleanse the peritoneal cavity before a peritonitis has set in. The only sure means of finding all the perforations is by instituting a systematic search through all of the intestinal coils. Under the most favorable circumstances, a gunshot wound of the intestines is to be considered a grave injury. Given a gunshot wound of the abdomen, an immediate exploratory median celiotomy should be performed. The objects to be gained are as follows: To determine the extent of injury; to avoid fecal extravasation and infection; to stop hemorrhage; to repair damage; to establish drainage if necessary.

Wounds of intestine should be sutured or resected according to circumstances. The search for injury should be systematic and complete, for intestinal wounds are rarely found in the course of the bullet at time of operation. Profuse irrigation with hot salt solution is most desirable in early cases, and may be of value in cases of general peritonitis, but is contraindicated where the peritonitis is localized. The time required in such operations is often necessarily prolonged and the consequent shock is frequently alarming. This condition is to be overcome frequently by the usual saline infusions, enemata and stimulants.

BEQUEST TO A HOSPITAL. — Through the will of the late David Herbert Sweetser, the Lynn Hospital receives a bequest of \$10,000. Mr. Sweetser had been treasurer of the hospital since its foundation.

THE PRACTICAL VALUE OF THE WHITE BLOOD COUNT IN SURGICAL CASES.¹

BY J. C. HUBBARD, M.D., BOSTON.

My object in looking over the surgical records of the Massachusetts General Hospital since early in 1895 has been to ascertain the practical value of the white blood count in surgical cases, and to show of how great or how small an aid it is to the surgeon when dealing with the probabilities of the presence or absence of pus in an individual case. I shall not attempt to go at any length into the scientific side, but shall confine myself as closely as possible to the subject of this paper, "The Practical Value of the White Blood Count in Surgical Cases."

As most interval appendix operations are performed when the patient is to all intents and purposes well, I have chosen the number of white corpuscles in these chronic cases to represent the normal count. Eighty-three cases of chronic appendicitis were counted. As, however, in three of these some pus was found at operation, I have omitted them in computing the normal count. This leaves 80 cases with an average of 9,240, which falls within the limits set by Cabot for the normal count—5,000 to 10,000. The individual counts in these chronic appendix cases ranged from 4,500 to 18,800. These and the following cases were doubtless counted at various times of day and without regard to meals; therefore, some of them when the blood was taken were probably at that stage of digestion when a digestive leucocytosis is present. Cabot states that 13,000 is as high as it is customary for this leucocytosis to rise. It follows from this, then, that in a certain number of these clean interval appendix cases a definite leucocytosis exists. Three cases, as I have said, had pus, with an average count of 4,350, which is about half as large as that of those without pus. Each of them had the last attack within a month of the operation. Of these 83 cases, one had some slight tenderness with a count of 8,500 and pus, while another with the same slight tenderness but without pus had a count of 13,200, and still another, where the count was 18,800, had no pus.

We can take 9,000 as the normal number for the leucocyte count in a healthy person. Now suppose you see a case of chronic appendicitis, and perhaps find some tenderness or perhaps not, but however it may be, a blood count is made as part of the routine examination, of how much help is it in determining the presence or absence of pus? We are taught to expect pus when the count is high. It may be true on the average, but we are dealing now with individuals. In the hospital cases pus was found when the count was as low as 8,500 and was not found in a case with a count as high as 18,800. This means that pus may be found with a normal count and may not with a decidedly increased count. In other words the blood count is of no particular aid in a number of these cases.

Now to turn to appendicitis during an attack. One hundred and seventy cases were counted. In 113 cases pus was found, and in 57 it was not found. In the purulent cases the average was 18,193, and in the non-purulent 15,550, only a slight difference. The individual counts in the pus cases varied from 8,200, a normal count, to 38,000 and in the non-puru-

lent cases from 6,500 to 32,600. A count, therefore, of anywhere from, roughly, 8,000 to 32,000 is common to either purulent or non-purulent cases. Of the 113 purulent, 105 have a count within this range and of the 57 non-purulent cases 52 come within these limits. So that the count in 92 per cent. of all the cases comes somewhere between 8,000 and 32,000, which range is common to both. Hence in 92 per cent. of the cases the blood count as determining the presence or absence of pus is of no consequence. No especial aid is derived from considering the duration of the attack in relation to the blood count, for on the first day there were various counts ranging up to 23,000 without pus and pus was found in other cases with counts as low as 7,500. So also on the second day there were counts in non-purulent cases as high as 21,600, and in purulent ones as low as 12,700. It might be considered at first sight as though a relative increase or decrease in the number of leucocytes as the disease progressed would be a sign for or against pus formation; for instance, a case entered the hospital with a count of 15,000, which increased in five days to 38,000 and at the operation pus was found. Unfortunately, this does not appear to be true, for here is a case falling from 17,000 in eight days to 9,000, and yet pus was found at the operation. This case is explained probably by the decrease in the virulence of the pus or by its more perfect walling in. Before this increase or decrease in the white count can be of very marked value in the individual case the surgeon must first ask himself and be able to answer these questions: Is the decrease in the blood count due to a decrease in the inflammation, or due to the loss of virulence of the pus, or to the fact that an abscess which exists has already reached the limits of its burrowings and is becoming more definitely localized?—questions difficult to answer. A high count does not necessarily mean that the attack is of a serious nature, for a man with a count of 21,400 got well without an operation, that is, the symptoms were not severe enough to warrant any operation, and another case with a count of 25,000 was not operated on and recovered. In acute appendicitis 75 per cent. of the cases have a count above 13,000, which is the highest count that may normally occur. This presence of leucocytosis may be of aid in making a diagnosis.

In natural sequence the cases of general peritonitis follow those of acute appendicitis. As in general peritonitis from whatever cause, there is no question as to the presence or absence of purulent infection. I have considered these cases in a somewhat different way. Sixty cases were counted, with an average of 19,068. The counts ranged from 4,800 to 47,000. In a case of appendicitis does the blood count show anything in regard to a general peritonitis? In all but two cases out of the 60 the counts lay somewhere between 8,000 and 38,000, which corresponds exactly with the range in the appendix cases. The count, then, in 96 per cent. of the cases is of no aid to the surgeon in trying to decide whether there is a general peritonitis or not. To try to determine its value from a prognostic point of view, I have divided these cases of general peritonitis into those that recovered and those that died. Twenty-three cases recovered, with an average count of 18,921, while 37 cases died, with an average of 19,216. There is practically no difference in these counts. Thinking that perhaps in those cases that died a low count might be of value as in-

¹ Read at a meeting of the Surgical Section of the Suffolk District Medical Society, January 3, 1900.

dicating an inability of the patient to react to the infection, I compared the counts with the temperature, for where there is practically no fever in acute general peritonitis the patient is considered unable to react. One would expect then a low count with a low temperature, as in this fatal case, 8,000; temperature, 98.4°. Here are others, however, which do not follow this rule: 38,200 with a temperature of 99°, and 15,800 with a temperature of 98°, both fatal, and a case that recovered with a count of 19,500 with a temperature of 99.4°. Where there are such great variations as exist in the counts in cases of appendicitis or general peritonitis, the value to the individual of a blood count is reduced to such a small size that it is practically of no use. Seventy-three per cent. of the cases of general peritonitis are accompanied by a leucocytosis, a count over 13,000. This may be of some help in making the diagnosis.

Seventeen cases of fibroid of the uterus were counted, with an average of 9,608, the individual counts ranging from 5,600 to 23,000. They were more closely bunched than this would lead one to suppose, as there was but one case over 14,000. No especial reason was discovered why this case should have so high a count. One other fibroid which I did not include in the 17 had a count of 21,000, but as it was a sloughing submucous variety it doubtless was infected.

There were 26 cases of benign tumors of the ovary and cysts of the ovary or broad ligament; two contained pus and one was twisted and ruptured. This leaves 23 uncomplicated cases, with an average count of 9,543, the individual counts varying from 3,300 to 15,100. The suppurating cysts had counts of 19,000 and 10,200 and the twisted and ruptured of 12,200.

Eighty-four cases of salpingitis were counted, 72 being purulent. The average of these 72 gave a white count of 15,116, the counts running from 6,200 to 32,600. In a number of the cases pus was found where the counts were normal. Thinking that perhaps the system might have become accustomed to the pus, which might have lost its virulence through time, I divided the cases as well as possible into chronic and acute cases. The histories of most of these pelvic troubles are so indefinite that it is hard to pick out a particular date for the onset. As a purely arbitrary time, I considered the elapse of one month to divide the chronic from the acute cases. Looking over the list with this in mind I found that chronic cases of pyosalpinx occurred when the count was 6,200 as well as when it was 24,000, and that the acute cases had not very different limits, 9,200 to 32,600. There were but few cases of salpingitis counted in which pus was not found, 12 cases with an average count of 9,185, the lowest being 5,600 and the highest 11,730. The range from 6,200 to 11,730 is common to both purulent and non-purulent cases. Of the 84 cases of salpingitis 44 per cent. fell within these limits. This makes the count of more value in determining the presence of pus than in the cases of appendicitis. Of the 72 purulent cases only 37 per cent. fell below 11,700, the highest count in the non-purulent, so that in 63 per cent. of the cases a count will aid in diagnosing the presence or absence of pus. Several cases showed a relative increase in the leucocytes in a few days, with the discovery subsequently of pus, and yet one dropped in six days from 16,500 to 11,460 and pus was nevertheless found.

I was in hope that the white count in ectopic gestation might be of aid in making a differential diagnosis from salpingitis. Twenty-three cases of extra-uterine pregnancy had a count made, with an average of 12,286, practically a normal count. The variations in the count, however, were large, 4,800 to 25,800. In these cases there is no question of pus, but I have wondered if the absorption of the blood serum from a ruptured ectopic gestation might not call for a leucocytosis as well as a temperature. This supposition is borne out by a count of 19,200 in a case of ruptured popliteal aneurism. A blood count alone, therefore, in these pelvic troubles is of but slight aid in diagnosis, for non-inflammatory pelvic tumors have counts ranging from 3,300 to 23,000, pus tubes from 5,600 to 32,600, and extra-uterine pregnancies from 4,800 to 25,800. This gives count from 5,600 to 23,000 common property and 87 per cent. of all these cases fall within these limits. Only 48 per cent. of the cases of salpingitis have a leucocytosis. The blood count, therefore, as an aid to diagnosis is not of much value.

The blood in 13 cases of uncomplicated gall-stones was counted, the white corpuscles averaging 11,360. Three cases of empyema of the gall-bladder and abscess of the ducts occurred, averaging 15,066. However, in this as in the cases gone before, the variation in count common to both the simple and the purulent cases is so great that no help can be derived from the count when considering an individual case.

The number of cases of acute inflammation of the gall-bladder that had a blood count was too small to be of any particular value; four cases, two purulent, two not, with counts of 20,400 and 6,000 for the non-purulent and 16,900 and 21,000 for the purulent.

When it is a question of a differential diagnosis between appendicitis, salpingitis and cholecystitis the blood count is of no aid. By reviewing the counts it is seen that the laws which govern leucocytosis, whatever they may be, appear to depend on some personal equation between the susceptibility of the individual and the grade of the inflammation and are not influenced by the locality of that inflammation. The same degree of leucocytosis may occur in inflammation of the appendix as in inflammation of the Fallopian tubes or the gall-bladder, and hence is no help toward a differential diagnosis.

Seven cases of acute intestinal obstruction from various causes occurred, with an average count of 10,014.

Eighteen cases of cancer gave an average of 9,116, and eight of sarcoma of 11,675, all these counts being practically normal except that of one cancer case of 23,800. This may be of help in diagnosing malignant from inflammatory tumors.

Thirty-five cases of abscess formation, abdominal, lumbar, pelvic, subdiaphragmatic, nephritic and in the extremities were counted, giving an average of 22,984, the variations being from 9,000 to 40,000.

If, as we are taught, the increase in the leucocytes is dependent on the pressure exerted on the abscess, we should expect high counts in acute osteomyelitis. Five cases of acute osteomyelitis had counts varying from 14,200 to 20,800 with an average of only 16,880, which is certainly not a high count.

Here follows some counts which I add simply to put them on record: Seven cases of tubercular peritonitis, with an average count of 11,900; five cases of tubercular salpingitis, with an average of 11,280;

two cases of acute hemorrhagic pancreatitis, with counts of 9,200 and 22,800; eight scattered cases of tuberculosis, with an average of 10,912; two cases of suppuration of the knee-joint, 24,600 and 21,200.

To summarize all these cases, 189 non-inflammatory cases, such as cysts, fibroids, extra-uterines, tumors, chronic appendicitis, gall-stones, etc., were averaged, giving 8,811; 71 cases of inflammation not so great as to form pus, with an average of 12,645; and 299 cases of pus formation, with an average of 17,696. These averages show a slight increase from the non-inflammatory to the inflammatory and again to the purulent cases. On the average, blood counts may be of value, but now in individual cases in the non-inflammatory group the counts varied from 4,000 to 25,800, in the simple inflammatory from 5,600 to 32,000, and in the purulent from 4,800 to 47,000. The counts that are common to all three lie somewhere between 5,600 and 25,800. As most of the counts fall within these limits, they are of no practical value to the surgeon when brought face to face with an individual case, and the blood count should have very little weight as compared to the physical signs in helping him to the diagnosis.

From our present knowledge of the causes and variations of leucocytosis we cannot yet make any deductions which are simple enough to be of any great use to the surgeon at the bedside. Doubtless hidden truths might be discovered by juggling with the above counts, but the paths to them would be too tortuous to follow except for scientific investigation.

To end this paper, let me cite one more case, showing how the blood count may point exactly, as we understand it at present, opposite to the physical signs: An abdominal case entered the hospital on October 16th, the second day of illness, with a white count of 19,000, temperature 102°, pulse 108. The abdomen was uniformly rigid and distended. The diagnosis of appendicitis was made. The next day the temperature was 101°, and there were less pain and distention, and yet the blood count had risen to 26,400. The symptoms were never severe enough to warrant an operation, and the patient recovered.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of January 16, 1900, the President, DR. WORCESTER, in the chair.

DR. GEORGE BEN JOHNSTON, of Richmond, Va., by invitation, presented a paper entitled

TREATMENT OF CANCER OF THE CERVIX OF THE UTERUS COMPLICATED BY PREGNANCY.¹

Owing to the unavoidable absence of the author, it was voted that discussion of the paper be deferred until a subsequent meeting.

DR. MALCOLM STORER read a paper entitled

ON INTERMENSTRUAL DYSMENORRHEA.²

DR. W. L. BURRAGE: I can recall a number of these cases. At present I have one under my care

whom I have had charge of for several years. The case is one of sharp ante-flexion with adherent ovaries. For years she has had typical intermenstrual pain such as the reader describes on the fourteenth day. A curetting relieved the pain for some months and cured a discharge of blood coincident with the pain. The pain has, however, been present again until lately, when, according to the patient, she cured it herself by taking a nap every day. The patient was a nervous woman.

DR. E. REYNOLDS: I have seen several such cases, and generally I have found in them some chronic inflammatory process, but I have not been able to satisfy myself that such inflammatory processes were always the cause of the pain. The pain has ordinarily not been worse than the usual menstrual pain and the cases have generally recovered without operation.

DR. C. W. TOWNSEND spoke of a case having pain regularly about the middle of the month, of such intensity as to suggest renal colic, this condition lasting for several years.

DR. G. J. ENGELMANN: I have been much interested in the cases of this nature that I have observed, and while it is curious that these symptoms occur with such regularity, I have not been able to connect them with premenstrual symptoms. I have always been able to overcome the pain in these cases by treatment of the pelvic lesion, and regard the pain as pathological rather than as related to the menstrual epoch.

DR. F. H. DAVENPORT: I am glad to have this subject brought up, as I agree with the reader that these cases are much more common than is generally supposed. Inquiry would certainly show in many cases a set of symptoms occurring at the middle of the menstrual month, usually associated with some pathological condition in the pelvis. What the cause of the pain is, is uncertain. I have always thought that pelvic congestion was the most important factor in causing the pain. Even when there is no gross affection, there is generally evidence that at the time of the pain there is an increased pelvic congestion. In cases where there is no gross lesion the problem is what to do to relieve the symptoms. In many cases I have succeeded in aborting the attacks, or preventing them entirely, by the ordinary treatment for the relief of passive congestion, that is, the use of the glycerine tampon. This is of course only following the line of treatment suggested by the predominant feature.

DR. J. B. SWIFT: I can recall a number of these cases in which there was always a definite lesion in the pelvis. One case, however, who was twelve years under my care, had always had this pain, although everything in the pelvis seemed in order. She was a perfectly healthy woman. The pain came regularly on the twelfth and fourteenth days and was situated sometimes on one side and sometimes on the other. Examinations during these attacks of pain only showed that the ovary on the side affected was more tender than the other. This case has not been affected by treatment.

DR. J. G. BLAKE: From the number of cases of this condition that I have seen I have been led to believe that the pain is due to congestion of the pelvic organs as they begin to fill with blood preparatory to the next menstrual period. My treatment, which has been very satisfactory to me, has been local depletion by scarification, helped out by the use of ichthyol,

¹ See page 401 of the Journal.

² See page 397 of the Journal.

douches, etc. I think the younger members of the profession are too prone to ignore the good effect of depletion. The leeches of old times can be replaced by scarification, removing two drachms to one-half ounce of blood at a time.

DR. G. J. ENGELMANN gave some interesting personal reminiscences of the recent Amsterdam Congress in a paper entitled

THIRD INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY, HELD AT AMSTERDAM, AUGUST 8-12, 1899.³

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, January 3, 1900, DR. J. W. ELLIOT in the chair.

DR. J. C. HUBBARD read a paper on

THE PRACTICAL VALUE OF THE WHITE BLOOD COUNT IN SURGICAL CASES.¹

DR. GREENOUGH: In 1898 I was interested in this subject and particularly in connection with acute appendicitis, and at that time I was able to get from the hospital records just an even 100 cases. I threw out all cases where the blood count was not made within less than twelve hours of the time of operation, and all cases where there was not an accurate description of the conditions found at operation, and from that 100 cases I tried to see if there were any rules that could be made out by which a knowledge of the conditions in the abdomen might be obtained before the operation. Those cases were all severe enough to demand operation and were all acute cases. Any count above 8,000 was considered a leucocytosis. The conclusions were as follows: (1) Leucocytosis may be considered to be a fairly constant symptom of appendicitis; (2) the presence or absence of leucocytosis, as the degree of leucocytosis, without other data is not sufficient to determine the local condition of the appendix and its surroundings; (3) in a series of cases the degree of leucocytosis corresponds roughly with the degree of temperature, but in individual cases great variations are found; (4) the degree of leucocytosis, when considered in connection with the duration of the attack, is of considerable assistance in the diagnosis of the local condition; (5) a leucocytosis above 20,000 on the first or second day of the disease suggests general peritonitis; (6) a low blood count (below 10,000) after the first week, if accompanied by severe symptoms, suggests general peritonitis, and is of grave prognostic significance; but if accompanied by mild symptoms denotes a catarrhal appendix, or well walled off abscess, which has become subacute in character; (7) a high leucocytosis (above 20,000) after the first week may be taken to indicate a local abscess.

I think any one symptom taken alone, and judged as one is inclined to judge leucocytosis, is put very much at a disadvantage, and that if that same symptom is taken in connection with other symptoms it may be of great importance in assisting us in making a diagnosis. For that reason I have thought that the

duration of the attack, which is something available in every history, and such considerations as temperature and physical signs and the general appearance of the patient may be put in to help out the blood count, and when that is done it seems to me a certain amount of very valuable assistance can be got from making the white count in any case of acute appendicitis.

DR. ARTHUR T. CABOT said that he regarded a leucocytosis not as a pathognomonic sign of suppuration, but as an indication which was to be taken in conjunction with other symptoms, and which, when thus used, afforded some aid to the diagnosis. He recalled cases in which, after the active symptoms of inflammation had subsided, a persistent leucocytosis led to a further search and the discovery of an abscess. He thought that cases of appendicitis were subject to considerable variations in the degree of leucocytosis, owing to the varying degrees of tension in those abscesses. A perforated appendix affords more or less drainage to the abscess which has formed around it. In many cases this drainage is sufficient to empty the abscess and bring about a cure. In others the abscess is incompletely emptied, and in others again the cavity intermittently fills and empties. Owing to these variations in the condition under which the pus exists, we should expect variations in the degree of leucocytosis, and Dr. Cabot thought that he had observed such variations explainable in these ways.

DR. HEWES: Without having tabulated the cases I have seen, I should say that they would give about the same general results that Dr. Hubbard mentioned, and if I had to be dogmatic in my conclusions, I should say about what he said. At the same time the value of a clinical sign in diagnosis is to be judged by its suggestive rather than by its absolutely diagnostic character; few signs are absolute, and I have always looked upon the value of leucocytosis as a feature of the case of great suggestive value, just as in a case where you have symptoms that are suggestive of trichinosis or rheumatism or grippe, and you find that in eosinophilia you would be more likely to take out a piece of muscle and look at it, although cases of trichinosis have been reported where you did not get eosinophilia, so if I get leucocytosis in a case it makes me look for all possible causes. If the symptoms in that case are suggestive of appendicitis, for instance, it makes me one step surer that it is an appendix. If a case with fever I rule out typhoid and malaria, and look for conditions associated with leucocytosis. I have never seen a case of appendicitis which had the symptom of leucocytosis present where I did not advise operation and have never seen one operated in that way that did not have pus. Of course in some cases in which operation was advised the advice was not taken. I can illustrate the suggestive value by several cases of surgical interest which I have seen. I remember being called twice to very young children who had indefinite signs, pain and fever, and looking at the blood I found an extreme leucocytosis, 40,000 in one case and 38,000 in another. There being no signs of exanthemata, I looked for pus, and after a systematic search found middle-ear suppuration in both cases. I have seen three cases in which I was sent for to look at the blood for malaria, but on looking at the fresh blood I noticed the great number of leucocytes, and said, "This cannot be malaria and it is very likely pus." One case turned

¹ See page 409 of the Journal.

³ See page 403 of the Journal.

out to be prostatic abscess, another middle ear. That is what I mean by the suggestive value of leucocytosis, the fact that you get it makes you look for serious causes, although ordinary things like gastritis may cause it. It seems to me you are less likely to overlook serious things if you take leucocytosis seriously.

DR. THORNDIKE: I have so few figures at my disposal that it does not seem worth while to read them. In a general way they agree with Dr. Hubbard's, and seem to point against the reliability of leucocytosis as a sign of diagnostic value in surgical cases. At the same time it must be remembered that few diagnostic aids are infallible and we rarely expect a diagnosis to depend upon one sign alone. It is the whole clinical picture made up of many bits of evidence upon which our opinion must be based—our opinion as to the operative or non-operative indications in the given instance. Any aid to this grouping of evidence which forms the opinion, even if such aid is not infallible, must be of value. The x-ray is such an aid even though misleading at times. Leucocytosis is such an aid—also misleading at times, but still of the greatest value in many doubtful cases. I have recently operated twice in the very beginning of acute osteomyelitis—so early in the disease that I am sure I should have delayed for further operative encouragement, had not marked leucocytosis in both cases compelled an operation in each instance. Dr. Hubbard's statistics are both interesting and valuable, but I do not think they should be taken as proving anything more than the fallibility of a leucocyte count in surgical cases. They certainly do not prove its worthlessness.

DR. MUNRO: I have always regarded leucocytosis as a great comfort to bear out one's judgment that has been based on other diagnostic signs. I have never hesitated to operate where other diagnostic signs indicated, if leucocytosis has been absent, but it has been a great comfort to feel there was a leucocytosis when all other signs bore out the inclination to operate for pus.

DR. RICHARDSON: I have learned to place much reliance upon the blood count in connection with acute abdominal symptoms. If in a case of appendicitis there is considerable doubt whether to operate or not, the blood count becomes an important factor. When local and constitutional signs indicate clearly the necessity for operation, I should then operate whatever the blood count might be. To delay in such cases, when there is no leucocytosis, may lead to disaster. I recall a case in which the count was not abnormal, and yet an exploration showed a general peritonitis. The general infection was so overwhelming that there was no reaction whatever. My feeling is that in the blood count we have a guide which, though generally of great value, is not always unerring.

DR. ELLIOT: It seems to me this is a subject of great importance in that we have had these blood counts made year after year, and now we hope to reap something from them. From the practical surgeon's point of view the question we want to decide is, does the blood count help us in a difficult case? Dr. Richardson said that in a doubtful case it helps you if you get an increase in the whites. It is the same point that Dr. Hewes made; it is suggestive. But suppose everything else is evenly balanced and you don't know what to do, should the leucocytosis guide you? In appendicitis the rule of almost all surgeons would be

if we were doubtful, and some one symptom was a little worse than we liked to leave it, we would operate. So with leucocytosis, but that rather begs the question. The true test of its value is to balance the other symptoms evenly, and if there is no leucocytosis, no operation; if there is a leucocytosis we operate. Unfortunately, exactly that circumstance came to me in the hospital. I was surgeon to the out-patients then. In that case the physical examination was negative on account of a very fat abdomen, and yet the patient was evidently ill. The blood count gave no leucocytosis, and although I could not decide before, it decided me not to operate. The next morning I did operate and found the abdomen full of pus. There is no doubt, in my mind, that a leucocytosis in a test case like this is not decisive, and all the figures given here to-night more or less confirm this view. It has a certain value in that it is another symptom which requires study and explanation and may thus lead to a correct diagnosis. I remember a case of extra-uterine pregnancy where it was very difficult to make a diagnosis; the blood count was very high, and therefore every one thought it must be salpingitis. In another case of typhoid perforation the leucocytosis had been taken in the evening. I think it was 8,000, and in the morning it was 17,000, very much increased over night, and I operated with all the more encouragement, but it did not decide the question. I think the subject clearly needs much more study. It seems to me we are at present pretty much at sea in the matter.

DR. H. A. LOTHROP reported a case of

GUNSHOT WOUND OF THE ABDOMEN, WITH MULTIPLE WOUNDS OF THE INTESTINE.²

DR. MUNRO: It is an extremely interesting case and worthy of better discussion than I am able to offer. One point Dr. Lothrop mentioned that impressed me because it has been my experience in a number of these acute abdominal hemorrhages, and that is the low pulse. I think almost without exception every case of abdominal acute hemorrhage other than extra-uterine pregnancy, such as bullet wounds, stab wounds, etc., where the abdomen has been full of retained blood, had a slow pulse, in many cases of good volume, and occasionally of poor volume. I have seen a number of abdomens that were distended with blood, fresh and in clots, with a pulse of 72 and 80. I think that it is of value to recognize this fact, as it is not brought out to any extent in the books. A factor that has decided me to operate in cases of contusion of the abdomen with rupture of the liver or spleen has been a normal pulse with distention and spasm, and not a high pulse, which the books lead us to believe is always essential to these cases.

DR. ELLIOT: I would like to ask Dr. Lothrop if the blood was examined at all during the case, or if the time of coagulation was tested during the course of the case?

DR. LOTHROP: I think there were no examinations made (that is, examinations of blood as to time of coagulation).

DR. ELLIOT: Was there anything about the blood in the bed that suggested its deterioration?

DR. LOTHROP: It was clotted.

DR. ELLIOT: Probably in the normal time, because it was seen very quickly?

² See page 405 of the Journal.

DR. LOTHROP: I am inclined to think the hemorrhage was slow and that the blood was some time accumulating.

DR. ELLIOT: I sympathize with Dr. Lothrop in his unfortunate result. I would make the suggestion that the hemorrhage and the transfusion of salt solution may have altered the constitution of the blood, and in a similar case I think I should surely have the blood examined carefully as to its time of coagulation, and in such a case I should do everything I could to restore the quality of the blood. Perhaps the first hemorrhage reducing the quality of the blood was what finally killed the man, although you were able by transfusion to pull him through for a certain time; he never got the right quality of blood. It seems to me if it had been a real hemorrhage from an artery the vessel would have been found. I saw this year a case in Dr. Homans's service that bled repeatedly from muscular substance, and no bleeding point was ever found. He finally poured the wound full of perchloride of iron and left it. The man finally recovered. I think the blood was not examined there either. I do not know that you could do anything, do not know of anything to correct that condition of blood, but I think it would be interesting to study the matter and see what could be done.

DR. HEWES: The injection of gelatine into the circulation has been reported to affect the coagulability of the blood considerably. It seems to me that it would be rather odd if the condition of the blood did not pick up in that time between the hemorrhages.

DR. CABOT said he was a believer in irrigation as a means of cleansing the abdominal cavity. Especially is it useful in those cases where, through injury or rupture, the intestinal contents have escaped into the general peritoneal cavity. In his experience of gunshot wounds of the intestine it has been a not uncommon thing to find small loops of the bowel fairly riddled with perforations, and for these conditions he thinks a resection of these portions of the bowels the best and quickest method of dealing with them.

Recent Literature.

La peste et son microbe. Par le DR. NETTER, Professeur agrégé à la Faculté de Médecine de Paris. Pp. 124. Paris: Carré et Naud. 1900.

This little volume gives a very good résumé of the subject to the present time in four chapters, which treat of the following topics: (1) The plague bacillus: its morphological characteristics; action upon animals; modification of its virulence; action of heat, drying, light and disinfectants upon it. (2) Clinical history: the bubonic plague, different forms—septicemic, pneumonic and intestinal; diagnosis, etc. (3) Method of spread and prevention: direct and indirect contagion; action of rats and parasites; seasonal prevalence and duration. (4) Serotherapy and vaccination.

A very clear diagram illustrates the results of an experiment in vaccinating nearly the entire population of the city of Hubli, in British India. The results obtained in this and other cities by the use of Haffkine's vaccine were very convincing.

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SCIENCE PURE AND SCIENCE APPLIED.

THE tendency of the improvement in instruction in our larger medical schools during the past decade, and of the greatly increased competition in all medical work, has resulted in the production of more and more limited fields of study and practice and in the sharper limitation of specialties, both scientific and practical. While the advance in this direction has been in many ways beneficial, enabling the scientist and practical physician each to devote himself more exclusively to some specific branch of medicine, and to become more expert and skilled in this line than would be otherwise possible, there are certain evident dangers in carrying this tendency too far. The physician whose life is devoted to too narrow a specialty is likely to become narrow in his general views of medicine, and to be ignorant or careless of important facts in other branches which have no less a bearing on the subject as a whole than those connected with his own department. This condition has long been evident among our scientific teachers; it is daily becoming more and more apparent among our practitioners, especially among those who are connected with the larger medical institutions and devote a larger portion of their time to study and investigation.

It is not only, however, between the different branches of medical science themselves or between the various specialties of medical practice that this want of understanding and thorough appreciation exists. For many years, almost since the establishment of the larger laboratories, there has been a marked separation between the permanent scientific workers or heads of laboratories, and the practitioners. Their aims have been different until they have become so separated that the one class is losing knowledge, and, to a certain degree, interest in the other. This is especially the case with the purely scientific teachers, whose ignorance of clinical work and of the practice of medicine is regrettable. The general practitioner knows a little about scientific work; the physicians connected with larger institutions in larger cities still more. Nevertheless, the separation between

these two classes of medical men is altogether too wide.

One reason for this lies in the fact that the scientific men have devoted their time and abilities too much to the investigation of purely scientific subjects. The value of such investigation is great and its results are often its justification. But there is another form of investigation which belongs to the scientific physician, which we believe equally or more important. This is investigation along lines which are likely to improve the practical knowledge, the *practice*, and not merely the theory, of medicine. Such subjects for investigation if not known to the scientific worker can readily be pointed out by the clinician. The time is not far distant when we hope to see the scientific investigator and the scientific practitioner working more closely together.

Any form of medical education which draws these classes further apart, we strongly deprecate. Any medical system which would confer a degree upon a medical scientist who had no knowledge of the practice of medicine, and thus legalize his admission as a teacher in a medical institution would seem a serious mistake in medical education, and can only lead to a greater divergence in the aims and views of two classes of men to whom co-operation is essential for their best work.

ANNUAL REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

THE report of the Massachusetts General Hospital for 1899 is, as usual, an interesting and important document. It impresses upon us again what we are perhaps not likely to forget, that progress in the systematic care of the sick has never been more rapid than now, and that a modern hospital bears but a faint resemblance to its predecessor of a generation ago. The report before us commemorates very notable advances even within the last year, and marks out a plan of expansion for the immediate future, which must be a source of satisfaction to all who are interested in hospital development.

The special report of the trustees gives the following statistics of the work of the hospital: The total number of patients treated during the year was 5,086, against 5,053 in 1898, and the average number in the hospital was 261, against 253 in 1898. The number of free patients treated during the year was 2,981, against 3,010 in 1898, and the number of patients paying in whole or in part was 2,105, against 2,043 in 1898. The average cost per week was \$13.74, against \$13.16 in 1898. The number of out-patients (new cases) treated during the year was 31,003, against 28,741 in 1898. This service involved 104,205 visits—a daily average of 340—and the filling of 65,530 prescriptions. The number of patients treated in the accident room during the year was 3,977, against 3,514 in 1898. Of this number 958 were retained in the hospital.

It is further recorded that the average length of time of residence of paying and free patients in the hospital was nineteen days, or twenty days if the Convalescent Home be included, a fact which the trustees regard with satisfaction, and which they attribute to improved medical and surgical practice. This is no doubt in great measure justified, but it must also be remembered that cases with chronic tendencies are carefully excluded from the wards or permitted to remain but a short time, if admitted. Statistics of this sort are misleading, if this fact is not borne in mind.

The trustees have words of great commendation for the work of the Clinical-Pathological Laboratory, for which they have recently appropriated \$2,500, for the purpose of enlarging the present quarters, and establishing a model plant for photomicrography. The perfectly clear recognition of the importance of laboratory research in close conjunction with the everyday work of the hospital wards is sure to bring results of importance and to pave the way toward a union of the so-called practical and scientific sides of medicine, which at times seem to be too widely separated, either for the good of science or of practice.

Of the new buildings now in process of construction the surgical operating building is one which has long been particularly needed, and which will no doubt be appreciated by the surgeons, who have hitherto been forced to put up with accommodations quite behind the present standard of surgical requirements. A domestic building and an addition to the Nurses' Home will soon be furnished, both of them structures which the growth of the hospital has rendered imperatively necessary. Other contemplated buildings are an adequate and properly equipped out-patient department, and a ward building in connection with the out-patient service.

The director of the Clinical-Pathological Laboratory, Dr. J. H. Wright, gives an excellent account of the scope and function of such a laboratory. He says in part: "The foundation of clinical or pathological laboratories in exclusive connection with hospitals is a comparatively recent thing in this country, where it is only beginning to be generally recognized that our knowledge of the nature and causes of disease has reached the dignity of a science with great possibilities for the good of the human race; and that properly equipped laboratories are quite as necessary for the proper cultivation of this science as are laboratories for biology, chemistry, or physics. At the present time, there are probably not more than half a dozen such special laboratories that are worthy of the name in this country; while in some European countries, particularly in Germany, the hospital laboratory has been regarded for many years as a necessary department of a large hospital, and it is largely due to these laboratories that Germany has been able to add so much to medical knowledge, for most of the remarkable progress in medicine and surgery has been made possible through experiments and observations

carried on in them." At the end of Dr. Wright's report is printed a list of publications from the laboratory, an example which should certainly be followed by other departments of the hospital.

The development of the McLean Hospital is uninterrupted. Dr. Cowles, Medical Superintendent, speaking of the recent tendency toward a closer clinical study of patients, remarks: "It is interesting to note that our conceptions of the principal forms of mental disease have changed gradually through being subjected to the rigid tests of actual cases, and that this leads to simplifying the forms or making fewer of them. The encouragement is in the sense of having gained certain satisfactory conceptions that stand the test of clinical facts." It is to be noted that "melancholia" and "mania" no longer occupy a place in the tabulated list of diseases. An addition of importance to the McLean Hospital has been the installation of an admirable hydrotherapeutic apparatus.

Fifty-two pages of this otherwise excellent report are taken up with the inevitable tables of medical and surgical diseases of the General Hospital, and this exclusive of the Out-Patient Department, which receives scant notice anywhere. The diseases are not carefully tabulated and are of small value as statistics or for purposes of reference. Dementia, neurasthenia and hysteria, for example, are classed as surgical diseases, as is also miscarriage. As we have before had occasion to say, such statistics are worthless unless prepared with scrupulous care. The difficulty seems inherent in the system, and is by no means peculiar to the Massachusetts Hospital. It is a matter for congratulation that the out-patient diseases were wholly omitted. But why should there not be some reform in this matter of the tabulation of diseases, which is so easily capable of reformation?

ARMY CONTRACT SURGEONS.

SURGEON-GENERAL STERNBERG has prepared a bill, just submitted to Congress with the approval of the Secretary of War, providing for the appointment as commissioned officers of volunteers, with the rank of first lieutenant, of contract surgeons who have rendered one year's faithful and satisfactory service in the army of the United States. The bill provides for such appointments after the usual physical and professional examinations, and the officers so commissioned are to be subject to honorable discharge when their services are no longer required. The bill also provides for the promotion of such assistant surgeons to the rank of captain after two years' faithful and satisfactory service as a commissioned officer in the grade of lieutenant. There are now nearly five hundred contract surgeons serving with troops, and the above bill is in line with the constant efforts of the Surgeon-General to improve their status and promote their welfare. These men are frequently called upon to fill places of great responsibility, but are constantly at an official dis-

advantage through their lack of definite military rights and authority. It is much to be hoped that Congress will do justice to this class of deserving medical men, but the urgent needs of the Army Medical Department appear to receive but little consideration when compared with the claims of the practical politicians outside the service.

We recently received a letter from a doctor of first-rate academic and professional training, the possessor of some of the best degrees to be had in this country, who had served two years as an acting assistant surgeon. In reading the letter one gets the feeling that "the iron had entered into the soul" of the writer. But the letter throws a clear light upon a sombre corner of the service and we make extracts therefrom without apologies.

Some time ago, while in conversation with an officer of the United States Army, upon the subject of the acting assistant surgeon of the army, I asked him his opinion of the contract surgeons. His answer was, "They are no better than our common packers or civilian teamsters; in the eyes of the officers and privates of the army they are outsiders, hired by the Government, and are entitled to no more consideration than merely the payment of \$150, as specified in their contracts." This from a man whose only redeeming feature, if so it may be called, was a silver leaf upon his shoulder and the uniform he wore. That is the general opinion and position of the army towards the contract surgeon, and especially the opinion of the younger regular and volunteer surgeons in our army, who because they are the wearers of a single bar upon the shoulder, in the majority of cases, I am sorry to say, place that above and value it more than the little cross upon their collars, the symbol of a profession at once noble and self-sacrificing.

After a service of two years in the United States Army as an acting assistant surgeon, and a careful study of the conditions existing in our medical corps, I can honestly say that it is my opinion that "rank" is the curse of our medical corps, and I believe that the shoulder bar and leaf have been responsible for more of the mismanagement and terrible mortality in our camps during the late war than anything else. What difference did it make whether a man was absolutely incompetent as a physician or surgeon, and was jeopardizing the lives of his fellow men every day he lived? Was he not a "major" or a "colonel," or a "commissioned" officer in the regular or volunteer army? Did that not give him the right to be careless? Did that not give him the right to jeopardize human life? From what I have seen, it seems so, and I think that the contract surgeon of the army will uphold me in my statement.

What would the army have done without the acting assistant surgeons? Yet they are the men who are most trodden upon and get absolutely no credit for their work. The contract surgeon has no "rank" in the army, therefore he is at his best in the wards and by the bedside of the suffering soldier. The contract surgeon does not have to bring a poor tottering sick man to "attention" because he has "rank" stamped upon his shoulder! He is a "doctor of medicine," not a "lieutenant" or "major," and who would not choose the former title? He is in the army on his merit as a physician or surgeon and gets his standing by that, not by the length of time he may have been in

the army. Many of them, yes, most of them, are men who have held responsible positions in civil life, and because their country needed them, they threw up everything and responded with a will to the call.

Many of them have died and are still dying from wounds and disease; many will carry the marks of their service to the grave with them; many will be unable to regain what they have lost by their devotion to their country; and what have the representatives of that country done for them? They have put them in the worst sink-holes of our island possessions, exposed them to every sort of contagion and filth; they have put them under men who were socially and professionally their inferiors; forced them to see their fellow men suffer from epidemics which they could not prevent, because those who had the courage to speak out promptly had their contracts annulled and were dismissed. They have been asked even to forswear their professional opinion. They have been hooted at by privates and jeered at by officers of the army. They have been misrepresented without a chance to redeem themselves or deny statements made against them. Without a word of warning their contracts were annulled; they were simply dropped at the word and discretion of any one under whose command they happened to be, without any investigation whatever. If the statement was made that a contract surgeon was incompetent, it made no difference whether the statement was true or not as long as it was endorsed by "rank."

MEDICAL NOTES.

STATISTICS FROM CARLSBAD FOR 1899. — At Carlsbad, the Austrian watering place, according to the official report which has just been published by the authorities, 50,543 persons were registered as bathers in 1899. Of these, 19,780 visitors came from Austria and Hungary, 28,328 from other European countries, 2,193 from America, 170 from Africa, 66 from Asia and 6 from Australia. Among the visitors from European countries 944 visitors registered from England, Scotland and Ireland, 560 came from France, 259 from Italy, 5,674 from Russia, 333 from Sweden and Norway, 273 from Switzerland and 118 from Denmark. Of the 50,543 visitors, 26,322 were males and 24,221 females. From England 460 males and 484 females, and from America 989 males and 1,024 females, came to use the waters of Carlsbad. As in Carlsbad only the names of those visitors are registered as bathers who stay longer than eight days, and for the purpose of drinking the waters, holidaymakers, tourists and other travellers, whose number amounted to 108,000 in 1899, were registered separately, and therefore Carlsbad, as in former years, claims the record of being the most frequented bathing place in Europe.

RESIGNATION OF SIR WILLIAM C. GAIRDNER. — Sir William C. Gairdner has resigned his position as professor of the practice of physic in the University of Glasgow, owing to advancing years and defective eyesight. On the occasion of his formal resignation he said: "My class-room and my hospital remain now, as they have all along been, the greatest of my occupations and the sources of the most profound satisfac-

tion in endeavoring to serve thereby my day and generation." In the words of the *Lancet*, Sir William's forte as a teacher has been that he has always been a learner.

DEATH OF SIR WILLIAM OVEREND PRIESTLY. — The death is announced of Sir William Overend Priestly, member of Parliament for the Universities of Edinburgh and St. Andrew's since 1896, and former president of the Obstetrical Society of London. Dr. Priestly was seventy-one years old, a graduate in medicine of the University of Edinburgh, and the author of various works on obstetrics. He was knighted in 1893.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the six days ending at noon, April 17, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 56, scarlatina 32, measles 87, typhoid fever 4.

BOSTON SOCIETY OF MEDICAL SCIENCES. — At a meeting of the Society held April 10th, papers were presented as follows: Dr. G. B. Magrath spoke "On the Relation of Age, Physique and Preliminary Training to Class Rank in Pathology," from which the relatively greater importance of age and preliminary training was shown. Dr. F. P. Denny gave a "Report on the Examination for Diphtheria Bacilli of Cultures from Four Hundred and Seventy-five Healthy Individuals." Dr. F. B. Mallory demonstrated three new methods of staining, original with him, illustrated by microscope slides. Dr. J. H. Wright reported the pathological anatomy of a case of multiple myelomata, with lantern-slide demonstration.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The annual meeting commemorating the fiftieth anniversary of the Society will be held at the Massachusetts Institute of Technology, Walker Building (corner of Boylston and Clarendon Streets), Room 22, Saturday, April 28th, at 8 P. M. Attention is called to the announcement on the last page.

PHYSICAL EDUCATION SOCIETY. — At the last meeting of the Society Dr. Myles Standish read a paper on the care of school children's eyes and Dr. J. S. Stone one on proper seating. Dr. Stone also took occasion to explain a model school chair devised by Professor Miller, of the Massachusetts Institute of Technology.

NEW YORK.

A CASE OF GASTRO-ENTEROSTOMY. — On April 9th Dr. Robert F. Weir showed at the Medical Association of the Greater City of New York a remarkably successful case of gastro-enterostomy for carcinoma of the stomach. The patient, a woman of over forty, was operated on four weeks ago, and is now in excellent condition and daily gaining in weight. The tumor, which felt on external manipulation about the size of a large orange, was at first supposed to be a pyloric growth. An exploratory incision showed,

however, that the pylorus was but little involved. In the subsequent operation a large section of the stomach, extending some seven inches along the greater curvature and five inches along the lesser curvature, was removed. The patient's recovery was rapid and uneventful.

THE QUESTION OF MIDWIVES.—At a hearing on April 13th, before Mayor Van Wyck, on the Plunkitt Bill, a midwife made the statement that she purchased a diploma for \$200, "without ever seeing the body of a woman or child, or even a woman's bone." When she got the diploma she felt so incompetent that she did not dare to practise, and so went to Germany and took a thorough course of study. The bill referred to, which was passed by the Legislature last month, provides that all midwives practising in New York City must first pass an examination of a commission of five physicians appointed for the purpose by the Board of Health.

APPOINTMENT OF DRs. WEIR AND BULL.—Drs. Robert F. Weir and William T. Bull, the professors of surgery in the College of Physicians and Surgeons, have been appointed attending surgeons to Roosevelt Hospital, and will divide between them the service from which Dr. McBurney recently resigned. In the future their clinics, which have heretofore been held at the New York Hospital, which is at a considerable distance from the college, will be at the Roosevelt, directly opposite the college buildings. Dr. Weir has been an attending surgeon at the New York Hospital for nearly thirty years.

COLLECTION OF HOSPITAL SATURDAY AND SUNDAY ASSOCIATION.—The official report shows this annual collection to have been \$74,177, which is some \$4,000 more than last year. Of this amount over \$9,000, or \$2,000 in excess of any previous year, was collected by the Woman's Auxiliary. Thirteen thousand dollars was specially designated to particular hospitals by individual donors. On April 13th the undesignated fund was distributed to the various institutions represented in the Association, on the basis, as usual, of the free work done by each.

ARMY NOTES.

COMPLIMENTARY DINNER TO COL. C. H. ALDEN.—Army medical officers of the active and retired lists, on duty near or residing in the city of Washington, will give a complimentary dinner to Col. C. H. Alden, Assistant Surgeon-General, on the eve of his retirement from active service, on April 28th, by reason of age. Colonel Alden entered the army as an assistant surgeon in 1860, serving throughout the Civil War and being brevetted major and lieutenant-colonel for faithful and meritorious services. Colonel Alden saw much service on the frontier after the Civil War, but has latterly acted in an executive capacity in connection with various army examining boards and the office of the Surgeon-General, acting as assistant to the Sur-

geon-General during the war with Spain. Colonel Alden carries with him into private life the respect and esteem of all who have been brought into association with him. He intends to make his future home at Hingham, Mass.

WOODBIDGE TREATMENT OF TYPHOID FEVER.—It is understood that a board of medical officers convened to investigate the merits of the Woodbridge treatment of typhoid fever, as carried out at the Fort Myer General Hospital during the war with Spain by Dr. Woodbridge himself, then major and surgeon, United States Volunteers, finds a mortality of about ten per cent. of all cases treated by the Woodbridge method and about seven per cent. of all cases treated by other methods. In all, about 600 cases of typhoid fever were treated at the Fort Myer Hospital; of these, 57 were treated by Dr. Woodbridge, who was afforded every facility in the application of his treatment.

MEETING OF THE CONFEDERATE SURGEONS' ASSOCIATION.—A feature of the reunion of Confederate veterans, to be held at Louisville, Ky., on May 30th, will be the meeting of the Confederate Surgeons' Association. A medical committee has been appointed by the general committee, and Dr. Preston B. Scott, one of the two surviving medical directors of the Confederate Army, has been made chairman. It is stated that the whereabouts of about 1,500 ex-Confederate surgeons is known to the committee, which will use every effort to secure a large attendance.

SPECIAL NURSES.—A general order has been issued by the War Department governing the employment of special nurses for sick officers and soldiers at stations where treatment in an army hospital cannot be obtained. In such cases it is stipulated that the attending physician shall certify that the services of the nurse were indispensable. The rate of compensation is the same as that allowed army nurses serving in the United States, namely, \$10 per week.

DR. CABELL RETIRES FROM THE "MAINE."—Dr. J. C. Cabell, Captain and Assistant Surgeon, United States Army, retired, who has for some months been in command of the American hospital ship *Maine*, receiving the British wounded in South Africa, has relinquished command of this ship and is now *en route* to the United States, the leave of absence granted him by the War Department having expired.

TO STUDY BUBONIC PLAGUE.—Lieut. W. J. Calvert, Assistant Surgeon, United States Army, one of the members of the board of medical officers appointed to study tropical diseases in the Philippines, has gone to Japan to study bubonic plague under Kitasato at the University of Tokio.

A WHOLESALE REQUISITION FOR PILLS AND THERMOMETERS.—As showing the magnitude of medical operations in the Philippines it is interesting to note that a recent requisition, among other items, contained a request for five million quinine pills and ten thousand clinical thermometers.

Miscellaneous.

MOSQUITOES AND THE MARCH OF EMPIRE.

ONE of the most useful things, according to the *Practitioner*, which we have learned in these latter days is the infinite importance of the infinitely little. To practical men of only a decade ago the idea that mosquitoes were the greatest obstacle to the expansion of our empire would have seemed mere foolishness. We now know that if we are to carry out our mission of civilizing the heathen (and taking charge of his land) and bear the "white man's burden" successfully (and reap the profit of the undertaking), we must conquer the white man's worst enemy—that is, malaria. Therefore all the batteries of science must be directed on the germ-bearing mosquito. As may be gathered from the address delivered at the Royal Colonial Institute a week or two ago by Dr. Manson, the experts feel tolerably sure that the extermination of the mosquito is quite within the sphere of practical hygiene. But even mosquitoes cannot be killed without money. It is, therefore, an enterprise of great pith and moment to make business men looking for new markets realize that money bestowed for that purpose is a thoroughly sound investment in a commercial sense. And malaria, though the worst, is not the only enemy that hinders the march of empire. There are other diseases, both epidemic and endemic, that must be overcome if the tropics are to become habitable by our race. Here, again, we have to fight the infinitesimal. The solution of the problem of acclimatization lies in the destruction of microbes, and this, in Dr. Manson's phrase, is a question of knowledge and the application of knowledge. The London School of Tropical Medicine has been founded with the object of gaining the necessary knowledge and teaching men whose way of professional life lies in the Colonies how to apply that knowledge. It is already doing excellent work, but if it is to do the State all the service which should be done by such an institution, it must be much more fully equipped than it now is with the means of research and of teaching. It is earnestly to be hoped that Dr. Manson's appeal for a liberal endowment will not fall on deaf ears.

Correspondence.

DR. LEFFINGWELL PROTESTS.

AURORA-ON-CAYUGA LAKE, N. Y.,
April 11, 1900.

MR. EDITOR:—Simply in the interest of scientific accuracy, will you permit me to utter a gentle protest against the method employed by Dr. J. J. Putnam in that criticism of my pamphlet which recently he contributed to your columns? Of its many inaccuracies and misstatements I shall not speak, but one or two peculiarities of his method so touch the ethics of all criticism that I ask for space to refer to them.

It would seem a matter beyond any possible questioning that Professor Putnam had no sort of right to change the language of a statement which I had criticised in order to render my criticism void and inaccurate. This is precisely what he has done more than once. For instance, Professor Putnam calls attention to what he describes as "the statement, originally made, I believe, by Ludwig, and cited by Mosso in the biography of his great teacher, to the effect

that many experiments would be made impossible by the occurrence of pain. Dr. Leffingwell rejoins," etc.

Now I rejoined to nothing of the kind. Mosso "cited" nothing of the kind either from Ludwig or anybody else. In my pamphlet I quoted Mosso's words from the *London Lancet's* translation: "It is an error to believe that experiments can be performed on an animal which feels"; I quoted from a manuscript that Professor Mosso sent me himself: "It is an error to think that one can experiment on animals that have not lost sensation"; and I now quote from the original essay in *La Revue Scientifique* of July 27, 1895: "*C'est une erreur de croire que l'on peut faire des expériences sur un animal qui sent.*" That statement—whether in the original or in either of its translations—is absolutely untrue, and I said so in my pamphlet. Professor Putnam sees it as well as anybody; but he also sees that by changing Mosso's language, and inserting the word "many" before "experiments" he could frame a statement that would be entirely truthful. To do this—and then to quote me as "rejoining" to a statement manufactured by himself—is that in accord with the ethics of controversy as Professor Putnam understands them? To be sure he admits that he is not giving "the exact expressions used" by Mosso, since he had no "access to the original." I leave it to your readers to value that apology at its true worth.

Let me cite yet another instance. Dr. Leffingwell, he says, "*denies the justice of the claim which Professor Porter makes, that animals are kept from suffering any considerable pain*" when vivisected under anesthetics or narcotics at the Medical School. Absolutely untrue; Professor Porter made no such claim and I have certainly made no such denial. That which I criticised in the pamphlet was something entirely different. In the *Boston Transcript*, Professor Porter and his associates had declared in regard to "painful vivisections" that "such investigations are rare. None such have been made in the Harvard Medical School within our knowledge." That statement was certainly untrue; nobody defends it since I pointed out the experiments of Dr. Ott—to say nothing of the investigations of Professor Porter himself. Dr. Putnam sees its untruth as well as anybody, so he constructs a new sentence; puts it into the mouth of Professor Porter as being what he "believes to have been Professor Porter's meaning," and cites me as "denying" it! If others believe in this method of controversy, I do not; and I must protest against being quoted as opposing assertions manufactured by my critic for the sole purpose of rendering my own criticism void. I cannot regard it as a very laudable line of conduct, nor one that in any way tends to the elucidation of the truth.

Very truly yours,
ALBERT LEFFINGWELL, M.D.

ANOTHER HAIR-BALL.

BOSTON, April 13, 1900.

MR. EDITOR:—Dr. Brewster's case of hair-ball, in the last number of the *JOURNAL*, reminds me of one in London in 1866, under the care of Mr. Knowsley Thornton. A young woman of about twenty-five years of age had a sausage-shaped tumor in the region of the transverse colon. It was about ten inches long and its exact nature could not be made out, but it seemed to be within the colon. When Mr. Thornton opened the abdomen the tumor was found to be in the stomach and on opening the stomach the tumor was found to occupy its long axis and to consist of a mass of hair, nine inches long by two and a half wide, which had been gradually swallowed during the past twelve years at the daily morning and evening combings, the hair combed out at those times having been twisted up, put in the mouth and swallowed. The patient recovered. As it was the first time I had seen the stomach opened, the case made a strong impression on me.

Very truly yours,
JOHN HOMANS, M.D.

METEOROLOGICAL RECORD

For the week ending April 7th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...1	29.94	43	54	32	42	40	41	N.W.	W.	18	12	C.	C.
M...2	30.04	50	59	40	47	44	46	N.W.	S.	18	12	F.	C.
T...3	29.73	43	47	39	32	33	32	N.W.	W.	11	13	R.	C.
W...4	29.91	42	51	32	61	60	60	N.W.	N.W.	18	15	C.	C.
T...5	30.03	38	45	31	44	52	43	N.W.	E.	7	2	C.	C.
F...6	29.65	48	59	38	48	54	51	N.W.	N.W.	16	16	C.	C.
S...7	29.52	50	58	41	52	59	46	N.W.	N.W.	12	16	C.	C.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☞ Mean for week.

New York 14, Boston 5, Baltimore 3, Pittsburg, Providence and Newton 1 each. From erysipelas New York 18, Boston 3, Springfield 1. From scarlet fever New York 14, Boston 2, Worcester, Cambridge, Salem and Malden 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending March 31st, the death-rate was 21.4. Deaths reported 4,753: acute diseases of the respiratory organs (London) 469, measles 168, whooping-cough 146, diphtheria 80, diarrhoea 38, fever 34, scarlet fever 29, small-pox (Liverpool and Hull 1 each) 2.

The death-rates ranged from 11.9 in Croydon to 36.8 in Wolverhampton; Birmingham 24.1, Bradford 18.6, Cardiff 19.3, Gateshead 15.7, Huddersfield 13.5, Hull 23.8, Leeds 23.1, Liverpool 31.3, London 20.3, Manchester 27.2, Newcastle-on-Tyne 17.6, Nottingham 17.6, Portsmouth 14.4, Sheffield 25.6, Sunderland 20.5, Swansea 16.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 14, 1900.

F. W. OLCOTT, passed assistant surgeon, ordered to duty at the Naval Recruiting Rendezvous, Philadelphia, Pa.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY, CENSORS' EXAMINATION.—The censors of the Suffolk District Medical Society, officiating for the Society at large, will meet to examine candidates for admission to the Massachusetts Medical Society at 19 Boylston Place, on Thursday, May 10, 1900, at 2 P. M.

Candidates should make personal application to the Secretary and present their medical diploma or its equivalent at least three days before the examination.

For further particulars apply from 2 to 3 P. M. to HOWARD A. LOTHROP, M.D., Secretary, 10 Marlborough Street.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The annual meeting, commemorating the fiftieth anniversary of the Society will be held at the Massachusetts Institute of Technology, Walker Building (corner of Boylston and Clarendon Streets), Room 22, Saturday, April 28th, at 8 P. M. Brief remarks pertaining to the formation, history and objects of the Society will be made by Drs. B. Joy Jeffries, A. T. Cabot, J. C. White, D. W. Cheever, J. C. Warren, Geo. B. Shattuck and H. L. Burrell.

Business: Report of the librarian and treasurer; election of officers; appointment of delegates to the annual meeting of the American Medical Association. Supper at the Brunswick after the meeting.

HERBERT L. BURRELL, M.D., President.
HOWARD A. LOTHROP, M.D., Secretary,
10 Marlborough Street.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION.—The Association will meet at "The Shoreham," Washington, D. C., May 1, 1900.

AMERICAN ACADEMY OF MEDICINE.—The twenty-fifth annual meeting of the Academy will be held at "The Shelburne," on the beach at the end of Michigan Avenue, Atlantic City, N. J., on Saturday, June 2, and Monday, June 4, 1900.

AMERICAN DERMATOLOGICAL ASSOCIATION.—The twenty-fourth annual meeting of the Association will be held at the Hotel Gordon, Washington, D. C., May 1, 2 and 3, 1900, in connection with the fifth triennial session of the Congress of American Physicians and Surgeons.

AMERICAN SURGICAL ASSOCIATION.—The meeting of the Association will be held at the Columbia University Building, Lecture Hall No. 2, Washington, D. C., May 1, 2, 3, 1900.

AMERICAN GYNECOLOGICAL SOCIETY.—The twenty-fifth annual meeting of the Society will be held in Washington, D. C., May 1, 2 and 3, 1900, at Columbian University.

AMERICAN OTOLOGICAL SOCIETY.—The thirty-third annual meeting of the Society will be held this year on Tuesday, May 1st, at the Arlington House, Washington, D. C., in connection with the fifth Congress of American Physicians and Surgeons.

FREDERICK L. JACKSON, M.D., Secretary.

RECENT DEATHS.

FRANK D. KIMBALL, M.D., twenty-four years of age, house surgeon at the City Hospital on Blackwell's Island, died on April 12th, from suppurative meningitis resulting from mastoid abscess. The latter was due to otitis incidental to an attack of influenza, which during the past season appears to have been attended to an unusual extent with deep-seated inflammations of the ear. Dr. Kimball was a graduate of Dartmouth College and of the Medical Department of the University of the City of New York.

GEORGE H. CONKLIN, M.D., the oldest practising physician in Suffolk County, N. Y., died at his home in Babylon, L. I., on April 12th, at the age of eighty-nine.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 7, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,564	1647	581	22.32	25.74	.72	2.82	1.6
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	579,416	276	70	26.28	21.24	2.19	3.96	.36
Baltimore	506,389	230	67	18.92	22.79	1.29	3.44	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	137	50	18.98	26.28	—	2.19	2.19
Washington	277,000	169	46	18.88	10.03	1.18	1.18	.59
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	106	17	1.17	43.20	.90	—	—
Nashville	87,754	31	7	9.69	38.76	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	49	16	2.04	16.32	—	—	—
Fall River	103,142	58	24	5.07	31.11	—	—	1.63
Cambridge	92,520	33	10	24.24	27.27	—	3.03	—
Lowell	90,114	47	13	6.93	34.85	—	—	—
New Bedford	70,511	38	13	7.89	23.67	—	—	—
Lynn	68,218	28	1	10.71	21.42	—	—	—
Somerville	64,394	26	3	11.55	23.10	—	—	—
Lawrence	59,072	32	8	15.65	15.65	—	—	—
Springfield	58,266	25	6	16.00	32.00	—	—	—
Holyoke	44,510	23	6	21.75	13.05	—	1.35	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	10	—	50.00	20.00	—	—	—
Malden	36,421	12	1	25.00	8.33	—	8.33	—
Chelsea	34,235	16	3	—	—	—	—	—
Haverhill	32,651	18	—	—	33.33	—	—	—
Gloucester	31,426	9	—	11.11	—	—	—	—
Fitchburg	30,523	17	5	29.40	17.54	—	5.84	—
Newton	30,461	16	5	31.25	18.75	—	6.25	—
Taunton	28,527	12	3	8.33	33.33	—	—	—
Everett	28,102	7	4	—	—	—	—	—
Quincy	24,578	9	1	22.22	11.11	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	16	2	48.00	14.75	—	6.25	—
North Adams	21,583	5	1	—	20.00	—	—	—
Chicopee	18,316	6	3	16.66	50.00	—	—	—
Melrose	17,199	7	2	2.56	—	—	—	—
Newburyport	15,036	13	1	—	47.14	—	—	—
Melrose	14,721	11	1	27.27	9.09	—	9.09	—

Deaths reported 3,074; under five years of age 974; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 637, acute lung diseases 786, consumption 366, diphtheria and croup 77, measles 41, diarrheal diseases 29, whooping-cough 29, typhoid fever 26, cerebrospinal meningitis 25, erysipelas 24, scarlet fever 20.

From whooping-cough New York 22, Boston 3, Pittsfield, Washington, Fall River and Waltham 1 each. From typhoid fever Pittsburg 13, New York 7, Baltimore and Washington 2 each, Boston and Lowell 1 each. From cerebrospinal meningitis

Original Articles.

SPLENIC PSEUDOLEUKEMIA: HISTORICAL SKETCH.¹

BY H. C. CABOT, M.D., BOSTON.

PREVIOUS to the publication of Osler's 15 cases in the January issue of the *American Journal of Medical Sciences*, not more than 25 cases are on record. Although the disease had been described in 1867, and although Dr. H. C. Wood called attention to it in this country in 1871, the first systematic treatment of the subject was given by Banti in 1882. Banti's paper being published in Italian did not attract the attention it deserved. The revival of interest in this subject of late years is due to some extent, I think, to Dr. West's article entitled "Splenic Anemia."²

The term "splenic anemia," suggested by Gretzel in 1867, was a natural outcome of the terminology of a time when "lymphatic anemia" was a term used as a synonym for Hodgkin's disease. At the present time it seems as if we should either abandon the use of the term "splenic anemia" or else take up the term "lymphatic anemia" as applied to the association of lymphatic enlargements with impoverished blood, or, if we consider, as Osler does, that there is no relation between enlargement of the general lymphatic system with anemia and enlargement of the spleen with anemia, we ought to make a similar sharp distinction between the two varieties of leukemia. The only defence for the use of the term "splenic anemia" is that it does call attention to the two marked features of the disease, while the term "splenic pseudo-leukemia" is much less significant. "Anemia with splenic enlargement" seems to me the best term.

In going over the literature of the subject it is very difficult to separate out the cases of leukemia and of enlargement of the spleen due to various causes like malaria or syphilis, and to distinguish all these from the symptom-complex which is our subject to-night; as, for example, in Dr. West's article in Allbutt's "System," a case is quoted in full as splenic anemia, which is obviously a case of leukemia. I have excluded, therefore, cases in which there was an obvious history of malaria, or in which the signs pointed strongly towards cirrhosis of the liver, or in which the blood examination was so imperfect as to make it impossible to exclude pernicious anemia. I have included only such cases as showed a marked anemia with considerable splenic enlargement, without any known cause either for the anemia or for the enlargement of the spleen, and with no leucocytosis. The symptomatology of such cases is simply that of progressive or relapsing anemia combined with the local disturbances and annoyances due to great enlargement of the spleen. Hemorrhage, however, seems to be more frequent a factor than in other varieties of anemia. In eight of Osler's 15 cases there were recurrent attacks of copious hematemesis, in another there was hematuria, and in another purpura. The gastric and intestinal hemorrhages, Osler thinks, are accounted for on mechanical principles.

In the great majority of cases reported the spleen has been considerably enlarged, but has rarely reached the size that we commonly see in advanced cases of

myelogenous leukemia. It reaches usually to or not quite to the level of the navel. Perisplenitis seems to be relatively infrequent. The liver is usually somewhat enlarged, and occasionally the retroperitoneal glands have been found hypertrophied. The increase in the size of the spleen is due in most cases to fibrous hyperplasia, the Malpighian bodies being more or less atrophied. There is less pulp than usual. The surface is drier and firmer on section. The atrophy of the lymphoid follicles, which is reported in some of the very few autopsies which are on record (not more than a dozen in all), is important, if true, as it is the opposite of the condition usually found in leukemia and in Hodgkin's disease.

As to the liver, accounts vary. In some cases a slight degree of interstitial overgrowth is mentioned; in others a certain amount of lymphoid infiltration.

The account of the blood, as given in Osler's cases, is different from that which one finds in most of the earlier records, which accent the severity of the anemia, while Osler comments especially upon the resemblance to chlorotic blood.

As regards the duration of the disease, most of the cases reported previous to the appearance of Osler's paper have been of short duration, two to four years, while the latter author is impressed by the long duration of the disease and the frequency and duration of the intermissions. Several of his cases have lived over ten years.

In the *diagnosis* of the disease we have to distinguish:

(1) Cases of idiopathic splenic enlargement without any anemia or any other symptoms, which are not very uncommon.

(2) We must exclude pernicious anemia, in which a slight enlargement of the spleen is almost always present, and sometimes a very considerable one. In one of my own cases the spleen reached a hand's-breadth below the navel. The diagnosis here depends upon the constitution of the blood, which, in the disease which we are now considering, presents characteristics of an ordinary secondary anemia or, as Osler says, of chlorosis. It should here be said that one may easily lay too much stress upon the distinction supposed to exist between the blood of chlorosis and that of secondary anemia. There really is no such distinction to be made. Chlorosis is simply a secondary anemia occurring in young girls without any cause that we can put our hands upon. The low color index, which certainly is a great feature of the blood of chlorosis, is found in any relatively mild case of secondary anemia.

(3) We must distinguish the disease from cirrhosis of the liver. Some of Osler's cases would undoubtedly have been diagnosed as cirrhosis by less competent observers. The association of anemia, ascites, hemorrhages from the stomach, and enlargement of the liver (or, as in one of Osler's cases, diminution in the area of liver dulness) would in many minds be sufficient for the diagnosis of cirrhosis, which would not be contradicted by the splenic enlargement, since a very considerable enlargement is itself a symptom of cirrhosis. The fact that a certain degree of interstitial overgrowth has existed in some of the post-mortem records makes this differentiation from cirrhosis all the more difficult. In cirrhosis of the liver we often have an anemia of very much the type described in Osler's cases. Altogether the differentiation be-

¹ Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

² Allbutt's System of Medicine, vol. vi., 1898.

tween these two diseases *intra vitam* must be a very difficult one in many cases.

(4) Splenic tumor associated with chronic malarial poisoning must also be excluded. In some of Osler's cases there was a history of malaria, and by some observers the diagnosis of malaria would undoubtedly have been made. In persons living in a malarial district the absence of malarial parasites at any one period does not seem sufficient evidence for excluding a chronic malarial infection.

(5) From leukemia the disease may be easily and quickly distinguished by the blood examination.

(6) The anemias of children are very frequently associated with enlargement of the spleen, with or without leucocytosis, and their classification is still entirely unsatisfactory. As a rule such cases are associated with and usually considered secondary to rickets or syphilis, and the existence of either of these diseases would differentiate a case otherwise identical with Banti's disease.

Prognosis.—Different writers give us a very different idea of the prognosis of the disease. According to Osler, it would seem to be a relatively favorable one, some of his cases lasting twelve years or more being still in good health.

Treatment.—The operation of splenectomy was done in one of Osler's cases with apparently favorable results. It is a reasonable method of treatment, in view of the fact that splenic enlargement seems to have preceded the anemia in all the recorded cases in which the question has been looked into thoroughly.

SPLenic ANEMIA.¹

BY JOHN LOVETT MORSE, M.D., BOSTON.

I HAVE seen but three cases which seem sufficiently characteristic to be classified under the head of "splenic anemia." Two of these I will report, the third will be reported by Dr. Henry Jackson.

CASE I. Walter D., age seven years, was seen with Dr. W. A. Morrison, of East Boston, February 19, 1896. There was no syphilitic or alcoholic history. He was nursed and was healthy until six months old. After that he had more or less digestive disturbance. He got his teeth late, but walked at eighteen months. He had not been well since his third year. The chief symptoms had been gastric, associated with pallor and weakness. He suffered from dyspnea on exertion and at times his feet were a little swollen. There had been no hemorrhages at any time. He was noticeably pale. His head was large, his teeth poor. There was a slight rosary. The lungs were normal. The heart was slightly enlarged to the right, but the action was regular and strong. There was a systolic murmur over the whole precordia, loudest at the base. The second pulmonic was not accentuated and there was a venous hum in the neck. The abdomen was somewhat large but soft. The liver flatness began above at the fifth rib in the nipple line. The edge was felt an inch and a half below the costal border. The spleen could be felt distinctly running out from beneath the ribs in the nipple line, then toward the umbilicus, extending downward below the pelvic brim. The posterior border could also be easily made out. The surface was smooth and the

¹ Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

edge fairly sharp. It was slightly tender on deep pressure. There was no glandular enlargement.

BLOOD.	
Hemoglobin	57 per cent.
Red corpuscles	3,400,000
White corpuscles	5,200
Small mononuclear	16 per cent.
Large mononuclear	5 "
Polynuclear neutrophiles	76 "
Eosinophiles	3 "

No abnormal white cells; fairly numerous microcytes and macrocytes. Moderate poikilocytosis; no nucleated forms.

I saw him again February 3, 1900; he was then eleven years old. He had improved a great deal in general condition, but was still unable to exert himself without some dyspnea. There was no longer any swelling of the feet. His appetite and digestion were good. He was slightly jaundiced at times, but never had clay-colored stools. He had had nose-bleed several times but no other hemorrhages. He was in good general condition, but undersized. He was decidedly pale, with a slightly yellowish tinge. The conjunctivæ were slightly yellow. The condition of the heart was as before. The liver flatness began above at the fifth space in the nipple line. The edge was just palpable at the costal border. The spleen could be felt distinctly running out from beneath the ribs in the nipple line, downward to about the level of the iliac crest and then backward and upward. The surface was smooth and the edge sharp. It was not tender. There was no glandular enlargement. Physical examination was otherwise negative.

BLOOD.	
Hemoglobin	52 per cent.
Red corpuscles	3,128,000
White corpuscles	6,520
Small mononuclear	22 per cent.
Large mononuclear	2 "
Polynuclear neutrophiles	75 "
Eosinophiles	1 "

No abnormal white cells; considerable variation in staining of red corpuscles; marked variation in size, but no special tendency to large or oval forms; moderate poikilocytosis; no nucleated forms. It is noteworthy that this examination of the blood differed in no essential particular from that made four years earlier.

In the light of the early history the splenic tumor in this case may be considered the relic of some infantile condition, for, as is well known, anemia with splenic enlargement is not at all uncommon in infancy. Moreover, splenic tumor is a frequent accompaniment of rickets, which this boy undoubtedly had. While it is impossible to say that this is not the case, I feel very sure that it is not. Most of the cases of anemia with great enlargement of the spleen in infancy die early. In those that recover the spleen diminishes rapidly in size and probably in the course of years is but little, if any, larger than normal. The same thing is true of the splenic enlargement in rickets. I think, therefore, that the splenic tumor in this case may be regarded as of comparatively recent development. The persistence of the anemia would also seem to rule out any infantile condition. The improvement in this general condition, the unchanged condition of the blood at the end of four years, the absence of new symptoms, seem sufficient to rule out pernicious anemia, leukemia and Hodgkin's disease. The history of clay-colored stools, the enlargement of the liver at the first examination and the occasional slight jaundice suggest some disease of the liver, especially cirrhosis. The absence of

cause, the age of the patient, the duration of the disease and the absence of other symptoms of hepatic or portal obstructions render this condition improbable, although it cannot be absolutely ruled out.

CASE II. Mrs. L., thirty-seven, was referred to me in May, 1899, by Dr. L. C. Jones, of Malden, for an examination of the blood. She had always been subject to fainting attacks. She had been married four years, had no children, but had contracted syphilis. For this she had had fairly thorough and persistent treatment. During the summer of 1898 she nursed her mother through the last stages of cancer of the uterus. The odor was very foul and she was much pulled down by her efforts. Shortly after, her throat became very sore and a gland in the right side of her neck swelled. The sore throat was of short duration, but the gland persisted. There is a bad tooth on that side. During the winter of 1898-99 one of the inguinal glands enlarged but later disappeared. In February, 1899, she had a very severe attack of pain in the left abdomen. Dr. Jones discovered the spleen at that time in making an abdominal examination. It was as large then as in May. The spleen had remained more or less tender and she had had several attacks of very severe pain in that region. She had not felt as usual since the first attack of pain, but had had no very definite symptoms. Her digestion had been good. Her bowels, however, had been constipated, although they had never troubled her previously. There had been no symptoms of hemorrhage except that on several occasions the stools had been black without known cause. She had not lost weight. The fainting attacks were no more frequent than before.

She seemed in fair general condition and was able to superintend a large business. The abdomen only was examined. The spleen could be felt projecting outward from under the left costal border about six inches. It was about one or two inches thick. The edge was rounded and a definite notch could be made out. It was somewhat movable and pressure caused pain in the back. The liver was not enlarged and the kidneys were not felt.

BLOOD.	
Hemoglobin	65 per cent.
Red corpuscles	4,488,000
White corpuscles	8,080
Small mononuclear	25 per cent.
Large mononuclear	5 "
Polynuclear neutrophils	66 "
Eosinophiles	4 "

No abnormal forms of white corpuscles; very slight morphological changes in the red corpuscles; no nucleated forms; no plasmodia.

Dr. Jones writes me that she has kept up vigorous antisyphilitic treatment and that her general condition has improved. The spleen has not increased or diminished in size. She has had had no more attacks of pain and no new symptoms have developed.

It is possible that in this case both the anemia and splenic tumor may be of syphilitic origin. The attacks of pain were probably due to a twist of the pedicle.

Anemia of various grades of severity, with enlargement of the spleen, with or without leucocytosis, is not at all uncommon in infancy. It is especially common in rickets. In these cases the splenic tumor seems of no especial diagnostic significance, as great enlargement of spleen is often found when there is but little anemia, and great anemia when there is but little enlargement of the spleen. The splenic tumor and

anemia seem independent of each other and are both probably the results of some common cause. In infancy the common cause is apparently always some profound, complicated and obscure disturbance of the nutrition. Reasoning from analogy I am inclined to think that in the same way these unusual cases of anemia and splenic enlargement in adult life may be due to obscure disturbances of nutrition. For the same reason I am also inclined to think that the enlargement of the spleen and the anemia are independent of each other, both being the results of some common cause. That such cases exist there can be no doubt, and until we know more as to their etiology there seems to be nothing better to do with them than to call them cases of "splenic anemia," or, better, "anemia with splenic tumor."

SPLENIC ANEMIA.¹

BY HENRY JACKSON, M.D., BOSTON,
Assistant Visiting Physician, Boston City Hospital.

A YOUNG man of about twenty years entered my service September 11, 1896. All his family were well and there was no family history of hemophilia. He had always been delicate and rather pale; on his left leg was a large birth mark, with marked prominence of the veins. Little hemorrhagic vesicles formed at times on the surface of this birth mark, and their rupture gave rise to a frequent though slight loss of blood. There was no personal history of rheumatism or venereal disease. For three years before his entrance to the hospital he had done but little work. He dated his ill health from the time a tooth was extracted which was followed by a profuse hemorrhage. In 1893 he had bleeding hemorrhoids and was confined to the house for a good part of the summer on account of weakness and palpitation. In the summer of 1895 he had a similar attack.

On entrance his chief symptoms were weakness, marked palpitation and dyspnea on slight exertion, headache and vertigo at times.

Physical examination.—Fairly well nourished. Pallor of the skin and mucous membranes. Heart negative except for a slight systolic murmur, believed to be hemic in origin. Lungs negative. Spleen, dullness from the eighth rib to just below the costal margin, where the edge was plainly felt, smooth and rather hard. Urine negative.

Red cells	4,000,000
Hemoglobin	20 per cent.
Polymorphonuclear neutrophils	61 "
Lymphocytes	29 "
Large mononuclear and transitional forms	8 "
Eosinophiles	2 "

In counting these one normoblast; slight variation in size and shape.

During September there was no great change in his condition; weakness and dizziness were marked features; slight bleeding from hemorrhoids. October 15th the following blood examination was made by Dr. J. L. Morse:

Reds	4,500,000
Whites	5,000
Hemoglobin	25 per cent.
Polymorphonuclear neutrophils	54 "
Large and transitional forms	16 "
Small lymphocytes	28 "
Eosinophiles	2 "

¹ Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

Large proportion large mononuclear; no myelocytes; red corpuscles, as a rule, nearly of same size; occasional macrocyte and microcyte. Very little poikilocytosis.

About the end of October he was discharged rather improved as to general condition. After his discharge I saw him occasionally. He improved markedly, had a good color, and was able to do hard work as an attendant to an idiotic boy.

I saw him again when he was in the hospital last November, on account of sloughing hemorrhoids. He was then very sick for several weeks.

January 27, 1900. I saw him at his home. He then felt well; had no trouble from the hemorrhoids; had no palpitation. Examination of heart and lungs negative; spleen somewhat enlarged, as on examination in 1896.

Reds	5,200,000
Whites	3,400
Polymorphonuclear neutrophiles	73 per cent.
Lymphocytes	17 "
Large and transitional forms	8 "
Eosinophiles	2 "

In 1896, in view of the enlargement of the spleen without any evident cause, splenic anemia was considered. I considered secondary anemia dependent upon the slight but long continued hemorrhages as rather more probable, while Dr. Morse favored the diagnosis of splenic anemia.

At the present time he is not anemic, and yet the spleen remains of the same size as in 1896; therefore the diagnosis is to my mind still obscure, but, on the whole, I feel that Dr. Morse was more correct than I was in his view of the case.

With the exception of the one case quoted I have not found in the records of the City Hospital a case of splenic anemia. To determine, if possible, whether cases had not been recognized as splenic anemia, I have examined all the cases that I could find entered under the head of Hodgkin's disease, splenic leukemia, pseudoleukemia and pernicious anemia. In the cases diagnosed as Hodgkin's disease and pseudoleukemia there was in each instance great enlargement of the lymphatic glands, as well as enlargement of the spleen; further, in each case the analysis of the blood when made substantiated the diagnosis. In the cases of splenic leukemia the blood examination made the diagnosis positive.

I find 40 cases of pernicious anemia; in all the clinical history is such as to corroborate the diagnosis. In the cases admitted during recent years the blood analysis confirms the diagnosis made from the history and the physical signs. The spleen was found to be negative in 30 out of the 40 cases; in 10 cases it was enlarged, though in nine cases the enlargement was slight, the spleen being just palpable at the edge of the ribs. In the tenth case the spleen was very large. Autopsy showed that the spleen weighed 795 grammes, the normal weight being from 150 to 200 grammes; but in this case the history of an acute anemia of five months' duration and the examination of the blood leave no doubt at the correctness of the diagnosis of pernicious anemia.

The résumé given makes me confident that very few, if any, cases of splenic anemia have entered the Boston City Hospital. It is to be hoped that with the active interest now being manifested in the subject still more careful observations may be obtained in the future.

A CASE OF SPLENIC ANEMIA.¹

BY JAMES MARSH JACKSON, M.D., AND GEORGE SUMNER HILL, M.D., BOSTON.

A. S., age twenty-eight years, born in Armenia, married, occupation housework, entered the Out-Patient Department of the Massachusetts General Hospital December 26, 1899.

Family history.—Father died of pneumonia at the age of forty-five; mother, one brother and sister alive and well.

Catamenia at fourteen years; always irregular, frequently not appearing for two or three months; flow slight and not painful. Two children; one died at age of twelve months. Other at age of seven years died suddenly after an attack of diarrhea and vomiting. No miscarriages.

Habits.—Tea, two cups a day; seldom drinks coffee; small amount of alcohol, but not a regular drinker.

Previous history.—No children's diseases. At age of eighteen years commenced to have convulsions, which lasted thirty minutes; attacks occurred two or three times a day; at times passed over periods of a week without them; these attacks occurred in spring-time. Has bitten tongue, broken teeth, foamed at the mouth, and had general muscular spasm. Appetite and bowels usually all right.

Present illness.—Two and one-half years ago had a sharp pain in left side at about costal border; the pain kept her awake. At this time she noticed mass growing in side. The pain has come on at irregular intervals since. Has had palpitation, but no dyspnea. Lost about fifteen pounds in weight. Has noticed no loss of color. Has coughed up about one-half cupful of blood five times, but has noticed none in stools. Has headache, dizziness, ringing in ears. Bowels alternate from diarrhea to constipation. No swelling of limbs or urinary symptoms.

Physical examination.—Well developed and fairly well nourished; slightly pale; no glandular enlargement; throat and mouth negative; reflexes normal. Nothing wrong found with chest and heart save systolic murmur heard all over precordia. Abdomen rather full, especially on the left side; the walls are rather flabby. Liver dulness commences at the lower border of fifth rib, and extends a hand's breadth below costal border; edge palpable and smooth, not tender. On the left side is a mass extending from the seventh rib diagonally across to umbilicus, and then toward right anterior spine; dulness extends over into left flank and back and down to crest of iliac bone on left side. The mass descends slightly with inspiration; edge (right) is notched twice; otherwise mass is perfectly smooth. The rest of abdomen is soft, tympanitic and not tender.

BLOOD.	
Reds	4,076,000
Whites	5,200
Differential count	500 cells
Polymorphonuclear neutrophiles	36.2 per cent.
Lymphocytes	58.7 "
Myelocytes	4.5 "
Eosinophiles . . . . .	.6 "

Two normoblasts seen. Corpuscles are rather pale and show considerable variation in size, but very slight poikilocytosis:

¹ Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

December 28, 1899.	Whites, 5,400	Reds, 4,256,000
January 6, 1900.	" 5,300	" 3,800,000
January 13, 1900.	" 5,400	" 3,196,000
Hemoglobin	" 75 per cent.	
Differential count		500 cells
Polymorphonuclear neutrophils		45.2 per cent.
Large lymphocytes 19.6 per cent.		51.4 "
Small lymphocytes 31.8 per cent.		3. "
Eosinophiles		.4 "
Myeloocytes		

No nucleated reds seen. Quite a variation in size of red corpuscles, majority of normal size, but many of small size, and rarely a very large corpuscle. The corpuscles are stained well, and do not seem to tend toward poikilocytes.

Patient entered Massachusetts General Hospital January 23d, in the service of Dr. Fitz.

Counts made by Dr. Waterman at hospital January 25, 1900:

Whites	7,800
Reds	3,693,000
Hemoglobin	53 per cent.
Differential count	500 cells
Polymorphonuclears	36 per cent.
Small lymphocytes 56.2 per cent.	61.6 "
Large lymphocytes 5.4 per cent.	1.2 "
Eosinophiles	.6 "
Myeloocytes	.6 "
Mast cells	.6 "

No nucleated reds seen; reds rather pale, moderate variation in size, little irregularity in shape. February 1, 1900:

Whites	5,750
Reds	3,760,000
Hemoglobin	55 per cent.
Polymorphonuclears	42.01 "
Small lymphocytes	52.5 "
Large lymphocytes	4.8 "
Eosinophiles	.3 "
Myeloocytes	.1 "

No nucleated reds seen. Corpuscles show same characteristics as in former count.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL. CLINICAL MEETING OF THE MEDICAL BOARD.

REGULAR meeting, February 17, 1900, Dr. C. B. PORTER in the chair.

DR. A. K. STONE showed a case of

PELVIC GUMMA.

The case had presented herself in July, 1897, and the tumor found and diagnosed as osteosarcoma. As the tumor appeared to be inoperable, potassic iodide was given, and almost immediately there was improvement in the general condition, and within a couple of months complete disappearance of the tumor. At the present time, a year and a half afterwards, there is no tumor and the patient is well and strong, doing her own work, and considering herself well.

A similar case, still under observation, has presented itself this winter at the clinic.

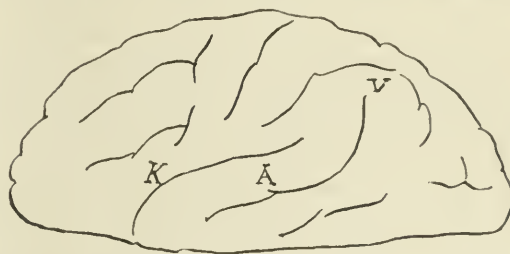
DR. G. L. WALTON showed a case of

SUBCORTICAL MOTOR APHASIA.

I will remind you that for the complete exercise of the faculty of speech the integrity of quite an extensive portion of the cortex is essential. It is also necessary that the fibres connecting the cortical centres be unimpaired, and finally that the afferent and efferent fibres be in condition to transmit stimuli to and

from the brain. The three most important cortical centres to be investigated are: (1) the centre for visual memories, including that for words; (2) the centre for sound memories, also including the sounds of words, and (3) the so-called kinesthetic centre, or the centre in which are stored memories of the mechanical processes, that is, of the movements of the lips, tongue, larynx and other parts involved in speech. The first of these centres is situated in the angular gyrus, the second in the first temporal lobe, the third in Broca's convolution (V, A and K, in diagram). Whether a special writing centre exists at the base of the second frontal convolution need not concern us for the purposes of the present simple and practical demonstration.

In the majority of cases met with in practice more than one of these cortical centres and more than one variety of connecting fibres suffer; an occasional case presents itself, however, illustrating a single type of lesion. This young woman shows one of these types, namely, destruction of the efferent fibres passing to the bulb from Broca's convolution (whether directly or by way of the centres for actual movements, at the fissure of Rolando, we need not discuss for the purposes of this demonstration). The patient is now twenty-three years of age. At the age of eleven she had typhoid fever, in the course of which an attack of hemiplegia occurred, involving her right side, and de-



stroying the power of speech. She has only recovered the use of the words "no" and "mamma." This lesion was probably thrombosis, not hemorrhage, as cerebral complications of acute infectious diseases result from morbid blood states rather than from diseased arteries.

First, testing her visual centres, I show her my watch and ask her the time, which she correctly indicates by holding up first five, then three fingers of the left hand. This simple test shows not only that she sees the watch but that she appreciates its use and is able to interpret correctly what she sees, that is, there is no "mind blindness." To test her vision for words I point out the printed word *child* and ask her to indicate its meaning, in response to which she holds her hand at a short distance from the ground to indicate a child's stature. In previous tests I have asked her the meaning of the words *wheel*, *book*, *skirt* and *collar*, which she has shown by appropriate gestures. She has therefore no "word blindness," that is to say, the angular gyrus is intact.

Similarly investigating the auditory centre, I tell her to close her eyes, then I put the watch to her ear, and then replace it in my pocket, telling her to open her eyes and indicate what she heard. She at once makes a circle with the thumb and finger, then points to my watch chain. This test shows that she not only hears but appreciates what she hears; still

further, it shows the integrity of the fibres connecting the auditory with the visual centre, inasmuch as the sound brought to her mind the picture of the watch. Proceeding to test her auditory capacity for words, I ask her to close her eyes, put out her tongue, show her teeth, being careful not to aid her by making these movements myself; she responds promptly and accurately. To give her a rather more difficult test in the same line, I ask her if she can find the article she has been reading in the magazine; she takes up the magazine and turns to the article without hesitation. We have now demonstrated the fact that she has no "word deafness," in other words, the temporal region is unaffected.

The test for demonstrating the integrity of the so-called kinesthetic centre is more difficult, for it is very hard to determine with certainty whether she has the capacity for calling up the memories of the muscular movements required for speech, since she is absolutely unable to make these movements in the slightest degree. She cannot even make them when I pronounce the words for her and ask her to repeat them. Clinical and pathological study seem to have established the fact, however, that the patient's power of reading to herself, and understanding what she reads, shows that this centre is spared, such reading probably requiring not merely a visual recognition of the words, but a power of calling up the memory of the motions made in articulating them; it is, in reality, through this process that we learn to read. This patient in point of fact reads to herself with evident satisfaction; it is obviously wise, however, to assure ourselves that this intelligence is real, not simply apparent, and this I do by showing her simple printed or written commands such as, "Close your eyes," "Where is the watch," etc. To these tests she responds readily.

The so-called Proust-Lichtheim test is perhaps the most satisfactory of those yet suggested for testing the kinesthetic centre. This test consists in showing the patient a word and asking her to indicate the number of syllables and the number of letters, the supposition being that this action necessitates the mental reproduction of the muscular movements. I accordingly show her the word *child* and ask the number of letters, upon which she promptly holds up five fingers. I now try a similar test without even showing her the word; I hold up a pen and ask her if she knows its name; she nods her head. Without repeating the word myself or showing it to her, I ask her to spell it to herself and indicate the number of letters; this she does by holding up three fingers. The act of spelling, even silently, is probably done — to put it rather crudely for the sake of simplicity — by making the necessary movements in the mind even though these movements are not externalized.

The patient can write her name though she cannot pronounce it. This is done with the left hand, the right being practically helpless as a result of the hemiplegia. The ability to write probably demonstrates the integrity of Broca's convolution and of the fibres passing from this convolution to the writing centre, so-called, probably not a special centre, but the centre for the movements of the fingers, in this case on the right side of the brain. This question is still in dispute, and its discussion need not delay us at this time.

We have now by simple and easily accessible tests demonstrated the integrity of the cortical centres in-

involved in speech, and of the connecting fibres. There remains only the collection of efferent fibres already mentioned as conveying the motor impulse from Broca's convolution to the bulb. A sufficient number of autopsies have been made on cases resembling this one to demonstrate the fact that a comparatively small spot of softening interrupting these fibres anywhere in their course from a point directly below the cortex to the level of the internal capsule suffices to produce this type of aphasia; and this is doubtless the character and seat of the lesion in this case. Various names have been given this variety of speech defect, for example, aphemia, fascicular anarthria and subcortical motor aphasia, the latter term being perhaps the most satisfactory.

A practical advantage of distinguishing this from other forms of aphasia concerns the question of testimentary capacity. The intellectual processes concerned in speech in such a patient are intact; we may therefore rely upon his gestures in answer to our questions as to persons and amounts, though he can neither speak nor write.

DR. C. W. TOWNSEND showed a woman with

CYANOSIS FROM CONGENITAL CARDIAC DISEASE.

I showed this woman here in November, 1897, together with two other cases of congenital cyanosis due to congenital disease or malformation of the heart. Last August this patient had a baby at the Lying-in Hospital and I brought her to-night because I think it is a very unique case of a woman with congenital cyanosis giving birth to a living child. I have not been able to find a similar case in literature. She has had two children before this, each born a month prematurely, and both failed to live. This child was born at full term. The mother went through a normal pregnancy, was able to walk about as well as any one, and gave birth to this baby — eight pounds and six ounces — six months ago. Her labor lasted eleven hours and showed nothing unusual, and there was no exhaustion, although cyanosis was very marked. Pulse 84 before delivery and 80 after delivery. She has nursed the baby ever since, and, as you see, the baby is healthy looking and shows no evidence of congenital heart disease. The woman herself is decidedly cyanotic, her lips and fingers being always blue and her face having the characteristic dusky tint. The mucous membranes of the mouth and vagina are markedly blue. She was in the hospital here for a time, coming first to the Out-Patient Department. Examination of the patient shows no enlargement of the heart, and although there is at times a systolic murmur at the base, it is absent most of the time. The absence of murmur does not of course vitiate the diagnosis of congenital heart disease. I have followed up 29 cases of congenital cyanosis, seen mostly at the Children's Hospital, and found a heart murmur present in 18, absent in 11. In three cases there were autopsies, and, notwithstanding the absence of murmur during life, the autopsy showed marked malformation of the heart. In two cases there was a narrowing of the pulmonary artery, with large ductus arteriosus, associated in one case with a large foramen ovale; the third case had a deficient ventricular septum, so that the heart was practically a heart with three cavities, a ventricle and two auricles.

The condition of the blood in these cases is extremely interesting. I have had blood counts made

in some 13 cases by Drs. Robey, Potter and Capps. In all these cases of cyanosis — and it is also the case in acquired cyanosis from any cause — there is an increase of the number of red blood corpuscles. In this patient the increase is, however, very slight over the normal, 5,000,000, the count taken last September showing 5,632,000. I will read the blood counts in the other cases, as I think they are extremely interesting: 6,570,000, 11,800,000, 9,000,000, 5,955,555, 7,592,129, 8,051,111, 6,577,777, 7,144,400, 6,586,640, 5,115,000, 6,000,000, 8,595,000. The two latter counts are from patients shown here in November, 1897.

Dr. Townsend in reply to questions said that this patient had no constant discomfort or dyspnea, that she could walk and do her work perfectly well. The compensation seems to be perfect notwithstanding the constant presence of the cyanosis.

DR. F. C. SHATTUCK reported a case of

ADENOCYSTOMA OF THE LIVER.

Mrs. T., sixty-three years old, mother of seven children, the youngest twenty, was referred from the Out-Patient Department to the wards for diagnosis, entering December 12, 1898. About eighteen months ago she noticed an abdominal enlargement, painless and not tender. During this period she had several attacks of some weeks' duration and with chilly sensations and anorexia, and about once a month she has passed blood per rectum, estimated at four to six ounces in amount each time. The general health had not been much impaired, and, though she was thin, her color was fairly good.

The abdominal enlargement was more marked in the right and upper abdominal segments. From the right iliac crest to the costal border a smooth, non-tender mass could be felt, not seeming to extend into the flank. Over the upper and central portion of this mass there was a fluctuant area about the size of the palm of the hand. The blood, urine and thoracic viscera were normal. No positive diagnosis was made. Hydronephrosis, hydatid and ovarian cyst were considered possible. I was inclined to think the fluctuant area due to an encysted peritonitis complicating one of the above-named conditions. An adenocystoma of the liver never occurred to my mind. Indeed, I did not know that they ever attained any such dimensions. Operation was advised and consented to. Dr. Porter will describe it and its results.

Operation.

DR. C. B. PORTER: Under ether an incision was made from the ensiform cartilage to the umbilicus through the right rectus abdominis. The abdominal wall was very thin. On opening the peritoneal cavity a smooth dark-red tumor presented itself, filling the whole right half of the abdomen. The greater part of the mass was solid, but two inches below the right costal margin the tumor became fluctuant and the whole right hypochondrium was evidently filled by a tense cyst. The intestines were walled back with gauze and a large trocar inserted into the cyst about three inches below the tip of the xiphoid cartilage. A nearly colorless fluid gushed out until a basin had been filled. Pressure on the abdominal walls expressed about as much more. The cyst wall was stitched to the abdominal wound, and an incision made into it about three inches long. This revealed

a large cavity occupying the normal position of the liver. Further examination showed that the cyst arose from the superior surface of the liver and that this organ, pushed downwards by the cyst, constituted the greater part of the mass previously felt in the abdomen. In all, about a gallon of fluid was removed. The sac was thin and firmly adherent to the surrounding tissues, like a retention cyst, and bore no resemblance to the laminated wall of an echinococcus cyst. After the opening of the cyst had been carefully sutured to the abdominal parietes, two large rubber drainage tubes were carried to the bottom of the cavity towards the pelvis, and two gauze wicks were passed upwards under the ribs.

The patient made a good recovery from the operation. It was noteworthy that at the dressing on the following morning the liver had risen from the pelvis, so that its lower border was opposite the umbilicus. The direction of the drainage tubes, which at the operation passed obliquely downwards, was already directed upwards and backwards towards the diaphragm. The liver rose higher day by day, and ten days after operation occupied relatively its normal position. The slow, sanguineous discharge was very profuse for several days. Tincture of iodine, one drachm to one ounce of water, was therefore injected into the sac at intervals. This was followed by slight fever, but no change in pulse-rate. The cyst rapidly contracted, and in two weeks contained only a few ounces.

One month after operation the tubes were removed, and in two weeks more the patient left hospital. A small sinus remained discharging only a few ounces in the twenty-four hours. Subsequently the fluid increased in amount and became bile-stained: one and a half pints drained away in the day. Two days after an unsuccessful operation to close this sinus, the patient suddenly died of heart failure. Examination showed that the cyst had arisen close to the suspensory ligament, and had pressed the liver down as it grew. Dr. Whitney's diagnosis of the first operation was entirely confirmed. As the case is one of unusual rarity, it will be soon reported in further detail.

Microscopic Appearances.

DR. WHITNEY: Dr. Porter removed for examination a small piece of the cyst wall, which was hardened and examined and is under the microscope. You can see it is a fibrous structure in which there are duct tubes and larger tubes and also what are apparently small communicating cysts. This formed the wall through which Dr. Porter went and there was no liver substance proper in it, but simply new-formed bile-ducts in this mass of fibrous tissue. The condition evidently corresponds closely to the one described by Sigmund¹ as adenocystoma of the bile-ducts, which he looks upon as new formation of bile-ducts analogous to that in the condition of multi-follicular cystoma of the ovary. He has had an opportunity of examining one case at an autopsy. His plates show the liver and the microscopic sections of the new-formed bile-ducts which he found in the walls of these various cysts, which were chiefly confined to one-half of the liver. In his case the largest cyst is by no means anything as large as in the case of Dr. Porter. It is probably multiple, and it is possible, also, that in this case there may have been other and

¹ Virchow's Archiv, Bd. 115.

smaller cysts. The cyst wall was lined with the same sort of epithelium that clothes the small new-formed ducts, and there is every reason to think that this cyst was of the same character as Sigmund's. It is to be regarded not as a simple retention cyst, but new formation of gland tissue with the formation of a cyst, a veritable cysto-adenoma. There are a number of cases of large cysts of the liver, one which held two gallons, and one in which there was a tumor the size of a child's head, but in none of them was a sufficiently careful microscopic examination of the cyst wall made to fully identify its character. In the fluid there was a small amount of mucin found, but none of the bile characteristics, showing that the liver had no connection at all with this form of cyst, and that the fluid had been secreted by the wall.

Dr. F. C. SHATTUCK reported a case of

PERIGASTRIC ADHESIONS CAUSING INDIGESTION AND GASTRIC DILATATION.

B., twenty-nine, a farmer and painter, was referred from the Out-Patient Department to the wards, entering December 21, 1898. Essentially the above diagnosis had been made by his physician, Dr. Desmond, of Concord, and in the Out-Patient Department. Three years ago he had an attack of pain in the right hypochondrium, and vomiting, lasting about three weeks. Two years ago he had a second and similar attack. One year ago he had abdominal pain and wrist-drop. Three months ago he had "inflammation of the bowels," pain in the right upper abdomen, persistent vomiting, and the bowels did not move for many days. Fever is said to have been absent. He was in bed four weeks, and has not been well since; suffering from pain, gastric distress, and occasional vomiting, loss of weight and strength. The stomach held 88 ounces, and extended well below the navel when inflated. It was not possible to get satisfactory gastric contents after a test meal until the 25th. Free hydrochloric and lactic acids were found, the former .87 pressure per inch. There was no digestive leucocytosis.

The next day or two he suffered much from abdominal pain requiring morphia for its relief, ate almost nothing and was losing so rapidly that operation was urged and declined by him December 29th. The next day, however, he changed his mind and was transferred to Dr. Porter.

Operation.

Dr. C. B. PORTER: Under ether anesthesia an incision was made below and parallel to the right costal margin from the median line outwards for six inches. On opening the peritoneal cavity, the stomach was easily recognized and was drawn up into the wound. The pylorus was found to be very firmly adherent to the gall-bladder and adjacent under surface of the liver and could not be moved until these adhesions were divided. Several adhesions near the attachment of the lesser omentum were particularly firm and required division, after being tied in sections with animal tendon. At length the pyloric end of the stomach was made freely movable. The pylorus seemed thickened, so it seemed best to open the stomach and investigate its calibre before going further. An opening two inches long was made in the anterior wall of the stomach, about four inches from the pylorus. The index finger, introduced through this wound, easily passed through the pylorus; nothing

abnormal could be felt, and it was therefore evident that no stenosis of the pylorus existed, but that the interruption to the exit of stomach contents had been due to the adhesions *outside* of this part of the stomach. The edges of the incision in the stomach were sewed with a continuous catgut suture, to hold all the layers together and prevent infiltration between them, and then the wound was closed with continuous and interrupted Lembert sutures. The abdominal wound was sutured without drainage in the usual manner.

From the time of operation the patient made a continuous and practically uninterrupted recovery, with such marked relief from his previous pain that the contrast was most striking. He left the hospital a month later.

This case was a most instructive one, and shows the great value of an exploratory operation, for the symptoms—loss of forty pounds in four months, dilatation of the stomach and vomiting—would arouse suspicion of malignant disease of the pylorus, yet the operation and its results proved that the obstruction was solely due to the pressure of adhesions upon the pylorus.

In the absence of Dr. CABOT, Dr. WHITNEY showed the specimens from a case of

DOUBLE EXTRA-UTERINE PREGNANCY.

Dr. Cabot opened the abdomen and removed a mass which lay just in the median line wrapped up in the omentum. It was made up of the more or less macerated mummified bones of a small fetus, which must certainly have been between the third and fourth months judging by their size. Then he removed the tube and ovary on the right side, thinking that was possibly the whole cause. The ovary contained a large corpus luteum, and in the tube he was unable to find evidences of chorionic villi. Into the other mass, which was behind and to the left of the uterus, he put his hand, and through the blood clots extracted a fetus, about three and one-half months, which at the time was alive. The other tube and ovary were not seen. This is a case of double ectopic gestation, one considerably antedating the other. Four days after the operation the woman passed spontaneously from the uterus the decidua, of which a drawing has been made. The question of the decidua is interesting, as it is claimed that in these cases it is not cast off from the uterus except at the death of the embryo or fetus. In this case it was so, as the fetus was alive at the time of the operation and this was expelled three days after a living fetus was taken away.

Dr. J. C. WARREN reported a case of

PERFORATING GASTRIC ULCER; OPERATION; DEATH.

J. M., forty years of age, single, born in Ireland, lives in Winchester, brought to the accident room December 26, 1898, with a history of several attacks of acute abdominal pain during the last five weeks; for two days had been in bed; there was abdominal pain, especially in the epigastrium, and frequent vomiting; bowels not moved. Abdomen tender, tympanitic and rigid, especially tender in the right hypochondrium. The patient came to the hospital at two o'clock in the afternoon, and I saw him at the end of my morning's work in the accident room.

On examination, with the brief history of the case which I have just given to you, it seemed to me that

possibly the attack might subside with rest and nursing, as it had in a case with similar symptoms which I had seen a short time before outside the hospital, upon which I had been prepared on three different occasions to operate, but which got well without operation. On the next morning, December 27th, suddenly conditions changed for the worse — persistent vomiting; pulse went to 140. Dr. Shattuck not being in the hospital at the time, I asked Dr. Fitz to see the case with me, and he felt that there was local peritonitis in the right upper quadrant and that the origin of it was doubtful. On seeing the patient myself, soon after Dr. Fitz, I found his condition was a very serious one. He was vomiting large quantities of green fluid, the abdominal walls were very rigid, and the pulse had gone from a comparatively normal condition up to 140.

The patient refused to be operated on immediately, as he had to have his will made and had to see some friends. I came back in the afternoon, and after waiting some time we were finally allowed to operate. At that time I had come to the conclusion that there was a perforating ulcer of the stomach. An opening was made in the right linea semilunaris, and evidences of general peritonitis, large flakes of lymph and a creamy fluid were seen everywhere. On following up the signs of acute inflammation we came to the stomach, sitting up the linea semilunaris, and found gas and a greenish vomitus pouring out from a hole in the stomach near the pylorus. The opening was about the size to admit the stem of an ordinary wooden pencil. The hole was immediately isolated as much as possible with gauze, and sewed up rapidly with Lembert sutures in order to check the free flowing that was coming through it. The stitches were afterwards reinforced. The abdomen was thoroughly washed out with normal salt solution, and gauze wicks were passed into the pelvis and up towards the seat of the operation. At this time the patient's condition was very bad. He was carried to his room and died during the night. Unfortunately no cultures were taken from the abdomen.

DR. F. C. SHATTUCK reported a case of

PERFORATING GASTRIC ULCER SIMULATING APPENDICITIS.

A teamster of nineteen came to the accident room about 10 p. m., January 11, 1899. A week ago he had an attack similar, as he thinks, to the present one, but less severe. The pain was epigastric. Went home to bed and slept it off. About 8.45 at night he was seized with very severe epigastric pains. He went to a drug store and fell on the floor; not faint, but collapsed with pain. Vomited twice while being brought from the druggist's to the hospital. On entrance he collapsed and suffered severely. Temperature subnormal, pulse slow and of poor quality. The liver dulness was much diminished. The belly was rigid but not swollen; most tender at the epigastrium; markedly tender in the right iliac region. The next morning he had rallied decidedly. The tenderness was, on the whole, less, and most marked in the right inguinal region. White count, 43,600.

As soon as I saw and examined him I believed him the subject of general peritonitis from perforation of the appendix, and asked for a surgical consultation with reference to immediate operation. Dr. Warren saw him promptly and concurred in the diagnosis.

Operation.

DR. WARREN: I consider it most proper to state from the point of view of diagnosis that this case came after the one in which I had made the diagnosis of perforating ulcer of the stomach, and yet in this case I concurred with Dr. Shattuck in his diagnosis of appendicitis. The patient was a young man, of the type we see brought in with perforating appendicitis, certainly not of the type we generally associate with gastric ulcer. Then there was the distinct history of pain in the right iliac region, great rigidity all down the right side of the abdomen, so that appendicitis seemed the most probable diagnosis.

The patient was operated upon by twelve o'clock. I think the acute pain which Dr. Shattuck referred to occurred about nine the night before, so it was fifteen hours after the first attack of pain. The incision was made first over the region of the appendix, and a quantity of creamy, thin, rice-water fluid welled up from the bottom of the cavity. The appendix was pulled out and found to be normal. The incision was enlarged upwards, along the linea semilunaris towards the stomach, as flakes of lymph were found in that direction, and the stomach was found with a perforation almost exactly in the same spot that existed in the other case, namely, not far from the pyloric orifice. The perforation was very much smaller, however, and several Lembert sutures were immediately taken to shut it up as soon as possible. No attempt was made to excise the ulcer, the feeling being to stop the leak as quickly as possible, the tissue around the ulcer being in good condition and the sutures holding well. Attention was turned to disinfection of the abdominal cavity. A certain amount of flakes of lymph was found along the region of the abdomen underneath the line of incision. The rice-water fluid was found throughout the abdominal cavity, a large quantity of it welling up from the pelvis. Owing to the general dissemination of this fluid I took particular pains to wash out the abdominal cavity with normal salt solution. To make this possible there was a good large opening in the linea semilunaris. I did not remove the intestines from the abdomen because there was little, if any, gluing together, and they could be separated with one hand while the other hand poured salt solution through a funnel into the abdominal cavity. About six gallons were poured in this way, and then the abdomen was carefully sponged out. A wick was passed down into the pelvis and another up towards the stomach and the wound closed. Nutrient enemata with stimulants were given every four hours after the operation.

On January 13th, the patient was restless and thirsty; had nothing by mouth; was infused with 800 cubic centimetres of warm salt solution, right arm. On the 15th, water by mouth. On the 18th, temperature normal; wicks changed twice a day. On the 21st, milk and lime-water by mouth. On the 25th, liquid diet. On the 29th, soft solids; patient in good condition. On February 8th, sinuses almost closed; no discharge. On the 11th, patient in excellent condition; put upon house diet.

A culture was taken at the time of the opening of the abdomen, and later of some of the fibrinous masses, I think, and then after the washing out. In all cases the cultures were sterile, and I presume it was due to this fact that the patient recovered. There

is a possibility that some of these cultures got dried and therefore did not grow, but I give the facts as they are stated in the report. (The patient then walked into the room and showed his cicatrix.)

In answer to a question by Dr. Harrington, Dr. Warren said that in the first case when the abdomen was opened there was a loud noise, with explosion of gas. In the second case there was not.

Dr. JOSLIN remarked that this was the first case of gastric ulcer with perforation operated upon in the hospital which had recovered, unless such a case had occurred since January, 1898.

Dr. F. C. SHATTUCK reported a case of

HEMORRHAGE FROM THE WHOLE GASTRIC MUCOSA
SIMULATING GASTRIC ULCER.

A Swedish domestic of twenty-nine entered Ward 30, December 23d, sent in by Dr. Beach. For three years or so she had had distress after meals, more or less severe. Eighteen months ago she vomited blood twice and passed blood downward for several days following. Severe indigestion five or six weeks ago, after unusual fatigue. Two days ago fainted and vomited about four ounces of blood and, apparently, passed blood by stool last night. Nothing important was detected on physical examination. She had good color in her cheeks and lips. Hemoglobin, 75 per cent.

No food was permitted to enter the stomach, but nausea was constant, was not checked by morphia, and December 24th and the following days, she vomited blood in considerable amount. She was running down so rapidly that December 28th operation was advised and accepted. It was feared unless the bleeding vessel could be found and tied she would succumb to loss of blood. There was nothing in the history to suggest the hemorrhagic diathesis and the car-prick made for the blood examination gave no trouble. No doubt was felt as to the diagnosis of gastric ulcer.

Operation.

Dr. H. H. A. BEACH: The patient's abdomen was opened on the day of transfer by an incision of five and one-half inches in the median line, beginning one and one-half inches below the ensiform cartilage. Upon cutting through the skin and subcutaneous tissue the hemorrhage was excessive. It filled the wound immediately, not from a number of vessels that could be tied, but from the whole surface as from a sponge filled with blood, and at once raised the question of hemophilia as a cause. The bleeding was checked by direct compression, and the peritoneal cavity then opened. The stomach was carefully inspected, and its peritoneal surface found of a dark red color from the intense injection of its blood-vessels, but no trace of perforation, softening or thinning was detected. The stomach was opened by a straight incision midway between the greater and lesser curvatures, and sufficiently free to permit a thorough inspection of its interior from the pylorus to the cardiac opening. In examining the border of the stomach wound, I found a softened spot of one-half inch in diameter that bled freely and required a continuous suture for its control. This suture tore out with very slight tension unless the needle was introduced beyond the softened area, and so suggested the beginning of a necrotic process. The stomach was then cleared of clots and a search made for ulcerations. None were found, yet the

bleeding continued from what appeared to be a granulating surface, involving the larger part of the stomach. When compressed with a sponge it would cease, only to begin again as soon as the pressure was removed. This pressure was maintained steadily for a considerable period and repeated at intervals. It became clear that the stomach could not be closed without subjecting the patient to the same condition of things that existed prior to the operation. In order to maintain the compression necessary to control the bleeding, I decided to suture the border of the stomach around to the abdominal wall, and to pack the stomach with gauze, letting the ends project from the opening and applying direct compression by gauze compresses and an abdominal band over all. Styptics and cautery offered no advantages over this plan, as there could be no security against a recurrence of hemorrhage. The condition of the patient forbade complete gastrectomy. The most dependent part of the abdominal wound was closed with provisional sutures and a wick of gauze inserted below the line of union with the stomach. Morphia, one-fourth grain, was given subcutaneously soon after the removal to her bed, and rectal feeding, including stimulants, begun. She passed a fair night, having considerable sleep and no recurrence of bleeding.

The gauze packing was completely and easily removed at the end of forty-eight hours. Some retching at the time, which soon subsided; no bleeding. Enemata given regularly and retained. In the evening she was reported for cyanosis and collapse, the pulse became weak and rapid and the extremities cold. An intravenous injection of one quart of hot salt solution was given at once, and another in two hours by my assistant, Dr. La Conte. Marked improvement in her condition followed immediately after and continued. Later, with the change in the force and fulness of her circulation, she had a very slight hemorrhage from her stomach, that was easily arrested by the re-insertion of some gauze; this was removed on the following day. On the third day after the operation the evening temperature was 101°, pulse 126 and of fair quality; feeding by the mouth of small quantities of peptonized milk; good union of stomach to the skin; enemata regularly given and retained. The wicks were removed and provisional sutures tied on the two following days. Although some gastric juice escaped into the dressing, there was little or no irritation of the skin, owing to its protection by the application of stearate of zinc. There was comparatively little change to report after this until the sixth night, when her sleep was much disturbed and the urine diminished to a few ounces. The enemata were well retained. Pulse varied from 120 to 130. A soft-rubber tube was passed through the wound into the stomach and pushed gently beyond the pylorus. Through this seven ounces of milk and salt solution were injected into the duodenum and retained. This was repeated at intervals, with the addition of meat and egg albumin. On the following day all enemata were rejected. Her pulse failed steadily in spite of food, stimulus and strychnia at proper intervals. At midnight another collapse, and from that time she gradually sank and died on the morning of the eighth day, the hemorrhage having been controlled to the end. Small doses of morphia at eight-hour intervals were given to avoid any tug upon the stomach sutures should retching become troublesome. Could her strength have been maintained until the stomach

had regained its normal condition, the gastric fistula might have been closed by detaching the stomach from the abdominal wall and inverting its borders with sutures. Unfortunately, no autopsy could be obtained.

DR. WARREN: I think this condition is a very interesting one, and of course a difficult problem to know how to deal with. I think Küttner, who has written one of the latest monographs on diseases and surgery of the stomach, alluded to treatment of this diffuse hemorrhage, and, if I remember aright, one amongst other suggestions was that of tying one of the gastric arteries supplying the oozing region either at the lesser or greater curvature. I suppose, also, another expedient that might be tried in such cases would be gastro-enterostomy. By diverting the secretions of the stomach into the jejunum, we might relieve the irritation of the mucous membrane, and in that way perhaps bring about a cessation of the oozing. It is certainly a very difficult problem to deal with, as we all know.

DR. MINOT: I should like to ask Dr. Beach if he noticed the liver at the time of the operation. One sees this sort of hemorrhage sometimes in atrophy of the liver. I have had a case this winter in which the vomiting and the bleeding were like that in this case, and where there was an atrophy of the liver, the patient being also a young woman, with none of the usual antecedent history of atrophic cirrhosis, and it occurred to me that might have been the condition here.

DR. BEACH, in answer to this question, replied that he did not see the liver during the operation.

DR. HARRINGTON: I have just had a patient die from venous oozing from the stomach, a man who clearly had cirrhosis of the liver. The hemorrhage lasted only two days, but while it was going on one could not but wish there was something to be done. The loss of blood was enormous. Three pints of blood at a time were vomited. Although a large, strong man, he died in two or three days.

DR. WHITNEY: In cirrhosis of the liver, there are a number of cases quoted of hemorrhage from the esophageal plexus of veins just above the cardiac orifice of the stomach; and blood that is vomited probably comes from the esophagus rather than from the stomach.

DR. HARRINGTON reported a case of

PUDENDAL HERNIA OF THE BLADDER IN A WOMAN
FORTY-SIX YEARS OF AGE.

He showed the patient after the return of the bladder to the pelvis. The bladder had been drawn down by an edematous fibroid tumor arising in fibrous tissue in the floor of the pelvis. The tumor was closely incorporated with anterior wall of the bladder. It hung from the labium of the left side with attachment extending backward to the left buttock. The tumor with the bladder hung between the legs. It was eight inches in length and eighteen inches in circumference at its largest. It caused retention of urine. A soft catheter had to be introduced eight inches into the urethra before the urine would flow. Compression of the tumor caused an acceleration of the flow of urine. The abdomen was opened but the bladder could not be separated from the tumor from that side. The tumor was then cut into from the outside and dissected off from the bladder. The bladder was then

returned to its proper position. This left an opening through the floor of the pelvis which admitted four fingers. The tubes and ovaries were removed from the uterus and the body of the uterus was drawn over into the hernial opening and secured by a ligature. This closed the hernial opening. The patient made a rapid recovery. She was able to pass her urine on the second day.

DR. F. C. SHATTUCK reported a case of

PYLORIC STENOSIS AND GASTRIC DILATATION FROM
GASTRIC ULCER; HOUR-GLASS CONTRACTION OF
THE STOMACH.

This patient was seen by Dr. Stone in the Out-Patient Department. Dr. Harrington and I simply confirmed his diagnosis. A waitress, age twenty-eight, entered January, 1899. She stated that as long as she can remember she has been subject to attacks of indigestion characterized by heartburn, sour stomach and distress after eating. About fourteen years ago, after a severe attack, she vomited a pint or more of blood. This has never recurred since. Generally her attacks of indigestion have become more frequent and prolonged. For the past three months she has suffered much, vomiting frequently and sometimes large amounts, and she has lost in this time some thirty pounds in weight.

Examination showed a dilated stomach; capacity 80 + ounces; secreting HCl in sufficient amount. Inflation of the stomach with air gave no hint as to the presence of hour-glass contraction such as was found to exist at the operation, which was advised and accepted.

* *Operation.*

DR. CONANT: This case, previous to undergoing operation, had the stomach carefully blown up, and it is interesting to note that there was then no evidence of an hour-glass contraction. At the time of the operation there was found to be an hour-glass contraction, which only admitted the ring finger. The incision was made in the median line about two and a half inches long. When the peritoneum was cut, the contracted portion of the stomach appeared. At first sight the contraction was so marked that it seemed as if this were the pylorus. Examination with the finger failed to detect any pyloric thickening and further examination revealed that there was an hour-glass contraction, and that the pylorus was practically in its normal place, although somewhat bound down by adhesions. These adhesions made it difficult to get the pylorus out, and it was only after considerable work that the pyloric end of the stomach was drawn up into the wound. External examination showed the pylorus to be very thick and it had under the fingers the feeling of pure gristle. Externally it had all the appearance of a complete closure. It was decided to make an incision through the contraction of the hour glass. The incision was practically the Heinecke-Mikulicz. This was done at the suggestion of Dr. Beach, who had operated upon two cases, and of Dr. Harrington, who also had had two cases. Following their suggestion, an incision about three inches long was made. No cicatricial tissue was found. Through this opening it was possible to feel the pylorus, and on examination one was not able to put the tip of the little finger through the pyloric opening. The incision made through the hour-glass contraction

was sewed up by the Heinecke-Mikulicz method. The most interesting thing about the result in this case was that the hour-glass contraction had been relieved to such an extent that the stomach was very much like the normal stomach except with a slight depression at the point of incision. An incision was then made through the pylorus, which was found to consist of very firm cicatricial tissue. On examining the mesenteric glands, which were numerous, it was feared that they might be malignant. A few of them were removed and examined by Dr. Whitney, who reported that they were simply enlarged glands, and there was nothing malignant in the tissue taken from the pylorus. The whole cicatricial tissue was cut out, and it was found to include nearly three-fourths of the circumference, the posterior portion being free.

After the removal of the cicatricial tissue the wound was sewed up by the Heinecke-Mikulicz operation; then the abdominal wall was sutured and the woman put to bed. Except for a little vomiting that afternoon the patient had no serious trouble. At the end of forty-eight hours she began to have coffee and milk and water. After the third day she began to have food in considerable quantity. I think that it is possible in many cases to begin feeding the patient much earlier than is usually advised in the books. The gauze was left in the wound for five days and then removed, and the wound has been gradually closing up. One interesting thing about this case is that in looking up the literature, as far as known, this is the first case in which the double operation of gastroplasty and pyloroplasty has been done.

Six months after operation the patient was reported to be in excellent health, without any gastric symptoms.

Dr. F. C. SHATTUCK reported a case of

TYPHOID FEVER; PERFORATION; IMMEDIATE OPERATION.

A rubber-worker of thirty entered January 15, 1899, about the end of the third week of typhoid fever, mild in type. At first he was believed to be suffering from influenza, as the Widal reaction was absent and the white count was 10,000. On January 16th he had hemorrhage from the bowel. On January 19th the Widal reaction was still absent. On January 22d it was present for the first time, with a white count of 3,800. The temperature was at this time nearly normal, the general condition excellent, pulse about 100.

On January 26th at 9 A. M., the temperature was 99°, the pulse 90. At the time of my visit, about ten o'clock, he lay on the side, apparently asleep, so I did not speak to him. About half an hour later, while I was still in the house, he was reported for severe abdominal pain. On going to him he was on his back, evidently in great suffering, with an anxious expression. There was great tenderness in the right iliac region, with a rigid abdominal wall. It was believed that perforation had occurred and Dr. Warren was asked to see him with a view to immediate operation. The outlook seemed remarkably good, so excellent was the general condition, and so little time after the occurrence of perforation had been lost.

Operation.

Dr. WARREN: The patient was prepared for operation immediately and an incision was made in the

region of the appendix, where the tenderness was found to be very great. On opening the abdominal cavity the intestines were somewhat congested, and after passing one or two loops through the fingers, a loop was found with a very minute perforation. It was immediately isolated with gauze and the perforation sewed by longitudinal Lembert sutures. There were a few flakes of lymph and some serum, but no large quantity. The general condition of the peritoneum seemed to be of good color and appearance. The wound was enlarged a little bit and about four gallons of salt solution were poured into the abdominal cavity. There were three cultures taken at different periods during the operation. In No. 1 there were several colonies of staphylococcus pyogenes aureus; in No. 2, two or three colonies of staphylococcus pyogenes aureus; and in No. 3, taken after the washing, a few streptococci and typhoid bacilli. A small strand of gauze was passed down to the neighborhood of the suture and the wound closed. The perforation was found in the ileum a few inches above the cecum. I was taken ill that night and saw nothing of the case afterwards, so I am unable to report the different conditions that prevailed after the operation, although my notes state that the operation was performed January 26th. The patient ran a high temperature until January 29th, and died at noon. The report of the autopsy states: "Signs of peritonitis around the wound; bowels injected; no flakes or adhesions; sutured perforation tight; several large ulcers in small intestine."

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Concluded from No. 15, p. 383.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."—SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

WATER SUPPLY AND SEWERAGE.

*The Treatment of the Sewage of Towns.*⁴⁸

At the annual meeting of the German Society of Public Hygiene, held at Cologne in September, Dr. Dunbar introduced the subject of sewage treatment, with special reference to modern methods, in a series of seven propositions, affirming that the first object was to separate the suspended and floating impurities, to eliminate the dissolved organic matters liable to undergo putrefaction, and to destroy pathogenic germs; that the requirements of hygiene, with respect to the degree of purity needed, vary in accordance with local conditions; that by means of careful irrigation it is possible to attain a high degree of purification without nuisance and in certain cases without loss; that intermittent filtration, accompanied at times by a chemical or mechanical treatment, will ensure upon a relatively small area of land a considerable degree of efficacy; that the so-called biological system of treatment depends mainly upon intermittent filtration and the self-purifying properties of the filter when not in action; that neither mechanical disposition nor the vari-

⁴⁸ Vierteljahrsschrift f. öff. Gesundheitspflege, vol. **xxi**, p. 136.

ous combined chemical and mechanical methods of sewage treatment are capable of effecting a notable decrease in the amount of dissolved organic matter contained in the sewage water; finally, that the disinfection of town sewage can be carried out more efficiently by the use of calcium chloride than by means of any other known chemical, notably quicklime, and that clarified sewage can be much more readily and safely disinfected than raw sewage water. The author maintained these theses, and in the course of his arguments asserted that in sewage irrigation two chief aims were present, the one to render the sewage water innocuous, and the other to obtain from it those substances yielding food for vegetation.

TENEMENT HOUSE HYGIENE.

Housing of the Working Classes.

At the meeting of the Sanitary Institute Congress at Southampton, in August, 1899,⁴⁹ it was stated that there were in Liverpool 70,000 people living in unsanitary houses. They could not turn these people out all at once, since there was no way of rehousing them. The existing laws providing for such cases were expensive, and they obtained a special act. Under this act they dealt with about 500 houses per year and had already demolished 4,200, while 800 had been erected, either by the corporation, or by private enterprise. The new houses were not taken by the people who were displaced, who were, therefore, bettered but little, if at all. They then set about erecting a series of houses which could be let at one shilling or one shilling and sixpence per room. They had erected 180 such tenements, and the poorest of the persons displaced had the first offer. The houses were not all that one would like, but were a great improvement on what the people had previously occupied. Improvements were being made on those first erected.

SCHOOL HYGIENE.

Obstruction of the Light in Consequence of Frosted Windows.

Wolpert⁵⁰ presents a series of tables in which are given the results of observations upon the obstruction of daylight in winter, in consequence of the frost upon the window glass.

Notification and School Closure in Relation to the Prevention of the Spread of Measles and Whooping-Cough.

Dr. Armstrong⁵¹ gives the results of notification of 7,680 cases of measles and 3,746 of whooping-cough in Newcastle-upon-Tyne. Each notified case was visited. Printed circulars were left at houses giving instructions as to preventing the spread of infection. Special means were also taken to prevent the spread of these diseases in the schools and especially in infant schools. In December a request was made to the authorities to close all schools (day and Sunday) for four weeks. This was done and many schools were disinfected. In the following year the experiment was tried of closing each school where scholars were being taken sick for a few hours only, long enough to allow of thorough purification

and sprinkling the floors of rooms with disinfectants. In the case of measles, this disinfection was followed by extinction of the disease. In one school having 44 cases in three weeks preceding disinfection, after the first fortnight the number fell to a total of three in thirteen weeks. Similar experiences followed in other schools.

In regard to whooping-cough, the difficulty of diagnosis in time for prevention, the prolonged duration of infectivity, and the hopelessness of isolation and disinfection, all render notification unsatisfactory.

BURIAL OF THE DEAD.

*Growth of Sentiment in Favor of Cremation in America.*⁵²

The growth of public sentiment in the United States is illustrated by the following figures, which were furnished to the writer by Mr. Louis Lange, of New York City, President of the Cremation Society of that city. The number of crematories in the United States on March 1, 1900, was 26. The number of bodies incinerated in these establishments was as follows: 1876 to 1883, 25; 1884, 16; 1885, 47; 1886, 114; 1887, 127; 1888, 190; 1889, 249; 1890, 379; 1891, 471; 1892, 561; 1893, 671; 1894, 831; 1895, 1,017; 1896, 1,101; 1897, 1,391; 1898, 1,699; total, 8,885. Further information received later brings the total up to nearly 10,700 at the close of 1899.

*Cremation in Scotland.*⁵³

In order to render cremation more popular, the directors of the Scottish Society have decided to issue certificates, for five or six guineas each, entitling the holder to arrange for a cremation at any time, and they hope that by this means the time may soon come when such certificates may be made available at any other crematorium, not only in Great Britain, but also abroad. By such a policy the ashes of those dying at a distance from home, as, for example, in the colonies, might be brought home and laid to rest in the family burying-place.

*Influence of the Soil on Earth Burial.*⁵⁴

The suitability of the soil for the site of a cemetery depends on the same conditions that determine its fitness or unfitness for the treatment of sewage, namely, the presence or absence of nitrifying bacteria, its permeability to the air and its humidity and drainage. In the one class of soils bodies undergo desiccation, and the soft parts "return to dust" in the course of a few years; in the other they putrefy and remain for years—in fact, for indefinite periods—festering masses of corruption. The reference gives several instances in support of this statement.

NOXIOUS GASES.

The Latest Advances in Water-Gas Illumination.

Several articles have appeared in the foreign medical journals during the past year relating to the manufacture of water gas, but, with the exception of the British Parliamentary Report of last year, little notice appears to have been taken of the important subject of its extremely poisonous character.

⁴⁹ Public Health, October, 1899, p. 29.

⁵⁰ Hyg. Rundschau, January 1, 1900, vol. x, No. 1, p. 3.

⁵¹ Report of the Medical Officer of Health, Newcastle-on-Tyne, 1899.

⁵² Public Hygiene and State Medicine in the United States, a monograph contributed to the Paris Exposition of 1900, pp. 59 and 60.

⁵³ The Sanitary Record, February 16, 1900, p. 140.

⁵⁴ Public Health, July, 1899, p. 684.

Strachen⁶⁵ after devoting a paper mainly to the advantages of water gas, makes the following comment: "It may be also said that the majority of fatalities from the use of ordinary coal gas are due not to its poisonous, but to its explosive, character. In the case of water gas the mixture must have at least 11 per cent. of the gas in order to become explosive."

The comparatively slight importance and rare occurrence of explosions as compared with other accidents may be judged from the recent report of the Gas Commissioners of Massachusetts, from which it appears that in the year 1899 there were 65 fatalities from illuminating-gas poisoning in the State and 69 other non-fatal cases of poisoning from the same cause.

Poisoning by Carbonic-Oxide Gas from a Heating Apparatus.

Voss⁶⁶ reports this case, in which a calorifer or hot-air apparatus placed in the cellar of a villa at Quedlinburg, in the Harz, which during an antecedent period of three years had worked perfectly well, caused the deaths of three persons, namely, the proprietor, his wife, and a grown-up son. These persons were all found dead in their beds at nine o'clock on the morning of October 28, 1898. The positions of the heating apparatus in the basement and of the three rooms

was used also for a cooking range in the kitchen, and it is shown that probably owing to some reversal in the draught of this flue the fumes from the apparatus, charged with the gas, escaped by the lower opening connected with the range and entered the rooms occupied by the sleepers. There was a sudden and violent change in the weather, with great warmth after a very cold night, which most likely caused the fatal down-draught in the flue.

A parallel instance occurred in Melrose, Mass., in 1878, in which a young married couple lost their lives in consequence of inhaling carbonic oxide from a hot-air furnace, the cold-air box having been opened too soon, so that the poisonous gas was evolved in large quantity and escaped into the room occupied by these persons.

VITAL STATISTICS.

The following table presents in a condensed form the principal vital statistics of the six New England States for the five years 1893-97. The items presented are the numbers of marriages, births and deaths, with the rates per 1,000 of the living population; the deaths under one year and the rate per 1,000 births, and the numbers of deaths from nine causes, with the rates per 10,000 population.

PRINCIPAL VITAL STATISTICS OF THE SIX NEW ENGLAND STATES⁶⁷
(FOR THE FIVE YEARS 1893-97).

Mean Annual Population of the Period (Estimated).	Maine 667,248		New Hampshire 392,256		Vermont 332,493		Massachusetts 2,501,406		Rhode Island 392,569		Connecticut 817,215		Total (New England) 5,103,187	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Marriages and rate per 1,000 population	28,025	8.40	19,794	10.09	13,881	8.35	113,224	9.05	16,776	8.55	32,089	7.85	223,789	8.77
Living births and rate per 1,000 population	71,733	21.50	41,353	21.09	34,876	20.98	348,021	27.83	50,656	25.82	98,097	24.00	644,736	25.27
Deaths and rate per 1,000 population	54,472	16.33	35,308	18.00	27,888	16.77	240,215	19.21	36,749	18.72	72,086	17.64	466,718	18.29
Deaths under one year, and rate per 1,000 births	8,463	117.90	6,052	146.30	4,723	135.40	54,969	158.50	8,447	166.50	14,700	149.80	97,354	151.00
Deaths from Consumption, and rate per 10,000 population	6,056	18.15	3,520	17.95	2,552	15.35	27,443	21.94	3,849	19.61	6,607	16.17	50,027	19.70
Deaths from Pneumonia, and rate per 10,000 population	4,695	14.07	3,164	16.13	2,651	15.95	23,751	18.99	3,430	17.48	6,517	15.95	44,208	17.32
Deaths from Typhoid Fever, and rate per 10,000 population	1,111	3.33	586	2.99	477	2.87	3,508	2.80	593	3.02	1,142	2.79	7,417	2.91
Deaths from Small-pox, and rate per 10,000 population	0	0	0	0	1	0.006	46	0.04	2	1.01	22	0.05	71	0.03
Deaths from Measles, and rate per 10,000 population	138	0.41	88	0.45	104	0.63	786	0.62	254	1.29	436	1.07	1,806	0.71
Deaths from Scarlet Fever, and rate per 10,000 population	205	0.61	228	1.16	200	1.20	2,533	2.03	505	2.57	497	1.22	4,168	1.63
Deaths from Diphtheria and Croup, and rate per 10,000 population	938	2.81	630	3.21	627	3.77	8,082	6.46	1,226	6.25	2,138	5.23	13,641	5.35
Deaths from Cholera Infantum, and rate per 10,000 population	2,546	7.63	1,946	9.92	933	5.61	12,945	10.35	2,569	13.69	3,502	8.08	24,241	9.50
Deaths from Cancer, and rate per 10,000 population	2,368	7.10	1,319	6.73	991	5.96	8,387	6.71	1,133	5.77	2,264	5.64	16,462	6.45

⁶⁷ From advance sheets of monograph on Public Hygiene and State Medicine in the United States. Wright & Potter Printing Co., Boston, 1900.

on one floor above warmed by it are explained. The deaths were undoubtedly due to carbonic-oxide and not to carbonic-acid gas, as in two adjoining rooms, while a lamp on a small low table was still alight in one of them, a canary bird in a cage almost at the same level in the next room was dead, as was also the dog. All the corpses, from their appearance, gave evidence of a painless death. The flue from the calorifer stove

⁶⁵ Journal f. Gasbeleuchtung u. Wasserversorgung, 1898, 31, p. 541.
⁶⁶ Gesundheits-Ingenieur, February 15, 1899, p. 35. See also Investigations as to the products of Combustion of Illuminating Gas, by Dr. Grebaut, Bulletin de la Soc. d'Encouragement pour l'Industrie Nationale, February, 1899, p. 297.

DAMAGES FOR A DISLOCATED KIDNEY.—A man and his wife, according to the *Medical Record*, have obtained a verdict of \$10,000 against the Pennsylvania Railroad Company in the New Jersey Supreme Court, for injuries received by the woman while on a train. A jolt occasioned by attaching a new car to the train threw the woman down, and her physician testified at the trial that the accident was the cause of a movable kidney from which she suffered. The court awarded the woman \$8,000, and her husband \$2,000 for the loss of her companionship.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, February 5, 1900, Dr. E. H. BRADFORD in the chair.

ANATOMICAL SPECIMENS.

DR. J. P. CLARK: The specimen which I have to show is a papillomatous growth of the tonsil. It is interesting on account of the rarity of benign growths of the tonsil, the somewhat extraordinary size which the growth reached in this case, and the fact that it was apparently a recurrence of a considerably smaller growth which was removed several years before. The patient was a boy eight years old, whom I saw during my service at the Massachusetts Hospital last spring. There had been a small whitish growth, about the size and general configuration of a blackberry, removed three and a half years before. The present growth began to appear very soon after and increased quite rapidly. It occupied the region of the right tonsil and was removed under ether anesthesia, with the cold wire snare. There was very little hemorrhage and there has been no recurrence as far as I know now. These drawings were made by Dr. Mosher, from sketches made at the time. Dr. J. H. Wright gives the following descriptions of the microscopic appearance: "The central parts are composed of more or less dense connective tissue with vessels, etc. The peripheral lobulated parts are composed of lymphadenoid tissue and of cellular connective tissue covered over with mucous membrane. The growth is difficult to classify, but may be called a papilloma. It is, of course, not malignant."

Dr. R. C. CABOT read a paper entitled

SPLenic PSEUDOLEUKEMIA; HISTORICAL SKETCH.¹

DR. F. C. SHATTUCK: It seems to me that the reader has not set forth our real ignorance as to "splenic anemia," so called. We are trying to classify way ahead of our knowledge. We characterize one group of symptoms as pernicious anemia, another as leukemia, a third as pseudoleukemia. And this classification, in default of a better, serves a good purpose. But we must not forget that this classification does not rest on bed-rock, inasmuch as we are still profoundly ignorant of the real nature of any member of the group of blood diseases.

Then we encounter cases which do not fit accurately into either of the three divisions, sharing some of the features of two. Among them are the cases of splenic anemia, anemia with enlarged spleen, the splenic form of pseudoleukemia. The second of these terms seems to me perhaps the safest for the present, as we do not really *know* that the splenic tumor and the anemia are intimately related one to the other. Dr. W. H. Smith has kindly gone through my hospital and private records and can find only four cases which could possibly be classified as splenic anemia. One of these, a child of twenty-one months, with a secondary anemia and a spleen reaching to the navel and left iliac crest, I am sure Dr. Cabot would not accept. The reader's remarks and Dr. Smith's investigations confirm my previous impression that splenic anemia is

not even a clinical entity. I hope the President will give Dr. Smith an opportunity to state his results.

Dr. W. H. SMITH reported

CASES OF SPLenic ANEMIA IN THE HOSPITAL SERVICE AND PRIVATE PRACTICE OF DR. F. C. SHATTUCK.

In looking over the records of the cases of splenic anemia in Dr. Shattuck's service at the Massachusetts General Hospital, great difficulty was encountered in selecting cases which seemed to meet the requirements. All the cases of Hodgkin's disease, splenic anemia, hypertrophy of the spleen, and many of the cases of anemia were analyzed. From the series three cases were selected. Several others seemed on the border line between Hodgkin's disease, anemia with enlarged spleen, or with glandular enlargement. One patient with history of previous hemorrhages from the mucous membranes, marked secondary anemia with enlargement of the spleen and liver, was excluded, because he had a cardiac lesion, although he was suffering from his anemia at entrance and there were no signs of uncompensated cardiac disease. One other patient with the spleen enlarged, with a secondary anemia and slight glandular enlargement, was not included in the series of cases because of the moderate enlargement of the spleen and the high leucocyte count, 25,000. At one entrance to the hospital, the picture of one case was that of a typical Hodgkin's disease without anemia, without splenic enlargement. A re-entry within a few months showed a severe degree of anemia with the red corpuscles down to 1,000,000, the splenic area enlarged nearly to the umbilicus. Whether to consider this a case of splenic anemia complicating Hodgkin's disease, or a severe case of Hodgkin's disease with an unusual degree of anemia, or splenic enlargement, was the question. Fortunately, after several weeks in the hospital a gland appeared near the nipple which when excised proved to be sarcomatous. A case of moderate secondary anemia with marked enlargement of the spleen without glandular enlargement was left undecided, as the case was that of a young child, where splenic enlargement is not uncommon. A case of severe anemia with 1,720,000 red corpuscles, 9,600 white corpuscles and hemoglobin of 35 per cent., with splenic and hepatic enlargement, with some previous history of hemorrhage from the mucous membranes — nearly all the requisites for a splenic anemia — was through a careful differential count found to be a case of pernicious anemia.

DR. HEWES: I have seen two cases of a nature similar to that described by Osler as characterizing splenic anemia; one of them, included in the cases of Dr. Shattuck, occurred in the Massachusetts Hospital at the time I was house officer, and Dr. Shattuck's diagnosis at the time was idiopathic enlargement of the liver and spleen. Dr. Shattuck lectured on the case under this diagnosis, and Dr. Fitz two weeks later lectured upon it to the same students as a case of Hodgkin's disease. This was of course simply a difference in terms, not in diagnosis. This case answered as nearly to the description of Osler's typical cases as any I have seen. There was a slight anemia. The count and differential count of leucocytes were normal. The man complained of this mass in the left side. The liver was somewhat enlarged, the spleen larger. No other symptoms; no discoverable etiology.

¹ See page 421 of the Journal.

The second case that I saw was in a boy of fourteen. This case is rather interesting as suggesting that the differentiation between the anemias of infancy and childhood and splenic anemia, so-called, is not very easy to make. This boy, according to the family doctor, had always as a child been very anemic, and all through his childhood had remained with this sallow color, and had never been a well child; had been seen in consultation as an infant by a physician in Boston, who said it was a case of infantile anemia. I saw the boy at the age of fourteen. At this time the blood showed 3,500,000 red corpuscles, hemoglobin 40 per cent., poikilocytosis and achromia of red corpuscles, number of white cells normal and differential count normal, spleen half-way between the navel and Poupart's ligament, the liver somewhat enlarged, one and a half inches below the costal border. If that was the first history I had had of the case I should have said it answered very well to Osler's cases of splenic anemia; but the history of the case suggested that it was simply a condition of infantile anemia where you have enlargement of the liver and spleen which have continued. The boy suffered by spells from diarrhea for weeks at a time. No other symptoms save debility and pallor. No etiology discoverable.

Those are the only two cases I have seen which I should dare to place in that class. I saw one more case a few days after Osler's article came out, which I at first thought a case of splenic anemia, so-called. The patient had been previously well up to two weeks of the time I saw him, then he had a great deal of diarrhea and felt much weaker than he thought he ought to feel, and called a doctor for the first time in his life. The doctor found the spleen resting almost on Poupart's ligament, the liver slightly enlarged, no ascites. The blood was practically normal as far as the whites went; there was a red count of 4,000,000, hemoglobin 70 per cent., poikilocytosis slight. I said, "Here is a case of splenic anemia," finding no other symptom except the anemia and the marked enlargement of the spleen, with slight enlargement of the liver. As the case progressed he developed ascites, and on tapping the fluid was puriform. A culture was sterile, so that it was not a septic peritonitis, but it seemed to me that the puriform condition of the fluid would tend to rule out splenic anemia, pure and simple, and I am more inclined to think of that case as a case of new growth of the spleen. We failed to get an autopsy, however, so that I don't know what the condition was in reality.

These cases of enlarged spleen with anemia do occur as distinct conditions unlike any other known pathological conditions. It is well to bear this condition in mind, even if it is not yet time to name it.

DR. J. L. MORSE read a paper entitled

SPLenic ANEMIA.²

DR. WENTWORTH: I can recall two cases, one a patient nine or ten years old, who was in the Children's Hospital for seven or eight weeks. There was no previous cause for the anemia or for the enlargement of the spleen. He never had had malaria, and there was no evidence of rickets or of syphilis. His spleen reached the iliac crest and almost to the median line of the abdomen. His blood simply showed a secondary anemia—nothing characteristic. These

observations extended over six or seven weeks, with normal temperature and normal organs otherwise. We then lost sight of him. I heard that he died about six months later, but did not learn the cause.

The other case was an infant of about eighteen months, who showed no evidence of rickets and no evidence or history of syphilis. The enlarged spleen filled out the whole left flank, and the blood showed secondary anemia. That case we lost sight of.

This variety of anemia has been regarded as one of the primary anemias, and therefore cases with rickets or syphilis or malaria, associated with enlargement of the spleen, cannot be included in this class. There is absolutely nothing characteristic about the blood. As far as Hodgkin's disease is concerned, I thought that it was generally regarded as lymphosarcoma and I was not aware that the splenic changes in so-called splenic anemia were those of lymphosarcoma. The microscopic appearances of the glands in Hodgkin's disease are characteristic. I should think, as Dr. Shattuck says, it is better not to give a name to an unknown condition.

DR. HENRY JACKSON also read a paper entitled

SPLenic ANEMIA.³

DR. VICKERY: I would like to report two cases. One of them I saw in consultation with Dr. H. S. Moran in Roxbury, a man thirty-nine years old, who had gripe about seven years previously, and thought he had never been so well since that time. He had also suffered somewhat from dyspepsia. Otherwise the present illness was the first he had ever had. On July 9, 1899, he woke up nauseated, and vomited about one-half pint of blood, and later a somewhat less amount. On the 15th he also vomited and had tarry stools, and on the 24th, when I saw him, he had vomited what was stated to be about a quart of blood. There was no alcoholic or venereal history. The blood did not seem abnormal on microscopic examination. He was too ill to be examined very much at that time; it was more a question of treatment, and neither Dr. Moran nor myself then discovered any enlarged spleen. On September 13th I had the opportunity of seeing him again with Dr. Moran. The spleen was very large. There was also ascites. There had been no more hemorrhage. There were no enlarged glands, and a differential count of 500 cells made for me by Dr. Tileston was practically normal. The cells were a little pale. They were rather smaller than the normal size, and there was a slight poikilocytosis. One normoblast was seen while counting the 500 white cells. This patient, having had a long and expensive illness away from his family, then went to Baltimore, where his brother lived, and by Dr. Moran's advice saw Dr. Osler, and his case is mentioned by Dr. Osler in the January number of the *American Journal of Medical Sciences*. Dr. Moran has seen the man within a few weeks and thought he was in fair health and able to work.

The second case I first saw in 1898. She was a single woman of seventeen, born in Boston and coming from Whitman, in Massachusetts. The family and previous health had been good. In 1894 she vomited what was stated to be at least two quarts of a mixture of blood and food. The blood was bright red. The doctor who saw her found a large spleen at that time and in 1898; he said that the spleen in 1898 was

² See page 422 of the Journal.

³ See page 423 of the Journal.

not so large as the spleen in 1894. In 1894 she was well except for slight bleeding from the gums at times, and at times attacks of diarrhea. She had always been pale. About the 1st of July, 1898, she had hematemesis again and when I saw her in the hospital she was very pale, rather poorly developed; the spleen large, not tender and its consistence rather hard, its edge blunt, moving with respiration. Inflating the colon did not obscure its mass. There were, however, no notches to be felt upon the spleen. I am quite sure it was the spleen. The heart seemed normal except for anemia. Her white corpuscles were counted many times, the highest count being 1,700. On entrance there were only 700, and the red corpuscles 2,500,000, hemoglobin 20 per cent. A differential count was made and showed nothing peculiar. The urine was frequently examined and found normal. Her weight at that time was 98 pounds. The liver seemed of normal size. On August 11th her blood was 2,456,000 and the hemoglobin 45 per cent. She went away from the hospital feeling much better, and according to an arrangement which I made she came back in the autumn, that she might be examined by Dr. Shattuck and that he might show her to his class if he thought best, and he made the same diagnosis which I had—pseudoleukemia. There were a few not very large glands, I omitted to say, in the neck, more on the left than the right. There were no other glandular enlargements. By the 18th of November she weighed 108 pounds and her hemoglobin had reached 50 per cent., the red corpuscles 4,912,000. The improvement apparently was due to arsenic. On July 5, 1899, she writes that she has improved steadily and that her gums and lips and nails are red, and that she has no more bleeding.

DR. CABOT: I am struck by the contrast between the cases brought together to-night (with the exception of Dr. Vickery's two cases) and those which Dr. Osler reports. In Dr. Osler's cases hemorrhage is a prominent symptom. Hemorrhage from the stomach was present in Dr. Vickery's cases, but not in the others. It seems to me that we all agree pretty well that the best name that we can attach to this condition is "anemia with splenic enlargement." I certainly feel as Dr. Wentworth does, that we do not know enough to call it a form of pseudoleukemia, first, because we do not know what pseudoleukemia is, and secondly, because we do not know whether the condition we are discussing to-night is identical with what pseudoleukemia is said to be. In the same number of the *American Journal of Medical Sciences* in which the report of Dr. Osler's cases appeared, is an autopsy record by Dr. Flexner, of a case which he says he calls Hodgkin's disease, although the cell structure is that of a mixed-cell sarcoma and not the ordinary lymphosarcoma. He decides upon clinical grounds to call the thing Hodgkin's disease because it shows multiple chronic glandular enlargements. I do not mean to say he is right or wrong, but only that we do not know what pseudoleukemia is. There are no distinct boundaries that separate it on the one side from sarcoma and on the other from adenoid hypertrophy, such as occurs in the tonsils. The whole conception is a makeshift.

DR. WENTWORTH: I simply stated the laboratory teaching of Dr. Councilman as I understood it. The microscopic examination shows lymphosarcoma. Perhaps Dr. Flexner was wrong.

DR. HILL, in the absence of DR. JAMES MARSH JACKSON, read a paper entitled

A CASE OF SPLENIC ANEMIA.¹

Recent Literature.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York. In twenty volumes. Vol. XIX, Malaria and Micro-organisms. New York: William Wood & Co. 1900.

This is an important and valuable volume of this series. With the index it consists of 811 pages. Of these, 522 pages are devoted to the subject of Malaria, and the rest to Micro-organisms. The subject of malaria is of especial interest at the present time in connection with the recent investigations as to the relations of the mosquito to this disease. This article has been prepared by Marchiafava and Bignami, both of Rome. Their names are associated with the subject, and with the modern work which has untangled to great extent the perplexities with which the subject was so long enmeshed. No better choice could have been made by the editor. They naturally belong to and were among the founders of the Italian school, which has advocated and upheld the doctrine of a plurality of parasitic species, in contradistinction to the unitary theory of Laveran.

The completion and publication of this article has been delayed more than a year, that it might meet the rapid and serious modifications which were being made in previous conceptions in regard to several essential points. The later knowledge alone as to the biology of the malarial parasites outside of the human body not only justified but made imperative such delay. This knowledge not only modifies previous views regarding epidemiology, but suggests new and more certain methods of prophylaxis. The article is an authoritative and exhaustive one, at least up to the date of its going to the printers. It is preceded by eleven excellent plates, illustrative of the subject.

Dr. Simon Flexner, of the University of Pennsylvania, and Dr. Eugene L. Opie, of the Johns Hopkins University, contribute the two first-rate articles on Micro-organisms, which complete a very creditable volume.

Prophylaxis and Treatment of Pulmonary Tuberculosis. By S. A. KNOPF, M.D. Philadelphia: P. Blakiston's Son & Co. 1899.

The rapid growth of interest in the question of sanatorium treatment for consumptives makes the appearance of Dr. Knopf's book of special interest and use. With the exception of a few unimportant errors concerning the capacity of certain institutions, the work will be of much aid not only to those whose work lies in this special direction but to the ordinary practitioner.

Dr. Knopf devotes a number of chapters to the description of special sanatoria in different parts of the world, the illustrations being throughout of more than ordinary excellence.

These chapters are rather an outgrowth of Dr. Knopf's previous work entitled "Les Sanatoria:

¹ See page 424 of the Journal.

Traitement et Prophylaxie de la Phthisie Pulmonaire," a thesis which procured him the final degree of the Faculty of Medicine of the University of Paris.

The author, while taking advanced views as to the undoubted communicability of phthisis and of the necessity of proper care and cleanliness in dealing with patients, yet decries the inordinate fear which has grown among the laity as to the danger of consumptive hospitals to the surrounding community and cites the views of various authorities to prove the contrary.

The chapters upon prophylaxis, upon the dietetic and hygienic care of consumption, and also those upon hydrotherapeutics have many excellent and practical suggestions. These all testify to the energy and zeal which Dr. Knopf shows in all his recent publications upon tubercular disease and in his efforts to awaken the public to the importance of sanatorium and hospital care of consumptive patients.

In short, no one will regret having the book upon his shelves as an interesting and practical contribution to the subject.

The Causation of Functional Heart Murmurs. By ARTHUR FOXWELL, M.A., M.D. (Cantab.). Birmingham: Cornish Brothers. 1899.

This is the Bradshaw Lecture of 1899. The title is somewhat too comprehensive, as Dr. Foxwell considers only the abnormal sound heard over the second and third spaces, the so-called pulmonary murmur. From clinical experience and numerous experiments, he is convinced that it is caused by the dilatation of the conus and pulmonary artery, with a carrying up of the root of the artery till the valves are vertically over its bifurcation. The changed conditions thus produced are responsible for the murmur. In proof of this he has found that when the murmur was present in a heart during life it could always be produced after death by passing a current of water through the heart by means of a specially constructed apparatus; while in a normal heart it could only be produced after locally dilating the conus and pulmonary artery. His arguments and experiments in support of his theory seem convincing, and his explanation satisfactorily accounts for a condition which has served as the subject of much discussion.

The International Medical Annual and Practitioner's Index. A Work of Reference for Medical Practitioners. Pp. 748. New York and Chicago: E. B. Treat & Co. 1900.

This is the eighteenth year of this annual. It is comprehensive, as usual, and covers in a superficial way the whole field of medical and surgical treatment. The abstracts vary widely in length and quality, as is inevitable in a book of multiple authorship. The volume contains a vast amount of information, much of it no doubt serviceable. It is rather fully illustrated, and again the editors have fallen into the error of attempting to reproduce x-ray pictures on cheap paper, which apparently cannot be done with success. For example, plates I and XV are worthless and should by all means be omitted in later editions. The small cuts on page 301 are miserably reproduced, and the frequent half-tone photomicrographs convey small idea of histological structure. Diagrammatic drawings are certainly to be preferred in such a publication. Many of the illustrations, on the other hand, are sufficiently good for the purpose. The book is cheaply bound.

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MEDICINE AS A MEANS OF GRACE.

It has long been recognized that a practical and efficient method of instilling the principles of Christianity into heathen minds is through the medium of their bodies. Hence has grown the importance attaching to the work of the so-called medical missionary, who has for many years been a potent factor in bringing the recalcitrant native to a sense of his possibilities and destiny. We have the advance sheets of a paper by Dr. Albert P. Peck, Dean of the Medical Department, North China College, American Board of Foreign Missions, on the subject of "The Training of Natives in Medicine in Foreign Mission Fields," which was presented at the Ecumenical Missionary Conference in New York. It is the hope of those interested in the matter that a certain number of native student assistants may be trained in medicine sufficiently to be of service to the superior medical officers. Of this project, Dr. Peck says: "That medical missionaries need native help in their arduous labors will be readily granted, and that such help should be as competent as possible needs no argument. Hence, the training of a staff in mission hospitals to be student assistants becomes an important part of the duties of the medical missionary. These assistants, as they become capable, multiply the activities of their preceptor, relieve him in routine work, and in exacting attention to certain details in connection with the central station; and as they become still more competent they are often sent out from the immediate presence of their preceptor to take part in tours evangelistic and clinical, or perhaps to be placed for a time in some out-station, there to be necessarily the representatives of the mission station, and to have personal responsibilities of health or life. With the establishment of training classes, which grow into medical schools, there comes the question, is it worth while to educate a larger number than will be required to keep up the supply of trained help needed by the mission, with the idea that they may, perhaps, pass into independent practice and support themselves in their profession as Christian practitioners among their own people?"

To this latter question Dr. Peck gives no dogmatic answer, realizing that the conditions in different countries are quite dissimilar, but, in general, he thinks that if we recognize and admit the value of the medical profession as a social factor in our own civilization, we shall be ready to see the importance of such an element in the infusion of a new life into the effete civilization of the East.

In Japan, for twenty years past, the native practitioners have gladly availed themselves of the clinical instruction to be gained at the medical missions, even though they had long been practising medicine to the extent of their own somewhat primitive knowledge. Conditions in the northern part of China are very much worse; medicine, in the modern sense of the word, is not practised; every so-called scholar is also a doctor, whose success depends rather upon his shrewdness than his knowledge of medical matters. Thus, Dr. Peck writes, there "is a sorry procession of ignorant quacks past the bedside of every unfortunate who is ill or injured, the speed of their transit proportioned to the gravity of the case. If the patient be wealthy and seriously ill there may be several doctors called in a single day—not in mutual consultation, but as soon as one can be hustled out of the way, another may be brought in, and the unfortunate patient compelled to swallow a series of disgusting compounds, which have as little rational relation to each other as have the unsavory ingredients to the disease. There is no such thing as a medical school, and few, if any, practitioners of medicine who support themselves by their practice alone. One would think that such advantages as a little instruction in modern medicine would give would be an inducement strong enough to bring them to accept the proffered help, if purely from a business point of view, but the power of prejudice and conservatism is seen in the unwillingness to meet these advances."

From this somewhat gloomy picture Dr. Peck looks with hope and confidence to the younger generation. Therefore it seems wise to begin the educational reforms among the young, and that medicine be taught only after a general preliminary training of an adequate sort. The final question then comes as to how this medical education is to be brought about. It is not likely that dissections of the body can be made in China for a long time to come, owing to the fanatical prejudice against the mutilation of the human body. This superstition, we have heard from a physician in China, stands also very much in the way of surgical advance, since death is frequently preferred to the loss of a portion of the body, however useless it may have become from accident or disease. In view of these facts difficulties of a very real sort are at once encountered, and Dr. Peck advises a recognition of the facts at the outset and a modification of the plan of education in accordance. On this point he says: "The average intelligence of such communities as, for instance, we have in China, is not very high. They cannot follow advanced hygienic teaching, nor appre-

ciate the most scientific practice. A plain, practical and empirical education is the best for the somewhat undeveloped state of society, teaching the best uses of the imperfect equipment, the rude surroundings which they must have. My recommendation therefore is rather for what we would now call an old-fashioned education for our medical students. The writer has sometimes been annoyed at the anxiety displayed by the Chinese with whom his lot has been cast to learn some new thing, inquiring what is the latest wonder of science, when the vast world of known and tested facts, the road by which we have to go, is unknown. Superficiality is the weakness of the uncultured races."

What has been accomplished in India through the advent of trained women physicians is well known, and certainly goes far to bear out the theory that the salvation of the body is the first step toward the salvation of the soul. This whole problem is clearly an interesting one, and if our mind is made up that it is desirable to interfere with the decadence of the people of the East, it is highly important that we should go about it in the right way, which, we fear, has not always been done. We are, at least, convinced that the introduction of modern ideas of hygiene and medical procedure will do much toward bringing about the moral and physical improvement which should be at the basis of all missionary endeavor. It is a far safer means of reformation than the introduction of warring creeds; of that there cannot be the smallest doubt.

THE FATALITY OF CERTAIN DISEASES. OF A CERTAIN NUMBER ATTACKED WHAT PERCENTAGE DIES?

In consequence of the enactment of improved laws and regulations, and the better enforcement of laws which had long existed but had hitherto been neglected, the practice of notification of infectious diseases has made it possible to determine the fatality of such diseases with a considerable degree of accuracy. The application of these results gives a greater degree of certainty to the prognosis of disease.

It should be noted, however, that all percentages derived from statistics of this character are probably a little too high, since the registration of deaths as now conducted in the States and cities included in the list is more perfectly enforced than the notification of cases, many mild cases escaping notification, especially those of scarlet fever and measles.

The following extract comprises the substance of the returns to certain inquiries sent out by the United States Commissioners to the Paris Exposition of 1900, and compiled under their direction.¹

In consequence of inquiries sent out in 1899, information was secured in regard to 619,765 reported cases of small-pox, typhoid fever, scarlet fever, diphtheria and measles, which occurred in the years 1894, 1895, 1896, 1897 and 1898, together with 75,715 registered deaths from these dis-

¹ Public Hygiene and State Medicine in the United States, p. 21.

eases which occurred in the same years. These were reported by the following States and cities:

STATES. ²			
Massachusetts . . .	1894-98	Vermont . . .	1896-97
Michigan . . .	1894-98	Connecticut . . .	1898
Rhode Island . . .	1894-98	Indiana . . .	1898
CITIES.			
New York City ³ . . .	1894-98	Reading . . .	1894-98
Chicago . . .	1894-98	Hudson Co., N. J. . .	1894-98
Philadelphia . . .	1894-98	Cincinnati . . .	1894-97
Pittsburg . . .	1894-98	St. Louis . . .	1894-97
Cleveland . . .	1894-98	Baltimore . . .	1894-97
New Orleans . . .	1894-98	Milwaukee . . .	1894-97
Minneapolis . . .	1894-88	Rochester . . .	1894-97
St. Paul . . .	1894-98	Denver . . .	1894-96
Buffalo . . .	1894-98	San Francisco . . .	1898
Toledo . . .	1894-98		

The results of the returns received from the foregoing States and cities are as follows:

Diseases.	Reported Cases.	Registered Deaths.	Fatality (Per cent.).
Small-pox	9,222	2,385	25.8
Typhoid fever	69,758	13,284	19.0
Diphtheria and croup	195,783	44,411	22.7
Scarlet fever	117,847	9,211	7.2
Measles	217,755	6,424	2.8
Total	619,765	75,715	

These results agree fairly well with those of the English Local Government Board for the eight years 1890-97, which showed a fatality for typhoid fever of 18.05 per cent., for diphtheria of 23 per cent., and for scarlet fever of 4.9 per cent.

In the compilation of these figures it was found necessary to reject the returns of several entire States and cities, in consequence of manifest deficiency in the number of reported cases.

The use of antitoxin for the treatment of diphtheria became general in the early months of 1895, throughout the country. If, therefore, the returns for the year 1894 be treated separately it appears that there were 25,844 reported cases, and 7,654 deaths in that year, the fatality being 29.6 per cent., while the fatality of the remaining years was only 21.6 per cent.

Treating the year 1898 in the same manner, the fatality was only 20.5 per cent., or the ratio of 31,494 cases to 6,471 deaths. In two States and seven cities combined, having a total population of 4,250,000, the fatality from diphtheria in 1894 was 29.7 per cent., and in the same places in 1898 it was only 14.6 per cent., confirming the statement that the diphtheria fatality has been cut in twain since the general introduction of antitoxin treatment. It is also quite noteworthy that in several large cities, situated a thousand miles apart, the diphtheria fatality before 1895 was quite uniformly from 29 to 30 per cent.

LOBAR PNEUMONIA.

A VERY interesting series of statistics regarding 500 cases of lobar pneumonia treated in ten years in the wards of the Mount Sinai Hospital has been prepared for the Hospital Reports by Dr. Alfred Meyer, attending physician to the hospital. The youngest patient

² The returns of several large cities (Boston, Worcester, Providence, Detroit, Hartford, New Haven and Indianapolis) are included in the statistics of these States.

³ Including the figures of the consolidated city for 1898.

was four months old, and died, and the oldest was seventy-seven years, and recovered. The total deaths were 94, a mortality of 18.88 per cent. Omitting 23 cases that died within forty hours after admission, the mortality for the series is only 14.20 per cent. There was a very high mortality under twelve months (67.34 per cent.), an almost uninterrupted fall in the mortality up to thirty years of age, and then a rise for every decade up to seventy years, which latter gave a mortality of 50 per cent. The mortality was nearly three times greater between thirty-one and forty than between twenty-one and thirty, and nearly twice as great between forty-one and fifty as between thirty-one and forty. The mortality in female cases was 23.68 per cent., and in male cases, 16.66 per cent., a proportion agreeing almost exactly with that given by Juergensen in Ziemssen's Encyclopedia. Out of 263 cases there were 63 lyses and 200 crises. Of 200 crises, 79 fell on even days and 121 on odd days. All cases were considered as having defervesced by crisis in which the temperature fell from 103° or over to normal within forty-eight hours. In the 263 cases with complete histories the average duration (from the beginning of the disease to the cessation of fever) was thirteen days. As to site, the figures agree with those of other authors in showing a more frequent involvement of the right lung than of the left. The left lower lobe was the most frequent seat of disease, occurring in 26.62 per cent. of the cases. Pneumonias involving the right lung were more fatal than those involving the left, in the proportion of 13.50 to 8.18. There was not one fatal case of left upper pneumonia, though there were 36 in this site out of 325 cases. This does not support Juergensen's view that the prognosis is better when a lower lobe is involved. Pulmonary edema was both the most frequent and the most fatal complication. It occurred in 5.8 per cent. of the cases. There was pleurisy with effusion in 5 per cent., and pericarditis in 2.2 per cent. The cases occurring in summer appear to have been more benign than those of other seasons, for, though they represent 16.16 per cent. of the morbidity, they give only 8.51 per cent. of the deaths.

SMALL-POX IS A PREVENTABLE DISEASE.

THE recent somewhat eventful trip of the steamship *New England*, which has just returned to Boston, is worthy of mention for several reasons. The circumstances are briefly as follows: The steamer sailed February 1st, from Boston, with an excursion party of 425 persons, whose destination was the Orient. While at Rome small-pox appeared, which probably had broken out a considerable time before the vessel reached the port of Naples, where passengers were landed for the Italian sightseeing. The excursionists were on shore, sightseeing, and the captain of the steamer, seeing the desirability of prompt action, sailed for Liverpool without his passengers, after having disembarked their lug-

gage. Several of the members of the party have since died of small-pox, and for a time something approaching a panic prevailed. The excursion naturally has come to an untimely end, to the discomfort and annoyance of all concerned.

It goes without saying that the possibility of disease and even of epidemic disease is a consideration which must always be taken into account when a large number of persons are closely associated for a considerable period of time. This, however, would merely seem to enforce the principle that all possible precautions be taken before embarking on such an excursion. This was clearly neglected in this case, in spite of the fact that small-pox has been unusually prevalent during the past winter in sporadic form. Had general vaccination been enforced before the departure of the steamer from Boston, it is altogether probable that the members of the excursion would now be enjoying the pleasures which they had anticipated, instead of beating a disorderly retreat back to their native country. Small-pox is essentially a preventable disease, a fact which people appear to be slow in recognizing. A few more experiences such as this of the *New England* will doubtless do something to enforce the lesson.

MEDICAL NOTES.

DEATH OF PROFESSOR BIRCH-HIRSCHFELD. — The death of Birch-Hirschfeld, professor of pathology and pathological anatomy at the University of Leipsic, is announced. He was born in May, 1842, and after many years of comparative obscurity, was elected to the chair of pathology at Leipsic in 1885, in place of Cohnheim. He is well known for his text-book on pathology, which has passed through several editions, and for his numerous contributions to pathological subjects.

PLAGUE IN MANILA. — A recent renewed outbreak of plague, resulting in 14 deaths in one week, has been traced to infection from the market. A strict quarantine has been instituted, and the market buildings, which are filthy, will be burned. The total number of deaths from plague has been 119 Chinamen and 66 Filipinos. The disease in other localities has been suppressed.

PLAGUE IN PERSIA. — An outbreak of bubonic plague is reported in the Javanrood district, near the Turkish frontier. Upwards of 195 deaths have occurred.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the eight days ending at noon, April 25, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 60, scarlatina 46, measles 99, typhoid fever 7.

MR. A. SHUMAN REAPPOINTED. — Mr. A. Shuman has been reappointed as a Boston City Hospital trustee for five years. Mr. Shuman has already served three terms in this capacity, with much profit to the

hospital. There is no salary attached to the position and the temptation to the politically indebted to appoint, or to the impecunious incompetent to be appointed, is correspondingly lessened.

ANNUAL MEETING OF SOUTH MIDDLESEX MEDICAL SOCIETY. — At the recent annual meeting of the South Middlesex Medical Society, Dr. Godfrey Ryder, of Malden, delivered the annual address on the subject, "Surgical Pain." Dr. C. H. Cook was elected President for the coming year.

NEW YORK.

A HOSPITAL PAVILION FOR PRIVATE PATIENTS. — The Board of Managers of Mount Sinai Hospital on April 22d formally accepted a gift of \$200,000 from Meyer Guggenheim and his six sons to pay the cost of one of the group of buildings about to be erected on the new site selected for the hospital, Fifth Avenue, facing Central Park at 100th and 101st Streets. The proffered structure is designed as a memorial of the deceased wife and mother of the donors, and the offer of the gift was accepted on the condition that it should be devoted to the use of private contributing patients. Accompanying it was a letter in which the opinion was expressed that such a department could not fail to prove a constant and remunerative source of income, and, as a consequence, the revenues derived therefrom, added to the other resources of the institution, would render practically certain a more successful prosecution on a more extensive scale than hitherto of the charitable work now engaged in. The estimated cost of the entire new hospital is about \$2,000,000.

HOSPITAL FOR INCIPIENT TUBERCULOSIS. — Governor Roosevelt has named the five trustees of the New York State Hospital for the Treatment of Incipient Tuberculosis, which is to be established in the Adirondaeks. Two of them are physicians, Drs. John H. Pryor, of Buffalo, and Willis G. Macdonald, of Albany. On April 17th, Mayor Van Wyck gave a hearing on the bill passed by the Legislature. Drs. H. M. Biggs, John B. Cosby, John H. Girdner and Daniel Lewis spoke in favor of the measure, and a letter urging the Mayor to approve it was read from Dr. N. H. Henry, who introduced it in the Assembly. Dr. Henry was not able to be present, being on duty with General Roe and the militia at the Cornell Dam.

BEQUESTS TO HOSPITALS. — By the will of James D. Sarven, \$5,000 is bequeathed to the Tarrytown Hospital to endow a "Sarven Free Bed," and 200 shares of Northern Pacific Railroad first preferred stock to Harriet L. Burgess, a nurse in that hospital who attended him with great faithfulness when he was under treatment in the institution. By the will of the late John Halstead, of New York, which bequeaths the bulk of his estate, amounting to about \$500,000, to the Cooper Union, \$2,000 each is left to the Skin and Cancer Hospital and to the Northern Dispensary.

ARBOR DAY AND TREES. — Governor Roosevelt, in a special proclamation calling public attention to Arbor Day, fixed by statute on the 4th of May, states

that the school children of the State have planted more than two hundred thousand trees within the ten years in which Arbor Day has been recognized, and that few similar efforts in recent years have been more thoroughly commendable than the effort to get the people practically to show their appreciation of the beauty and usefulness of trees.

COMPLIMENTARY DINNER TO DR. A. JACOBI. — It is proposed by a number of the friends and professional associates of Dr. A. Jacobi to tender him a dinner May 5th at Delmonico's, New York, on the occasion of his seventieth birthday, in recognition of the service he has rendered in various relations during the course of his career as a physician, educator and civic worker. Any one who has not received a personal application blank may apply to Dr. A. G. Gers-ter, Box 3032, New York City.

PRISON ATTENDANTS. — In an address delivered April 4th, Commissioner John W. Keller, of the Department of Public Charities, said, in speaking of the employment of prison labor in hospitals, asylums and public institutions, that it was only at the beginning of the present year that he had finally succeeded in effecting the complete elimination of prison attendants.

FROM BROOKLYN BRIDGE WITH SUICIDAL INTENT. — On April 20th a woman jumped from the Brooklyn bridge with suicidal intent, but was promptly picked out of the water and taken to the Hudson Street Hospital, where she is said to be likely to recover. One other woman jumped from the bridge, in September, 1895, and she, too, was but little injured.

STATE HOSPITAL FOR CARE OF CRIPPLED CHILDREN. — The Governor, on April 12th, signed the bill establishing a State Hospital for the care of crippled and deformed children, in or near New York City, and appropriating \$15,000 therefor.

A GENITO-URINARY SOCIETY. — A new medical organization has been formed under the name of the New York Genito-Urinary Society.

ARMY NOTES.

CEMETERIES IN PORTO RICO. — A recent general order issued in the department of Porto Rico, based on the recommendation of the Board of Health, provides that all cemeteries established by public funds shall be civil in character, and that each municipality shall have at least one such civil cemetery. Graves or lots in such cemeteries may be sold, but a sufficient area must be set aside for the free interment and proper burial of the remains of the poor and friendless. In all existing cemeteries it is prescribed that no further interments shall be made unless such interments can be accomplished without disturbing the remains of human beings previously buried. The order also provides for the maintenance of cemeteries in a decent condition and authorizes the Board of Health to close any cemetery by the further use of which the

health of the municipality appears to be threatened. Provision is made for the punishment of acts of vandalism or sacrilege in cemeteries. This order appears to have resulted from the persistent continuance of the ecclesiastical customs as regards burial which prevailed during the period of Spanish domination. Cemeteries were entirely in the hands of the clergy, by whom they were regarded as a source of profit. Graves were usually rented for limited periods — about five years — and at the expiration of these periods, unless further payments were made to the church authorities, the occupants of these graves were ruthlessly exhumed and the burial spaces resold. The bones thus disinterred were scattered outside of the cemetery or were heaped together indiscriminately in some obscure corner. Efforts have previously been made to abolish this practice, but apparently without the desired results. The new order will undoubtedly meet with the hostility of the ecclesiastical element.

AN "OFFICIAL" REPORT. — The following official report on the condition of an old soldier, received at the office of the Surgeon-General, is calculated to make medical men proud of the fact that they, too, belong to the learned profession of medicine. The report is as follows: "I find the present condition of his legs, as follows, to wit: the Right leg commencing at the Top of foot clear up into Asending vena cava the entire venus sistem of leg is in A congested or Vericoste condition. I mean all the superficial and deeper ones are in sutch A state as would bee left from several attacts of fleebetes as it has some 18 or 20 places where there has been ulcers and most all the surface below the knee shoe that discolored and Indurated condition, from frequent ulsers that have come and are slow to heal and there is no time that he can dispence with bandaging the limb. Sometimes he is compelled for weeks at a time to take the bed and submit to constant treatment for that subacuit. Fleebeetes that from any slight cause does make its Appearance and likewise the Left Leg is in every resp as bad, and so he is compelled to bandage above the knee and so the same discoloration and old escars from ulceration — and on examining the Trunk the entire Venis sistem over abdoman and including the Glutiel muscles. Now his condition in my judgment of *each leg are equil to or grater* than the loss of A hand or foot." Reference to Polk's Medical Directory discloses the fact that the writer of the above graduated in 1883 from the Bennett College of Eclectic Medicine and Surgery, at Chicago, Ill.

THE HOSPITAL SHIP "MISSOURI." — The Secretary of War has received a telegram from General Bates, president of the special board appointed to inspect the hospital ship *Missouri*, now at San Francisco, endorsing the recommendation of Surgeon-General Sternberg that the vessel be discontinued as a hospital ship and turned over to the Quartermaster's Department as a general transport. Before the departure of the board from Washington, Surgeon-General Sternberg notified the Secretary of War that in

view of the considerable time which might be required in putting the *Missouri* into condition he considered it better to transfer the vessel to the Quartermaster's Department, and recommended that the sick and wounded in the Philippines be returned to the United States on board the regular transports. These sail from Manila every two weeks and are abundantly equipped to care for a considerable number of sick and convalescents on the return trips.

EQUIPMENT OF THE MEDICAL DEPARTMENT. — The board of medical officers which has been engaged during the past year in a revision of the supply tables for the Medical Department of the Army has just concluded its session. Many practical changes have been recommended, and many great improvements made in the character of the instruments, appliances, chests and field equipment. The matter of supplies has been exhaustively studied, as a result of which the equipment of the Medical Department will undoubtedly be superior to the equipment of the character provided for foreign armies.

INSPECTION FOR VENEREAL DISEASE. — Weekly inspections for the detection of venereal disease among the United States troops at Matanzas, Cuba, are now being carried out. It will probably be but a short time before this method of preventing concealed venereal disease is generally adopted among troops serving outside the United States.

Miscellany.

BOARDS OF HEALTH.

The *Boston Medical and Surgical Journal*, which is apparently simple-minded enough to believe that boards of health are instituted for the purpose of caring for the public health, has this to say:

"It should be the duty of boards of health, also, to keep in touch with all the discoveries in sanitary science, to be familiar with every advance in the art of protecting the health of the community and to be able themselves to prepare and devise schemes for minimizing the ravages of disease. With such duties before the boards of health, it is obvious that the members of such boards must be selected with the greatest care as to their character and qualifications. The community has the right to demand that such responsibilities should be entrusted only to competent persons, and that matters so vital as the lives and health of the citizens should be placed above the plane of political preferment — should never be used as counters in the political game."¹

Of course there is no doubt that if the purpose of a board of health were what the *Medical and Surgical Journal* thinks it is, all that it has to say is admirable for good sense and sound advice. Nevertheless, so far as we have observed, the chief value of a board of health is that it provides three chief "counters," and occasionally half a dozen or so minor ones, for the political game. — *The New Bedford Evening Standard*.

¹ Editorial, April 12th, p. 390.

METEOROLOGICAL RECORD

For the week ending April 14th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:

Date.	Barometer		Thermometer		Relative humidity		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S... 8	29.65	44	53	34	32	38	35	N.W.	N.W.	15	12	C.	C.	
M... 9	29.85	36	43	29	37	64	50	N.W.	N.W.	24	9	C.	C.	
T... 10	30.08	36	46	27	48	49	48	N.W.	N.W.	29	13	C.	C.	
W... 11	30.30	42	50	33	57	60	58	N.W.	S.	8	9	F.	C.	
F... 12	30.14	40	44	36	70	100	85	S.E.	N.E.	6	16	O.	R.	.49
F... 13	29.82	42	43	40	96	88	92	N.	N.W.	13	10	R.	O.	.08
S... 14	29.92	44	53	35	69	46	58	W.	S.W.	9	12	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 14, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,564	1644	559	20.94	27.30	.42	3.66	1.32
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	691	204	19.15	16.27	2.61	2.88	3.16
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	269	88	22.20	20.72	.37	4.81	.74
Baltimore	506,389	226	57	27.28	26.84	.44	2.64	.44
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	172	59	29.00	23.20	6.96	2.32	2.32
Pittsburg	305,000	124	31	3.24	20.25	1.62	.81	—
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	122	26	13.94	51.66	—	2.46	1.64
Providence	150,000	61	18	14.76	29.52	—	—	—
Nashville	87,754	36	9	—	—	—	—	—
Charleston	65,165	61	21	14.76	22.96	—	—	1.64
Worcester	111,732	45	14	24.44	24.44	2.22	—	—
Fall River	103,142	23	7	14.05	13.05	—	—	—
Cambridge	92,520	54	14	7.40	29.60	—	3.70	—
Lowell	90,114	28	8	6.74	32.13	—	—	—
New Bedford	70,511	27	7	7.40	18.50	—	3.70	—
Lynn	63,218	22	11	8.30	41.50	—	—	—
Somerville	64,394	30	11	6.66	23.33	—	—	—
Lawrence	59,072	34	5	14.70	26.46	—	—	—
Springfield	58,266	—	—	—	—	—	—	—
Holyoke	44,510	13	2	15.38	53.83	—	—	—
Brockton	38,759	13	6	15.38	7.69	—	—	—
Salem	37,723	6	2	—	16.66	—	—	—
Malden	36,421	20	4	15.00	—	—	10.00	—
Chelsea	34,235	18	4	—	22.22	—	—	—
Haverhill	32,651	10	4	30.00	—	—	—	—
Gloucester	31,426	9	—	33.33	11.11	—	—	—
Fitchburg	30,523	9	2	11.11	22.22	—	—	—
Newton	30,461	10	1	10.00	40.00	—	—	—
Taunton	28,527	7	3	14.28	14.28	—	14.28	—
Everett	28,102	6	2	33.33	16.66	—	16.66	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	6	3	50.00	—	—	33.33	—
Waltham	22,791	9	3	—	33.33	—	—	—
North Adams	21,583	4	1	—	50.00	—	—	—
Chicopee	18,316	—	—	—	—	—	—	—
Medford	17,190	8	1	12.50	12.50	—	—	—
Newburyport	15,036	—	—	—	—	—	—	—
Melrose	14,721	—	—	—	—	—	—	—

Deaths reported 3,839; under five years of age 1,494; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 762, acute lung diseases 948, consumption 401, diphtheria and croup 116, measles 55, typhoid fever 39, scarlet fever 39, diarrheal diseases 38, whooping-cough 35, erysipelas 23, cerebrospinal meningitis 16.

From scarlet fever New York 22, Philadelphia 8, Boston 6, Pittsburg 2, Worcester 1. From diarrheal diseases New York 18, Pittsburg 6, Boston 4, Philadelphia and Fall River 3 each, Baltimore, Providence, Worcester and New Bedford 1 each.

From whooping-cough New York 17, Philadelphia 7, Boston 4, Providence 2, Baltimore, Pittsburg, Washington, Worcester and Springfield 1 each. From erysipelas New York 14, Philadelphia 4, Boston 2, Baltimore, Providence and Cambridge 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 7th, the death-rate was 23.0. Deaths reported 5,120: acute diseases of the respiratory organs (London) 499, measles 177, whooping-cough 146, diphtheria 78, fever 39, scarlet fever 20, diarrhoea 28.

The death-rates ranged from 15.0 in Derby to 33.2 in Wolverhampton: Birmingham 22.8, Bradford 21.6, Cardiff 21.5, Gateshead 17.2, Hull 24.2, Leeds 23.7, Liverpool 31.6, Manchester 31.0, Newcastle-on-Tyne 20.0, Nottingham 21.9, Sheffield 21.8, Sunderland 17.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 21, 1900.

G. E. H. HARMON, medical inspector, detached from the "Baltimore" and ordered to the "Oregon."

F. B. STEPHENSON, surgeon, detached from the "Oregon" and ordered to the "Baltimore."

(CHANGES BY CABLE FROM ASIATIC STATION.)

L. MORRIS, passed assistant surgeon, to the "Baltimore."

S. G. EVANS, passed assistant surgeon, order of April 13th modified; ordered to proceed home, when detached from the "Marblehead," and to be ready for sea duty.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDING APRIL 19, 1900.

WHITE, J. H., surgeon. Detailed as inspector of quarantine stations. April 10, 1900.

COBB, J. O., passed assistant surgeon. Detailed as delegate to attend the meeting of the American Climatological Association at Washington, D. C., May 1-3, 1900. April 11, 1900.

DECKER, C. E., assistant surgeon. Bureau letter of March 31, 1900, granting Assistant Surgeon Decker leave of absence for twenty-nine days on account of sickness, amended so that the said leave shall be for twenty-three days only. April 6, 1900.

McMULLEN, JOHN, assistant surgeon. To proceed to the South Atlantic Quarantine Station (*en route* to Tortugas) and report to the medical officer in command for temporary duty. April 11, 1900.

CURRIE, D. H., assistant surgeon. Granted leave of absence for ten days from May 4, 1900. April 12, 1900.

McLAUGHLIN, A. J., assistant surgeon. To report to medical officer in command of the Service at New York, N. Y., for duty and assignment to quarters. April 6, 1900.

LONG, J. D., assistant surgeon. To report to medical officer in command of the Service at Boston, Mass., for duty and assignment to quarters. April 12, 1900.

GLOVER, M. W., assistant surgeon. To report to the medical officer in command of the Service at Baltimore, Md., for duty and assignment to quarters. April 12, 1900.

EARLE, B. H., assistant surgeon. To report to the medical officer in command of the Service at Chicago, Ill., for duty and assignment to quarters. April 12, 1900.

LLOYD, B. J., assistant surgeon. To report to the medical officer in command of the Service at Mobile, Ala., for duty and assignment to quarters. April 12, 1900.

HUNTER, S. B., acting assistant surgeon. Granted leave of absence for two days. April 6, 1900.

HANRATH, F. R., hospital steward. Upon being relieved from duty at St. Louis, to proceed to New York, N. Y., and report to the medical officer in command for duty and assignment to quarters. April 11, 1900.

RICHARDSON, S. W., hospital steward. Believed from duty at Cleveland, O., and directed to proceed to St. Louis, Mo., and report to the medical officer in command for duty and assignment to quarters. April 11, 1900.

GLENNAN, A. H., surgeon. To rejoin station at New Orleans, La. April 18, 1900.

McINTOSH, W. P., surgeon. Detailed to represent the Service at the meeting of the Medical Association of the State of Alabama, to be held at Montgomery, Ala., April 17th-21st. April 13, 1900. To proceed to Tarpon Springs, Fla., for special temporary duty. April 14, 1900.

GUIERAS, G. M., passed assistant surgeon. Bureau order of March 5, 1900, relieving Passed Assistant Surgeon Guieras from duty at Matanzas, Cuba, revoked. April 17, 1900.

HEISER, V. G., assistant surgeon. Detailed as delegate to the Congress for the Struggle against Tuberculosis, to be held at Naples, Italy, April 23 to 28, 1900. April 14, 1900.

TROTTER, M. E., assistant surgeon. Bureau order of March 5, 1900, detailing Assistant Surgeon Trotter for duty as quaran-

tine officer at Matanzas, Cuba, revoked and directed to proceed to Cienfuegos, Cuba, as quarantine officer. April 17, 1900.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for fifty-one days from May 1, 1900. April 16, 1900.

HAVELBURG, W., acting assistant surgeon. Granted leave of absence for thirty days from May 10, 1900. April 18, 1900.

ALLEN, G. C., hospital steward. Granted leave of absence for twenty-seven days from April 19, 1900. April 16, 1900.

ILTIS, G. W., hospital steward. To proceed to Cleveland, O., and report to medical officer in command for duty and assignment to quarters. April 17, 1900.

BOARD CONVENED.

Board convened to meet at Washington, D. C., April 19, 1900, for the physical examination of candidates for appointment as second assistant engineer in the U. S. Revenue Cutter Service. Detail for the Board: Surgeon P. M. CARRINGTON, Chairman; Assistant Surgeon L. D. FRICKS and Assistant Surgeon W. C. BILLINGS, Recorder.

APPOINTMENTS.

JOHN D. LONG, of Pennsylvania; MERVIN W. GLOVER, of the District of Columbia; BAYLIS H. EARLE, of South Carolina, and BOLIVAR J. LLOYD, of Texas, commissioned as assistant surgeons, April 9, 1900.

GEORGE W. ILTIS, of Minnesota. Appointed junior hospital steward. April 16, 1900.

TREASURY DEPARTMENT.

WASHINGTON, D. C., April 12, 1900.

A board of officers will be convened at the Service Building, 378 Washington Street, New York City, Wednesday, May 23, 1900, for the purpose of examining candidates for admission to the grade of assistant surgeon in the U. S. Marine-Hospital Service.

Candidates must be between twenty-one and thirty years of age, graduates of a reputable medical college and must furnish testimonials from responsible persons as to character.

SUPERVISING SURGEON-GENERAL,
U. S. Marine Hospital Service.

APPOINTMENTS.

There have been the following changes in the staff of the Carney Hospital: DR. FARRAR COBB has resigned from position of surgeon to out-patients; DRs. E. A. PEASE, G. W. W. BREWSTER, D. F. JONES, W. F. GAY have been appointed assistant surgeons; DRs. J. S. STONE, R. B. GREENOUGH, J. C. HUBBARD, M. F. BURKE have been appointed surgeons to out-patients.

SOCIETY NOTICE.

AMERICAN NEUROLOGICAL ASSOCIATION. — The twenty-sixth annual meeting will be held at "The Normandie," Washington, D. C., on Tuesday, Wednesday and Thursday, May 1, 2 and 3, 1900.

RECENT DEATHS.

JOHN JOSEPH CRANE, M.D., of New York, died on April 18th, in the Adirondacks, from pulmonary tuberculosis, from which he had been suffering two years. He was born in Elizabeth, N. J., in 1851, and was graduated from Princeton in 1873, and from the College of Physicians and Surgeons, New York, in 1876.

ISAAC C. HARMG, M.D., of West Nyack, N. Y., died at the Nyack Hospital on April 15th. He was a graduate of the Albany Medical College and had practised for fifty years in Rockland County.

T. B. HASSIE, M.D., of Gouverneur, N. Y., died April 15th, at the age of forty-one.

THE REV. S. O. GARRISON, principal and founder of the New Jersey Training School for Feeble-Minded Children, and founder and secretary of the State Village for Epileptics at Skillman, died on April 16th.

BOOKS AND PAMPHLETS RECEIVED.

Massachusetts Infant Asylum, Thirty-third Annual Report, 1900.

Variation of Type in Diphtheria and Scarlet Fever. By Henry D. Fulton, M.D., Pittsburg, Pa. Reprint. 1900.

Foreign Bodies in the Maxillary Sinuses, with Report of a Case. By R. J. Wenner, M.D., Cleveland. Reprint. 1900.

The Justo-Major Pelvis as a Factor in the Causation of Perineal Injuries. By Joseph Brown Cooke, M.D., New York. Reprint. 1900.

Some Points in the Diagnosis of Traumatic Injuries of the Central Nervous System. By J. T. Eskridge, M.D., Denver, Col. Reprint. 1900.

Addresses.

THE MEDICAL SCHOOL OF THE FUTURE.¹

BY H. P. BOWDITCH, M.D., LL.D. (EDIN.), D.Sc. (CAMB.),
President of the Fifth Congress of American Physicians and
Surgeons.

AMONG the intellectual movements that have characterized the century now drawing to a close, there is perhaps no one more deserving of careful study than that which is concerned with providing education for the people in the school, the academy and the university. The importance of popular education became apparent in proportion as political freedom was secured for the people. Thus Viscount Sherbrooke, better known as the Hon. Robert Lowe, in the reform debates of 1866 and 1867, after the passage of a bill for the extension of the suffrage, uttered the well-known words: "We must now at least educate our masters." The same sentiment has also more recently been embodied in the inscription on the Boston Public Library, "The Commonwealth requires the education of the people as the safeguard of order and liberty," and in the Presidential Address of Dr. J. M. Bodine² at the meeting of the Association of American Colleges in 1897, we find the same idea thus expressed: "In America the citizen is king. The king must be educated to wield aright his ballot sceptre."

For many years educators looked upon their work with no little complacency. The educational systems of the various civilized countries were supposed to be well adapted to the ends in view, and educational exhibits have generally been regarded as important features of international expositions. But within the memory of most of those now before me, signs of serious discontent have not been wanting. Education has not always been found to furnish the required safeguards for order and liberty. Highly educated men have often been found singularly lacking in mental balance. Schools for the inculcation of "common sense" have never yet been established. Even the great development of psychology as an experimental science, which has occurred chiefly within the last twenty-five years, though it has served to establish many laws of mental action, has thus far failed to justify the hope that pedagogy may find in psychology a foundation for the erection of rational systems of education. Indeed, we have recently been told by one of the ablest expounders of this science that it is a great mistake for teachers to "think that psychology, being the science of the mind's laws, is something from which they can deduce definite programmes and schemes and methods for immediate school-room use. Psychology is a science and teaching is an art. A science only lays down lines within which the rules of the art must fall, laws which the follower of the art must not transgress: but what particular thing he shall positively do within those lines is left exclusively to his own genius."³

Even this general guidance has been very imperfectly afforded, for the limits set by the science of psychology to the art of teaching have never been precisely defined. In fact, the most fundamental

question of all, namely, the relation of mental to physical development, has not yet been settled, though much material for its study has been collected. It is not, therefore, surprising that in many countries teachers have made too great demands upon the time and strength of growing children.

This has been clearly the case in some parts of Germany, where school boys from eight to fifteen years of age have found their vital energy so far exhausted by the school work required of them that they have lost all inclination for vigorous athletic amusements so naturally indulged in by Anglo-Saxon boys. The deterioration of the race as a result of too close application to intellectual pursuits, to the neglect of the physique, has been fortunately obviated, in the case of Germany, by the army system, which takes entire possession of the youth before it is too late, and, by requiring him to devote three years to the education of his body, turns him out, at the end of that period, a young man with mind and body trained to a high degree of efficiency, well fitted for civil as well as military pursuits, and comparing favorably in all respects with men of his age in other nations. Looked at from this point of view, the German army must be regarded as an important part of the educational system of the country, though as a piece of educational machinery its workings cannot be considered economical. In fact, the absurdity of depending upon the army to remedy the defects of the school system has long since been forced upon the attention of German educators, and the difficulties above alluded to are now in a fair way to be removed.

In our own country difficulties of a quite different kind have been met with. Here the great danger which threatens our system of popular education arises from its close association with party politics. The office of a school committeeman in one of our large cities has been well described as "the smallest coin in which politicians pay their debts," and as long as the education of our children continues to be entrusted largely to men who consider their position on a school board as the lowest step of the political ladder, there is small hope of the adoption of rational methods of education. Moreover, this intimate alliance between education and politics greatly aids the efforts of persons, more zealous than discreet, to direct the instruction of children in accordance with their own special views. Thus nearly all the States of the Union have upon their statute books laws requiring the physiological action of alcohol to be taught to children in all grades of the public schools. These laws violate the first principles of pedagogy, inasmuch as the physiological action of a drug cannot possibly be understood without a familiarity with anatomy, physiology and chemistry which school children cannot be supposed to possess. They have been passed at the bidding of total abstinence associations, sometimes in opposition to the earnest protests of the teachers entrusted with their execution. How these excrescences upon our educational system may be best removed, and the work of instruction placed under the control of those best qualified to direct it, are questions demanding serious consideration.

I have mentioned these instances in which great educational systems have been found wanting merely for the sake of pointing out that the critics of our methods of medical education, who, as Professor Exner⁴

¹ President's Address delivered before the Fifth Congress of American Physicians and Surgeons, Washington, May 2, 1900.

² American Practitioner and News, June 26, 1897.

³ W. James: Talks to Teachers, p. 7.

⁴ Wiener klinische Wochenschrift, No. 3, 1900.

has shown, are now raising their voices in every land, to but give a special expression to a wide-spread feeling that our educational systems are not accomplishing all the objects for which they have been devised, and that the discontent which they imply is but a healthy dissatisfaction with the results thus far accomplished. May the time be far distant when those in charge of our educational interests shall rest content with what they have achieved, for this will indicate that a state of stagnation has been reached similar to that which characterizes the institutions of the Celestial Empire, and that no further attempt is to be made to adapt our methods of instruction to the constantly widening domain of human knowledge and experience.

It may perhaps be well for me at this point to offer a few words in explanation of the selection of such a well-worn theme as medical education as the subject of my remarks this evening. It is true that in recent years the subject has been a favorite one with those who have been called upon to address medical associations or classes of graduating students, and if, in spite of this fact, I venture to add another address to the fast growing literature of the subject, my justification may be found in the following reasons. In the first place, it must be borne in mind that such addresses are very quickly forgotten. "Were it not so," as Dr. Billings has remarked, "it would be a hard world for address-givers." In the second place, the progress of medicine at the present time is so rapid that new points of view are constantly being secured, and it is, therefore, not at all impossible that, even at comparatively short intervals, new and valuable suggestions may be made, both with regard to subjects to be taught and to methods to be employed in giving the instruction.

Lastly, it so happens that during the academic year now nearly completed the Faculty of the Harvard Medical School has inaugurated an entirely new plan of instruction in the sciences of anatomy, physiology and pathology. This scheme, though still in the experimental stage, embodies ideas of such fundamental importance in medical education that its presentation to a representative body of the medical profession seems to me to be peculiarly appropriate.

I shall therefore ask you to consider with me this evening what lessons the faculty of a modern medical school may draw from recent advances in medical science and recent experience in medical education, or, in other words, on what lines the instruction of a medical school of the first rank is likely, in the immediate future, to be organized. I say in the *immediate* future, for what changes are in store for us in the course of the next few decades it is equally impossible to foresee and useless to speculate.

RELATION OF MEDICAL SCHOOLS TO UNIVERSITIES.

One of the most hopeful signs of the times in the field of medical education is the growing tendency of the better schools to ally themselves to universities and of universities to establish medical departments. Of the great advantages to medical education which may be expected from this union it is unnecessary for me to speak, for they formed the subject of a thoughtful discourse delivered by the last president of this Congress at Yale University in 1888.⁵ The twelve years that have elapsed since he spoke have brought

accumulating evidence of the soundness of his views. In fact, it is difficult to see how a private medical school of the joint stock company type can ever, in the future, rise to the first rank, for such a school is not much more likely to attract endowments than a cotton mill and without endowments the enormous expenses of a modern first-class medical school cannot possibly be met.

Great as are the benefits to a medical school of thus forming a department of a great university, the advantages of the union are not wholly on one side. Beside the increase of prestige secured to the university by the broadening of its functions, the establishment of a medical school as part of the university organization greatly facilitates the instruction of those students who, without any intention of becoming physicians, seek in the study of the medical sciences a means of general culture and mental discipline.

The relations between the governing body of a university and its medical faculty in matters of administration are often defined by custom and tradition rather than by statutory provisions, and vary considerably in different institutions. In general, two methods of government may be distinguished. Either the initiative is left with the teaching faculty, the governing body exercising simply a veto power, or the governing body acts directly without necessarily asking advice from the faculty or its members. The former method of government is most likely to be found in those cases in which a well-established medical school has allied itself to a university for the sake of the mutual benefits that may ensue from the union, and the latter method in those cases in which a university has completed its organization by the creation of a medical department. Both methods have certain advantages and neither is without its drawbacks. In all cases men are more important than methods. On the one hand, the collective judgment of a teaching faculty on matters relating to medical education is likely to be of more value than that of a governing body which may not, and generally does not, include physicians among its members. On the other hand, personal and selfish considerations are perhaps more apt to sway the judgment of a faculty than that of a body of trustees, especially when the question is that of the appointment of teachers. That this is not a serious danger, however, the experience of Germany seems clearly to show, for in that country, as Dr. Farlow has recently pointed out, the faculty "has more power in regard to appointments and the general policy of the university"⁶ than with us, and yet we find there the custom of calling professors from one university to another fully established—a custom which must be regarded as one of the strongest influences in maintaining a high standard of educational efficiency. On the whole, therefore, even with this possibility of error, the judgment of a faculty would seem to be the safer guide, and there are probably few boards of trustees who would feel themselves justified in disregarding it altogether.

The above-mentioned advantages of a union between a medical school and a university will naturally become more obvious as the problems of medical education become more complex and the methods of instruction more costly. Hence we may expect in the near future to find all of the better class of medical schools

⁵ Presidential Address, American Society of Naturalists, December, 1889. *Science*, January 5, 1900.

⁶ *New Englander and Yale Review*, September, 1888.

under the egis of a university and we may reasonably hope that this change will be associated with a diminution of the total number of medical schools now so greatly in excess of the needs of the country.

The union of a medical school with a university at once compels the consideration of the proper relation between the academic department and the professional school. To say that the former should be the feeder of the latter and that the holding of an A. B. degree should be the condition of admission to professional studies is to adopt the position taken by two of our leading medical schools.

The A. B. degree, however, since the introduction of the elective system, no longer stands for a definite amount and kind of training. Hence the Johns Hopkins Medical School demands not only the diploma, but also evidence of ability to read French and German and of laboratory training in physics, chemistry and biology. The Harvard Medical School is content to accept the A. B. diploma as evidence of fitness to pursue professional studies, stipulating only that the holder shall possess an adequate knowledge of inorganic chemistry. Whether the example set by these schools will be generally followed is quite doubtful. Without undervaluing the importance of collegiate training as a preparation for a professional career, it may perhaps be contended that a properly conducted admission examination is a better test of fitness to pursue the study of medicine than the possession of a diploma the value of which varies so much with the character of the college bestowing it. Moreover the possibility that a young man unable to afford the expense of a college course may yet by private study prepare himself for a professional career is not to be lost sight of. Hence the Harvard school provides for the admission by special vote of the faculty of young men, not holders of an A. B. degree, who may furnish satisfactory evidence that they have obtained an equivalent education and that they are consequently able to profit by the instruction which the school has to offer.

The recent lengthening of the course of study from three years to four in all the best medical schools of the country has drawn renewed attention to the importance of enabling the student who takes the A. B. degree as a preparation for medicine to so far shorten the sum total of the time devoted to his education that he may be able to enter upon the work of his profession at an age not in excess of that at which his European confrères begin their career as practitioners. A few years ago an examination of the best accessible evidence on the subject led to the conclusion that foreign systems of university education enabled students of medicine to enter upon their life work at least two years earlier than was possible for the alumni of Harvard College, a condition dependent upon the fact that the changes in the academic department which had raised the age of graduation had been made with little regard to the interests of the professional schools and chiefly for the purpose of making the undergraduate department as complete as possible in itself. In other universities a similar condition existed, though probably not in the same degree, as in Harvard.

That the American medical student, seeking the best possible preparation for his profession, is seriously handicapped by these conditions has been generally recognized and the question of the best method

of meeting the difficulty has been widely discussed. The most thorough treatment of the case consists in reducing the academic course to three years. Less radical methods are the provision in the academic department of courses of instruction by which students may anticipate a part of their professional work and the permission to count the first year of a professional course as the fourth year for the bachelor's degree. The first and most radical method meets with strenuous opposition owing to the deeply rooted traditions which surround the four years' academic course in this country, while the other plans violate what in some colleges seems to be regarded as an educational axiom, that one course of study should not count toward two degrees. It is interesting to notice that, without any specific legislation to this end, the quiet working of the elective system has in Harvard College practically solved the problem by bringing about a condition in which, as President Eliot says,⁷ "Any young man of fair abilities can now procure the degree in three years without hurry or overwork, if he wishes to do so or his parents wish to have him." The President further ventures to predict that "within a time comparatively short the majority of those who enter the freshman class will come to college with the purpose of completing the requirement for the degree in three years." As soon as a three years' residence becomes the rule rather than the exception, a young man spending four years in college will of course be regarded either as deficient in mental capacity or as having wasted his time.

That a reduction of the academic course to three years is an advantage to students looking forward to a professional career or to further study in a graduate school is too obvious to need discussion, but it is interesting to find the change advocated in the interest of the undergraduates themselves. Prof. Clement L. Smith, for nine years Dean of Harvard College, points out⁸ that there is a large and influential class of college men who get into the habit of frittering away their time simply because they have so much of it and that "for them and for those whom they influence — and these make up the largest part of the class we are now considering, the men who go from college into active life — the reduction of the course would be a distinct gain." Nor need we fear (as has sometimes been urged) that, in thus reducing the length of the college course, we shall lose the fourth and most valuable year, for, as Professor Smith says, "The senior year is the best year not because it is the fourth but because it is the last year. The causes which make it what it is come from before, not from behind: from the consciousness of opportunity passing away and of the serious problems of life close at hand. The period of waste lies between the fresh zeal and good resolutions with which the youth begins his course and the growing sense of responsibility with which he draws near its close. It is this intermediate period that would be shortened in the briefer course. It is not the senior year that would be cut off; it is rather, let us say, the sophomore year, and with it might well go its absurd name." It thus appears that the claims of the college and of the professional school upon the time of the student are in a fair way to be harmoniously adjusted.

⁷ Annual Reports of the President and Treasurer of Harvard College, 1898-99, p. 10.

⁸ The American College in the Twentieth Century. Clement L. Smith: Atlantic Monthly, February, 1900.

ELECTIVE SYSTEM.

Let us now consider in what way the medical school of the immediate future is likely to differ from that of the present time with regard to the subject matter of instruction. The most striking phenomenon presenting itself to the educator of to-day is the recent enormous widening of the educational horizon. "The immense deepening and widening of human knowledge in the nineteenth century and the increasing sense of the sanctity of the individual's gifts and will power"⁹ are the fundamental facts which underlie the development of the elective system, but it is important to bear in mind that, as Professor Smith observes,¹⁰ this development has been "due not so much to increase of knowledge — for not all new knowledge is straightway fit for educational purposes — but rather to the conversion of new fields of knowledge to the uses of education."

A discussion of the elective system of education with its attendant advantages and dangers would require far more time than I have at my disposal, and I must content myself with pointing out the possibility that, in this period of transition, the educational pendulum may have swung to an extreme position and that too much attention has been given to the accidental differences of pupils, while the essential similarity of their natures has been lost sight of. In discussions on individuality as a basis for the elective system one sometimes hears the statement (attributed to Leibnitz) that no two leaves of the same tree are alike. This dissimilarity, however, does not prevent them from all elaborating the same sap and it is, moreover, always associated with sufficient essential similarity to enable any one, with even the most elementary knowledge of trees, to distinguish the leaves of an oak from those of a maple.

While admitting that some of the extreme positions now maintained by the advocates of the elective system may in the future have to be abandoned, no one can doubt the wisdom of adapting the education to the powers of the mind to be educated and of allowing, in the case of advanced students, the choice of the individual to be a determining factor in the selection of studies. Let us, therefore, inquire to what extent the elective system may properly find a place in the curriculum of our medical schools. That it forms an essential feature of our post-graduate schools of medicine scarcely needs to be mentioned, for these schools have been organized for the express purpose of enabling graduates in medicine to select such subjects for study as may seem to them desirable and to acquire more advanced knowledge than was possible in the undergraduate course. Moreover, in some of our larger schools, since the establishment of the compulsory four years' course, a portion of the instruction of the fourth year has been given in elective courses in various specialties. The elective system in medicine is, therefore, not altogether a novelty, and the question now before us is whether it may be profitably extended to the earlier years of the course.

In his remarks at the dinner of the Harvard Medical Alumni Association in 1895, President Eliot used the following language: "There ought to be in the Harvard Medical School an extended instruction far beyond the limits of any one student's capacity. This

involves, of course, some optional or elective system within the school itself, whereby the individual student should take what is, for him, the best four years' worth, the faculty supplying teaching which it might take a single student eight, twelve or twenty years to pursue."¹¹

One year ago last December, in an address which I had the honor to deliver in New York before the American Society of Naturalists,¹² I gave the reasons which seemed to me conclusive in favor of this extension of the elective system and, with your permission, I will take the liberty of presenting as briefly as possible the views there set forth.

In the first place, it may be assumed that a medical school of the first rank should be an institution in which the most advanced instruction in all departments of medicine can be obtained, and on this assumption it is, of course, impossible to arrange a course of study that every student must follow in all its details, for, in the time which may properly be devoted to a course of professional study, it is quite impossible for even the most intelligent students to assimilate all the varied information which such a school may be reasonably expected to impart.

It seems, therefore, to be evident that in arranging a course of medical study a distinction must be made between those subjects which it is *essential* that every student should know and those subjects which is *desirable* that *certain* students should know, that is, between those things of which no man who calls himself a physician can afford to be ignorant and those which are important for certain physicians but not for all; in other words, provision must be made both for required and for elective studies. The task of drawing the line between the essential and the desirable in medical education will require the greatest possible good judgment and readiness for mutual concession on the part of those engaged in the work, but there is no reason to fear that the difficulties will be found insuperable when the importance of the change has once been recognized.

Any one who is familiar with the existing methods of medical instruction is aware that in nearly every department many things are taught which are subsequently found to be of use to only a fraction of those receiving the instruction. Thus, the surgical anatomy of hernia is taught to men who will subsequently devote themselves to dermatology, future obstetricians are required to master the details of physiological optics, and the microscopical anatomy of muscles forms a part of the instruction of men destined to a career as alienists. Now no one can doubt the propriety of including instruction on all these subjects in the curriculum of a medical school, but it may be fairly questioned whether every student should be forced to take instruction in them all.

To better indicate the nature of the reform which I am advocating, allow me to describe a possible arrangement of a course of study in the department of physiology, with which I am of course more familiar than with any other. An experienced lecturer will probably find it possible to condense into a course of about forty or fifty lectures all the most important facts of physiology with which every educated physician must necessarily be familiar. Attendance upon

¹¹ Bulletin Harvard Medical Alumni Association, No. 8, p. 40.

¹² See *Science*, December 30, 1898, and *Boston Medical and Surgical Journal*, December 29, 1898.

⁹ C. W. Eliot: *Atlantic Monthly*, October, 1899, p. 443.

¹⁰ C. L. Smith: *Loc. cit.*, p. 219.

these lectures, combined with suitable courses of text-book instruction and laboratory work, would suffice to guard against gross ignorance of physiological principles. In addition to this work, all of which should be required, short courses, of not more than eight or ten lectures each, should be provided, giving advanced instruction in such subjects as the physiology of the special senses, cerebral localization, nerve-muscle physiology, the internal secretion of glands, the physiology of the heart, circulation and respiration, the digestive secretions, the reproductive organs, etc. These courses should be elective in the sense that no student should be required to take them all. Each student might, however, very properly be required to choose a certain number of courses, which when once chosen become, for the student choosing them, required courses leading to examinations. There is, in my opinion, no doubt that an arrangement of instruction similar to that here suggested for physiology could be advantageously adopted in the departments of anatomy, histology, bacteriology, medical chemistry, pathology, surgery, and in the courses of instruction in the various special diseases, such as dermatology, ophthalmology, etc.

In the existing state of medical education the introduction of the elective system in some form or other seems to be an essential condition to any further important advance, for the curriculum of most of our schools is already so crowded that no considerable amount of instruction can possibly be added. Various arguments may, of course, be advanced in opposition to the change. It may perhaps be urged that no choice of studies can be made without determining to some extent the direction in which the work of a future practitioner is to be specialized, and that such specialization cannot be properly and safely permitted until the student has completed his medical studies. To this it may be answered that, whatever may be the dangers of too early specialization, the dangers of crowding the medical course with instruction of which many students do not feel the need, and of thus encouraging perfunctory and superficial work, are certainly no less serious. It is, moreover, a matter of common observation among teachers in medical schools that a certain number of students very early make up their minds either that they will become surgeons, obstetricians, or specialists of some sort, or, on the other hand, that they have a strong aversion to certain branches of medicine and a determination never to practise them. For such students a prescribed curriculum necessarily involves great loss of time and energy.

If it be said that under this system the medical degree will cease to have the definite meaning now attached to it, and that it will be impossible to tell from his diploma in what way a physician has been educated, it may be replied that, though the degrees of A. B., A. M., Ph. D. and S. D. are affected with exactly this same uncertainty of signification, their value seems in no way diminished thereby. As long as the M. D. degree stands for a definite amount of serious work on medical subjects, we may be reasonably sure that those who hold it will be safe custodians of the health of the community in which they practise.

If it be urged that the elective system in medical education will lead to the production of a class of physicians who, owing to the early specialization of their work, will be inclined to overrate the importance

of their specialty and to see in every disease an opportunity for the display of their special skill, it may be pointed out that this result is apt to be due not so much to early as to imperfect instruction in the work of a specialist, and that since the elective system tends to encourage thoroughness in special instruction, the evil may be expected to diminish rather than to increase.

METHODS OF INSTRUCTION.

Having thus recognized the necessity of remodelling our conception of the subject matter to be taught, and noted the importance of distinguishing between the essential and the desirable in medical education, we must next consider by what methods the needed information may be best imparted and the necessary training secured. There is perhaps no way in which modern educational methods differ more from those of an earlier period than in the greater prominence given to object lessons. Beginning with the kindergarten, the child is trained to cultivate his power to observe accurately and to manipulate skilfully, and through his school and college life prominence is given to the objective side of education to an extent which would have seemed to the book-trained pedagogues of a former generation but ill adapted to provide the well-stored mind which it was thought to be the principal object of education to secure. In the professional schools also the reaction against purely didactic methods has been strongly felt. Even in those professional pursuits to which the object method might seem at first sight least applicable, in the study of the law, the so-called "case method" of instruction has been found to exert a vivifying influence.

In medical education in this country it is interesting to note that in the very beginning the instruction was more objective in its character than at a somewhat later period. In those early days it was in the office of his preceptor and at the bedside, as his actual assistant, that the embryo physician was initiated into the mysteries of his calling. Then followed a period when it was clearly perceived that the trained mind is necessary to interpret the data of observation, and that mental training is essential to correct observing. Hence schools were established to provide this training by means of systematic didactic lectures covering all the departments of medicine and usually extending over not more than four months. These schools were intended at first merely to supplement the work of the preceptors, but in process of time the relative importance of these two educational agencies was reversed and the work of the preceptors became supplementary to that of the schools. The function of the preceptors finally became so subordinate that their names no longer appeared in the catalogues, though this did not always indicate that they had ceased to afford students opportunities for practical clinical work.¹³

The schools, once established, grew chiefly by an increase in the length and number of the lecture courses as new and important subjects forced themselves upon the attention of the medical profession. Against this undue extension of purely didactic methods of instruction a reaction has now set in and during the last ten or fifteen years loud voices have been raised in advocacy of more objective methods

¹³ See address by Henry Hun, M.D.: *Albany Medical Annals*, October, 1896.

than those at present in use. It is not, however, the reinstatement of the preceptor that is urged, but rather the greater use of laboratory methods in the strictly scientific departments of medical instruction and their application as far as possible at the bedside of the patient. A fruitful discussion of the relative advantages of the laboratory, the lecture and the text-book as methods of medical education cannot be undertaken without a recognition of the fact that this education has a double object. In the first place, the faculties of the student are to be so trained that he may observe carefully, reason correctly, study effectively and judge wisely; in other words, he is to be "trained for power," to use President Eliot's phrase. In the second place, there must be imparted to him a sufficiently large fraction of the acquired medical knowledge of the time to make him a safe custodian of the health of the community. Which of these two objects is the more important is a question which we need not now discuss, but even if we grant all that is claimed by the advocates of training for power it is evident that the constantly increasing range of subjects with regard to which an educated physician must be informed will greatly reduce the time which, in the curriculum of a medical school, may properly be devoted to courses of instruction not intended to impart direct and valuable information. In fact, "training for power" should be largely a function of the academic department of a university, and when undertaken in a professional school should be so directed as to impart at the same time the greatest possible amount of useful information.

Let us now consider how far the didactic and the laboratory methods of instruction are each adapted to secure these two objects of medical education. For the purpose of training for power no one can doubt the value of the laboratory method. Contact with the phenomena themselves and not with descriptions of them has a stimulating effect upon the mind of a student, the importance of which it is difficult to exaggerate, but it does not follow from this that the lecture, the recitation and the text-book are worthless as methods of training. It is here that some of the advocates of laboratory methods have committed what appears to me a serious error, such as is too apt to characterize all reform movements, the error, namely, of assuming that, because one proposition is true, another proposition, not logically inconsistent with it, must be untrue. "These gentlemen," as Professor Howell¹⁴ has expressed it, "having become possessed of the golden truth that the best knowledge is that which comes from personal experience, seem disposed to deny all value to knowledge communicated from the experience of others." We are told, for instance, by Dr. Burr¹⁵ that the didactic lecture "dates from the time when printing was unknown and manuscripts were rare and almost priceless and the only means of communicating knowledge was by word of mouth. To-day it is in large part an anachronism, because the time devoted to it could be put to better uses."

In his able address¹⁶ at the last Yale University Medical Commencement, my colleague, Dr. C. S. Minot, expressed himself as follows: "The very best that can be said of a lecture or a book is that it de-

scribes well the knowledge which some one possesses. There is no knowledge in books. . . . A book or a lecture can serve only to assist a man to acquire knowledge with lessened loss of time. Knowledge lives in the laboratory; when it is dead we bury it decently in a book. . . . A lecture is a spoken book." I venture to believe that Professor Minot's students will hardly agree with this estimate of the lifeless character of either his written or his spoken instruction.

In place of these rather disparaging views of the importance of a didactic lecture, I am inclined to accept Dr. Weir Mitchell's¹⁷ opinion that "The best lecturing does not so much think for you as invite you to think along suggested lines of inquiry." If, as has been claimed, "the passive attitude of listening does not demand of the students intelligent thought,"¹⁸ the fault must lie with the lecturer and not with the method of instruction. In every department of medicine advanced instruction necessarily deals with subjects which lie within what Foster has called the "penumbra" of solid scientific acquisition and about which conflicting views are therefore certain to be held. It is in inviting thought with regard to the evidence on which these views rest that the experienced lecturer has his best opportunity to train the minds of his hearers. Other opportunities are also afforded by the historical presentation of subjects about which differences of opinion no longer exist, for there are few things more instructive than to follow up step by step the lines by which our knowledge has advanced, noting the marks which distinguish the paths which have been trodden successfully from those which have turned out to be "no thoroughfare." Even better opportunities for mental training than those which the lecture-room presents are afforded by the recitation, for here the minds of the teacher and the pupil are brought most closely into contact, the pupil's difficulties are appreciated by the instructor and the point of view of the teacher can be learned by the pupil. It has always seemed to me that no higher enjoyment falls to the lot of the teacher than that which he experiences when, by a series of carefully considered questions, he leads his pupil onward from the known to the unknown and notes the gleam of intelligence which illumines his countenance as a subject, previously obscure, becomes clear, as a result of his own mental operations guided by his teacher's skilful questions. It thus appears that no monopoly of opportunities for mental training can be claimed for the laboratory method of instruction.

We must next enquire, What are the relative advantages of the laboratory and didactic methods as means of imparting information? Here we at once perceive that a great deal will depend upon the kind of information to be imparted. Certain subjects are much better adapted than others to be taught in the laboratory. The student of anatomy, for instance, can secure the greater part of the information which he needs by laboratory methods, that is, in the dissecting-room, though a short course of lectures on descriptive anatomy in which an experienced teacher emphasizes the salient features of the subject will probably always be indispensable. Physiology and pathology (including physiological chemistry, pharmacology and bacteriology) are subjects in which lab-

¹⁴ The Michigan Alumnus, January, 1900, vol. vi, p. 143.

¹⁵ Philadelphia Medical Journal, October 21, 1899.

¹⁶ Science, July 7, 1899.

¹⁷ University Bulletin, vol. iii, p. 85, Philadelphia, December, 1898.

¹⁸ W. B. Cannon, A.M.: The Case Method of Teaching Systematic Medicine. Boston Medical and Surgical Journal, January 11, 1900.

oratory instruction may be unquestionably much more freely used than is customary at the present time. The recent experience of the Harvard Medical School, in which the laboratory courses in these subjects have been greatly extended, has furnished conclusive evidence of the value of this method of instruction as a means both of imparting information and of stimulating the mind of the student. It must be remembered, however, that, as Dr. Welch¹⁹ has said, "laboratory methods are extremely time taking and are not adapted to teach the whole contents of any of the medical sciences. It is, of course, hopeless to attempt to demonstrate practically all of even the more important facts that the student should learn."

Moreover, observed facts are often apparently inconsistent with each other. Equally competent observers differ in their interpretation of them. Yet, because the last word of science has not been spoken on these subjects, it would be a mistake to exclude them from the medical curriculum. The student should rather be carefully instructed as to researches which have not yet yielded definite results. The most profitable way of reconciling conflicting observations should be pointed out, and he should be shown in what direction the search for truth can be prosecuted with the best prospect of success. He will then be able to appreciate the value of new observations and to assign to their true position the reported discoveries in medical science.

Instruction of this sort can, of course, be given only by an experienced lecturer who has mastered the subject of which he treats. It is in this kind of teaching and in the exposition of those facts and principles which cannot properly be made the subject of laboratory instruction to students that the didactic lecture of the future will probably find its principal field of usefulness. In the latter direction, however, the field is more restricted than might at first sight appear, for the amount of practical work that can be successfully performed by first and second year students in a physiological or in a pathological laboratory is surprisingly large. In the physiological department of the Harvard Medical School, for instance, during the current academic year, each pair of students in a class of one hundred and eighty has been furnished with a kymographion, a capillary electrometer, a moist chamber, an induction coil, unpolarizable electrodes, etc., and the most important experiments of nerve-muscle physiology have been successfully repeated. The fundamental experiments in the physiology of the circulation, respiration, etc., are to be performed in a similar manner. In the pathological laboratory the students, working in sections of ten, have had an opportunity of producing for themselves and studying experimentally the most important pathological degenerations. They have also studied in the same way the principal infectious diseases. In the anatomical department also, while the number of didactic lectures has been diminished, the whole class has had largely increased facilities for the practical study of bones and of various special organs.

Still, after making due allowance for the legitimate expansion of laboratory teaching, it is probably safe to say that a systematic course of lectures in each of the medical sciences will never be found to be superfluous, and that the day is probably far distant when

the lectures will be merely "explanatory of the experiments."²⁰

We have thus far considered the relative advantages of didactic and laboratory methods in teaching the medical sciences, but the agitation in favor of more objective teaching has extended also to the clinical departments of medicine and the organization of "clinical laboratories," in which the cases of hospital patients may be studied by the most refined methods of physiological and pathological research, is a natural outcome of this agitation. In fact, however, so far as instruction is actually given at the bedside, clinical medicine has always been taught by means of object lessons. In many of our schools this instruction has been supplemented by so-called "conferences," exercises in which a student reports before the class a case which he has himself examined, giving diagnosis, prognosis and treatment. The subject is then discussed by the class and finally by the instructors.

Wherever actual cases of disease are thus utilized for teaching purposes the instruction is always likely to be more or less haphazard and unsystematic, for the diseases studied will be those of which actual cases happen to be available. To remedy this difficulty it has been recently proposed²¹ to substitute the study of hospital records of cases for the examination of the cases themselves, a method quite analogous to that known as the "case method," which has long been used with great success in training students in the Harvard Law School. It will thus be possible to group cases so that they will throw light upon each other and, though the student will miss the stimulus of contact with the actual patient, the method presents so many distinct advantages that it will doubtless commend itself to many teachers of clinical medicine and of theory and practice.

It is thus evident that the reaction against purely didactic methods of instruction is well under way. It is a movement to be heartily welcomed, for there can be no doubt that medical students have been, and still are, too much lectured, but, like all other reforms, it should be carefully guided lest useful as well as useless things be swept away. It should be borne in mind that it is quite as easy to abuse the laboratory as the didactic method of instruction and that in all schemes of education a good teacher with a bad method is more effective than a bad teacher with a good method. As Professor Howell²² has well remarked, "Courses of lectures that if analyzed would be found to be top-heavy and lop-sided and otherwise possessed of an instability that should have ensured failure have been saved and made instruments of great value by the mere earnestness of the teacher."

DISTRIBUTION OF WORK.

The next question which I shall ask you to consider is that of the proper distribution of the work of a medical student. Thirty years ago no such question seems to have presented itself to the minds of instructors in medicine. The medical faculties of that time contented themselves with providing each year courses of lectures covering all the departments of medicine, as they were then understood, and every student was expected to attend as many of the lectures

²⁰ Porter: Boston Medical and Surgical Journal, December 29, 1893.

²¹ W. B. Cannon, A.M.: The Case Method of Teaching Systematic Medicine. Boston Medical and Surgical Journal, January 11, 1900.

²² The Michigan Alumnus, January, 1900, vol. vi, p. 141.

¹⁹ Higher Medical Education and the Need of Its Endowment. The Medical News, July 28, 1894.

as he saw fit. Between 1870 and 1880 the fact that there is a natural sequence in medical studies became generally recognized and graded courses of instruction were established in the principal medical schools of the country. The grading was not, however, carried sufficiently far. Thus, instruction in both anatomy and physiology was generally given simultaneously through the whole of the first year, though the knowledge of structure should logically precede a study of function.

The time seems now to have come for taking another step in grading medical instruction, and during the academic year now drawing to a close instruction in the Harvard Medical School has been given in accordance with a plan of which the guiding principles are concentration of work and sequence of subjects. Thus in the first half of the first year the students devote themselves exclusively to the study of anatomy, including histology and embryology. In the second half year they are occupied with physiology, including physiological chemistry, while in the first half of the second year pathology, including bacteriology, engages their attention. It is perhaps too early to pass a final judgment upon the value of the method, but thus far both teachers and students seem to regard it as a success. The result seems to have justified the opinion of its advocates that the work of the student would be made "easier by concentrating his thoughts upon one subject instead of dissipating his attention upon many subjects."²³ Nor have its opponents found any justification for their fears that the average brain would become fatigued and unreceptive by too close application to one subject, for the sciences of anatomy, physiology and pathology "are not narrow, hedged-in areas but rather broad and diversified domains composed of many contiguous fields,"²⁴ in passing from one to another of which the student may rest his mind without interrupting the continuity of effort essential to effective work.

An obvious objection to this method of concentrating instruction is the large amount of work which it imposes upon the instructors. There is no doubt that the labor of teaching every day in the week may task the powers of even the most enthusiastic instructor, but it has been found that the laboratory work, which has occupied from two to three hours every forenoon, has been conducted with much less fatigue than was anticipated. In fact, students, when supplied with printed directions for work and with the necessary apparatus, need remarkably little supervision. In the physiological laboratory it was found that one instructor could readily supervise the work of fifteen pairs of students, and the experience in the anatomical and pathological departments was of a similar sort.

EXAMINATIONS.

Closely connected with the questions of method of instruction and of distribution of work is the subject of examinations. With regard to these tests of our educational methods opinions vary even more widely than with regard to the methods themselves. There is only one point, as Professor Exner has remarked, on which teachers are practically united, and that is "that an examination is a necessary evil." Every examiner knows only too well that an examination is but a very imperfect test of knowledge, but few are ready with

any suggestion of a substitute. Much of the confusion which prevails in the discussion of this subject would be removed if the objects to be secured by an examination were more clearly apprehended. Professor Exner²⁵ points out that examinations may be broadly divided into two classes, namely, the *Controlprüfung*, to test the faithfulness with which the student has performed his daily tasks, and the *Reifeprüfung*, to determine the amount of his permanently acquired knowledge of medical subjects.

The examination which, at the end of the year, covers the whole ground of the twelve months' instruction, and which is so common in our schools, belongs to neither of these two classes and is really a concession to a very natural wish of the students to get the examination "out of the way" while the subject is still fresh in their minds. Having little justification from an educational point of view, we may hope to see it abandoned when the extension of laboratory methods provides in the note-book and graphic records of each student the evidence of his daily work and thus either renders a further examination unnecessary or prepares the way for a final test of his fitness to receive his diploma of M. D. Whether the written or the oral examination affords the better method of applying this test is a question about which opinions vary. The fact that some persons can write more readily than they can talk, while others can talk more readily than they can write, seems to be a reason for providing a mixed method of examination in which each individual may have an opportunity of appearing to the best advantage.

CONCLUSIONS.

If the views here presented are well founded we may expect that a medical school of the first rank will in the immediate future be organized and administered somewhat as follows:

(1) It will be connected with a university, but will be so far independent of university control that the faculty will practically decide all questions relating to methods of instruction and the personnel of the teaching body.

(2) It will offer advanced instruction in every department of medicine and will therefore necessarily adopt an elective system of some sort, since the amount of instruction provided will be far more than any one student can follow.

(3) The laboratory method of instruction will be greatly extended and students will be trained to get their knowledge, as far as possible, by the direct study of nature, but the didactic lecture, though reduced in importance, will not be displaced from its position as an educational agency.

(4) The work of the students will probably be so arranged that their attention will be concentrated upon one principal subject at a time and these subjects will follow each other in a natural order.

(5) Examinations will be so conducted as to afford a test of both the faithfulness with which a student performs his daily work and of his permanent acquisition of medical knowledge fitting him to practise his profession.

If I have clothed these conclusions in the language of prophecy it is because the title of my discourse has laid this necessity upon me. In forecasting the immediate future, I have borne in mind the history of the

²³ Minot: Science, July 7, 1899. Reprint, p. 22.

²⁴ Porter: Boston Medical and Surgical Journal, December 20, 1898. Reprint, p. 11.

²⁵ Wiener klinische Wochenschrift, No. 3, 1900. Reprint, p. 3.

immediate past, and if I have failed to read aright the indications of the lines on which our medical schools are to advance, it must be remembered that the development of a biological science and of its dependent arts not infrequently takes place in totally unexpected directions, thus introducing into the path of educational progress perturbations which may well defy prediction.

PERFORATING ULCER OF THE DUODENUM.¹

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THE interest that has been lately directed toward the surgical treatment of gastric perforations has also been turned to the operative relief of the allied round or peptic ulcer of the duodenum. This affection is much rarer than the ulcer of the stomach, is much more difficult to properly diagnose and is more apt to be confounded with other more distant surgical lesions, such as appendicitis, etc.

Site.— Its site is in the upper part of the duodenum, and according to Morot² and Vouwy³ it is always situated within 1.5 inches of the pylorus; but Schwartz⁴ gives one case where the perforation existed on a level with or a little below the ampulla of Vater and thus allowed a free escape of bile into the peritoneal cavity. The figures given by recent authorities show that in the 262 collected cases of Collin⁵ the perforation occurred 242 times within 2 inches of the pylorus, in the descending portion 14 times, in front of the aorta 3 times and in the ascending portion 3 times. Or, expressing the same a little differently, 162 of the 262 cases were situated at 2 to 4 millimetres from the pylorus; 75 close to it; 4 encroached on the pylorus itself, and two extended through pylorus to duodenum and to the stomach. Perry and Shaw have reported in *Guy's Hospital Reports*, of 1894, 141 cases of duodenal ulcer, 123 in the first part of the duodenum, 16 in the second part and only 2 in the third part.

Number.— These ulcerations are usually single. Collin says that one ulcer was found in 80 per cent. of his cases; two ulcers in 11 per cent.; and three or four ulcers in 4 per cent. Morot, in 22 cases, found 18 had a single ulcer; 2, two ulcers; 1, three ulcers and 1, four ulcers.

Location.— These perforations are encountered most frequently on the anterior wall. Oppenheimer⁶ in 15 cases noted that the perforation had taken place in the anterior wall 11 times; 3 times posteriorly and once superiorly. Of the 119 cases of Collin in which the first portion of the duodenum was perforated, in 68 it occurred on the anterior wall of the bowel; in 39 the posterior wall; in 10 the superior, and in 1 the inferior portion. In 8 ulcers perforating in the second portion of the bowel, 5 occurred in the internal wall, 2 in the posterior and 1 in the external wall; and in the ulcers presenting in the third part of the duodenum, 4 in number, in 3 the anterior and superior walls were involved, and in 1 the posterior wall.

¹ The Presidential Address in Surgery delivered before the American Surgical Association, Washington, May 1, 1900.

² Thèse de Paris, 1892.

³ Ulcer Perforans Duodeni. Thèse de Paris, 1893.

⁴ Ulcère perforante du duodenum. Bull. et Mem. Soc. de Chirurg., January, 1898.

⁵ Thèse de Paris, 1894.

⁶ Das Ulcers Pepticum Duodenale. Thesis, 1891.

This is of considerable surgical importance. The anterior perforations are, for obvious anatomical reasons, less likely to be closed off by adhesions, and hence a free and rapid involvement of the peritoneal cavity takes place in the openings here situated. Reckmann⁷ states that half the cases of duodenal ulcer die from perforation into the peritoneal cavity.

Frequency of perforation.— Perforation is said to take place 180 times in Collin's 262 cases, or in 69 per cent. Chvostek, however, places the frequency of perforation at about 42 per cent. of the cases. In these 262 cases there was a generally diffused and fatal peritonitis 125 times. But occasionally in anterior openings, but more commonly with the perforations existing elsewhere, adhesions or ulcerations with abscess and hemorrhage of the duodenal wall or adjacent organs have been encountered. Examples of such complicating lesions are subphrenic abscess, which follows more commonly a perforation in the superior wall of the horizontal portion of the duodenum (according to Oppenheimer). Liver and pancreatic adhesions are at times met with (Oppenheimer gives 6 cases and Collin 38 cases of such adhesions). Perforations into the gall-bladder have been reported, but more important and dangerous are the ulcerations into the aorta (Stich,⁸ 2 cases), or the vena porta (2 cases, Rayer and Habershon), or the superior mesenteric vein (Warfinger), or the hepatic artery (Vouwy). The ulceration has been also known to invade the adjacent colon (2 cases, Murchison and Sanderson).

Sex.— Duodenal perforations are more common in men than in women; about 79 per cent., according to Collin, are in males. From the tables of Morot, Kraus, Lebert and Chvostek I have gathered 176 cases of duodenal ulcers, and of these 144 were in men and 30 in women.

Cause.— This has been explained by Boas⁹ to be due to the rougher food, and, in men, to their addiction to alcohol and tobacco, which intensify the acidity of the gastric juice and thus act unduly on the glandular mucous membrane of the duodenum, which is not protected until the alkaline bile and pancreatic fluid is poured into the intestine at the opening of Vater. Koch and Ewald by giving to animals 5 per 1,000 HCl caused duodenal ulcers to appear. Pyloric spasm, Talma states, produces necrosis and anemia of the membrane there. On the other hand, alcoholics are not found to be prone to duodenal ulcer, and though the spasms and lesions of gastric hyperacidity, which are now accepted as a causative factor of stomach ulcer, will doubtless apply in many instances to the development of a similar duodenal damage, there are other causes for duodenal ulceration to be mentioned beside the foregoing.

Burns.— The principal and best known, though now somewhat disputed, factor in their etiology is the influence of external burns. Holmes,¹⁰ for instance, states that in 125 cases of burns 16 cases of duodenal ulcer were found; Perry and Shaw in 149 cases of burns met with duodenal ulcers 5 times; and in Collin's 297 cases of duodenal ulcer he states that burns produced the ulceration in 38 instances. According to Holmes, the duodenal ulcerations after burns present themselves from the seventh to the fourteenth day, but Poufick found in one instance a duodenal ulcer within

⁷ Ulcer Duodenale u seine Diagnose, 1893.

⁸ Deutsch. Arch. klin. Med., 1874.

⁹ Diagnostik u. Therapie der Darm Krankheiten, 1899.

¹⁰ System of Surgery, vol. 1, p. 733.

eighteen hours after the reception of the burn. Curling also had a case where symptoms of duodenal ulcer were recognized one day after the burn, and the autopsy confirmed the diagnosis.

The explanation most accepted at the present day is that this complication of a burn is due to septic infarctions such as may be developed in frost-bite, of which Billroth and Adams each cites a case, or in erysipelas 8 instances, or in tuberculosis (Latham). In the cases where trichinosis (Ebstein), or heart or kidney disease, or cirrhosis or hepatic or other carcinomata (Latham) exist, it is not quite so easy to trace the connection, though embolism even here has largely to deal with the question. The recognized explanation offered by Hunter¹¹ and often quoted seems inadequate to elucidate the relation between a cutaneous burn and a duodenal ulcer. This observer proved that in animals treated by injections of tolylendiamene the bile was so changed that when discharged into the duodenum ulcerations rapidly developed. His idea, therefore, was naturally that the alteration of the cutaneous covering so altered the bile as to beget the complicating duodenal ulcerations. Unfortunately duodenal ulcers are so rarely met with on a level with or below the bile discharge into the bowel that this at once disposes of the need of calling on the liver and pancreas as accomplices in their production. That septic infarction is the most probable cause of duodenal difficulties after burns may also be fairly inferred by the later collection of Lockwood, who in 138 cases of burns treated with more or less approach to an antiseptic idea noted the complication of duodenal ulcer in but one instance. A cancerous ulceration is almost unknown, but 4 cases (Eichert, Ewald, Schrotter and McKenzie) have been recorded.

Frequency. — A duodenal ulcer is, according to statistics, a rare lesion. Collin, whom one is compelled to quote by the worth of his collected cases, in a range of eleven years could only find 26 cases. Houze¹² in three additional years could add only 3 more cases, though Darras¹³ more than one year later found 5 others. Since attention has been given to the subject and particularly to the surgical aspect of it by the present writers in 1896, when 9 cases were reported as having undergone surgical treatment, there have been reported 41 operations for this disease.

The relative frequency as a cause of death deduced from autopsies is as follows:

Willigt	1,600 sections with	74 gastric ulcers and 2 duodenal.
Stark	384 " " "	36 " " 3 "
Grünfeld	1,150 " " "	124 " " 4 "
Steiner	3,085 " " "	89 " " 12 "
Vonwyl	12,806 " " "	98 " " 3 "
Latham	8,192 " " "	not given " " 12 "
Perry and Shaw	17,652 " " "	" " " " 70 "
N. Y. Hospital		
(unpublished)	1,000 " " "	" " " " 2 "
	49,369	421 108

or about .2 per cent. in frequency.

Kinnicutt¹⁴ however, in 30,000 autopsies, which probably included many embraced in the above table, has given a rather higher percentage of frequency, placing it at .4 per cent. Though the proportion is a small one, stress must be laid on the fact that from 40 per cent. to 70 per cent. of these ulcers perforate, with an al-

most invariably fatal result. The relative proportion of gastric to duodenal ulcers is as 12 to 1 (Burwinkel).

Age. — As to the age at which it is most common, it is encountered at all ages. Chrostek in 87 autopsies on children under ten years of age found 5 duodenal ulcers, of which 1 was seen in a seven weeks' old child, another in a child four days old, and a third in a babe of three hours. Collin's table is the most complete in this respect, and it is here presented. In 297 cases of duodenal ulcers they were met with:

Under 10 years of age	42 times.
Between 10 and 20	24 "
" 20 " 30	43 "
" 30 " 40	52 "
" 40 " 50	46 "
" 50 " 60	41 "
" 60 " 80	28 "
" 81 " 95	3 "

Progress. — It has already been strongly stated that nearly all perforations of the duodenum will prove fatal from a generalized peritonitis unless surgical intervention should relieve the patient. What this consists of, what are its results and its difficulties, will be considered a little later. At present one must take account of the somewhat encouraging fact that all duodenal ulcers do not go into this severe complication of perforation. In 70 autopsies Perry and Shaw found decided evidences of repair in nearly 50 per cent. of the cases, and Collin also recorded 39 instances of cicatrized ulcerations. These cured ulcers may prove innocuous, but they can, as in the stomach, narrow to a dangerous degree the lumen of the intestine and even encroach upon the bile opening, or make such traction upon it as to bring about gastric and hepatic dilatations. Some of the most brilliant surgical triumphs have been obtained in relieving such obstructions, of which examples may be subsequently found in this article.

Symptoms. — The symptoms of a non-perforated duodenal ulcer are, as shown by Schwartz, frequently very slight. In 20 out of 25 instances of perforation, the patients were in apparent good health or so slightly indisposed that they had not consulted a physician. In only 5 cases were there previous stomach symptoms; of these 1 was thought to have dyspepsia, and 2 to have a gastric ulcer. In my own collection of 51 cases, treated by operation, gastric symptoms previously existed in 25 out of 34 cases.

The usual signs may be given as follows:

(1) The *pain* when characteristic occurs several hours after eating and may be slight or severe, and presents itself just below the gall-bladder, and may reach to the median line or to a level with the navel. Many times the pain is absent. Reckmann in 80 cases found 16 in which little or no pain existed. Pressure, particularly over the region to right of the twelfth thoracic vertebra, occasionally elicits pain. Swallowing of a sour lemonade or a strong alcoholic drink may arrest the pain by bringing about a pyloric contraction, but Pagenstecher¹⁵ denies the value of this test.

Vomiting is present in about 17 per cent. of the cases, but it is of reflex character. It is of diagnostic importance if, like the pain, it shows itself from an hour or so up to several hours after a meal, and the

¹¹ British Medical Journal, vol. i, p. 76, 1890.
¹² De l'ulcère perforant du duodenum. Thèse de Paris, 1896.
¹³ De la perforation de l'ulcère simple du duodenum. Thèse de Paris, 1896.
¹⁴ Jacobi : Festschrift, 1900.

¹⁵ Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

matters rejected are broken-down food mixed often with bile and blood.

The right shoulder pains are noted by Schwartz as occasionally to be recognized. According to Vonwyl and Buequoy, the pains are often slight from the comparative immobility of the duodenum, and vary from queer indescribable sensations to severe radiations of distress. Vomiting, when it occurs, relieves the pain.

Jaundice, if present, which is rare, may be due to simple duodenal tumefaction or to cicatricial contraction on the papilla.

Hemorrhage is to be expected in about one-third of the cases of non-perforating ulcers. Probably it is even greater than this, as Oppenheimer found blood in the stools of one-half of his 34 cases, and Krauss says it occurs even more frequently than this ratio. This bleeding can be severe and show itself by mouth as well as per rectum. It can speedily prove fatal, as larger vessels are opened than by a gastric ulcer. Usually the blood is discharged from the bowels in a tarry condition, which bespeaks a high origin of the hemorrhage and an exposure of some duration to the action of intestinal secretions. This is spoken of as *melena*. Its color may be, however, a bright hue, and recently, with Dr. Peabody, the question of the presence of a duodenal ulcer in a patient with intestinal hemorrhage and right-sided epigastric pain and distress some time after eating, was negatively decided because the blood discharged per anum was of bright red color and unclotted. As the patient, moreover, had hemorrhoids, the possibility of this origin led to the confusion in diagnosis. This escape of fresh unchanged blood from the bowels is recognized by Vonwyl, and some emphasis should hereafter be placed on this possibility. The profusion of the hemorrhage may be much beyond that encountered in gastric ulcer, for larger vessels may be involved. Collins gives 12 instances in which the blood came from the pancreoduodenal artery; three times the gastro-epiploica dextra was opened into, twice the pancreatic artery, once the hepatic, twice the aorta, twice the vena porta, and once the superior mesenteric vein. Pagenstecher states that the ulcers on the posterior wall are more apt to bring about hemorrhage than the anterior ones, as the vessels are more abundant and larger there. Burwinkel¹⁶ says that, excepting in vicarious menstruation and typhoid fever, intestinal hemorrhage in large amounts is very rare and should excite suspicion of gastric or duodenal ulcers. This writer, in spite of all that has been advanced by Nothnagel, Ewald, Lemke, and latest of all, by Kinnicut, that in the great majority of cases a differential diagnosis from gastric ulcer is impossible, claims that by a careful study of the symptoms he has been able to diagnose 5 cases of duodenal ulcers in the last few years.

Diagnosis.—The following contrasting symptoms have been grouped by Vonwyl as an aid to this end:

Gastric ulcer.—(1) More frequent in women, twenty-fifth to fiftieth year; (2) pain promptly after eating; (3) relieved by vomiting; (4) frequent biliary, mucous and food vomiting; (5) marked dyspeptic symptoms; (6) frequent bloody vomiting; (7) more seldom bloody stools.

Duodenal ulcer.—(1) Occurs most frequently in males; (2) pain in right hypochondrium or to right

¹⁶ Das peptische Duodenalgeschwürs. Deutsch. med. Wochenschrift, December 29, 1888.

¹⁷ Jacobi: Festschrift, 1900.

of parasternal line; (3) comes on two to four hours after meals; (4) no relief by vomiting; latter not frequent; (5) bloody stools (*melena* or bright blood) more common than bloody vomiting; (6) if jaundice is present this would contribute to the diagnosis.

That medical and surgical education in this line is progressing has also been brought out in the cases of operations which form the basis of this paper. Here it will be seen that notwithstanding that the greater part of them have been treated as of appendiceal or other origin, surgeons awake to the possibilities of the case are making shrewder diagnoses, and the reproach which was good up to a year ago, that no operation for a previously recognized perforated duodenal ulcer had yet been performed, no longer holds good. It may be expected that as the detection and treatment of a perforated gastric ulcer has so rapidly and so satisfactorily progressed from 1892, when the writer was only able to add to his first operation of this kind but 4 other instances, while now over 100 cases each year are operated on with a mortality that has fallen (if operated on within twelve hours) from 39 per cent. to 17 per cent. (Keen¹⁸), that a similar improvement will take place in the recognition and proper treatment of duodenal ulcers.

The picture is a far different one when the duodenal ulcer perforates, and particularly if anteriorly, which is the most common site of this complication. Here there is usually no withholding adhesion, and a rapid invasion of the peritoneum is probable.¹⁹ If the stomach is yet filled, the extravasation may take an anatomical course somewhat in the order spoken of by Pagenstecher, and which is in accord with my own analogous clinical experience in three perforations of the gall-bladder. Fluids escaping from the duodenum or gall-passages flow at first between the liver and the colon and thence along the ascending colon sometimes to the outside of the bowel, and sometimes between the omentum and the parietal peritoneum towards the iliac fossa. From this point they may pass over to the sigmoid flexure and into the pelvis. Given, therefore, such a free course and with a plentiful pouring out of acid fermenting food and gas through a direct though small (2 to 8 millimetre) opening, the symptoms presented would naturally be severe.

Great pain is usually felt frequently at the epigastrium or to the right of this region, as was noted 26 times in 47 of my cases. It has a few times also been observed at the umbilicus and in the left side, but in 23 others of the 47 instances it was simply recorded as abdominal pain. Vomiting often follows the attack of pain. It occurred in 28 out of 34 instances. Shock is not often met with, but may be severe and fatal. Peritoneal symptoms rapidly develop, with a tendency in some cases to be localized in the upper part of the abdominal cavity and in the right side; when these signs show themselves mostly to the right and at or below the level of the umbilicus, it necessarily simulated an appendicitis. When the liver dulness has been dissipated up nearly to the mammary line, air extravasation may be suspected, and when accepted as present, it will aid in concentrating the diagnosis. This symptom of liver resonance, unless

¹⁸ British Medical Journal, June 11, 1898; Mayo: Surgery of the Stomach, Lancet, March 17, 1900.

¹⁹ It should also be remembered that generally the duodenum in its first part is free and covered by peritoneum, so that extravasation is likewise possible through a posterior perforation in this region. It is, however, in this case, more likely to enter the omental bursa (lesser omental cavity) or invade the retroperitoneal tissues.

marked, is so often found to be due to a distended colon that it should not be much relied on.

In considering the diagnosis of a perforated duodenal ulcer as just given, I cannot but feel that more weight and attention should be given, first, to the previous history, which shows, contrary to the opinions of many anterior observers, that in the 51 collected cases of operations for the relief of such conditions there was a history of gastric or dyspeptic symptoms given in 25 out of 34 cases where the point was noted; secondly, and also important, is the fact alluded to on a previous page that the initial or early pain was developed in 26 instances out of 47 in the epigastrium, and in the right hypochondrium 13 times. The third factor of value in the diagnosis, as well as the treatment, of the symptoms of perforation peritonitis, whether from stomach, duodenum, gall-bladder, appendix or any other part of the intestinal tract, is the prompt resort to an exploratory incision. This need of an early solution of the site of a perforation has been already shown in the cases of a gastric perforation in an article²⁰ embracing 78 cases operated for this trouble. The mortality in these cases clearly depended on whether the patient underwent surgical intervention within twenty-four hours from the inception (that is, the pain) of the perforation. This is yet more strongly marked in the latest collections of this class of troubles by Mayo,²¹ who states that in 429 cases of gastric perforations those operated on in the first twenty-four hours were 82, where 47 recovered; 35 died (a mortality of 42 per cent.); and that in operations done after that period over 70 per cent. of the cases died. In duodenal perforations the same outcome is observable. In the 51 collected cases herewith presented of duodenal perforations, there were 25 cases where the lesion was recognized and closed at the operation; of these, 13 underwent operation after thirty hours' delay and all died; 1 case, however (No. 31), recovered after a delay of two hundred and sixteen hours, but here the perforation had formed a chronic abscess and sinus. Twelve others were operated on within that time; 8 survived, giving thus only 33½ per cent. of mortality. *Only*, I say, and with much satisfaction, since it marks an improvement on the statistics of Pagenstecher, which gave a mortality of 60 per cent. in the found and sewn-up duodenal ulcers by him collected. Of equal value as illustrating the increasing alertness of the surgeon is the fact that prior to 1895, in the 20 cases reported up to that time in which laparotomy was done for duodenal perforation, in 15, or 75 per cent., the ulcer was not found; in 5, or 25 per cent., it was found and sutured. In only 2 cases, or 10 per cent., was the possibility of a duodenal perforation considered. Contrast this with the 31 cases operated on since 1895, when the surgery of gastric ulcer began to be developed. Of these 31 cases the perforation was not found in only 11 per cent. It was found and sutured in 20 cases, or 65 per cent. Its presence was considered in diagnosis in 11 cases, or 35 per cent.

Another indication showing the advance in our surgical art since attention has been directed to this lesion is the circumstance that it has been possible in 13 of the more recent instances to either arrive at a correct pre-operative diagnosis or to make the alternative diagnosis varying between a duodenal and a gas-

tric perforation. The difficulties that have been experienced are succinctly shown in the following statement:

Diagnosis wrong: Ulcer not found.	
Diagnosis as acute peritonitis	8 times.
“ appendicitis	15 “
“ intestinal obstruction or appendicitis	1 “
“ strangulated hernia	1 “
“ hydronephrosis	1 “
	26
Diagnosis wrong: Ulcer found.	
Diagnosis as acute peritonitis	5 times.
“ intestinal obstruction	4 “
“ appendicitis	3 “
	12
Diagnosis right or approximately so: Ulcer found.	
Diagnosis as duodenal ulcer	5 times.
“ gastric or duodenal ulcer	6 “
“ appendicitis or duodenal ulcer	2 “
	13

Treatment. — For the treatment of a duodenal ulcer the medical means applicable to the management of a gastric ulcer also hold good. It is but seldom that surgical aid is called for before perforation has occurred, but the cases reported by Codevilla²² are of much surgical interest and instruction. This surgeon, for the relief of symptoms that fairly well pointed to an intractable duodenal ulceration, resorted to a gastro-enterostomy in 2 cases with a cure as the result of his intervention.²³ In some cases of perforation the shock and progress of the infection is so rapid as to bring about death in a few hours. Stevens²⁴ quotes a case where a fatal issue occurred within twenty-one hours after the first symptom (sudden pain) had shown itself.

Where the diagnosis has happily been narrowed down to a perforation of either the stomach, duodenum or gall-bladder, the incision to be advised is in or along the edge of the rectus muscle, 4 to 6 inches in length and starting rather low down on the abdominal wall, so as not to reach much above the liver edge but to extend far enough downward to easily get below the transverse colon, which might be necessary. Supplementing this incision in its upper third another transverse one, in the skin, to the left or toward the median line is advisable; this will permit the cross division of the fascia covering the right rectus muscle, which latter is in turn to be pulled to the left, when its posterior sheath, with the peritoneum, is also to be divided. This gives a satisfactory and largely increased exposure of the parts beneath and the subsequent suture of the upper and lower sheath of the rectus with the full replacement of the muscle adequately restores the integrity of the abdominal wall. This incision I have made many times in operations on the gall-bladder and in numerous instances of suppurating appendicitis when an increased space is needed.²⁵

If gas or food material escape when the abdomen is opened, the surgeon's action is rendered more certain, and by a rapid and thorough inspection, after wiping away any obscuring fluid, of the gall-bladder, duodenum and the anterior walls of the stomach the perforation can be disclosed. If nothing is visible in these regions, the examination of the posterior gastric wall can be accomplished by either tearing through the gas-

²² Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

²³ Berg and Roux also each report a case where for a duodenal ulcer with adhesion of pyloric stenosis a similar operation was done with success.

²⁴ Glasgow Medical Journal, vol. li, p. 87, 1897.

²⁵ Weir: Medical News, February 17, 1900; On an Improved Method of Operating for Acute Suppurating Appendicitis, Medical News, March, 1899.

²⁰ Weir and Foote: Medical News, April 25, 1896.

²¹ Surgery of the Stomach, Lancet, March 17, 1900.

trocolic omentum, or by turning up the omentum and large bowel and entering the lesser omental cavity through the mesentery, as in posterior gastro-entrotomy. From the lower end of this wound, which is large enough to admit the hand, the appendical region can be explored in many instances if it should be necessary, though probably if this should be involved a separate incision might be more suitable. If a duodenal perforation exists it will generally be found on the anterior wall of the duodenum as a small round opening, rarely beyond one-quarter inch in diameter, with comparatively thin edges and rarely adherent to any adjacent intestine. Gas or fluids have frequently been seen passing from the opening, and occasionally bile, which latter may also stain the peritoneal extravasation. Mayo has suggested that an acid reaction of the peritoneal effusion might help in suggesting, prior to its discovery, a gastric or duodenal opening, but as the inflammatory effusion rapidly neutralizes the stomach acidity, this will seldom be of help.

Since several of the collected cases have shown in the abdominal extravasation the presence of recognizable medicines, such as castor oil, etc., given erroneously to move the bowels, it may be considered worth while to utilize the fact, and to give prior to the operation a certain amount of methyl blue or other innocuous colored solution to aid in the detection of the opening. When found, the perforation should be closed by a double or triple row of interrupted silk sutures. No attempt should be made, in my judgment, to excise the ulcer before suturing. This takes too much time, and the results in the collected operations show that in 7 out of 9 of the successful cases suturing alone was relied upon. In 1 only was excision and suturing employed, and in 1 other case the ulcer was closed over by suturing over it the duodenum, colon and stomach. This experience is confirmed in the large number of gastric perforations that have been treated up to date.

The suggestions given by Pagenstecher in the conduction of this operation are worthy of remembrance. They are, that the fundus of the gall-bladder when distended, lies in front of the duodenum. By raising up the transverse colon, which rests somewhat in front of and below the horizontal part of the duodenum, and by drawing it forward, this portion of the intestine is immediately revealed. Crowding the stomach and pylorus to the left and a little downwards with lifting up the liver and pushing the colon down, a good view of the locality of a perforation is obtained.

The closure of the perforated intestine, however, leaves much of the battle for life unfinished. The proper and systematic cleansing of the peritoneum is of the utmost importance. If the extravasation is limited, careful wiping out of the affected portion of the peritoneal cavity, with especial attention to the retrogastric and suprahepatic spaces and to the splenic and renal region, with ample gauze drainage, will in most cases suffice better than the large warm irrigations of sterilized salt solutions, which are, I think, more suitable in extensive or general peritoneal inflammations.

For those who favor multiple incisions and large irrigations, the specific directions of Lennander²⁶ are of value. He considers in suitable cases and in patients of sufficient vitality that irrigations with water

at 10° C. (104° F.) through several incisions, the best method of cleansing the peritoneal cavity. One must go carefully and methodically about the solar plexus and the diaphragm; methodically cleansing pleurae, irrigating, and then wiping clean with wrung-out gauze. He begins with upper surface of liver, particularly on both sides of suspensory ligament, then passes between liver and stomach to the triangular ligament, then around cardiac portion, then between stomach and spleen, then under diaphragm to left kidney, and along spleen to ligament phrenocolicum. The division of the triangular ligament with a thermocautery has been suggested, so that one might sweep around the left lobe on both sides. He then cleans between the right kidney and liver, kidney and colon, colon and liver, next the lumbar regions and both iliac fossae, then both sides of the mesentery of the small intestine, and last the pelvis, which is often infected at the beginning of the trouble. A great quantity of hot fluid is of undoubted benefit in the pelvis.

Drains and tampons are intended to remove accumulating fluids and to shut off infected areas. Tubes surrounded by gauze are the best drains. He places sterile gauze on both sides of the suspensory ligament of the liver and between the liver and diaphragm. Drains should be placed in both lumbar regions, the left passing alongside of (better through) the phrenocolic ligament, external to the spleen, to the middle of the diaphragm. The right one passes to the duodenum. The pelvis of men is drained above the symphysis pubis, that of women through the vagina.

My own experience in the surgical treatment of duodenal perforation is confined to one case, which is briefly as follows:

Perforation of duodenal ulcer; laparotomy; suture; death.—Man, age thirty, who had previously symptoms, confusedly detailed, of gastric disturbance, but not of hematemesis, for several months, was seized four days previously with severe epigastric pain, chill, fever, repeated vomiting and great prostration. No blood expectorated or dejected. His abdomen rapidly swelled and became generally tender and painful. On entrance into the New York Hospital, April 30, 1899, nothing could be made out by palpation save that the liver dulness was nearly obliterated. The abdomen was very tympanitic, and no special point of tenderness or dulness was observed. He also had a double hernia. On the right side there was a protrusion of intestine beyond external ring. Pulse 140, temperature 104°. The diagnosis of a general peritonitis from a gastric or duodenal perforating ulcer was made. A large median incision was made, with umbilicus in centre for general exploration. The fingers showed nothing at rings or at cecum, and then on carrying the examination upward a minute sharply defined perforation, one-fourth inch in diameter, was found on the anterior wall of the duodenum, near pylorus, out of which was oozing some brandy and water given just before chloroformization. This was sutured with a double row of Lembert sutures and peritoneal cavity systematically and carefully washed out with sterile salt solution. Returned to ward in bad condition. Salt transfusion, 75 ounces, etc., but the patient succumbed shortly after the operation.

The autopsy showed the perforation to be in the duodenum just below the pyloric termination and in its superior anterior wall. Within the bowel was a

²⁶ Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

deep ulcer, at bottom of which had occurred the perforation.

LATER EFFECTS OF DUODENAL ULCER AND OPERATION FOR SAME.

There yet remain a few words to be said about the late consequences of a healed duodenal ulcer. The resulting cicatricial contraction may bring about stricture of the duodenum and dilatation of the stomach, and may by traction or primary ulceration damage the bile entrance to the intestine. Several interesting surgical cases have been reported where relief has been afforded by such circumstances. Pagenstecher quotes a case by Lange²⁷ where a gastro-enterostomy was successfully resorted to for contraction of the duodenum to the hardness and size of the finger, 3 centimetres from the pylorus, with dilatation above of the duodenum and stomach.

Codevilla (also quoted by Pagenstecher) details a more acute case with ulcer and stenosis of the duodenum and dilatation of the stomach. The duodenum was found at the operation markedly stenosed, as in Lange's case, and a gastro-enterostomy was performed, with a successful and permanently good result.

Carle²⁸ had a similar case in the front part of the duodenum, but the gastro-enterostomy resorted to ended fatally. He also reported another instance where great emaciation and stomach dilatation demanded surgical interference. The first and second parts of the duodenum were found strongly contracted but with atrophic, thin walls. Gastro-enterostomy was employed with success. Death one year later from lung tuberculosis.

Rewidzow²⁹ also cites a case which is doubtfully placed among these, as the locality of the stenosis following bloody vomiting and gastric disorder for twenty years was shown at the operation to be below the bile papilla, where a stenosis existed. For this a gastro-enterostomy was successfully resorted to.

OPERATIONS FOR DUODENAL PERFORATIONS.

The following list embraces all the reported cases of perforation of the duodenum that have undergone operation up to April, 1900, and have been carefully investigated and epitomized by Dr. E. M. Foote, to whom I am much indebted for this and other help in the preparation of this article:

CASE I. Male, age thirty-five. A heavy drinker; no history of indigestion. For a week or so loss of appetite and indefinite epigastric pain; then sudden acute pain while at work, followed by vomiting. Two days later brought to hospital in collapse. Abdomen distended, dullness in right flank; pulse rapid and feeble; temperature 98.8° F. Laparotomy at end of two days. Acute peritonitis; cause not discovered. Death in a few hours. Autopsy: Perforation anterior wall of duodenum close to pylorus.³⁰

CASE II. Male, age thirty-one. Acute attack like intestinal obstruction. Diagnosis: Appendicitis and general peritonitis. Operation, third day. Appendix normal; general peritonitis; perforation not found. Death in a few hours.³¹

CASE III. Male, age twenty-nine. History of abdominal colic. While in usual good health was seized at 5 p. m. with sudden pain, followed by bilious vomiting. Some lumps of feces and gas passed that evening, but absolute

²⁷ Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

²⁸ Loc. cit.

²⁹ Loc. cit.

³⁰ Mackenzie (Jones, operator): *Lancet*, 1888, ii, p. 1,960.

³¹ Mackenzie (Croft, operator): *Loc. cit.*

constipation thereafter. Next day a purgative only increased the vomiting and pain. Entered hospital on third day, with fecaloid vomiting. On fourth day great distention, tenderness and pain at its maximum in right hypochondrium. Pulse 120, small; dullness in both flanks. Diagnosis: Perforative peritonitis. Operation in about ninety hours. General peritonitis. The hand thrust under the liver broke into a cavity containing two quarts of serous liquid. The intestine was searched in vain for mechanical obstruction, and on account of weakness of patient, the operation was terminated. Death same evening. Autopsy showed a perforation "near the end of the second portion of the duodenum, externally."³²

CASE IV. Male, age twenty-eight, always well. While drinking tea, had a violent pain in the left side of the abdomen. Next day, a tumor to the right of umbilicus; sour vomit, later becoming fecal; tympanites; constipation, no blood; third day, temperature normal, pulse about 130. Operation in eighty hours (about). Incision to left of umbilicus gave vent to gas and pus; intestine sound; greatly distended; incision of intestine; suture of collapse; drainage. Death in seven hours. Autopsy: Perforation in anterior wall of duodenum; purulent peritonitis.³³

CASE V. Male, age forty-one, of good previous health except slight indigestion. One year before perforation, an attack of abdominal pain with constipation. While at work was seized with violent pain; gastric vomiting, later becoming fecal; no blood; absolute constipation. In tympanic stage, when first seen by reporter; respiration thoracic; pulse 120, temperature 99.2°. Diagnosis: Septic peritonitis. Operation, May, 1891. Usual incision; cavity searched; no cause for suppurative peritonitis found; irrigated; drained. Death in ten hours. Autopsy: Perforation in posterior wall of duodenum, 1 inch below pylorus, freely communicating into peritoneal cavity when intestines were lifted.³⁴

CASE VI. Female, age twenty, servant. Of constipated habit; otherwise health good. Bowels moved by salts two days before the attack. A sudden attack of pain in the right hypochondrium, passing then to left side, and afterwards becoming general. Vomiting of sour fluid began twelve hours after the attack of pain, and continued. There was tympanites without loss of hepatic dullness. Diagnosis of general peritonitis, cause unknown. Operation in twenty-four hours. A median incision below the umbilicus allowed the escape of inoffensive fluid. A second incision above the umbilicus disclosed the perforation, one-quarter of an inch in diameter, in the posterior aspect of the duodenum, close to the pylorus. Milk was escaping through it. The ulcer was excised and sutured, the abdomen flushed. Death in six hours. General peritonitis.³⁵

CASE VII. Male, age twenty-one. Always good health. Sudden pain in the lower abdomen, followed by vomiting and collapse. After eighteen hours laparotomy gave exit to much brownish, acid, non-feculent fluid. There was adhesive peritonitis. The cause of peritonitis was not found. Death in a few hours. Autopsy: A perforation in the anterior wall of the duodenum, about 5 inches from the pylorus, and about 5 inches in diameter; a second non-perforating ulcer of the posterior duodenal wall.³⁶

CASE VIII. Male, age fifty-six, brought to the hospital in a condition of tympanites, and having a right inguinal hernia. Laparotomy. The hernia was explored and found to be in good condition, and the incision was prolonged upward 7 inches, giving vent to purulent and fecal fluid. No cause for the peritonitis was found about the cecum or elsewhere. Death in a few hours. On the anterior surface of the duodenum, .5 inch from the pylorus, was a perforated ulcer, .5 x .7 inch. It could easily have been sutured.³⁷

CASE IX. Male, age twenty-eight. Of good health until two months before perforation, did not feel quite himself, but no localized symptoms. While ascending an

³² Boiffin: *Cong. fr. de chir.*, 1892, p. 210.

³³ Lockwood: *Medical Society Transactions*, 1892, vol. xv, p. 91.

³⁴ *Loc. cit.*

³⁵ Gould: *Middlesex Hospital Reports*, 1893, p. 163.

³⁶ Perry and Shaw: *Guy's Hospital Reports*, 1893, vol. i, p. 261.

³⁷ Lockwood: *Lancet*, 1891, ii, p. 964.

omnibus, felt a sudden pain in the abdomen; nausea and vomiting after an emetic had been given; constipation for four days, then a little fecal matter and flatus after an enema. Seventh day, entered hospital; abdomen distended; general tenderness; respiration 28, thoracic; pulse 104, temperature 99.8°. Questioned with reference to duodenal ulcer, could not localize first pain; never any blood by mouth or in stools; only slight indigestion. No evidence of trouble in upper part of abdomen. Diagnosis: Septic peritonitis with pus in pelvis. Operation in one hundred and fifty hours (about). Subumbilical incision; two pints of pus from pelvis; appendix, cecum and small intestine sound; higher search abandoned, as there was less peritonitis in that direction; irrigation, drainage, suture. Death in fifty-four hours. Autopsy: Septic peritonitis in pelvis, and also about duodenum, these areas being separated by a middle zone, relatively free from peritonitis; perforation, .5 inch in diameter, .7 inch from the pylorus, in the upper wall of the duodenum.³⁸

CASE X. Male, age sixty-one, with a long history of gastric ulcer, with epigastric pain and vomiting, never of blood. Sudden pain in right hypochondrium; collapse. Diagnosis: Perforation of gastric ulcer. Operation in four hours, fifteen minutes. Perforation in duodenum, anterior wall, .7 inch from pylorus, sutured; thorough washing, drainage. Death in six days. Autopsy: Suture tight; a second ulcer in the back of the duodenum, non-perforating; purulent fluid behind liver and in pelvis.³⁹

CASE XI. Male, age twenty-eight. Good health. One hour after a movement of the bowels, while lifting barrel from a dray, felt a sudden pain across the abdomen like a knife; vomiting immediately began and continued. Third day fecal vomiting; pain especially on right side. Pulse rapid, temperature 100.6°, respiration rapid, cold sweat. Diagnosis: Intestinal obstruction. Operation in sixty-two hours. Subumbilical incision gave vent to a large amount of seropus with a fecal odor; cecum, appendix, hernial openings, and intestine in pelvis examined; incision prolonged upward; perforation as "big as a florin," in anterior wall of duodenum, 1 inch from pylorus, pared and closed with six or eight Lembert stitches. Area covered by omentum; irrigation; drainage in pelvis. Death in three hours. No autopsy.⁴⁰

CASE XII. Female, age twenty-seven. For a fortnight had epigastric pain, and constipation for seven or eight days; treated for indigestion. Sudden pain in epigastrium and collapse; vomiting frequently repeated. Thirty hours later slight tympanites, and abdomen uniformly tender; pain most marked in epigastrium; vomiting; respiration rapid and irregular, pulse 120, temperature 100.6°. Diagnosis: General peritonitis from mechanical obstruction. Operation in thirty hours (about). Subumbilical incision gave vent to fluid and fibrin; intestinal cells congested; no lesion found; incision prolonged upward; gas noticed near gall-bladder; perforation of duodenum .7 inch from pylorus; surrounding induration incised; suture; irrigation; sponging; no drainage. Nothing by mouth for seventeen days; recovery. Two months later symptoms of obstruction; operation on third day; adhesions, which obstructed the ileum a short distance above the cecum, freed. Death from perforation of the wall of the ileum just above the obstruction. The suture of the duodenum was smooth and thin.⁴¹

CASE XIII. Male, age thirty-five, of alcoholic habit. Upon going to work was attacked by sudden abdominal pain and vomiting; pain and nausea continued, though vomiting ceased. Thirty hours later the patient lay with hollow eyes, alternately extending and drawing up his legs as paroxysms of pain came on. Nothing had passed by anus. There was tympanites except for dulness in right iliac region, where pressure was painful. No tumor could be made out. Temperature 37.9° C. (100° F.) pulse 104 and small. Operation by Brissaud, fifty-one hours after the attack, December 14, 1893. An incision was made over

the appendix, giving vent to a great quantity of fecal matter. The appendix was not seen; drainage. Death in a few hours. Autopsy: General peritonitis, and a fusiform collection of pus from the liver to the right iliac region. There was perforation of an ulcer in the anterior wall of the duodenum, just below the pylorus.⁴²

CASE XIV. Male. After a debauch the patient was attacked with a sharp pain in the right side of the abdomen. Forty-eight hours later there was general tympanites, fulness over a tumor in the right iliac region and collapse. Operation in fifty-three hours as for appendicitis. From the incision pus and milky fluid escaped in large amounts. Irrigation and drainage. Death. Autopsy showed a perforated duodenal ulcer, the sac about the cecum containing much of the milk and food which had been taken during illness.⁴³

CASE XV. Male, age twenty. Slight indigestion. While at the theatre a sudden attack of severe pain in the epigastrium with tenderness; no vomiting; passage of flatus; slight tympanites. Temperature 96°, pulse 100. On the second day greenish vomiting, becoming fecaloid; obstipation; rapidly increasing tympanites; tenderness in the cecal region. Diagnosis of appendicitis. Operation in about sixty hours. Gas without odor, thin, purulent fluid, and lymph in peritoneal cavity. Perforation not found; intestines washed; abdomen closed. Death in twenty-four hours. Perforation anterior aspect of first portion of duodenum.⁴⁴

CASE XVI. Male, age twenty-three. An attack of sudden pain, vomiting and obstipation three years previously. An acute attack of pain and vomiting lasting five days. There were two movements of the bowels in this period. When seen on the sixth day, there was marked tympanites and a very rapid pulse, not much tenderness, and pain in the cecal region. Diagnosis of appendicitis. An incision about one hundred and five hours after attack allowed odorless gas and thin pus to escape. The intestinal coils were covered with lymph, and greatly distended. An incision into the jejunum permitted several pints of fluid to escape. Perforation not found. Abdomen washed and drained. Death in twenty-two hours. Autopsy: There was a small perforation of the anterior wall of the duodenum, one-half inch below the pylorus. At the same distance, there was in the posterior wall the scar of a healed ulcer.⁴⁵

CASE XVII. Male, age twenty-eight, hard drinker. Sudden abdominal pain accompanied by vomiting. Two days later admitted to hospital with general abdominal distention and tenderness, but no loss of liver dulness. Temperature 103°, respiration 20, pulse 120. On third day a liberal median incision revealed a general peritonitis, with a small amount of fluid; cause not found. Rapid irrigation and drainage. Death three days after operation. Autopsy showed a sharply defined ulcer in the the third part of the duodenum, in its posterior wall. The ulcer had for its base the pancreas, whose tissues were necrotic and infiltrated with pus. The suppuration had extended as far as the jejunum, and had there entered the general peritoneal cavity.⁴⁶

CASE XVIII. Male, age thirty-five, a hard drinker, with a history of a similar attack thirteen years previously. For a few days there was a severe abdominal pain accompanied by vomiting. Was admitted to the hospital with very great general tenderness, no distention, and a temperature of 102°. The symptoms improved until the fourth day after admission, and then signs of a rapidly spreading peritonitis were manifest. Diagnosis of appendicitis. Incision made on the fourth day over the appendix showed that organ to be normal. There was a general peritonitis and a large quantity of odorless fluid in the abdomen. Drainage. Death in a few hours. Autopsy showed a perforation in the superior wall of the first portion of the duodenum just beyond the pylorus. The gut

³⁸ Lockwood: *Lancet*, 1894, ii, p. 968.

³⁹ *Loc. cit.*

⁴⁰ Eve: *Lancet*, 1894, ii, p. 1891.

⁴¹ Dean: *Medical Society Transactions*, 1894, vol. xvii, p. 305.

⁴² Collin: *Thèse de Paris*, L'Ulcère simple du duodenum.

⁴³ Bryant: *Medical Record*, 1895, vol. xlvii, p. 25.

⁴⁴ Shield: *Lancet*, 1895, i, p. 1170.

⁴⁵ *Loc. cit.*

⁴⁶ Bolton: *Medical Record*, 1900, vol. lvii, p. 494.

was adherent to the liver by recent fibrin. There was also the scar of an old healed ulcer.⁴⁷

CASE XIX. Male, age fifty-six. Long history of gastritis and diarrhea and sometimes of blood. Acute attack of pain, four hours after dinner; constant vomiting; collapse. The usual lavage failed to give relief and the water did not return readily. Morphine administered; passage of gas per anum. The next day symptoms disappeared then returned with vigor. Stool after enema. The second day there was again a remission and again a relapse toward night. Dulness and pain most marked in the right iliac fossa. Pulse 112, temperature 38.2°. The third day still iliac tumefaction; marked sepsis; pulse 160. Operation sixty-six hours after attack. Incision over appendix, which was thought to be the origin of the disease, allowed the escape of three pints of reddish virulent fluid with fibrin masses. The peritonitis appeared limited, and it was decided best not to break up the adhesions to find the perforation. Douche and drainage. Death nine hours after operation. Autopsy: An ulcer just below the pylorus occupied two-thirds of the circumference of the duodenum, the anterior wall being not involved. The perforation was on the postero-external surface.⁴⁸

CASE XX. Male, thirty-three. No previous gastric trouble. Sudden colicky pain in right hypochondrium; collapse; no defecation nor passage of wind. Following day, tympanites; liver dulness absent; temperature 100° F., pulse 122, respiration 38. Operation in twenty-five hours. Incision median line; purulofibrinous peritonitis; gas and fluid from duodenal region; perforation sutured by two rows of stitches; intestines cleaned by moist gauze; no drainage. Recovery after bronchitis; primary union of wound. Patient seen four years later, in good health.⁴⁹

CASE XXI. Male, thirty-five, a hard drinker. Sudden severe abdominal pain, without vomiting. Admitted to the hospital eight hours later with a tense abdominal wall and tenderness over the gall-bladder. The pulse was 90, and there was no fever. Later the temperature rose, distention with obliteration of the liver dulness developed. Diagnosis of appendicitis. Operation in twenty hours. Incision over appendix, which was normal. A well-marked general peritonitis was present, but the patient's condition prevented further search. Death in twenty-four hours. Autopsy showed a perforation of the duodenum in the posterior wall one and one-fourth inches from the pylorus, and a second non-perforating ulcer lower down.⁵⁰

CASE XXII. Male, age fifty-two. Attack of acute pain in epigastrium with obstipation and tympanites six years previously. Recovery in six weeks. More or less pain since. Acute attack of severe pain about pylorus, later extending downward and backward. Absolute obstipation; tympanites slight on second day and increasing; vomiting on third day of moderate character; temperature 100° to 100.5°. Diagnosis of appendicitis. Operation on fourth day. Intestines distended and covered with lymph; no pus. Perforation of duodenum into general peritoneal cavity found and closed. Cavity douched with hot water; gauze drain. Thirst and brownish vomiting; rapidly rising temperature. Death on third day after operation. No autopsy.⁵¹

CASE XXIII. Male. Sudden epigastric pain while at work, followed by vomiting, tympanites, and loss of liver dulness. Operation in about thirty hours. Perforation in anterior wall of first portion found and sutured. Gas and yellowish fluid in peritoneal cavity. Flushing with hot water; drainage for twenty-four hours. During convalescence return of symptoms necessitated a second laparotomy. Only adhesions of liver to diaphragm. A needle thrust through eighth intercostal space into these drew a

drop of pus. A mural abscess formed later which probably caused the above recurrence of symptoms. Recovery.⁵²

CASE XXIV. Male, age fifty, who for ten or fifteen years had pain after meals, with vomiting and bloody stools. Last hemorrhage seven months before entrance to hospital. Emaciated and anemic on entrance; stools black; diagnosis of ulcer ventriculi. Two days later sudden pain in right hypochondrium, with retracted abdomen. Temperature 100°, pulse rate normal. The signs of peritonitis with feelings of distention increasing, laparotomy was performed twelve hours after the attack. A long incision made above umbilicus with cross cut to the left and right; stomach and duodenum examined and fluid like coffee grounds squeezed from its posterior region by pressure, but no perforation could be made out. Duodenum, stomach and colon were sutured together to protect the general peritoneal cavity. Cavity irrigated and wiped and drained at epigastrium and through pelvis. Recovery. Six months later in good condition, as far as duodenal ulcer went. Still had chronic gastritis. Death in eight months from operation for suppurative peritonitis. Autopsy: A new perforation in the posterior wall at the beginning of the second portion of the duodenum.⁵³

CASE XXV. Male, age twenty-four years, with no gastric trouble. After a large dinner he felt indisposed for a few minutes. The next morning he rose at six in usual good health and ate his customary breakfast. At the last mouthful of a glass of white wine, he felt a sudden most severe pain and lay down in bed. There was vomiting of food, and afterward incessant vomiting of bile. He described the pain as "not like a general colic, but always in one point here," indicating a spot on the left, midway between the umbilicus and ensiform. A physician diagnosed volvulus, and tried by enemata and massage to relieve pain. In five hours vomiting ceased and the pain subsided somewhat and was referred to the lower abdomen. No fecal matter nor gas passed the anus. There was no tympanites nor difficulty in passing water. Sixteen hours after the attack he was admitted to the hospital. The abdomen was retracted and board-like, the pain was less and vomiting had ceased. There was costal respiration, and appearance of the face indicated severe abdominal trouble, the nose pinched, the eyes sunken, the hands clammy and the patient in a half stupor. Diagnosis was thought to lie between appendicitis and duodenal perforation. Nineteen hours after the attack an incision was made in the median line from the pubis to above the umbilicus. The abdomen contained non-feculent fluid, and there were light adhesions on the intestinal coils. Appendix normal; no intestinal lesion; pelvis normal. Incision prolonged upward and stomach searched; gas found escaping from under liver, and perforation near pylorus on anterior surface of duodenum sutured. Abdomen wiped and drained from site of duodenum. Several saline injections, amounting to 4,200 cubic centimetres in all. Death in twenty hours from peritonitis; suture tight.⁵⁴

CASE XXVI. Male, age twenty-six. Health perfect, never any gastric symptoms. Two hours after his usual light breakfast, while making a slight effort to open a sack, the patient experienced an intense pain in the left side of his abdomen. He was taken almost at once to a hospital. Diagnosis of appendicitis; treatment by ice and opium. Following day a feeble pulse, without fever; abdomen distending; tenderness in left iliac fossa. On second day vomiting set in, becoming bloody and bilious. About fifty-six hours after the attack, Sebileau made an incision as for appendicitis, permitting the escape of non-feculent fluid, like bouillon. The appendix was normal. The patient was already collapsed, and nothing further was done, except to drain with gauze and give a saline injection. Death after incessant vomiting in thirty hours. Autopsy: Abdomen contained fluid. There was general peritonitis; per-

⁴⁷ Bolton: Medical Record, 1900, vol. lvii, p. 494.

⁴⁸ Festal: Jour. de Méd. de Bordeaux, 1885, vol. xxv, p. 49.

⁴⁹ Herzogel, 1895, quoted by Pagenstecher: Deut. Zeit. f. Chir., 1899, vol. liii, p. 557.

⁵⁰ Bolton: Medical Record, 1900, vol. lvii, p. 494; also in previous article on perforating ulcer by Weir and Foote, Medical News, 1896.

⁵¹ Warren: Boston Medical and Surgical Journal, 1896, vol. cxxiv, p. 460.

⁵² Dunn: British Medical Journal, 1896, i, p. 846.

⁵³ Landerer and Glucksmann: Mitt. Grenzgebiet. Med. und Chir., 1896, vol. 1, pp. 168 and 738.

⁵⁴ Banzet and Lardennois: Bull. Soc. Anat., Paris, 1897, vol. lxxii, p. 479.

foration in the anterior wall of the duodenum 1 centimetre from the pylorus.⁵⁵

CASE XXVII. Male. Attack of sudden pain like lead colic. Incision from the ensiform downward. There was food under the liver, and a perforation was found in the first part of the duodenum. Suture. Death in twelve hours.⁵⁶

CASE XXVIII. Male, policeman, of alcoholic habit and history of gastric attack. While on duty the patient had a sudden attack of pain which made him writhe in agony. His bowels had moved a short time before. When seen soon after the abdomen was retracted, as hard as a board, excessively tender, especially under the ribs and in the right flank. Diagnosis of hepatic colic. Compresses were applied and morphine administered. The following day he felt better. An injection resulted in a large stool. Milk and viely were administered. There was no fever and not much pain, but the abdomen was still retracted. Thirty hours after the attack vomiting set in, soon becoming bilious. The abdomen swelled and the patient was taken to a hospital. Diagnosis: Appendicitis, intestinal obstruction or volvulus. Abdomen opened forty-eight hours after the attack. Nothing but general peritonitis discovered. Dienlafoy, operator. Death in one hour. Autopsy showed a perforation of the duodenum in the anterior wall just below the pylorus.⁵⁷

CASE XXIX. Female, age twenty-five, servant, giving a history of gastric trouble with vomiting, but never of blood. An increase of gastric pain, with general tenderness and abdominal swelling, was followed four days later by marked distention. Palpation showed the greatest tenderness to be in the cecal region. There was no fever. A needle thrust into the right iliac fossa brought out gas and an odorless fluid, containing flakes of fibrin. An incision was made over the appendix, which was congested. There was general peritonitis. Death in four days from the operation. Autopsy showed pus in the pelvis and about duodenum, in the lower wall of which, close to the pylorus, there was a perforated ulcer. A second ulcer was situated in the posterior wall.⁵⁸

CASE XXX. Female, thirty-four, servant, with a history of gastric troubles for twenty years, with frequent vomiting of blood; last attack one week before admission to the hospital, the vomiting being followed by bloody stools. Pulse 84, regular, strong; rectal temperature 98.6°. Maximum pain midway between ensiform and umbilicus to the right of the median line. Ice bag on abdomen, nothing but ice by mouth. Next day pain involved the whole right side; was relieved by morphine, but recurred with vomiting, a small pulse of 106, and cold sweat. More morphine was given. Two hours later the pulse was 130, there was tenderness all over the abdomen, and edema in the epigastrium. Diagnosis: Gastric ulcer. Laparotomy two days after admission to the hospital, thought by the operator to be "at least fifteen hours after perforation" through the left rectus above the umbilicus; gas and fluid escaped; no adhesions; general peritonitis. Perforation at pylorus, thought to be in the lesser curvature, sutured. Abundant irrigation; gauze drainage; 700 cubic centimetres saline injected. Death twenty-four hours after operation. Autopsy: Perforation in the superior wall of the duodenum near the pylorus. The suture was perfect.⁵⁹

CASE XXXI. Female, age fifty-four years, with history of indigestion, no bloody vomiting. A sudden attack of pain and vomiting, not of blood, followed by a large bloody stool and several small ones of a tarry character. Was followed eighteen days later by a second attack. There was tenderness and resistance to the right of the median line above the umbilicus; no fever. Laxatives and enemata relieved the abdomen of gas and fecal matter and the area of resistance became a well-defined tumor. Nine days after the last attack an incision was made through the

right rectus muscle, and in separating the abdominal wall from the viscera several small abscesses were opened, and through one of these gas and gastric contents escaped. Perforation readily found and closed. It was at the pylorus and thought to be in the stomach. The gall-bladder was opened and eight stones removed. Most of the omentum excised. Iodoform gauze drains were inserted. Death in five weeks. Autopsy showed that the abdominal condition was perfect. Death was due to pulmonary thrombosis infarction, from saphenous thrombosis. The sutured ulcer had healed. Two others in the duodenum had not perforated.⁶⁰

CASE XXXII. Male, age thirty-seven, shoemaker, with nausea and vomiting and indigestion, more or less for years. One morning he awoke feeling perfectly well. On sitting up in bed he was seized by a terrible pain in the umbilicus and to the right side lasting several hours, and followed by vomiting. Enemata resulted in several small stools. The next day he was taken twenty-five miles in a sleigh to the hospital, where he arrived with respiration 26°, pulse 140, temperature 102.5°, but free from pain while at rest; tenderness in left iliac fossa, and in the right hypochondrium, and over right rectus muscle. Stomach and bowels washed out. Diagnosis of duodenal ulcer or appendicitis. Sixty hours after the attack an incision was made in the median line, mostly below the umbilicus. Fluid and gas and fibrin escaping mostly from above, the cut was extended upward and the right rectus was cut across. A perforation into which the index finger passed was found in the anterior superior wall of the duodenum near the pylorus. It was sutured and the cavity washed out with water at a temperature of about 45° C., wiped out and drained in both loins as well as about duodenum and liver. Compresses wrung out of hot saline were placed in the wound which was left open. The pulse and temperature gradually rose, and in spite of 1,150 cubic centimetres of salt solution injected into a vein, the patient died in twenty-six hours after operation. Autopsy: Fibrous peritonitis without fluid. The suture was firm. There was an abscess between the stomach and colon.⁶¹

CASE XXXIII. Male, age forty-six. While lifting a heavy weight, he felt something snap, and immediately afterward there was intense pain (locality not given), which soon spread to the whole abdomen. Four days later he entered the hospital, not having passed gas or fecal matter per anum. There was no localized pain, but pressure was everywhere painful; no tumor nor fluctuation. The patient had not vomited, but had a hicough; pulse irregular, 110; temperature 99°. A diagnosis of intestinal obstruction was made and castor oil was given in small doses every hour. The next day there was great prostration and choreic movements. Five days after the attack the abdomen was opened by a median incision from pubis to ensiform, with a cross cut through the right rectus muscle. There was general peritonitis with pus and membranes all over, but especially in the pelvis. At the pylorus on the superior surface was a large perforation, which was sewed with difficulty, and the abdomen flushed and closed. Death two hours after the operation.⁶²

CASE XXXIV. Female, age thirty, with a history of indigestion and some epigastric pains. While eating breakfast she was seized with a terrible pain in the epigastrium and left the restaurant for a seat in the park close by. She was taken at once to a hospital. In six hours the pain was general and vomiting set in. The following morning she was worse, without stools or passage of gas, and scanty urine. The condition grew rapidly worse, with rapid pulse, subnormal temperature, tympanites and loss of liver dulness. A diagnosis of perforation, probably of the stomach, was followed by operation, twenty-eight hours after the attack. Incision above the umbilicus gave escape to gas and a quart of bile and purulent fluid. Stomach and biliary tract normal, and perforation found in the right side of the second portion of the duodenum. Open-

⁵⁵ Lardennois: Bull. Soc. Anat., Paris, 1897, vol. lxxii, p. 46.

⁵⁶ Soligeux: Bull. Soc. Anat., Paris, 1897, vol. lxxi, p. 72.

⁵⁷ Beausse: Jour. de Méd. de Paris, 1897, vol. ix, p. 146.

⁵⁸ Lennander: Mitt. Grenzgeb. Med. und Chir., 1898, vol. iv.

⁵⁹ Loc. cit.

⁶⁰ Lennander: Mitt. Grenzgeb. Med. und Chir., 1898, vol. iv.

⁶¹ Loc. cit.

⁶² Schwarz (Rochard, operator): Bull. et Mem. de la Soc. de Chir., 1898, p. 3.

ing sutured and abdomen closed over a rubber drain to duodenum. Death in fourteen hours. Autopsy: Perforation a little below and to the right of the opening of the common duct explained why the bile flowed so freely into the abdomen. The closure was perfect. There was a second ulcer a little below the first which had not perforated.⁶³

CASE XXXV. Male, age twenty-three, a soldier, with a history of numerous sprees before he entered the army. During a march he took a cup of coffee, and almost immediately he was overcome by pain in the epigastrium and right hypochondrium, streaming into the right shoulder. He was nauseated but did not vomit. There was tenderness and muscular contraction on pressure, especially on the right side. An enema produced a normal defecation. The pain spread over the whole upper part of the abdomen, accompanied with a certain amount of distention, constant vomiting of greenish fluid and a partial disappearance of the liver dulness. Incision above the umbilicus forty-eight hours after the attack. General peritonitis. Intestine overhauled, then liver examined. Bubbling at its base led to the discovery of the duodenal perforation in the posterosuperior wall of the first portion of the duodenum. The right rectus was divided to give room for suturing, but the stitches would not hold, and the perforation, of a size to admit the little finger, was walled off from the peritoneal cavity by omentum sutured above and below it. Death in thirty-six hours of general peritonitis. There were no other lesions found at autopsy.⁶⁴

CASE XXXVI. Male, age twenty-two. Always perfectly healthy. An acute attack of intense pain and vomiting three hours after supper; pain referred to the umbilicus and right side. On the following morning, temperature was 101°, pulse 120, respiration 42; moderate tympanites; lower edge of liver dulness 2 inches above the costal margin; tenderness most marked in the epigastrium and on the right side of abdomen. Diagnosis of peritonitis, probably due to appendicitis. Operation fifteen hours after the onset of attack. Incision over appendix. General seropurulent peritonitis. Appendix appeared normal but was excised. A second incision above umbilicus revealed after careful search a one-fourth-inch opening in the anterior wall of the first portion of the duodenum, close to the hepatic ligament. It was in the centre of an indurated area, and on account of its deep situation, no excision was made. Suture, and cleansing of the peritoneum with gauze. Closure of abdomen over iodoform gauze drain. Recovery with severe illness.⁶⁵

CASE XXXVII. Male, age thirty-eight, with history of attacks of intense pain in the epigastrium three or four hours after meals, without nausea or vomiting. While in usual good health, suffered an acute attack of violent pain in epigastrium with collapse. He recovered somewhat and then grew gradually worse, with vomiting on the third day; no movement of the bowels for a week before the attack. On the third day temperature 100°, pulse 99, respiration 30; face drawn; abdomen distended with gas; dull in flanks; liver dulness absent. Operation about seventy-two hours after onset of acute symptoms. Through an incision in the median line, much gas and thin greenish-yellow purulent fluid escaped, with flakes of lymph; appendix normal. A search over the intestine showed the perforation to be in the anterior wall of the duodenum near the pylorus. It was sutured and the abdomen swabbed out. The operation lasted two and one-half hours. Afterwards one quart of saline solution was injected into the basilic vein. Death in eight hours. The peritoneal cavity was dry, except six ounces of pus between the diaphragm and liver. The suture was tight and adhesions had already formed around it.⁶⁶

CASE XXXVIII. Male, age thirty, with a history of dyspepsia. While stooping to draw off his boots, the patient suffered a severe pain in his stomach which stretched

him out. The following day an enema was without result. The abdomen was swollen and painful, the pain being all about the umbilicus, the urine scanty and the pulse 120. About twenty-seven hours after the accident an incision was made in the median line at the umbilicus. The intestinal coils were distended and red. A mass of fecal matter seemed to clog the lumen, and was pushed along for a couple of yards. There was a suspicious yellow fluid in the peritoneal cavity, and pus in the pelvis. The appendix was normal. The abdomen was flushed with boric-acid solution and closed. The vomiting ceased, gas and a great quantity of feces passed and the abdomen became soft. Five days later the patient was attacked with dyspnea and double pneumonia developed. Death in nine days after the operation. There were numerous pus foci in the abdomen, and a perforation of the duodenum partly shut in by adhesions.⁶⁷

CASE XXXIX. Female, age seventeen, and fairly healthy; had rarely suffered from indigestion. One week before perforation occurred there had been indefinite pain in the abdomen for which she consulted a physician, who feared a beginning attack of appendicitis. About three hours after eating a hearty supper, she was seized with a violent pain above the umbilicus. Prostration followed, with rapid pulse, subnormal temperature, vomiting and rigid abdominal muscles. Infusion of saline solution and stimulants failing to improve the patient's condition, operation was performed twelve hours after the beginning of the attack. Incision as for appendicitis; appendix and pelvic organs normal, as was the small intestine. In the upper part of the abdomen there was a good deal of lymph and greenish fluid. The perforation of the duodenum was in the anterior wall of its third portion and was about the size of a goose quill, and surrounded for about an inch an indurated area. Fluid was freely escaping. Direct sutures would not hold, so a purse string was inserted, and afterward other peritoneal sutures. In this way the opening was firmly closed. Lymph and fluid were wiped away and the abdomen flushed with a great quantity of hot saline solution. Numerous gauze drains were inserted. Convalescence was slow, as it was a long time before the suppurating tracts, where the drains had lain for a week, had healed, but the patient ultimately recovered completely.⁶⁸

CASE XL. Male, age thirty. Sudden pain in abdomen, followed by shock and toxic symptoms. Operation thirty-six hours later as for appendicitis. Perforation found in first portion of duodenum. No blood nor food in peritoneal cavity. Death in a few hours.⁶⁹

CASE XLI. Male, age forty. Seized with pain while at work, followed by shock and toxic symptoms and great tympanites. Operation in twenty hours. Perforation found in first portion of duodenum, no blood nor food having escaped. Death in a few hours.⁷⁰

CASE XLII. Male, age thirty-eight. Supposed pulmonary abscess was opened and a large quantity of pus escaped. Two weeks later an abscess formed in groin and was opened. Later the abdomen was opened for appendicitis and a quart of creamy pus containing streptococci escaped. Death followed. Autopsy showed two ulcers near pyloric ring, one in the duodenum, the base of which had healed over, and one in the stomach—perforated. There were numerous pus pockets in the abdomen, one in the head of the pancreas being the original one apparently.⁷¹

CASE XLIII. Male, age twenty-nine. Alcoholic. Three years morning vomiting. Following a long spree he felt umbilical pain and vomited and had a chill. The next day the abdomen was moderately distended and rigid. Diagnosis of general peritonitis from appendicitis. Operation one to two days after attack. About one quart of fluid and fibrin escaped. Appendix amputated. Death in thirty hours. Autopsy revealed perforation in superior anterior surface of duodenum near pylorus.⁷²

⁶³ Rouvier: Bull. et Mem. de la Soc. de Chir., 1899, p. 17.

⁶⁴ Taylor: North Carolina Medical Journal, 1899, vol. xliii, p. 109.

⁶⁵ Erdmann: Medical Record, 1899, vol. lv, p. 477.

⁶⁶ Loc. cit.

⁶⁷ Brooks: Medical Record, 1899, vol. lvi, p. 943.

⁷² Brooks (Le Bontillier, operator): Loc. cit., p. 944.

⁶³ Schwartz (Guinard, operator): Bull. et Mem. de la Soc. de Chir., 1898, p. 3.

⁶⁴ Schwartz (Sieur, operator): Loc. cit.

⁶⁵ Wanaach: Arch. f. klin. Chir., 1898, vol. lvi, p. 425.

⁶⁶ Whipple: British Medical Journal, 1898, vol. ii, p. 1429.

CASE XLIV. Male, age thirty. History of gastric disturbance; no hematemesis. Sudden severe epigastric pain, with chill, fever and repeated vomiting and great prostration. No blood by mouth or rectum. Gradually increasing distention and tenderness. Four days later, April 30, 1900, he entered the New York Hospital, the abdomen generally swelled, but not presenting any special points of tenderness or dulness. Liver dulness absent. Patient had a double hernia, and in the right hernial sac intestine was to be felt. Temperature 104°, pulse 140. Median incision with umbilicus in centre. Nothing abnormal found at the internal rings or about the cecum. From a one-fourth-inch perforation in the anterosuperior wall of the duodenum close to the pylorus, brandy and water was found escaping. Closed with a double row of sutures; thorough washing of intestines and cavity; saline transfusion of 75 ounces, etc. Death in a few hours. Operator, Weir. Case not previously reported.

CASE XLV. Male, age twenty-seven, always healthy, but a steady drinker. Had colicky pain for four days, above umbilicus on the right side. Bowels moved daily and he kept on working. Then sudden severe pain 3 inches above the navel, and a little to right of median line; chill; no nausea. Nine hours later pulse 80, respiration 20, temperature 101.5°. March 28, 1899, abdomen opened ten hours after sudden pain, along right semilunar line above and below umbilicus; bile-stained fluid escaped; appendix examined as a matter of precaution and found normal. Incision extended upward to ribs. Perforation of duodenum, anterior surface, descending portion, big enough to admit 26 French sound, through which bile and intestinal contents were escaping. All organs in vicinity showed signs of irritation and so were washed with saline while opening was closed by pad. Suture of perforation; repeated flushing of peritoneal cavity without evisceration and wiping with dry gauze; gauze drain to ulcer; wound elsewhere closed. No shock. Patient fed by rectum for forty-eight hours. Temperature following day 101° F., and infection of skin stitches, which were removed. Recovery otherwise uneventful and perfect.⁷³

CASE XLVI. Female, age twenty-five. Sudden attack of umbilical pain, rigor and slight vomiting. On following day pain at pylorus and blood passed per rectum. Temperature then and later 101° F. or less. Attack gradually subsided, but in two weeks a similar slighter attack occurred. Later a fluctuating tumor in region of gall-bladder, gradually increasing in size until it occupied the whole right upper quadrant of abdomen. It was crossed by resonant colon; elsewhere dull on percussion. Diagnosis: Hydronephrosis. Through lumbar incision a quart or more of clear amber odorless fluid drawn off. Cyst reached from liver to iliac crest, and backward to spine. Kidney not felt. Stuffed with gauze, which next day was soaked with sour fluid. On third day food noticed in dressing. Patient developed acute bronchitis and died on fifth day. Autopsy showed duodenal perforation 3.5 inches from pylorus forming this retroperitoneal cyst below right kidney and reaching behind duodenum as far as pancreas.⁷⁴

CASE XLVII. No history given. Incision from ensiform cartilage to pubis. Ulcer found at back of the duodenum and with difficulty stitched. Patient collapsed and abdominal wound hastily closed. Death from hemorrhage from a vessel in the abdominal wound.⁷⁵

CASE XLVIII. Male. Patient neurasthenic and little attention was paid to his statement that he had great pain. Operation on the fifth day, when liver dulness was entirely obscured. Gas had escaped from the perforation, but no fecal matter, and the ulcer was therefore sutured and the abdominal wound closed without drainage. Death on the third day from infection leading from the site of perforation to the pelvis. Suture firm. The operator thought that pelvic drainage might have saved this patient.⁷⁶

CASE XLIX. Male, age fifty-two. Epigastric pain of

three days' duration was followed by violent exacerbation. No vomiting. Six hours later the abdomen was tense, rigid, almost motionless, with complete absence of liver dulness in the line of the nipples. A diagnosis of perforated duodenal ulcer was made and operation decided upon. Ten hours after the attack an incision was made through the right rectus and a clean cut perforation was found at the junction of the first and second portions of the duodenum. There was intestinal injection but no well-marked peritonitis. The perforation was closed with two rows of sutures, the intestines were brought out and washed with sterile water. A gauze slip was passed to the site of ulceration and the cavity of the abdomen was otherwise closed. Recovery uneventful. The gauze plug was removed on the second day, and the bowels moved on the third day.⁷⁷

CASE L. Male, age twenty. Seven months previously an attack of epigastric pain and vomiting lasting two weeks. Sudden severe pain in the right side of the abdomen, accompanied by vomiting. A few hours later the tenderness was greatest over the appendix. Temperature 102°, respiration 48, pulse 118. Diagnosis of appendicitis. Twenty hours after the attack an incision over the appendix allowed the escape of a quantity of odorless gas and fluid. On account of feeble condition further operative attempt abandoned. Death in twenty-four hours. Autopsy showed a perforation in the duodenum, anterior wall, just beyond the pylorus.⁷⁸

CASE LI. Male, age forty-five, a moderate drinker. Four years previously a similar attack. While in perfect health was seized with severe pain in the right side of the abdomen, referred to the iliac region. A few hours later the abdominal wall was tense, without distention or loss of liver dulness; tenderness over the appendix; temperature 100°, respiration 32, pulse 104. Diagnosis of appendicitis. Thirty-two hours after the attack an incision over the appendix evacuated considerable turbid serum. The appendix was normal. The peritonitis was most marked on the right side, and was followed up the colon to the hepatic region, but no cause for it could be found. The whole abdomen was flushed and drains were placed in the duodenal region and in the pelvis. Death in seven days. Autopsy showed a general exudative peritonitis, without free fluid. In the duodenum, anterior wall, just below the pylorus, were a perforated ulcer and the scar of a healed one.⁷⁹

Original Article.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

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SINCE the amount and character of food required for the preservation of health and vigor is influenced not only by climate but also, to a certain degree, by body weight, age, race, custom of living and other varying factors, it will be premised at the outset that the army above referred to is composed only of white troops, preferably drawn from the same regions and recruited under the same physical requirements as are the military forces of the United States. It is fur-

* This essay was unanimously awarded the prize of \$100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

⁷⁷ Perkins and Wallace: *Lancet*, 1900, i, p. 458.

⁷⁸ Bolton: *Medical Record*, 1900, vol. lvii, p. 494.

⁷⁹ *Loc. cit.*

⁷³ Johnson: *American Surgery*, 1899, vol. xxx, p. 634.

⁷⁴ Wright and Bury: *Lancet*, 1899, ii, p. 215.

⁷⁵ Elliot: *Boston Medical and Surgical Journal*, 1900, vol. cxlii, p. 41.

⁷⁶ *Loc. cit.*, p. 42.

ther assumed that the present United States Army ration, as established by law, will form the most satisfactory basis for the supply of food to troops of the above character, under any conditions of climate, since it contains only such nutrient articles as are commonly included in the diet of the civil classes from which the American soldier is ordinarily drawn, and to the ready assimilation of which his system is accustomed through the influence of heredity as well as personal habit. There are, then, two questions to be answered: Is the present army ration, considered as a whole, adapted to the needs of the United States soldier serving in the tropics? And if not, why not? These points having been determined, the remedy for existing defect can readily be deduced.

To the first question common experience returns an unqualified negative, best embodied in the words of the Court of Inquiry appointed to investigate the character of the food issued to troops during the war with Spain. This Court reported as follows: "As to the effects of the food supply, having regard to sufficiency and quality, it seems to be clearly established that the army ration as supplied, without modification, to the troops serving in the West Indies, was by no means well adapted for use in a tropical climate. If this be true, the unfitness of the ration should have manifested itself by its failure to keep the troops, who subsisted upon it, in the best possible condition for service in hot climates. This, in the opinion of the Court, is fully established in evidence."

The formulation of a reply to the second question involves, as a fundamental principle, a brief consideration of the physiology of hot climates — the determination of such alterations of body function as may result from the climatic and environmental conditions obtaining in the tropics. It implies, also, the appreciation and comparison of the dietaries ordinarily used, under varying conditions of climate, by human beings of the military class in civil life; a general review of all facts based upon practical experience with the phenomena of nutrition, especially in low latitudes, and, finally, a study of the existing army ration with reference to its modification for the tropics according to such principles as may appear to have been fairly established.

I. THE PHYSIOLOGY OF HOT CLIMATES.

The body temperature in the tropics is appreciably elevated above the normal in new arrivals. Rattray,¹ in his investigations upon this point, obtained the following results:

Hour of day.	Temperate climate, near England. Temperature 65°F. Average of 10 days.	Tropics generally. Average of 51 days.	Equator, temperature 84°F. Average of 7 days.
9 A. M.	98.1°	98.51°	98.5°
3 P. M.	98.3°	99.00°	99.5°
9 P. M.	98.5°	98.47°	99.1°
Average	98.3°	98.66°	99.02°

Maurel² found an increase of body heat in individuals recently arrived in the West Indies ranging from .5° to .9° F., and Jousset³ noted an average increase among the whites in Senegal of even greater degree. Fayer⁴ states that among European residents in Bengal the bodily temperature is .41° F. higher than the average of healthy persons in Eng-

land. Internal heat in temperate climates is readily lost by radiation and contact with the external air, by the heating of inspired air, by exhalation of moisture in the breath and by cutaneous evaporation. In the tropics the difference between internal and external temperature is always very slight, and it may frequently happen that for considerable periods the heat of the surrounding atmosphere may even exceed that of the body. Further, the high degree of humidity ordinarily present in the tropics opposes evaporation of moisture. It therefore happens, through these changed conditions, that, instead of dissipating heat, the vital forces must frequently neutralize heat reception in order to keep the bodily temperature down to normal. This produces an alteration in metabolism and throws additional work on the kidneys and liver; for an excess of nutritive material, which in temperate climates would be oxidized in the production of heat, requires here to be merely excreted.

A loss of body weight occurs in hot countries, and the same is commonly observed in summer in the temperate zone. Rattray⁵ noted that with an average temperature of 80° F. the loss of weight among a body of marines averaged eleven pounds per man during the period of one year. The decrease was greater when salt provisions were given and the air loaded with moisture, the loss of weight under hard labor being greater and more rapid. In the dry season 44 per cent. and in the wet season 76 per cent. of the individuals observed lost in weight. Rattray concluded that this effect was due to the destructive influence of prolonged heat upon the cellular elements of the organism, together with imperfect oxygenation. Adipose tissue, as a non-conductor, is undoubtedly potent in conserving internal heat and diminishing the effect of outside low temperature. In cold regions the proportion of fat in the organism is much greater than in warm climates, where the storing up of fats in human tissue is rare, and even the artificial fattening of animals is accomplished with the greatest difficulty. In cold climates, on the contrary, considerable deposition of fatty material is the rule. The animal flesh of the far north, as seal, bear and walrus meat, is notoriously rich in fats; while the chief protection of the whale against the cold of the polar seas is the thick layer of blubber in which the muscular structure is enveloped. Viewed from this standpoint, the decrease of body fat which occurs in the tropics may be looked upon as one of the most important processes by which the adaptation of the organism to changed conditions of temperature is accomplished. The discomfort of the obese during warm weather is proverbial, and hence loss of weight, provided the decrease is strictly limited to the adipose tissue alone, may be considered as wholly beneficial. It is obvious that any excess of foods, which in temperate climates is largely converted into systemic fat, cannot be devoted to this purpose in the tropics with either facility or advantage.

Tropical heat directly lowers the pulse rate; Rattray¹ finding that the average rate of cardiac action in the tropics was less by two and one-half beats per minute than in the temperate zone. This reduction of the pulse rate is doubtless related to the diminished respiratory function; and further observation proves what the latter fact suggests, namely, that in the tropics the pulse is diminished not only in frequency but in force. The low arterial tension always noted in

hot climates is a direct result of loss of fluid through increased perspiration favored by a relaxed state of the capillaries. The following results were obtained by him :

Hour.	Number of Observations.	Tropics.				Temperate zone.
		Lowest.	Highest.	Range.	Average.	Average.
9 A. M.	53	66	112	46	86.4	91.7
3 P. M.	53	68	108	42	88.8	88.1
9 P. M.	49	73	110	37	87.3	90.5
Average.					87.5	90.1

The first effect of tropical heat is to increase the respiratory capacity. This has been shown by Rattray¹ by means of the spirometer; his observations being subsequently confirmed by others. The results obtained by this investigator are as follows :

Average capacity of chest in cubic inches.	Temperate Zone near England, at Sea. June. Thermometer 65° F. Hygrometer 2.5° F.	Tropics, at Sea. July. Thermometer 78° F. Hygrometer 4° F.	Tropics, at Sea. August. Thermometer 85° F. Hygrometer 4° F.	Temperate Zone near England, at Sea. September. Thermometer 65° F. Hygrometer 1.5° F.	Temperate Zone. England, February. Thermometer 40° F. Hygrometer 3° F.
	256.083	280.75	287.416	260.25	253.727

The average gain in lung capacity noted by him for the tropics was 31.4163 cubic inches; the percentage of gain, as compared with the temperate zone, amounting to 12.24 per cent. Cullimore,⁶ however, states that this increase in vital capacity does not continue, and that, after a period ranging from six months to two years, it falls below the level for Europe.

Closely allied to the foregoing is the influence of tropical climate on the frequency of respiration. In heated air chambers the rate of respiration becomes less in man, and Vierordt and Ludwig⁷ long since found that the same results were obtained in animals subjected to great heat. Rattray's¹ observations as to the comparative frequency of respirations in hot and cool climates are as follows :

		Average Temperature (Shade) F.	Highest Number of Respirations.	Lowest Number of Respirations.	Average Number of Respirations.
Temperate Zone.	England in summer. (June.)	62°	18	13.5	15.63
	England in winter. (February.)	42.25°	17.5	15	16.5
Tropics.	Equatorial doldrums, outward voyage.	78.74°	14.5	11	12.74
	Equatorial doldrums, return voyage.	78.6°	15	12	13.74

Not only is the respiratory action markedly decreased in hot climates, but the greater quantity of air inspired in the tropics does not make up for the diminished number of respirations in supplying the same amount of oxygen to the blood as in cold climates.

Using the above data, Rattray¹ calculated the deficiency in the oxygen inspired in the tropics as follows :

Climate.	Cubic inches in each Inspiration.	Number of Inspirations per minute.	Cubic inches respired.
England.	15	17	255
Tropics.	16.836	14	235.704

Difference in favor of a temperate climate, 19,296 cubic inches, or 7.567 per cent.

"This decrease of 7.567 per cent. in the quantity of air respired daily diminishes the quantity of carbon which the lungs in ordinary circumstances can throw off in the tropics by .7567 ounces; 10 ounces being taken as the average amount thrown off in temperate climates will give 9.243 ounces as the amount for the tropics. But as tropical air contains less oxygen for a given bulk than air of colder latitudes, through the expansion of gases by heat, the decarbonizing capabilities of the lungs in tropical latitudes will evidently be still further curtailed and the amount of carbon they can throw off considerably decreased. Air increases by $\frac{1}{480}$ its volume for every degree of heat, and the difference between the temperatures in which these experiments were carried on being 18° F. (65° and 83° F.), if we reduce the amount inspired in the tropics by $\frac{1}{480}$ part, this will give its equivalent bulk in the temperate zone, thus :

$$\frac{235.704}{1 + \frac{1}{480} \times 18} = \frac{255.704}{1.0375} = 227.1846 \text{ cubic inches,}$$

which is equal to a decrease of 8.5194 cubic inches, or 3.614 per cent. Then 255 minus 227.1846 cubic inches gives 27.8154 cubic inches per minute, or 1,668.924 cubic inches per hour, or 40,054.176 cubic inches per day = 10.907 per cent. as the grand total difference in favor of a temperate climate, after deducting the real increase in volume and correcting for expansion of heat. By again reducing the 9.243 ounces of carbon by 3.614 per cent., or .33409 ounces, we get 8.909 ounces as the total amount which the lungs throw off in the tropics, the difference between the tropical and extra-tropical qualities being 1.1028 ounces."

The explanation of the variation in respiratory capacity noted above would appear to be due to the fact that there is no actual increase for the tropics in the size of the chest and enclosed lungs, but only an alteration in the relative proportion of blood and air contained in the latter. The bulk of the lungs remaining the same in the tropics as in cold latitudes, or being, as shown by Parkes,⁸ even somewhat diminished from their comparative abeyance as excreting and heat-generating organs, the blood, diverted to the functionally excited and congested skin and liver, permits the ingress of a larger quantity of air into the pulmonary air cells.

With the diminution in arterial tension there is, also, at each respiratory movement, less blood forced through the lungs than in the temperate climate, and this diminution necessarily implies a lessened value to the respiratory act. Further, the air in the tropics is rarefied, and pressure, which rules the conditions of pulmonary endosmosis, is diminished; hence it may be that the air reaches the pulmonary alveoles under pressure insufficient to properly force it into the pulmonary capillaries. The deficiency of oxygen taken

into the organism in the tropics, as influenced by the above factors, may therefore be considered to be made up as follows:

Lessened value of respiratory act . . .	7.5 per cent.
Rarefaction of air	3.6 "
Diminished cardiac action	3.0 "
Deficient air pressure	2.2 "
Total	16.3 "

It is undoubtedly true that less oxygen is required in the high temperatures of the tropics. Through decreased exertion a smaller amount is required for the metamorphosis of waste particles, and, where lessened necessity and desire for food diminish the ingesta, less is required for direct combination with the nutritive elements in the production of energy. It is probable, however, that there is a somewhat increased absorption of oxygen in hot climates by the functionally excited skin, which may, to a slight degree, act vicariously as a respiratory organ and so lessen the amount required by the lungs. Furthermore, the skin is aided in relieving the lungs in the decarbonizing process by the functionally excited liver and kidneys, which eliminate carbon in forms which do not require much oxygen for their formation, namely, as bile and uric acid.

The amount of sweat is greatly increased. Fonsagrives⁹ states that it is double the average amount secreted in Europe, often amounting to four or five pounds in the twenty-four hours. The amount of solids eliminated, however, is not proportionately increased. In addition, the secretion of sebum is more abundant than in temperate climates. In this connection Hill¹⁰ says: "The skin of the negro is a much more active organ of depuration than that of the white. It not merely exhales a larger proportion of aqueous fluid and carbonic acid from the blood, but it also elaborates a more unctuous secretion, which, by its abundance and sensible properties, evidently possesses a considerable influence in counteracting the heating effects of the sun's rays upon the body and in carrying off the superabundant caloric."

As a result of increased perspiration there is a diminished excretion of urine, the reduction amounting to about one-third of the usual amount. Mourson¹¹ states that the diminution in the output of urea usually amounts to about 10 or 15 per cent. According to Eijkman,¹² Europeans who had been in Java from two to six months excreted 14.8 grammes of nitrogen daily, or .226 gramme per kilogramme of body weight, while those who had lived in the tropics one and one-half to fifteen years excreted 12.802 grammes of nitrogen daily, or .193 gramme per kilogramme of body weight. Such decrease in eliminatory function on the part of the kidneys, according to Moore,¹³ is followed by increased secretory action of the liver, whereby some effete matter is passed into the intestines with the bile. But increased liver action is accompanied by congestion, and congestion frequently by hepatic deposit and degeneration, with impairment of function.

Through the loss of fluid resulting from increased perspiration, there is a diminution in the secretion of saliva, mucus, gastric and pancreatic juices and bile. As a consequence, also, there is dryness of the throat and fauces and exaggeration of thirst, weakness of appetite, impaired digestion, gastric fulness after eating and habitual constipation; these, according to Nielly,¹⁴ being the digestive phenomena constantly observed in the tropics.

(To be continued.)

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TYPHOID FEVER AND THE WATER SUPPLY OF PARIS.

A RECENT number of the *Journal d'Hygiène* (April 12th) contains a statement relative to the recent increase of typhoid fever in Paris which is worthy of more than a passing notice. The circumstances call to mind the conditions which prevailed at Chicago a few months previous to the opening of the Columbian Exposition of 1893, when typhoid fever had increased to such an extent as to create grave apprehensions as to the opening of the Exposition. The cause was attributed to the serious pollution of the city water supply. One of the results of the investigation was the immediate introduction of spring water from Wisconsin, by a pipe line leading to the Exposition grounds.

The water supply of Paris is variable, both in quality and in the great number of its sources. These are chiefly the river Vanne, the Marne, the Seine (at several points above and below the city), the Dhuis, the Ourcq, certain artesian wells, and the aqueduct of Arcueil, the total supply amounting to about fifty to sixty gallons per capita per day for all purposes. The household consumption is regulated by a stop-cock provided with a metre to about twelve gallons per capita daily, the annual price being one hundred and twenty francs per year per cubic metre daily, or twenty francs per year for one hundred and twenty litres' daily consumption (about \$23 per year for two hundred and sixty-five gallons' daily use, or \$4.00 per year for thirty gallons daily). The water pipes for household use are mostly of lead.

In recent years further measures have been taken to introduce the waters of two other sources, the rivers Loing and Lunain, and these works are nearly if not quite completed. Other improvements were the introduction of the Anderson process for purifying the water, together with filtration of the water through sand of that part of the supply which is pumped from the Seine at Cloisy, and from the Marne at Neuilly and at Nogent, all of which are a few miles above the city. It still remains true that several suburban villages below the city, Asnières, Bois de Colombes,

and others are compelled to use *l'eau de Seine naturelle*, after being polluted with the sewage of the city and of many riparian industries.¹

The general introduction of water closets in Paris since 1887 has largely increased the consumption of water for household use.

The relation of typhoid fever to the public water supply of the city has recently been a subject of lively discussion at the meetings of the Municipal Council, and also of the Council of Public Health and Safety of the Department of the Seine. The increase of typhoid fever in Paris during the past year has been very noticeable, the cases and mortality from this cause reported since last July indicating a genuine epidemic, and already exceeding the figures quoted for the epidemic of 1892. The following are the figures for the past five years :

Years.	Cases.	Deaths.
1895	1,389	271
1896	1,243	262
1897	1,342	249
1898	1,288	251
1899	4,329	802

The cases reported in the first ten weeks of 1899 were 398, while those of the corresponding period of 1900 were 891 (ten weeks ending March 11th).

Drs. Martin, Thoinot, Miquel and Navarre, all physicians of the highest authority, agree in attributing this increase to the pollution of the water of the Vanne. The latter, in speaking before the Municipal Council, produced a report from Dr. Moreau confirming the same statement by the fact that the town of Sens has been suffering from a coincident epidemic of typhoid, that place also being supplied with Vanne water. It was also noticed that those who did not use this water at Sens were exempt from the disease.

Dr. Martin, well known as the chief medical inspector, says: "The discovery of specific bacilli by Dr. Miquel at the point where the Vanne enters Paris, and by Dr. Vaillard at other points in the system leaves no doubt that the germs of typhoid fever were carried by this water. Samples taken July 31st, August 3d and 26th, by different authorities presented the characteristics of the bacillus of Eberth."

Shortly before the session of the Municipal Council, Dr. Thoinot, who had been dismissed from his position as secretary of the French Consulting Committee of Public Hygiene, at the suggestion of Dr. Monod, Director of Public Health, for having dared to publish an opinion on this question, addressed the following note to Dr. Navarre :

Dr. Vaillard, chief of the laboratory of Val-de-Grace, has personally confirmed the discovery of the bacillus of Eberth, during the progress of the epidemic of 1900. He has added that all the characteristics, even that of agglutination, are present.

(Signed.) DR. THOINOT.

It now appears that the opinions of these eminent experts are discredited by the Prefect of the Seine, who says in so many words, "The water of the Vanne

must not be incriminated in any way. It is extremely pure. No one has found in it the bacillus of Eberth."

The *Journal* continues in a similar manner, "We all know that the Prefect of the Seine is an administrator of the highest ability, but nothing has induced us to believe up to the present time that he has a profound knowledge of bacteriology, and even such knowledge of the subject as he had was wanting before the question was introduced at the meetings of the Municipal Council. He deemed it sufficient, however, to have a few minutes' conversation with some learned expert (whose name we regret to say he has withheld) to become forthwith, in his own opinion, 'very well posted upon the subject.'"

The Prefect, in his address to the Council, quoted in the *Journal*, appears to have made a studied attempt to mystify his hearers with the time-worn story of the subtle distinctions between the bacillus of Eberth and the various Eberthiform bacilli, and seeks to excite ridicule of the charges which have been made. He closes as follows: "If any one asks me the question, have you identified the typhoid bacillus in the water of the Vanne? I can only answer, No!"

But the plain, undeniable fact remains that typhoid fever during the past few months has prevailed to an extent unequalled for many years, and is specially prevalent in those quarters which are supplied with the Vanne water. In February, 1900, in the sixteenth *arrondissement* of Paris (supplied only by the water of the Avre) there was not a single case of typhoid fever; in the seventeenth, mostly supplied by the same water, there were only 13 cases, but in the sixth, seventh and eleventh *arrondissements*, supplied with the Vanne water, there were respectively 48, 23 and 59 cases.

In the discussions before the Council of Public Health and Safety, there appears to have been no doubt manifested that the water of the Vanne was the cause of the epidemic. Dr. LeRoy des Barres, in addressing that body, proposed that measures be immediately taken to secure the freedom of all the sources of water supply of Paris from pollution. The *Journal* commends the administration in its efforts to protect the new sources of supply (the Loing and Lunau) from harm, but criticises its inaction in regard to other existing sources. In the entire discussion much attention appears to have been given to bacterial examination, but there is almost entire absence of information upon the subject of investigation as to the source of contamination and the necessary measures taken for its prevention. Germ-hunting is an important part of sanitary work, but it is a far more important duty, the source having once been located with a fair degree of certainty, to seek the *fons et origo mali* at the fountain head and to remove or prevent it there. It is futile to waste time in discussing the minute distinctions of Eberthiform bacilli when the facts as shown by noted experts point to the pollution of a certain water supply, and if the duty of preventing the pollution or of providing some other means of protecting

¹ Revue d'Hygiène, vol. xix, p. 12.

the inhabitants of districts supplied is not properly attended to, the municipal authorities need not be surprised if the Exposition receipts do not fulfil their expectations.

SIR ANDREW DOUGLAS MACLAGAN.

IN the recent death of Sir Andrew Douglas MacLagan, Edinburgh adds another name to the list of its distinguished deceased physicians. He was a notable man in a coterie of which William Rutherford, John Struthers, John Duncan and Grainger Stewart were members, and leaves a gap in the social as well as in the studious life of his community which it will be hard to fill. A highly appreciative obituary notice has recently appeared in the *British Medical Journal*, which admirably sums up his character and varied attainments. He was one of a distinguished family, members of which have risen to the front rank in other walks of life as well as in medicine. Both Sir Douglas and his father had the unique honor of having been president of both the Royal College of Physicians and of Surgeons of Edinburgh. His life was a varied one, devoted largely to teaching in the subjects of toxicology and medical jurisprudence. "He was characterized by dignity of bearing, courtesy, courtliness, culture and a wide and minute knowledge of his subject. He constantly urged the importance, the gravity and the responsibility of medical men in giving evidence as skilled witnesses in medico-legal cases. He was himself an ideal skilled witness." But he was much more than a physician devoted to his calling and its advancement. He had many talents of a literary sort as well. As his obituary notice puts it, he was a poet and a man of great and genial humor. He had a playful fancy and a pretty wit. His lays, or poems, or songs, were possessed of high artistic merit. He was a regular attendant at the annual dinners of the New Town Dispensary, and a number of his songs were composed and first sung in his capacity of poet laureate of that Dispensary, at the old Douglas Hotel in St. Andrew Square. At one of the last of those dinners he was fittingly crowned with a wreath of laurel, a tribute which Sir Douglas valued most highly. He was a thorough sportsman. Even in his latter years, a friend writes, any one who has "been out" with him must have been struck by the light and athletic figure of the old man as he would "blithely tread the bloomin' heather," as his own song has it. A member of many learned societies and the recipient of university honors, he died finally full of years, taking with him the respect and esteem of his contemporaries and students, a representative of the type we are pleased to call gentlemen of the old school. At his funeral, by his own request, while the mourners were taking their places in the church, the pipe-major of the Third Battalion, Gordon Highlanders, played on the bagpipes the plaintive wails of the "Flowers of the Forest," and "Lovat's Lament."

DR. BOWDITCH'S ADDRESS.

WITH the general ferment now going on in education in general, and medical education in particular, repeated expressions of opinion on the part of those who may speak with authority are timely and welcome. We would direct the attention of our readers to Dr. Henry P. Bowditch's address, as President of the Congress of American Physicians and Surgeons, printed in another part of this issue. Dr. Bowditch speaks from a ripe experience, extending through the many vicissitudes of medical teaching which have marked the past twenty years. His remarks are, therefore, deserving of, and no doubt will receive, the closest attention. We are glad to note a perfectly definite desire to do full justice to the methods of the past, while recognizing the fact that some of those methods have outgrown their usefulness. This, coupled with the conviction that medical knowledge has passed beyond the limits of a rigidly prescribed course, gives to the address a judical quality which is at times lacking in the first enthusiasm of reform. We have of late frequently found occasion to express ourselves as advocates of change in the form of instruction. This is inevitable and wholly desirable, but this should never lead us into the error of supposing that the acquisition of knowledge is entirely dependent upon the manner of its presentation. The teacher is, after all, the essential element in the success of any system. We look, therefore, to a readjustment of the form of instruction which will lead to the development of the teacher as well as of the student. We have no doubt that the didactic lecture will be dignified rather than degraded by the attacks made against it, and the observation and independence of the student cultivated at the same time, through individual work in a general atmosphere of greater freedom in the choice of his studies. These seem to be some of the lessons which Dr. Bowditch's address teaches.

MEDICAL NOTES.

PLAGUE.— Conditions in Hawaii are much improved. A report under date of April 9th gives one new and fatal case. In general, the prospects are encouraging. No general crusade had been begun against the rats, which are supposed to spread the plague, but a bounty of twenty-five cents had been offered, and a professional rat catcher appointed by the Board of Health.

"UNIVERSITY MEDICAL MAGAZINE."— It is announced that the *University Medical Magazine* will be hereafter published by the University of Pennsylvania, under the editorship of Charles H. Frazier, M.D. Owing to the necessity for reorganization the new volume begins with the March issue. In appearance and matter this issue is most satisfactory.

TWO CENTENARIANS.— Mrs. Mary Blizard, of Macdonald's Point, N. B., who enjoyed the distinction

of being the oldest woman in Canada, has died. She was born in 1792. Richard Monahan, aged one hundred years and twenty days, has recently died at Staten Island. He served under Andrew Jackson in one of the Indian wars.

YELLOW FEVER IN MEXICO.—Yellow fever is reported at Vera Cruz, at Tehuantepec and at Salina Cruz. Unusually hot weather and imperfect sanitation appear to be responsible.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, May 2, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 69, scarlatina 50, measles 171, typhoid fever 6, small-pox 1.

THE MASSACHUSETTS MEDICAL SOCIETY PROTECTED.—A decision of importance has recently been handed down by Judge Barker in the Supreme Court, relative to a petition brought by a physician against the censors of the Massachusetts Medical Society, to compel them to examine him, with a view to giving him a certificate of the Society, approving him as a physician. On the broad question of the case the Court ruled that it was his opinion that the corporation owed no public duties such as contended for by the petitioner, and was not required to give a certificate of qualification to a physician. The Court said it would report the case to the full bench if counsel should agree upon a report.

BOSTON SOCIETY OF MEDICAL SCIENCES.—At a meeting of the Society held April 24th, Dr. Franklin Dexter reported further observations on the morphology of the digestive tract of the cat. Dr. Wm. Hallock Park, of New York, a guest of the Society, read two communications on "Some Experiments in the Nature of Antitoxins and the Elimination from Antitoxic Sera of their Deleterious Substances," and on "Behavior in Ice and River Water of Twenty Cultures of Typhoid Bacilli, Derived from Various Sources." Dr. E. W. Taylor demonstrated a series of preparations illustrative of diffuse degeneration of the spinal cord.

DEATH OF HARRIET P. DAME.—Harriet P. Dame, of Concord, N. H., has recently died at the age of eighty-five. She is well known for her services as a nurse during the whole period of the Civil War. She was on one occasion captured by the Confederate troops, but was given a pass through the lines in consideration of her services to both the Confederate and Union soldiers. Since the war, Miss Dame has been honored by various military organizations. From 1867 to 1895, she was employed as clerk in the Treasury Department at Washington.

FIFTIETH ANNIVERSARY OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.—The annual meeting, commemorating the fiftieth anniversary of the Suffolk District Medical Society, was held at the Massachusetts Institute of Technology, Saturday, April 28th. Brief remarks, chiefly of a reminiscent character, per-

taining to the formation, history and objects of the Society were made by Drs. B. Joy Jeffries, A. T. Cabot, J. C. White, D. W. Cheever, J. C. Warren, Geo. B. Shattuck and H. L. Burrell.

AID FOR THE VINCENT HOSPITAL.—The recent theatricals in aid of the Vincent Hospital have resulted in raising an amount of money sufficient to replenish liberally its somewhat depleted treasury. Last year 120 patients were treated—wage-earning women and girls—of whom 70 were free, and the others paid only small sums for treatment and care, according to their ability. The hospital has only a small invested fund, and its entire income met only about three-sevenths of its expenses last year.

MEETING OF CARNEY HOSPITAL PHYSICIANS.—The twelfth annual reunion of the Carney Hospital Alumni Association took place last week at the hospital. In the afternoon several operations were performed by surgeons of the hospital, and later the wards were inspected. At the annual business meeting the following named officers were elected: Dr. M. E. Keane, of Manchester, N. H., President; Dr. J. B. Hastings, Vice-President; Dr. May, Secretary and Treasurer.

A SCHOOL CLOSED IN WALTHAM, MASS.—It has been thought advisable to close temporarily St. Joseph's Parochial School in Waltham, on account of the prevalence of diphtheria in the town. This precautionary measure has been taken by the management of the school, and the Board of Health has taken action to disinfect the premises.

RIPLEY CLARK, M.D.—Dr. Ripley Clark, of Windsor, Vt., died April 23d. He was graduated at Dartmouth Medical College in 1846, and since 1861 has practised medicine in Windsor, until failing health obliged him to retire. He had been a member of the State Legislature, and was at one time president of the National Bank.

UNNECESSARY ALARM REGARDING SMALL-POX.—The case of small-pox recently reported from Worcester, supposed to have been contracted on the steamer *New England*, has proved on investigation not to be the disease. Other suspicious cases from the same source have also proved not to be small-pox.

A NEW STRENGTH RECORD.—H. F. Cochems, a student at the Harvard Law School, has recently broken his previous strength record of 1,761.4 points, as reckoned by intercollegiate test methods, by making a total of 1,809 points. This was done without systematic preliminary training.

NEW YORK.

NEW YORK'S WATER SUPPLY.—Controller Coler has made public a digest of the report on New York's water supply prepared by John A. Freeman, hydraulic engineer, who has been engaged in the study of the question since August last. While, with moderate and practicable restriction of waste, the Croton watershed, supplemented by the Bronx and Byram watersheds, can furnish a safe supply for Manhattan and

the Bronx for a few years to come, it is recommended that a source of additional supply be sought which will furnish at least 500,000,000 gallons per day. It appears most probable that an additional supply of 500,000,000 gallons per day, under the growth which is almost sure to come to Greater New York, would be exhausted in twenty years if use and waste go on increasing as they have for five years past. A supply of only 150,000,000 gallons, the utmost obtainable from either the Esopus Creek or the Ten Mile River alone, would probably be exhausted inside of fifteen years if it had to serve for all boroughs. It is therefore recommended that the investigation for new sources take a broader scope, looking further into the future than ten or fifteen years, and that a progressive line of extension and development for New York's water supply for a long period to come be now planned, much as has been done for the supply of the district around Boston. The sources of supply for the future are mentioned as the Upper Housatonic, combined with Ten Mile River, Long Island east of Massapequa, the watersheds east and west of the Hudson, the Ramapo River, and filtered water from the Hudson at Poughkeepsie. Water could also be taken from the Adirondacks at \$50 per million gallons, or, for a 400,000,000 gallon supply and over, at \$40. The placing of flashboards on the reservoir, for the purpose of increasing their storage capacity, is advocated as a precautionary measure.

STATE HOSPITAL FOR THE INSANE.—Governor Roosevelt has signed the Burnett Bill, relating to State hospitals for the insane in New York City and vicinity. By this bill are legislated out of office a number of physicians who have long been identified with the management of these institutions; namely, Dr. A. E. MacDonald, general superintendent of the hospital on Ward's Island, Dr. Elliott, medical superintendent of the hospital at Flatbush, Brooklyn, and Drs. O. M. Dewing and A. C. Everts, respectively general superintendent and medical superintendent of the hospital at King's Park, Long Island. Its enactment was urged by the State Commission in Lunacy, it is said, in the interest of economy, on the ground that it would save a considerable amount in salaries by abolishing unnecessary offices. In addition to abolishing these offices the new law divides the present Manhattan Hospital into three parts and the Long Island Hospital into two. That part of the former located on Ward's Island, consisting of two sections, for male and female patients respectively, is to be known as the Manhattan State Hospital for Ward's Island, and that part at Central Islip (the third section), as the Manhattan State Hospital at Central Islip. The two sections of the Long Island Hospital are to be known as the Long Island State Hospital at King's Park and the Long Island State Hospital at Flatbush.

THE MEDICAL TRAINING OF NATIVES.—On the occasion when Dr. Peck read his paper at one of the sectional meetings of the Ecumenical Missionary Con-

ference Dr. C. F. Harford-Battersky, Principal of Livingston College, London, acted as chairman and introduced the general subject, "The Medical Training of Natives; Whether Advisable; How and Where Should they be Trained?" All those who took part in the discussion were agreed as to the advisability of such training, but the general sentiment was in opposition to their being brought to Europe or America for instruction. Among the speakers were Drs. Edwin S. Fry, of the Edinburgh Medical College, who described his own work at Travancore, in Southwestern India; John C. Berry, of Worcester, Mass., who had for many years been stationed at Ksoto, Japan, where he established a training school for nurses; L. R. Scudder, of India; Avison, of Korea; J. B. Fearn, of Soo Chow, China, and G. D. Dowkontt, of New York. The last named referred to some Armenians who had received their medical education under the auspices of the American Medical Missionary Society, and who, instead of returning home, were now practising in the city of New York. The only speaker who favored the training of natives in American or European colleges was Dr. Moses C. White, of the Yale Medical School. The fact that in many countries dissection was not practicable made it all the more necessary, he thought, that they should be sent where they could have the advantage of the practical study of anatomy.

LEGISLATION REGARDING GARBAGE.—On April 25th the Governor signed the Barren Island Bill, compelling the removal of the garbage works located there, and the abatement of the alleged nuisance within one year. The bill, which is based on investigations made in this country and in Europe by Health Officer Doty, at the request of the Governor, also provides for the burning of the city refuse in crematories erected in different localities. The adoption of the measure was strongly urged by Dr. Doty as being in the interest of the public health, and also endorsed by experienced sanitarians. The strongest objection against the bill was on the score of increased expense to the city. There are mechanical and engineering experts, however, who claim that the cremation process, if given a fair trial, will prove more economical than the present reduction system now in use on Barren Island.

APHASIA AND PRESERVED CONSCIOUSNESS.—There is at present an interesting case of traumatic aphasia at the Harlem Hospital. The patient is an Italian, thirty-five years old, who on April 10th was shot in the left temple during a quarrel. At the hospital four ounces of brain matter were removed, but the ball could not be found; and, contrary to expectation, after a time he began to recover. During the past week it was accidentally discovered that he had been conscious almost from the first, although he had lost the power of speech. At the time of the operation and long afterwards he was supposed to be entirely unconscious, but he indicated that he had been aware of everything that was going on, although he experienced no pain. He is now able to repeat one

or two words at a time, but cannot apparently remember a sentence of four or five words.

VAGARIES OF A SOMNAMBULIST. — George Ritterbrand, a young somnambulist, whose habit of sleep-walking is said to have been due to deep grief over the death of his father, recently disappeared, and four days afterward walked into a police station-house declaring that he had lost all recollection of his identity. During this period he had kept an account of his wanderings, which were confined to Manhattan and Brooklyn, in a note-book. The writing was entirely different from his ordinary penmanship, and, though he was a graduate of the College of the City of New York, the spelling and construction were those of an illiterate person.

A LARGE VERDICT FOR PERSONAL INJURY. — A verdict for \$25,000 has been awarded in the Kings County Supreme Court to Dr. Walter B. Wellbrock, of Brooklyn, in his suit against the Long Island Railroad Company to recover \$100,000 for personal injuries. On Memorial Day, 1897, he was on a trolley coach which was run down by a train, and he was so severely injured that his life was despaired of. This was the second trial of the suit, the jury disagreeing in the first trial.

BEQUESTS TO HOSPITALS. — Charles P. Huntington, a wealthy sugar merchant, who died on April 20th, left \$20,000 each to Roosevelt Hospital and the New York Society for the Relief of the Ruptured and Crippled. By the will of Mrs. Cornelia Rhoades \$10,000 is bequeathed to the Society for the Relief of the Destitute Blind and \$1,000 to the New York Eye and Ear Infirmary.

ENOCH V. STODDARD, M.D., REAPPOINTED. — At the annual meeting of the State Board of Charities, held in Albany on April 12th, Dr. Enoch V. Stoddard, of Rochester, was elected vice-president for the sixth consecutive term.

THE DINNER TO DR. JACOBI. — Hon. Carl Schurz is to be the principal speaker at the dinner in honor of Dr. Abraham Jacobi in New York on May 5th.

ARMY NOTES.

SCHOOL OF INSTRUCTION FOR THE HOSPITAL CORPS. — Recent advices from Manila report the establishment at that place of a school of instruction for the hospital corps, similar in character to those now existing in this country at Washington and San Francisco. This school has accommodations for one hundred men. The instruction includes a period of fourteen weeks and embraces the subjects of first aid, minor surgery, pharmacy, elementary anatomy, physiology and hygiene, nursing and ward management, clerical work and regulations. Great attention is also given to bandaging and the handling and transportation of wounded. Instruction is also given in general cooking and in the preparation of light diet for the sick. The course of instruction is continuous and a

class is graduated at the end of each month, the men being sent to various commands and exchanged for uninstructed men. The value of these schools of instruction to the military service cannot be overestimated. While the period of instruction is necessarily brief, the men acquire a considerable knowledge of their future duties, physically profit by their drills, and are imbued at the outset of their service with ideas of soldierly smartness and discipline, which are material aids to military efficiency.

SESSIONS OF THE ARMY MEDICAL SCHOOL DISCONTINUED. — It is understood that the great need of medical men in the Philippines will prevent the re-establishment of sessions of the Army Medical School at the Army Medical Museum during the coming winter. The course of this school was calculated to supplement the training given by the medical colleges of the country and was of the greatest value in giving systematic instruction to young medical officers in various subjects, particularly military medicine, surgery and hygiene, and in organization and army regulations, which they otherwise learned only through long experience. It is much to be regretted that the needs of the service will not permit a resumption of the sessions of the school at the present time.

A BILL REGARDING THE RANK OF THE SURGEON-GENERAL. — A bill has recently been introduced in the House by a member of Congress from Georgia, giving the Surgeon-General of the Army the rank and pay of major-general. This is in line with the action taken some months ago by the Savannah Medical Society, urging the establishment of this grade as being warranted by the great responsibilities which now and in the future will continue to devolve upon the chief of the Army Medical Department.

APPOINTMENT OF LIEUT.-COL. A. A. WOODHULL. — Lieut.-Col. A. A. Woodhull, until recently Chief Surgeon in the Philippines, has been placed in charge of the Army Medical Museum and the library of the Surgeon-General's Office, Washington, D. C.

METEOROLOGICAL RECORD

For the week ending April 21st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'n'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...15	30.22	52	63	41	65	36	50	W.	N.	12	10	C.	C.	
M...16	30.44	53	64	42	60	43	52	S.W.	S.W.	7	13	C.	C.	
T...17	30.41	50	54	46	70	83	76	W.	S.	4	10	O.	O.	.06
W...18	30.11	56	61	52	88	90	89	S.W.	S.W.	22	18	R.	R.	.12
T...19	29.88	63	74	52	92	44	68	S.W.	N.W.	15	20	O.	C.	.42
F...20	30.12	58	70	47	79	54	66	N.W.	S.	15	10	C.	C.	
S...21	30.12	62	74	49	60	47	54	W.	S.W.	4	7	F.	O.	

* O., cloudy; C., clear; F., fair; G., fog; H., haze; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 21, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York . . .	3,654,564	1578	559	21.12	24.84	1.08	3.60	1.62
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	226	68	17.60	23.76	.88	3.52	.44
Baltimore . . .	506,389	245	70	12.30	23.78	—	2.05	.41
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	154	55	16.25	20.05	1.30	2.60	.65
Washington . . .	277,000	137	34	20.44	15.46	—	2.92	2.19
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	81	19	25.83	36.90	4.92	—	1.23
Nashville . . .	87,754	21	11	19.04	80.92	—	—	—
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	111,732	47	14	27.69	21.28	2.13	—	2.13
Fall River . . .	103,142	47	14	23.43	14.91	10.65	—	—
Cambridge . . .	92,520	30	9	20.00	13.33	—	3.33	—
Lowell . . .	90,114	34	8	14.70	14.70	—	—	—
New Bedford . . .	70,511	39	11	20.48	22.04	—	2.56	—
Lynn . . .	68,218	—	—	—	—	—	—	—
Somerville . . .	64,394	21	7	33.33	23.85	—	4.77	—
Lawrence . . .	59,072	21	6	9.54	19.08	—	4.77	—
Springfield . . .	58,266	31	2	6.46	22.61	3.23	—	—
Holyoke . . .	44,510	19	6	37.10	10.60	5.30	—	—
Brockton . . .	38,759	13	3	22.07	—	—	7.69	—
Salem . . .	37,723	10	6	—	40.00	—	—	—
Malden . . .	36,421	5	2	20.00	—	—	—	—
Chelsea . . .	34,235	17	6	35.28	—	—	23.52	—
Haverhill . . .	32,651	18	3	11.11	11.11	—	—	—
Gloucester . . .	31,426	8	2	12.50	—	—	—	—
Fitchburg . . .	30,523	10	5	40.00	10.00	—	10.00	—
Newton . . .	30,461	8	2	50.00	12.50	—	12.50	—
Taunton . . .	28,527	26	4	15.40	11.55	—	—	—
Everett . . .	28,102	8	2	12.50	—	—	—	—
Quincy . . .	24,573	5	—	20.00	—	—	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	5	1	—	—	—	—	—
North Adams . . .	21,583	7	2	28.56	28.56	—	—	—
Chicopee . . .	18,316	14	5	14.28	35.70	—	—	—
Medford . . .	17,190	4	—	50.00	—	—	—	—
Newburyport . . .	15,036	4	—	—	—	—	—	—
Melrose . . .	14,721	4	—	—	50.00	—	—	—

Deaths reported 2,909; under five years of age 940; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrosplinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 600, acute lung diseases 701, consumption 308, diphtheria and croup 90, diarrheal diseases 44, measles 40, whooping-cough 30, erysipelas 27, scarlet fever 25, typhoid fever 22.

From whooping-cough New York 14, Boston and Washington 3 each, Providence and Chelsea 2 each, Pittsburg, Nashville, Fall River, Cambridge, Springfield and Brockton 1 each. From erysipelas New York 20, Boston and Baltimore 2 each, Springfield 1. From scarlet fever New York 18, Boston 3, Pittsburg 2, Baltimore and Somerville 1 each. From typhoid fever Pittsburg 10, New York 3, Washington and Newton 2 each, Boston, Lowell, New Bedford, Holyoke and Fitchburg 1 each. From cerebrosplinal meningitis New York 10, Somerville 2, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 14th, the death-rate was 22.4. Deaths reported 4,998; acute diseases of the respiratory organs (London) 501, measles 182, whooping-cough 144, diphtheria 51, fever 38, diarrhea 33, scarlet fever 27, small-pox (Liverpool) 2.

The death-rates ranged from 15.6 in Burnley to 30.5 in Manchester: Birmingham 24.8, Bradford 19.5, Croydon 18.7, Gateshead 21.0, Hull 20.7, Leeds 23.9, Liverpool 28.5, London 21.0, Newcastle-on-Tyne 21.1, Nottingham 20.2, Portsmouth 18.2, Sheffield 27.2, Sunderland 16.6, Swansea 19.8, West Ham 15.8.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 28, 1900.

L. MORRIS, passed assistant surgeon, detached from the "Brooklyn" and ordered to the "Baltimore."
 J. STOUGHTON, passed assistant surgeon, detached from the "Bennington" and ordered to the "Castine."
 T. M. LIPPITT, assistant surgeon, detached from the "Baltimore" and ordered to the "Oregon."
 J. C. THOMPSON, assistant surgeon, detached from the "Castine" and ordered to the "Bennington."

A. G. GRUNWELL, assistant surgeon, detached from the "Yosemite" and ordered to the "Brooklyn."
 J. F. LEYS, passed assistant surgeon, detached from the "Essex" on reporting of relief, and ordered home and to wait orders.

C. H. DELANCY, assistant surgeon, detached from the "Amphitrite" and ordered to the "Essex."
 J. C. THOMPSON, assistant surgeon, will return to the United States by the "Bennington."

A. FARENHOLT, passed assistant surgeon, will return to the United States by the "Concord."

M. R. PIGOTT, passed assistant surgeon, detached from the Naval Academy and ordered to the "Chesapeake" same day.

K. OHNESORG, assistant surgeon, detached from the Naval Academy and ordered to the "Newport" same day.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 26, 1900.

GASSAWAY, J. M., surgeon. Leave of absence for five days from April 23, 1900, under the provisions of Par. 189, Regulations, M. H. S. April 23, 1900.

WERTENBAKER, C. P., passed assistant surgeon. Detailed to represent the Service at the meeting of the Association of Military Surgeons of the United States at New York, N. Y., May 31 to June 2, 1900. April 25, 1900.

STIMPSON, W. G., passed assistant surgeon. Granted leave of absence for ten days from April 28, 1900. April 25, 1900.

McMULLEN, JOHN, assistant surgeon. Granted leave of absence for three days. April 18, 1900. Granted four days' extension of leave of absence. April 24, 1900. Upon expiration of leave of absence to proceed to the Gulf Quarantine Station, Miss., and report to the medical officer in command for temporary duty. April 24, 1900.

GOLDBERGER, JOSEPH, assistant surgeon. Upon being relieved from duty at the Immigration Depot, New York, N. Y., to proceed to the Reedy Island Quarantine, Del., and report to the medical officer in command for duty and assignment to quarters. April 24, 1900.

EAGLESON, J. B., acting assistant surgeon. Granted leave of absence for three days from May 3, 1900. April 21, 1900.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for four days from April 23, 1900. April 20, 1900.

OLSEN, E. T., hospital steward. Upon being relieved from duty at Wilmington, N. C., to proceed to the Mullet Key Detention Camp, Fla., for duty. April 23, 1900.

CROWLEY, C. F., hospital steward. To proceed to Wilmington, N. C., and report to the medical officer in command for duty and assignment to quarters. April 23, 1900.

PROMOTIONS.

Passed Assistant Surgeons T. B. PERRY, R. M. WOODWARD and G. T. VAUGHAN, commissioned as surgeons. April 21, 1900.

APPOINTMENT.

CHARLES F. CROWLEY, of Nebraska, appointed junior hospital steward. April 21, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, May 7th, at 8 o'clock.

Dr. Wm. M. Conant will read a paper entitled "A Plea for the Fixation of the Kidney by the Anterior Abdominal Route." The subject will be discussed by Drs. Elliot, Munro, Richardson, Cabot, Warren, Watson, Thorndike, Cushing and others.

Dr. F. M. Briggs will show a case of "Contracting Scar of the Hand Remedied by a Flap from the Abdomen."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, May 9, 1900, at 8.15 o'clock.

Papers: "Report of Cases of Infection due to the Bacillus Aerogenes Capsulatus of Welch," by Paul Thorndike, M.D., assistant surgeon, Boston City Hospital, and Mr. Preston Kyes, of the Johns Hopkins Medical School.

"The Radical Cure of Hernia, with an Analysis of Ninety-eight Cases," by J. C. Warren, M.D.

F. G. BALCH, M.D., Secretary, 279 Clarendon Street.

BOOKS AND PAMPHLETS RECEIVED.

Bulletin of the American Academy of Medicine, April, 1900. Vol. IV, No. 6.

Report of the Kensington Hospital for Women (Non-sectarian) from October 10, 1898 to October 9, 1899. Philadelphia.

Original Articles.

ADAPTATION OF PATHOGENIC BACTERIA TO DIFFERENT SPECIES OF ANIMALS.*

BY THEODORE SMITH, M.D., BOSTON.

MEDICAL science and medical art are concerned chiefly with the phenomena of human disease. All that medical science desires to know is the series of causes or antecedents leading to any given disease, and the series of phenomena which unfolds itself within the body during disease. Medical art wishes to know where human ingenuity may enter to modify, suppress or eliminate portions of this series so as to interfere with the progress of the disease, and bring it to a standstill. By general consent, hygiene devotes itself to the external phenomena; pathology, to the internal.

In the carrying out of this program, a strict adherence to the subject has been found inadequate to gain the results aimed at. To learn even the simplest fact, recourse to animal experimentation has been necessary at every step. But this somewhat artificial procedure of inducing diseases in animals, to many of which they are naturally insusceptible, has not furnished adequate information, and the next step is the study of diseases natural to animal life. This step has become necessary, because in the attempt to analyze the series of events culminating in human disease many links of the series are buried out of sight, or else inaccessible to analysis, since, by universal agreement, experiment upon the human subject, except when immediate benefit to the subject is expected, is not only not permissible, but, as a rule, sterile of results under the conditions necessarily imposed. In the host of infectious diseases of animal life the submerged links of human pathology are often in full view or readily found by the ingenious explorer. Different diseases furnish different parts of the unknown elements we are looking for.

In the investigation of infectious diseases, the study of the most important link in the chain of their causation—the micro-organisms—is equalled only in importance by the study of the host into which they enter. This study of micro-organism and host necessitates at once the extension of our field beyond the exclusively human infections, if we wish to investigate the great facts of epidemiology, the rise and fall of virulence in the micro-organisms, and the correlative immunity of individuals and races. Thus far, a scarcity of accurate facts, which is due chiefly to the inherent difficulties of the subject, confronts us, and, in presenting the little that is at hand, I shall have to take a more or less speculative position and point out the problems, the pursuit of which is likely to bring back important information.

If we glance at the infectious diseases which we share with animal life, or in which the latter enters as a necessary factor, we find quite an array, readily divisible into groups:

(1) Diseases common to man and certain animals, and presumably transmissible from animals to man, and vice versa. (Bubonic plague, tuberculosis.)

(2) Diseases common to man and animals, but not known to be transmitted. (Actinomycosis, tetanus.)

(3) Diseases transmitted from animals to man, but

not as a rule communicated from man to man, owing to interfering conditions. (Anthrax, glanders, rabies, vaccinia, foot-and-mouth disease, meat poisoning, pituitacosis, possibly also infections due to pus bacteria.)

(4) Certain specific symbiotic relations requiring two hosts for the complete life-cycle of the micro-organisms. (Malaria, trichinosis, tapeworm infection.)

A small proportion of the infectious diseases of man and a large proportion of the infectious diseases of higher animals are transmissible, or at least inoculable, upon smaller animals, producing in them diseases having more or less constant characters. The range of infectiousness varies considerably and arbitrarily without any at present assignable reasons. Thus the rat, which is, generally speaking, quite resistant to infectious agents, is extremely sensitive to the bacillus of bubonic plague, while the guinea-pig, which is susceptible to a wide range of infectious agents, is much less sensitive to this bacillus than the rat. The tubercle bacillus, which counts among its victims such a large number of mammals and birds, is quite harmless to the gray mouse, even in large doses. Certain bacteria affecting mammalia have also the power to produce disease in birds. Among these are the tubercle bacillus, mouse septicemia (swine erysipelas) and rabbit septicemia (fowl cholera).

The range of infective power seems, to a certain extent, to coincide with the readiness with which the bacteria can be artificially cultivated on various substrata, or, in other words, with their degree of saprophytism. Thus, the plague bacillus, the colon derivatives, the rabbit septicemia group, and anthrax, are quite readily cultivated, and their range is very wide. On the other hand, those micro-organisms which are cultivated with considerable difficulty, or not at all, or which are not even known, have a limited range. For instance, the organisms of leprosy, syphilis, gonorrhoea and influenza do not attack animals; the same is true of the exanthemata of man, exclusive of variola and possibly scarlatina, and of certain diseases of unknown etiology in animals, among them contagious pleuropneumonia of cattle, and rinderpest. An important exception to this general statement is rabies, which produces disease in a considerable number of species. Many of these facts have been known for years, and are among the most familiar to bacteriology. The essence of such peculiar selective action has not yet been studied, and it may contain much that will elucidate the perplexing problems of natural and acquired immunity from disease. They seem to support, so far as they go, the recent contention of P. Baumgarten, that much of the natural resistance to specific infectious agents is, after all, due to the absence of a satisfactory soil.

The investigation of infectious diseases of animal life has brought before us another phenomenon, which is of considerable importance. Certain bacteria, causing disease among different species, have certain affinities which force us to classify them together, and which enable us at the same time to clearly separate them from other pathogenic groups. One of the most important of these groups consists of derivatives of the colon bacillus,¹ which produce epizootics among swine, guinea-pigs and field-mice: spermophiles, which have been found associated with disease in horses, cattle and certain birds: with pseudotuberculosis in certain other species, and to which the bacillus *icteroides* of Sanarelli, and perhaps some forms belong which pro-

* Read before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

duce disease in the human subject, and which have been variously classed as paracolonic bacilli and paratyphoid bacilli. Outbreaks of meat poisoning in European countries, characterized by gastro-intestinal disturbance, are most likely due to this group of organisms, which are introduced into the body in raw meat.² The typhoid bacillus is probably a more highly modified offshoot of this same stock. There is much minor variation among these derivatives, which is probably due to an adaptation to different animal hosts. We might say that the colon bacillus, or some ancestral form, possessed certain qualities favorable to parasitism, which have enabled it to become a prominent pathogenic power under the form of a number of varieties.

Another group of closely related bacteria—the group denominated by Hüppe “septicemia hemorrhagica”—is one which is capable of the same analysis. It appears as the cause of fowl cholera and swine plague; it produces epizootics among cattle, buffaloes, various kinds of game, rabbits and guinea-pigs. It occurs in various forms of bronchopneumonia in mammals and is a frequent parasite of the mucous membrane of the throat in cattle, swine, cats and dogs during health. In these respects as well as in others it is the analogue of the micrococcus of sputum septicemia and of croupous pneumonia in man. It appears endowed with widely different degrees of virulence, giving rise to various types of septic diseases after inoculation into rabbits. Wherever found, it is recognizable to the trained bacteriologist from certain traits which it has in common with other varieties of the same species. A certain plasticity in its functional character enables it to become a dangerous plague to animal life, but it seems to have little or no power to attack the human subject.

The tubercle bacillus furnishes still another illustration. The avian type has been recognized as a variety for some years. Similarly the tubercle bacillus of cattle has a certain uniform character which I have thus far not found in any culture from the human subject.

Among the more vulgar pathogenic bacteria the streptococci are found widely distributed, infesting a variety of domestic animals and appearing in many different kinds of lesions. The initial difference in the virulence of streptococci from different sources is now a well-established fact. The staphylococcus also exists in animals under varieties, several of which have been more carefully studied.

Two main facts thus stand out among the phenomena of bacterial adaptation: (1) The direct passage of infectious agents from animals to man and from one animal species to another; and (2) the adaptation of the same stock to different species leading to certain more or less profound modifications of this stock into recognizable varieties or races. An important problem arising from the second proposition is the extent to which such races are capable of vicarious infection of different hosts. To this we shall return later in some concrete problems.

Turning now to the experimental phase of bacteriology for light upon this matter, we find certain principles established and confirmed by numerous experiments. Since the days of Davarine it has been known that the passage of certain bacteria through a series of susceptible individuals of some one species markedly increased the virulence of the micro-organ-

ism. This increase manifested itself both by shortening the period of time between inoculation and death and by the successively decreasing dose necessary to produce the same fatal result. This has been demonstrated by Davarine for rabbit septicemia, by Pasteur for *rouget* and rabies, by Petruschky for streptococci, and by Voges and others for various animal infections. Considering the excessively minute doses which experiments have found sufficient to produce death in cases of certain organisms like streptococci and rabbit-septicemia bacilli, we might suppose that the virulence can be indefinitely increased; but this seems possible only for certain species of bacteria and certain animals. With others, notably rabies, a limit has been reached which marks a certain condition of equilibrium.

The word virulence, however, has its restrictions and it was found in due time that the increase in virulence referred to might or might not mean a general increase towards other species. In fact, this increase may be associated with decrease towards other species. This was first claimed by Pasteur with regard to the bacillus of *rouget*, or swine erysipelas. By passing the bacillus through pigeons he made it less virulent to pigs. By passing it through rabbits he made it more virulent to pigs. This has been in general denied by Voges³ recently, who states that the passage through one species reduces its virulence toward others and that to raise it toward pigs it must be passed through pigs themselves.

In the epizootic aphthæ (foot-and-mouth disease) of cattle and swine, whose etiology is still unknown, Löffler and Frosch⁴ found that the lymph of the vesicles representing the eruption became attenuated if passed through calves alone. When, however, swine were alternated with calves, the virus maintained its infectious power. Another virus of unknown morphologic character, rabies, was increased in power by Pasteur, by passages through rabbits for both them and dogs. The transmission of the virus through monkeys and dogs gradually diminished and eventually extinguished the transmissive power, while the passages through cats increased it.⁵

There is thus no general scheme that will fit the results of experimental studies upon the increase, decrease or fixation of the virulence of pathogenic organisms by passages through series of animals. Each organism or related group of organisms needs to be considered by itself before generalization may be attempted. Undoubtedly such passages produce certain more or less permanent changes in the physiologic character of micro-organisms, which may lead eventually to the races to which we have already referred as the products of nature's work.

In supporting our views upon experimental results solely, we should bear in mind that the latter are the outcome, in the main, of experiments upon small, usually quite susceptible animals. Work upon larger animals endowed with a considerable degree of resistance and approximating the human species in this respect, is meagrely represented, and in some instances it has led to results quite at variance with expectation. For example, in certain plagues prevailing among larger mammals, it has been found very difficult to infect healthy individuals even with large doses of the pathogenic agent under artificial cultivation. Anthrax serum, which was powerless to protect rabbits, readily protected sheep from the fatal dose subsequently injected.

In the continued flux and change of relationship between the micro-organisms and their hosts, which is made incredible by what has been stated, but which our limitations in time, space, and sense organs do not permit us to follow in nature, the problem that presents itself to human medicine is this: How far does nature utilize animals as a workshop for preparing bacteria to act in a pathogenic rôle upon the human race? I do not intend to present an answer to this question, but simply to point out the desirability of learning more of the micro-organisms parasitic upon diseased and healthy animals, which are closely associated with man either as beasts of burden, as food producers, as pets, or as unwelcome, though insistent, members of our household.

We have already seen that with reference to certain specific micro-organisms, peculiar relationships among species come to the front. There is evidently some physiologic relation between man and the rat, as disclosed by bubonic plague, between man and the horse, as revealed by the bacillus of glanders. Some writers believe in a relationship between man and certain domestic animals with reference to scarlatina. More general relationships between larger groups of animals are established by anthrax and rabies. If we go a step further into a less cultivated domain, we can readily think of other possible relationships between human disease and animals in which the causes of human disease may live without producing any recognizable disease. We can neither dispute nor affirm such relationship because we know comparatively little, if anything, of the micro-organisms which thrive, say, upon the mucous membrane of horses, cats, dogs, rats, mice and certain birds which enter so largely into the daily life of man, both young and old.

Some of you will perhaps remember the accounts of the stir produced in lay and medical circles in Paris by the peculiar epidemic of 1892, caused by sick parrots from South America. This single epidemic involved 49 persons, with 16 deaths. Though the bacteriology is not yet unravelled, the causal relation is clear. Leichtenstern,⁶ who has recently summed up the evidence concerning this new disease of psittacosis, gives some additional testimony from his own city, Cologne, which definitely implicates this household pet in the production of highly mortal family epidemics. Leichtenstern, in describing the peculiar atypical typhoid-like pneumonia found in this disease, emphasizes the fact that similar house epidemics of pneumonia of equal severity and atypical course have been not infrequently reported and have occurred in his own practice without the presence of parrots. The suggestion which comes to us in reading this is, why not look up other household pets? Are there affections among household animals, not pets, which are responsible? It is not necessary for me to continue these observations farther to show that in tracing the source of certain obscure diseases of man there is still a wide gap to be bridged over.

There is one other question which is more or less associated with the subject I have chosen, namely, the fluctuation in the virulence of pathogenic organisms and the bearing of this upon the appearance of infectious diseases in epidemic form. It is an old question to which I simply wish to add a thought. The commonly accepted view of the gradual self-limitation of epidemic diseases is the exhaustion of susceptible material. The recrudescence is similarly ascribed to

the reappearance of a young, susceptible generation. Thus the reappearance of the eastern plague after an interim of months is ascribed by one observer to the new generation of rats. But this explanation, though it may be true for many diseases, may not be true for all. We have seen that the passage through a series of individuals of the same species may lead to the attenuation and gradual extinction of the virus. If we indulge in a little speculation along teleologic lines we shall see that the attenuation of virus limited to one host is not an unreasonable hypothesis. We may assume that all parasitism tends toward a more or less harmless symbiosis. This tendency is for the good of both the host and the parasite directly concerned. If the latter promptly destroys the former, as in acute septicemias, not only the host perishes, but the parasite may, because of the sudden change of environment necessitated by the death of the host. If the organism is a perishable one like the pneumococcus or its animal equivalent, the rabbit-septicæmia bacillus, it may perish before reaching another individual.⁷ Hence we should expect the virulent type in this instance to thrive only temporarily and in densely crowded localities, in large herds or flocks. If, however, some arrangement can eventually be established tending to more mutually friendly, symbiotic relations, both organisms are in a sense the gainers. In the two organisms mentioned, I interpret this symbiotic relation as a parasitism of the mucous membrane of the upper air passages without any disturbance of health. The tendency of the diphtheria bacillus seems that way at present. This symbiosis probably leads to a loss of virulence, a weakening of the destructive powers toward the particular host in question.⁸

If the pathogenic bacteria have but one habitat — the one in which they produce a specific infectious disease — the probabilities are, I think, in favor of a gradual mitigation of the type of disease. This may be so slow that we, as individuals, cannot perceive it. A continuation of this process may eventually make the microbe of secondary importance which then acts only when other agencies prepare the way, as is probably the case with croupous pneumonia in man and various types of pneumonia in animals, or else the disease becomes greatly prolonged, as in leprosy, syphilis and tuberculosis, which are in reality mild types of parasitism when compared with the virulence of cholera or the plague. On the other hand, the bacteria may have another habitat in which they recruit their virulence. In this case we may expect the diseases to appear at times in epidemic form when transmission from individual to individual is possible. For the spore-producing bacilli of tetanus, anthrax, malignant edema and *Rauschbrand*, the normal habitat is probably the intestinal tract, fecal matter, the soil and decomposing material in association with other favoring bacteria. They are protected by the capacity for spore formation from the necessity of adaptation to a varying environment. For the sporeless and easily perishable bacteria I cannot conceive this habitat to be other than the human or animal body. In these various situations a virulence for other species is probably maintained owing to certain unknown physiologic relationships between the species, as already suggested.

I am inclined to think that the great specific energy of many disease germs was acquired in earlier geologic

ages, possibly in animals of very different type from those now living. But it is not improbable that the process of making pathogenic bacteria is going on now in the animal world, to be noticed only when these bacteria have been transported by some accident from their unseen habitat to species which happen to be susceptible. Then a disease appears, and we become cognizant of the disease germ. It is difficult to explain the incidence of certain animal diseases, especially the explosive septicemia, in any other way. Let us take a familiar organism to illustrate this hypothesis. It is difficult, for instance, to conceive the colon bacillus as acquiring pathogenic or invasive properties by a saprophytic life in the intestinal tract of man without at the same time inducing immunity in the race. It is not so difficult to conceive of colon bacilli living in such an environment in the intestinal tract of certain animals as to acquire at the same time pathogenic properties towards man and other animal species. In other words, the energy acquired by certain pathogenic bacteria may be gained under peculiar conditions and to discover these conditions, if still prevailing, is one of the problems of pathology and bacteriology. Viewed from this standpoint, micro-organisms causing acute disease are out of place or else endeavoring to create a new habitat. Disease itself is a temporary disturbance of relationship, largely accidental at first, but tending to become permanent as a form of parasitism. No better illustration of this statement is at hand than the Texas fever of cattle. In the South the micro-organism is a practically harmless symbiont of the blood. North of a certain line it produces a highly fatal disease in the same species, which endangers and may entirely interfere with the normal transmission of the blood parasite itself.

The difficulty encountered in making any brief statements upon the parasitism of bacteria and other low forms of life is very great and there is ample opportunity for self-contradiction. Perhaps the subject is best managed by some concrete illustrations.

I have already referred to the newest problem in our horizon, the bubonic plague. The German Commission⁹ has come to the conclusion that in the endemic focus of the Himalayas the rats, or perhaps other species of animals (*Arctomys*), preserve the infection sometimes for a number of years. Observations during the epidemic in the large cities have shown that direct infection from man to man is not very common in the hospitals. Again, some of the French observers have found that passage of the bacillus through rats is likely to fail after a time. The hypothesis that occurs to us as harmonizing these various statements is that the plague bacillus gains its maximum virulence for man in the rat, for the rat in man, and that both species may be necessary to maintain the disease in an epidemic form.

The second illustration I take from tuberculosis. Under the conditions prevailing at present in civilized society, there are two species the victims of this disease, man and cattle. Many other species are susceptible, but the conditions surrounding them or governing the disease in them do not favor any general diffusion. In cattle the tubercle bacillus is remarkably uniform in its character and highly virulent to certain small animals like the rabbit. In man there flourish many races of the bacillus as regards virulence among them; the maximum virulence of the bovine bacillus has been reported but once (Vagedes). What rela-

tion exists between the human and the bovine plague? Evidently not an indiscriminate one. Does the latter furnish the human race from time to time with bacilli of high potency to take the place of the attenuated forms that thrive saprophytically in the lungs? Or is the specific adaptation of the two forms such that any relationship worth consideration no longer exists? These are momentous questions, which present themselves not only in this disease but in others. They should receive careful attention from the human pathologist in studying the effects of the mingling of different races of the human family and of the different varieties of pathogenic organisms which they bring with them. Such varieties may lead to an increase in the virulence of strictly human diseases as observed in any one locality.

Within recent years much ridicule has been poured on the theories of Pettenkofer concerning the fluctuation of epidemics with season and locality—the unknown “y” and “z” of etiology. But the bacteriologists who have been the chief aggressors have left on all sides large gaps in the etiology of infectious diseases, so that there is scarcely a malady whose micro-organism is now known which does not bristle with interrogation points. The sum total of bacteriologic knowledge points toward certain still unknown conditions which favor a restoration or a maintenance of virulence and which differ from those which are currently reported as in action.

This statement does not intend to cast doubt upon accepted views of the increase in virulence due to passages through series of susceptible individuals of any species. These are too firmly established to be vulnerable. Nor can we dispute the evidence that the decline of epidemics is largely associated with acquired immunity. But there are certain supplementary facts bearing upon our relation to animal life which medical science can well afford to take as a text in order to discover, if possible, some of the still unknown dynamic sources of human disease.

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3. Zeitschrift für Hygiene, 1898, xxviii, p. 38.
4. Centralblatt für Bakteriologie, xxii, p. 357; xxiv, p. 569.
5. Aögyes. Notnagel's specielle Pathologie, v. Theil, ii Abth., p. 66.
6. Centralblatt für allgem. Gesundheitspflege, 1899, xviii.
7. The difficulty encountered in establishing artificially a plague among susceptible animals, even with a microbe of maximum virulence, was made evident by the failure of Pasteur to disseminate this septicemia among the rabbits of Australia. Similarly the hope that by imitating nature we can infect animals successfully with bacteria and other parasites has not yet been fully realized, probably because our imitation of nature is not perfect.
8. The persistence of pathogenic bacteria somewhere in the body after the acute disease has passed away is a phenomenon to which we have been accustomed in recent years and which has aroused considerable interest, mainly on account of the great difficulties which it places in the path of public health when endeavoring to secure satisfactory isolation of infected individuals.
9. Arbeiten a. d. D. Gesundheitsamt, 1900, xvi.

IMPROVED HOSPITAL FACILITIES FOR BROOKLINE, MASS.—The committee appointed to consider a new contagious hospital for the town will recommend a new building, particularly for the use of patients with scarlet fever and diphtheria. The accommodations for small-pox patients are regarded as adequate for present needs.

BACTERIOTHERAPEUTICS, WITH ESPECIAL REFERENCE TO TUBERCULOSIS.*

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IN my effort to present this subject I will include for the purposes of this paper, in order to cover more broadly the use of bacteria in medication, both preventive or immunizing methods and serum therapeutics. I cannot, however, attempt more than a summary of our present knowledge of the subject in connection with human diseases other than tuberculosis.

The use of living but weakened bacteria in the prevention of the like disease has found but little scope outside of vaccination for variola and anthrax. Considerable immunity has been produced in this way experimentally against streptococcal, pneumococcal, diphtherial and tuberculous infections, but its therapeutic employment would obviously be irrational. Living streptococcus inoculations have, however, been by accident or intent successfully employed in the treatment of sarcoma and lupus (Coley's first method).

The employment of dead bacteria, their extracts or culture products, has at present an undoubted field in cholera, plague and typhoid prevention in human beings. The results of Haffkine's¹ anticholera inoculations have demonstrated its protective power for a limited time, while the use of extracts of plague bacilli gives promise of similar comparative immunity.² The inoculations against typhoid in the British army are encouraging in their results.³ In other diseases there has been little encouragement except as regards the lower animals. For therapeutic use the extracts, or dead bacteria, have not commended themselves in acute diseases like typhoid, plague, sepsis, pneumonia and diphtheria.

The use of serums or tissue extracts of animals immunized or treated with bacterial substances for these purposes manifestly is much more applicable for therapeutics, because it brings to the aid of the infected organism the protective substances or powers of others. The striking success of diphtheria antitoxin in treatment has caused the flood of serums for all known diseases. It will here be sufficient to remind ourselves that except tetanus serum no others have shown brilliant results in human medicine. It is interesting to note that both these serums have pre-eminently antitoxic as distinguished from bactericidal powers. Among the serums that have claims upon our notice at present the streptococcus,¹ pneumococcus,⁴ and that of recurrent fever⁵ are said to have bactericidal or bacteriolytic properties only, while the serums of plague, typhoid and cholera may have both antitoxic and bactericidal powers. Of tuberculosis serum I will speak later.

Experiments upon animals, and to some extent upon man, are entirely satisfactory as a basis for a much wider usefulness of serums and tissue extracts as immunizing agents.

The promptly curative effects of diphtheria antitoxin may obscure in the minds of some the good results of immunization by its use, but its demonstrated value should encourage a much more extensive employment, especially as the improvements in preparation have lessened the dose and increased the potency. These remarks also apply with greater force to tetanus. It needs no sage to observe that

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at present bacteriotherapeutics and serum therapeutics have, with the exception of diphtheria, their best field for practical use in immunization against their respective diseases.

With this brief review of the general subject, with which I do not assume familiarity, I crave attention to some remarks with reference to tuberculosis.

While I consider it not unprofitable to mention the present clinical status of tuberculin, it is certain that it can serve no useful purpose to recount the history of the blind leading the blind of a decade ago. It remains a history for the contemplation of psychologists. The term tuberculin has been used to cover broadly all extracts and culture products of the tubercle bacillus, and should not be confused with serums, as is frequently done. The extracts prepared subsequent to Koch's original tuberculin that have been used clinically received various names according to their object and method of preparation, and may be enumerated as follows:

(1) Original tuberculin (abbreviated "T. O."); boiled, concentrated and filtered, glycerinated cultures; now chiefly used for diagnosis.

(2) Purified tuberculin ("T. Pur."); the resultant redissolved precipitate of the first with 60 per cent. alcohol.

(3) The new tuberculin ("T. R."); an unsterilized, unfiltered, glycerin-water semisolution of living, dried, pulverized, and washed bacilli.⁶

(4) Tuberculocidin and antiphthisin; dilute tuberculin made from the slight residue after precipitation with sodium-bismuth iodide.⁷

(5) Hunter's⁸ modifications; similar to purified tuberculin by precipitation with ammonium sulphate.

(6) Tuberculoplasmin; the filtered watery solution of the protoplasm of moist living bacilli, extracted by crushing with hydraulic pressure.⁹

(7) Watery extracts of bacilli without culture medium.¹⁰

(8) Tuberculinic acid; the nucleic acid obtained from fat-free bacilli, decomposed by superheated steam.¹¹

It was soon discovered that the original tuberculin produced no immunity against relapses of tuberculosis, where the disease seemed completely arrested and even apparently cured by its use. Hence the new tuberculin, containing the substance of the bacilli and not its extractive matter, was introduced by Koch because it was found in animals to confer immunity against, as well as to be curative in the sense of complete arrest of, the disease.

The results of these experiments with the new tuberculin are entitled to respect, although not yet completely published as promised (see Beck¹²), because they show the possibility of producing at least temporary immunity in guinea-pigs. Unfortunately, the conditions are such that man cannot tolerate proportionately greater doses of this bacillus poison; nor, if he could, would the immunity be certain to be sufficiently lasting to commend its use. The clinical results, so far as they relate to new tuberculin for preventing relapses, are disappointing, though inconclusive as yet. Moreover, from our present knowledge of its effects, the tubercle-bacillus poisons used for immunization would require such care to avoid overdosage that grave danger of chronic poisoning and cachexia would result from attempts to keep up the immunity even in vigorous subjects.

Therefore, it appears to me that the subject of tuberculin mainly interests us at present in relation to its local action on tuberculous tissue, and to the mechanism of this specific relatively increased tolerance, observed especially as a consequence of injections of the new tuberculins, dead bacilli and those of weak virulence.^{13,14} To discover and, if possible, utilize this relative protection for passive immunity in the treatment of tuberculosis is the aim of research to-day.

Much interest clings to the nature of the tuberculin reaction, and many theories have been held concerning it. That of Koch, which assumed a direct necrotizing action on tuberculous nodes; of Hertwig,¹⁶ that ascribed it to chemotaxis; of Eber,¹⁶ to "heightened cell energy"; of Buchner,¹⁷ Rosenbach¹⁸ and Charrin¹⁹ to "latent inflammation" and fever susceptibility; of Klein,²⁰ solely to mixed infections; of Arloing,¹⁹ to weakening of the tubercle, and increase of secretion by the bacilli; of Liebmam²¹ and Ribbert,²² who thought the bacilli were increased in potency, have all been abandoned or modified with further study and the discovery of analogies. The later assumption of Bâbes²³ and Proca that it is a process of fermentation or enzyme activity excited by tuberculin is more in line with our present knowledge.†

A long list of substances is now known to produce, like tuberculin, local and general reactions in tuberculous subjects, and similar general disturbances with fever in healthy persons when large doses are employed.

In general they are digestion products, such as albumoses and their ferments; also certain alkaloids, such as physostigmin, pilocarpin, atropin; certain acids, as cinnamic,²⁵ cantharidin, and especially nucleic acids and their combinations as found in bacterial proteids,¹⁷ and finally abrin, ricin and similar irritant bodies.

Their nature, taken in connection with our most recent knowledge of the chemical composition of tubercle bacilli and of bacteriolytic powers of serums, is to me highly suggestive of the ferment or enzyme theory propounded, and to some degree experimentally supported by Bâbes and Proca²³ to account for the tuberculin reaction. (See also Hahn.⁹) I may be permitted to present it with modifications to fit the times somewhat as follows: Tuberculin and allied irritants cause leucocytosis, or at least stimulate the secretion of ferments by leucocytes and other cells, particularly those which surround the bacilli as a wall. This ferment attacks both the injected irritant and the similar poisons that have been slowly accumulating in the tubercles during the life cycle of the bacillus. The general fever reaction now comes on because of the toxin set free, altered by or combined with the enzyme. The reactions are not produced in very recent tubercles nor earliest stage of tuberculosis because there has been no time for storage of toxin, which begins when the bacillus ceases to grow or dies, and because the organism as a whole has not developed susceptibility to this class of poisons, or power to attack them. The local and general reactions become less and less as more tubercles are exhausted of toxin, while the dose required to produce them increases because of less toxin in the tubercles,

and also because of the now lessened sensitiveness of the whole organism, or toxin immunity.

Inoculations of sterilized bacilli produce tubercles and susceptibility to tuberculin reaction. Hence, for the purpose of this argument, both living and dead bacilli may be considered simply as chemical irritants which the defensive mechanism of the animal strives to disintegrate and excrete. The bacillus being markedly resistant because of difficultly soluble fats and irritant nucleobodies in its substance, this effort fails in part and leucocytes and other cells hedge it in to form the tubercle. The nearest cells imbibe or slowly dissolve out the soluble toxin or suffer death in the attempt. In either case the process of digestion or enzyme action is too slow to effect a marked local or general disturbance unless there are present a sufficient number of tubercles of the same age, or unless tuberculin and similar exciters are used, or there are accompanying infections that cause an increase of leucocytes and thus more enzyme action.

This hypothesis satisfactorily accounts for many phenomena clinically and experimentally observed in tuberculosis and tuberculin action, and gathers force from the recently strengthened theory of Buchner,²⁶ that bactericidal and bacteriolytic or dissolving properties of serums are proteolytic enzymes secreted by various cells, but pre-eminently by leucocytes. The agglutination of tubercle bacilli by serums from tuberculous patients has been claimed by Arloing and Courmont,²⁷ and while this may not be a wholly specific property, it indicates the presence of some anti-body allied to those in bacteriolytic serums. If then we may assume that tuberculin acts as a spur to the functions of defence, we can easily apprehend the danger of overstimulation and harm from too large and frequent dosage, or when used on patients with poor nutrition or already over-poisoned by their malady. Likewise the severe local reactions, particularly in the lung, could cause new foci by washing out the bacilli. While this may have occurred during the tuberculin craze, I believe that all trustworthy advocates of tuberculin therapy to-day, after years of observation, think that no recognizable danger exists when the violent reactions are avoided and proper cases are selected.

Whether or not tuberculins of any sort should be favored for limited therapeutic employment in the light of our present knowledge, I will not presume to decide, but that they can favorably influence a pure, localized pulmonary tuberculosis, and lupus, in a well-nourished and afebrile patient, seems to me sufficiently proved by clinical experience coupled with animal experiments. Obviously their use should be confined to institutions, and the patients observed through a series of years.

The experience of Petruschky²⁸ is valuable in showing the necessity for repeated injections of tuberculin with long interruptions in order to attain an absence of reaction susceptibility to test doses. This he regards (and to my mind with some reason) as a criterion of the complete cicatrization of all the tubercles (though not of the death of all bacilli in them). How far such a criterion may hold good depends upon how much an acquired toxin immunity from the previous injections may have to do with it, but it is safe to say that the latent tuberculosis in a person in apparent good health, that will not react to a full diagnostic dose of tuberculin, should cause no anxiety. The few

† It is somewhat unfortunate that our ideas of the reactions and dosage should have been based on the use of the original tuberculin, since it is a crude mixture, including albumoses and peptones from the culture medium which by themselves produce reaction, supplementing that produced by the bacillus extract proper.

patients who have stood the test of time and tuberculin after long intervals are alone those of value in a clinical estimate of the curative influence of tuberculin in the sense above mentioned (complete cicatrization of foci).

It appears uncertain that tuberculin can do any more for the local process in aiding cicatrization or absorption of tubercles than other leucocyte irritants, such as cinnamic acid²⁶ and nucleins; but if a certain degree of toxin immunity can be produced by the new tuberculins it is more rational to employ a specific irritant. Considering the difficulty and danger of producing even comparative immunity by the use of tuberculin the question is practically resolved to this: Can we safely aid nature to advantage in her attempt to hem in and destroy the tubercle bacillus and its products by medication that increases the hyperemia and absorption from tuberculous nodes? I think it is reasonable to affirm that we can within narrow limits.

The successful treatment of tuberculous joints by combined active and passive hyperemia (Bier's²⁹ method), the complete absorption of tubercles from the peritoneum after simple laparotomy, due to reactive hyperemia (Hildebrandt³⁰), and the same result in lupus from tuberculin, x-ray, and other methods producing inflammation, are certain indications that it is rational so far as they can be applied to pulmonary tuberculosis.³¹ A more attractive subject for consideration is serum therapeutics in tuberculosis, which is in an experimental stage at present. A great variety of relatively immune animals and birds have been utilized in the search for an antituberculous serum without practical success. On the other hand, Maragliano³² and de Schweinitz¹⁴ have attained some prolongation of life in tuberculous guinea-pigs with the serum of horses injected with bacillus toxins. The serums have been and are being used clinically with greater or less claims for success.

Paterson³³ and Behring³⁴ found antitoxic properties in certain bird-serums, and de Schweinitz¹⁴ and Behring³⁴ in tuberculous cows treated with toxins. These were found unsuited for use on human subjects because of irritant properties. Maffucci and Vestea³⁵ obtained prolongation of life in guinea-pigs with serum of toxin-treated sheep, but as it produced fever it was thought to contain tuberculin, and its activity thus accounted for. The antitoxic properties of the serums of Maragliano and Behring were assumed to be demonstrated by the inhibition of a tuberculin reaction in a human subject, and prevention of death from a fatal dose of the toxin in healthy guinea-pigs. None have so far been proved bactericidal or immunizing, and the evidence is yet unsatisfactory (see Trudeau and Baldwin³⁶) as to the much-wished-for antitoxic power, which is at least so weak as to be unappreciated when measured by its immediate influence on the fever of tuberculosis patients. Thus far no tissue has been found to have an especial affinity for the bacillus toxin as in tetanus and diphtheria. This may be the reason that we have such slight evidence of the presence of a strictly antitoxin body.

It might be expected from what has been learned about the mechanism of the tuberculin reaction that a bacteriolytic property might be obtained in serums or tissue extracts of immunized animals. If present, the practical value of such a serum might be limited by its inability to get at the bacillus in the caseating tubercles, unless, like laparotomy in tuberculous peritonitis,

it could cause their complete absorption. The whole subject is being studied earnestly for more light on these problems, and we may not lose hope for results of practical value.

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THE RELATION OF BACTERIOLOGY TO MEDICINE.¹

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By the terms of the subject assigned to me, the parasite of malaria and the question concerning the parasitic origin of malignant new growths are excluded from discussion, since the organisms concerned in those diseases are not classed as bacteria.

Bacteriology has relations with every department of clinical medicine.

With (a) Etiology.

“ (b) Diagnosis.

“ (c) Symptomatology and the course of disease.

With (d) Prognosis.

“ (e) Treatment.

ETIOLOGY.

Through bacteriology we have been enabled to determine practically with certainty the causes of the following diseases:

¹ Read before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

I.

Diphtheria,	Asiatic cholera,
Tuberculosis,	Relapsing fever,
Bubonic plague,	Influenza,
Tetanus,	Gonorrhoea,
Anthrax,	Glanders.

Erysipelas and the various diseases due to pathogenic streptococci and staphylococci.

Actinomycosis.

Typhoid.

I have put typhoid last in the list of diseases of whose cause bacteriology has made us certain because it is only since 1897 that the typhoid bacillus has obtained so secure a position through the introduction of Widal's agglutination test. Previous to that discovery the typhoid bacillus was regarded as very probably the cause of typhoid fever, but not as occupying as secure a position as the bacillus of anthrax or of diphtheria.

II.

Next to the above group of diseases, we may arrange those regarding whose connection with a well-identified micro-organism we are but slightly less firmly convinced.

(a) Epidemic cerebrospinal meningitis (diplococcus intracellularis of Weichselbaum).

(d) Croupous pneumonia (micrococcus lanceolatus).

III.

Among the diseases whose bacterial cause is probably identified are:

(a) Malta fever (micrococcus melitensis of Bruce).

(b) Meat poisoning — certain epidemics — (bacillus enteritidis of Gärtner and allied species).

(c) Epidemic tropical dysentery (Shiga's bacillus).

(d) Leprosy (Hawsen's bacillus).

IV.

Regarding the bacteria believed by some to be causally connected with the following diseases we are at present *in doubt*.

(a) Whooping-cough.

(b) Yellow fever.

(c) Syphilis (Lustgarten's bacillus).

(d) Cystitis and cholangitis (colon-bacillus infection in certain cases).

(e) Soft chancre (Unna's bacillus).

V.

Finally we may make a list of bacilli probably pathogenic under certain conditions, but not constantly associated with any well-defined group of *clinical* manifestations. Such are the:

(a) Bacillus pyocyaneus.

(c) Bacillus of malignant edema.

(d) Bacillus of Friedländer (ozena, lobular pneumonia, etc.).

DIAGNOSIS.

Bacteriology is in the closest relations with clinical medicine through the help it gives us in clinical diagnosis. Such assistance is given

(A) Through the demonstration of the bacilli themselves in secretions or in the products of disease.

(B) Through the agglutination test.

(C) Through the injection of soluble products of the growth of certain bacilli (tuberculin mallein).

A.

So far only two or possibly three such bacteriological tests can be said to be in general use throughout this country, namely:

(1) The search for the tubercle bacillus in sputa.²

(2) The search for the diphtheria bacillus in the throat, and possibly

(3) The agglutination test of typhoid.

Other such aids to diagnosis which seem likely to come into more general use are the examination of

(a) *The blood* — blood cultures in pyemia, malignant endocarditis, bubonic plague, pneumonia, gonorrhoeal septicemia).

(b) *The sputa* — for the influenza bacillus, plague bacillus, and micrococcus lanceolatus.

(c) *The urine* — for the bacilli of typhoid and tuberculosis.

(d) *The feces* — for the bacilli of typhoid, tuberculosis and cholera.

(e) *Cerebrospinal fluid* — for the diplococcus intracellularis, tubercle bacillus, and mucococcus lanceolatus.

(f) *The urethral, vaginal and uterine secretions* — for gonococci.

(g) *The nasal, pharyngeal and conjunctival secretions* — for influenza or diphtheria bacilli, bacillus of Friedländer, bacillus of Weeks.

B.

THE AGGLUTINATION TEST.

(a) Next to typhoid, Malta fever seems at present the disease in the diagnosis of which we are most helped by the agglutination test.

(b) In the recognition of the true nature of certain obscure fevers, Durham believes that the serum test with the bacilli most frequently concerned in meat poisoning (Gärtner's bacillus enteritidis) is destined to play an important part.

(c) The diagnosis of relapsing fever between the paroxysms, once difficult or impossible, is now possible by the use of a reaction akin to the agglutination test.

(d) Well-marked agglutination reactions have been constantly observed in leprosy, bubonic plague, Asiatic cholera and tropical dysentery with the bacilli of these diseases. Just how much practical use is as yet made of these tests I am unable to say.

To other diseases the diagnostic assistance of the agglutination reaction has not extended. Individual observers have reported success in the attempt to apply the serum test to the diagnosis of tuberculosis and croupous pneumonia, but confirmation is lacking.

AID GIVEN TO BACTERIOLOGY BY CLINICAL MEDICINE.

To a limited extent we are able to reverse the use of the agglutination test. Instead of using a well-identified bacillus to test the body fluid of a doubtful case, we can use the body fluids of a well-identified case of disease to test a doubtful bacillus. In identifying doubtful cultures, M. W. Richardson uses slips of filter paper soaked in the blood obtained at autopsy from a case of typhoid. Durham has used similar tests in differentiating the flora of the intestine.

² In examining sputa from cases of gangrene of the lung, it should be remembered that the smegma bacillus may occur in such cases, and be mistaken for the tubercle bacillus if decolorization with absolute alcohol is not attempted.

C.

Of the diagnostic use of tuberculin it is only necessary to say that despite the warnings of Virchow it has passed into general use and deserves to be utilized much more widely still. The few who object to its use are for the most part those who have not tried it. The use of mallein is well established.

SYMPTOMATOLOGY AND COURSE.

(1) Bacteriology is rapidly bringing about a re-grouping and rearrangement of those clusters of signs and symptoms by means of which we have been accustomed to recognize the entities called "diseases." Previous to the development of bacteriology we thought of acute pneumonia as a single well-defined disease. Now we know that there are many kinds of pneumonia. The pneumonia due to the micrococcus lanceolatus differs in many respects from pneumonia due to the streptococcus pyogenes, to the plague bacillus, or to Friedländer's bacillus. Such differences are clear on the post-mortem table and we are beginning to recognize clinical types corresponding to them.

I cannot help hoping that such differentiations will help us to clarify the turgid sentences in which perforce our symptomatology is now expressed. When I read symptomatology, and still more when I attempt to write it, I am at times inexpressibly depressed by the wearisome occurrence of such phrases as "sometimes," "not infrequently," "in certain cases," etc. "Sometimes pneumonia ends by crisis — sometimes not." "Peritonitis sometimes caused distention of the abdomen, sometimes retraction." "Why?" asks the intelligent student and there is no answer.

Now if we could say (as I hope before long we can): "Pneumonia when due to the micrococcus lanceolatus ends by crisis, when due to the streptococcus by lysis" — what a godsend it would be! How much more scientific, how much less by the weather predictions of the Yankee fishermen our text-books of medicine would sound!

(2) Again by showing that one species of bacteria may set up disease in the brain, the lung, the endocardium and the peritoneum, bacteriology has suggested that what we now separate as various diseases — meningitis, endocarditis, peritonitis should properly be brought together under the heading of "pneumococcus infections." Influenza, tuberculosis, gonorrhoea and typhoid already occupy such a position. Influenza is still influenza whether it attacks the upper air passages, the gastro-intestinal tracts, or runs its febrile course without any recognizable local manifestation. The recent report of the Bombay Plague Commission manifests an advanced form of the same tendency when it specifies no less than ten forms of infection by the plague bacillus at least, as different from each other as are the different manifestations of the micrococcus lanceolatus in various organs.

(3) The interesting subject of combined bacterial infections is too extensive to be treated in this paper. But it is evident that our conceptions of the symptomatology of pulmonary tuberculosis have been greatly clarified since we began to distinguish the symptoms due to mixed infection with pyogenic cocci or with influenza bacilli from those due to the activity of the tubercle bacillus alone.

PROGNOSIS.

Statements regarding prognosis are apt to present an unrivalled material for the study of the art of *hedging*.

Bacteriology is helping us to make our prognoses less meaningless. The following examples are in point:

(a) When pneumococci can be demonstrated in the blood of a case of pneumonia, a fatal termination is almost certain.

(b) When the spirochetes of a case of relapsing fever are rendered motionless within one hour by the blood of another patient who has passed through one paroxysm and is expecting another, no second paroxysm will occur, while if the spirochetes are not quieted within two hours another paroxysm is sure to follow.

(c) Empyema due to the pneumococcus is likely to heal after relatively rapid tapping, often without permanent drainage.

TREATMENT.

(a) *Antitoxic or protective sera.*

The subject is so familiar and well worn that I will simply classify the various antitoxic sera according to the best current opinion of the efficiency.

I.

Markedly curative.

Antidiphtheritic serum.

Antispirillum serum (relapsing fever).

II.

Efficient as protective.

Anticholera serum.

Anti plague serum.

III.

Limited utility in selected cases.

Antitetanus serum.

Koch's tuberculin.

IV.

Doubtful but hopeful.

Antityphoid serum.

Antidysenteric serum.

V.

Probably inert.

Antistreptococcus.

Antipneumococcus.

Anti-amarillie (yellow fever).

(b) Under a slightly different heading comes the treatment of inoperable cases of malignant disease by the injection of the toxin of erysipelas, which appears to have a distinct though very limited field of usefulness.

RELATION OF THE CLINICIAN TO THE BACTERIOLOGIST.

The Municipal Laboratory of the City of Boston now offers to examine for physicians material suspected of coming from any of the following diseases: Typhoid, tetanus, tuberculosis, diphtheria, malaria, glanders, gonorrhoea, influenza.

Now, as a citizen of Boston, I take great satisfaction in knowing that we have such a municipal laboratory, and that our physicians can and do avail themselves of it. Yet I am sometimes appalled when I see

how innocently, how literally, how trustfully, physicians accept the verdict of the laboratory as decisive. I have been amazed to see how my own laboratory reports at the time when I was doing such work were accepted as final, and used as foundations on which to build an extensive superstructure of diagnosis, prognosis and treatment. No one who has ever done much laboratory work ever accepts the report of another in such a spirit, for he knows from experience

(a) The chance for error in the laboratory (from confusion of specimens, deterioration of cultures, or culture media, etc.).

(b) The difficulty of interpreting the results of bacteriological investigation, or of understanding just how decisively the bacteriologist intends to speak on the point in question.

(a) The bacteriologist knows that some of his verdicts are relatively final — other less so, and more subject to modification, according to various other circumstances. He knows when his technic has been above suspicion, and when (either from the condition of the material furnished him, or the nature of test attempted) his results are to be taken less seriously. All this the bacteriologist knows — but the clinician frequently does not. Hence arise errors and misunderstandings, which not infrequently drive the clinician to an utterly unreasonable distrust of *all* laboratory results.

(b) Few clinicians realize how difficult it is to interpret the results of bacteriologic examinations. For example, to draw the *properly limited inference* from the announcement of a positive Widal reaction; to be enough, and not too much, alarmed by a positive reaction to tuberculin, or by the finding of Klebs-Löffler bacilli in a patient's throat.

Especially is this true where relatively indefinite quantitative expressions enter into the bacteriologist's report. Only he who makes the test can really appreciate what is meant in a given case by such phrases as "Very numerous tubercle bacilli, very virulent streptococci, very motile organisms, very numerous malarial organisms, etc."

In view of these facts I believe that we get the greatest help from bacteriology only when the bacteriological tests are made by the clinician himself or by some one (for example, his private assistant or interne) who is familiar with the clinical aspects of the case in question. Otherwise, the wisdom of the laboratory and the wisdom of the bedside often fail to connect with and to re-enforce one another.

Bacteriological evidence on clinical cases cannot be passed from hand to hand without damage; the truth as the bacteriologist sees it is not the same truth which the clinician receives through the medium of a written report. The journey from mind to mind has modified it — sometimes transformed it into something very like error.

THE SOCIOLOGICAL STATUS OF THE PHYSICIAN.¹

BY CLARENCE JOHN BLAKE, M.D., BOSTON.

In the very beginning of his studies the medical student is brought into investigatory relationship with that which he has heretofore thought of as an entity, a being, a mystery, and which, now put into his hands

¹ Abstract of Address delivered before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

for demolition, he finds to be a most wonderful and delicately constructed machine, in the study of which he may be said to pass through much the same process of mental evolution as that attributed by Professor Giddings to primitive man.²

He is lost in marvel at the compact arrangement of muscular tissues, regards as might the explorer of a buried city the system of canals which carry quickening fluid to the outermost circumscription and of drains into which are cast waste matters to be discharged without the walls; while the glistening white lines of nerves sending their branches in a network between muscles and under and over canals and drains reveal to him the suggestion of a system for the communication of intelligence and the issuance of governing mandates to which the combined telegraphic and telephonic services of the greatest city built by human hands have no comparison in relative extent or in perfection.

There is probably no point in his career of so much initial portent as that in which the student in the dissecting-room for the first time lifts the wet sheet from a face that he has never known, but behind which there dwelt and through which there have been expressed all that emotion and desire can crowd into the compass of a human life; it is a period in which he either consecrates himself or turns back; if he be honest he does one or the other; if he be a pretender he may, it is true, continue and complete his medical school course and go out into the broader school of work, but without the consecration he will inevitably fail of his highest possibilities as a physician. The impress which is made by the study of anatomy upon the truly thoughtful man cannot but be emphasized in the physiologic laboratory where the student learns the values and uses of the different parts of the human machine and finds the answers to questions which the previous study of the structure of the silent body have evoked. Here and in the associated laboratories, he learns the chemical processes of the body in health and disease, the supplementary relationship of the different organs, the provision for their maintenance and repair, and comes to recognize and to know the functions of the microscopic organisms with which the body teems. Carrying with him the lessons born of research, he next passes into the wider school of clinical teaching and learns at the bedside that he has to study something more than the disease and that to render the fullest meed of service as a physician he must come to know, patiently, tenderly and, in the broadest sense, sympathetically his brother man. Here, too, he learns that his own feelings and emotions must be subordinated to the one purpose of his greatest help — efficiency; that here, as in all scientific work, his personal equation must be reduced to a minimum and that he must lose himself in the effort to think wisely and judge well for others.

In former times, not very many years ago, the bedside teaching was provided under a system corresponding to that of apprenticeship in trade and the student gained his clinical experience through association with some active general practitioner; but to-day, with the aggregation of population in cities and the consequent establishment of hospitals, these institutions are made to furnish the clinical material necessary for instruction, thus fulfilling one of their important obligations to the community which supports them; for, while

² F. H. Giddings: The Principles of Sociology, Anthropogenic Association, p. 246.

the first purpose of the hospital is to provide for the care of the sick, no such institution does the just measure of its work unless its benefits extend beyond its walls through the education of those whose lives are to be pledged not only to a warfare against disease, but to an effort toward its prevention.

From an economic standpoint the hospital may be defined as an institution in which capital and skilled labor combine to provide such members of the community as are temporarily disabled and without means of support with the maintenance and care which shall fit them to become again self-supporting and active community factors. It is a free repair shop for human machines, and the capitalist who contributes to its support does so with the basal, though perhaps not with the defined, understanding that his contribution is returned to him, through the community, in the lesser number of incapacitated and dependent machines, while the physician who furnishes the skilled labor contribution finds his return not only in the same manner as the capitalist, but in the opportunity which is given him of fulfilling his duty to humanity with less expenditure than if he did it at his own charge and with better effect, under conditions which inure greatly to his own well-being and usefulness. But the hospital of to-day is something very much more than a mere repair shop; it is a school full of object lessons in the application of those qualities which are the uprights, the girders and the binding rods of the modern social structure; in the first place, it is the most absolutely clean of all human habitations and the present splendid successes of surgery in the amelioration of suffering and the preservation of life are due not only to the application of trained skill and intelligence, but to its operations under conditions of absolute sterilization which are microscopic in their minutiae.

Not only is the hospital a lesson in physical cleanliness but, if justly administered, it is morally clean as well, for so important is its service, so often does the issue of a life depend upon the observance of some apparently minor detail, that its work must be done under the strictest discipline; order, obedience, alertness and complete devotion to the duty in hand must be commanded within its walls. Under such responsibilities the position of superintendent of a hospital is a serious one, calling for administrative ability of no mean order. Gradually with the growth of urban hospitals these posts have come to be filled by selected men, who, from previous education along other than medical lines, or from training in the hospitals themselves, have acquired the ability to deal with questions of structure, repair, lighting, heating, ventilation, equipment, food supply and the details having to do with a housekeeping for hundreds of patients and nearly half that number, the usual ratio, of medical house officers, nurses and attendants.

Many hospitals are administered by women who have had their preliminary training in such institutions as nurses; women are also supplementing the general administrative work as superintendents of hospital training schools for nurses. The entrance of women into hospital life and work is one of the sociological advances for which the medical profession is mainly responsible, a responsibility having a serious ethical, as well as an important economic, side. Under present conditions the training schools furnish to the hospitals a much better service than could other-

wise be obtained, one which has contributed much to the precision and fidelity of the work done, and which has moreover exercised a general beneficial effect upon the *morale* of the patients.

The course of study of the hospital-trained nurse is a severe one, usually of two years' duration, but now being lengthened to three and four years; the woman who enters upon and continues in it has a liberal education in the deterrent side of human life and, if she graduates well, comes out of the hospital to enter individually upon a vocation in which she is likely to find herself set apart from the society about her, even more than is the physician. For while the physician has his medical societies and other social relationships with his fellows, the nurse has only the affiliation with her training school and hospital; that she often finds it difficult to cope with the competition in her profession and the discomfort of an uncertain income is shown by the tendency to re-enter institution life among nurses who have been in private practice, even at moderate salaries. The trained nurse has now been in existence, as a community factor, a sufficient length of time to make statistical estimates possible, and it appears that the active professional life of the nurse, outside of institutions, is covered by an extreme limit of fifteen years, and that her average annual income is that of the average woman teacher. The teacher has a regular stipend, allotted hours of work and a definite holiday; the nurse in private practice has no regular stipend, no protracted leisure and leads an economical, irregular life, with occasionally extraordinary demands upon her strength and powers of endurance. The medical profession, which has created the trained nurse, to its own great advantage and with considerable extension of its helpfulness, owes a debt which should be acknowledged not only individually but generally. The provision for lodgment of nurses in separate buildings where they may, when off duty, have the comforts of a home is a step in this direction; here also the training in the hospital is supplemented by instruction in housekeeping, purchasing, and diet-kitchen work, and the nurse thus educated who goes into private practice and becomes temporarily the member of a household does so with a better knowledge of the perplexities which may beset the housemother when illness cuts across the line of home affairs.

Another question which is coming to the front is that of the establishment of co-operative training schools, in which a nurse, having served her probationary period and a year or more in one hospital, is passed on to a second and third hospital, either of a different class or in another city, returning to the first hospital for her final service and graduation. Under this plan the nurse, admitted only on an entrance examination and first trained in a general hospital, would continue her studies in a lying-in hospital, a children's hospital, some special hospital and in a hospital for contagious diseases, and the higher educational standard required of applicants, the length of the course and its completeness, would tend not only to furnish a better class of women, more competent to succeed in private practice, but would also help to prevent that overcrowding of the nursing profession already apparent.

Leaving now the hospital, a term here meant to include asylums, convalescent homes and similar institutions which are his particular province, and passing

over questions, interesting in themselves, in regard to the working relationship of medical staffs and boards of managers, let us consider other directions wherein the physician finds opportunities for the acknowledgment of his citizenship.

The medical supervision of public schools of recent inauguration, demanded as a necessity in view of the opportunity afforded for the spread of contagious diseases through the medium of these aggregation centres, is opening the way to a much larger sociological service than was at first expected of it, for where medical inspection has been fairly established the examiners find themselves confronted with questions of the proper seating of school children, of the provision of school lunches, of proper lighting, ventilation and sanitary accommodations and of the detection and setting aside for compensatory educational advantages children whose defective sight or hearing puts them below the average of their fellows. It is in schools for the defective, however, that the doctor finds his especial work, and the generous provision now made for the care of feeble-minded and backward children, the blind, the deaf, and latterly the crippled, gives him a large opportunity for elucidative study leading toward the betterment of the condition of those whose inheritance or personal misfortune have made them a charge upon the community, not only for assistance but for encouragement toward turning their moderate capital in life to the best account.

The distinction between lack of perceptive capacity and lack of sense transmission is frequently represented only by a thin and shadowy line, and the partition classification of dependent and imperfect children is often one of the most exacting of the moral responsibilities of the doctor. Children who are regarded as backward, or even idiotic, are sometimes found on careful examination to be merely creatures shut within themselves by the closure of normal channels of communication, and the bringing of such children into touch, through the education of their tactile sense, with the human companionship which makes life worth living is worth far more than all it costs in time or effort. In such cases as these the child has virtually no desultory memory, all impressions received come mainly through one channel and the memorizing capacity is in proportion to the concentration effort in reception; the nervous energy of the child, moreover, instead of being expended in an effort at reception through several sense organs, is limited to a distinctively volitional one and, in place of being used in the elaboration of different methods of expression, is devoted almost solely to perception. The intelligence, slowly educated by an expenditure of effort on the part of the child, is, reactively, constantly increasing the perceptive power, so that when, through the utilization of a quickened tactile sense, new forms of expression are afforded, the concentrated nervous energy bursts its bounds in a flood of questions, and there is no fairyland imaginable which will compare in its wonders to that into which such a child is admitted through the educational portals of the kindergarten for the blind.

The first attempts at the education of the so-called deaf mutes, but mutes only because of the lack of hearing and of training, began naturally through the medium of the signs and gestures which these unfortunates substituted for the inadequate utterance of which some of them were capable. While succeeding in imparting

a good education, through the medium of the manual and gesture language, this method created a class set apart by itself because of its inability to communicate through any other medium than that of writing with its hearing and speaking environment. The recognition in an educational process of so serious a defect as the creation of a distinct class in the community, subject to the temptation of intermarriage and the consequent possibility of class perpetuation, together with a better knowledge of the fact that many of these people had an amount of hearing power sufficient to enable them to perceive sounds which they themselves made, brought about the gradual introduction into the manual schools, of a system of voice-training and lip-reading, which has so far gained ground as to lead to the establishments of schools devoted exclusively to this method. The growth and progress of schools for the deaf in the United States since the establishment of the first school in 1817 may be judged from the fact that the twelve original pupils at that date have now increased to almost ten thousand, in over eighty schools, and that very nearly half this number of pupils are being taught articulation.

With the progress of a method of education which is ultimately destined in the main to prevail, since it is in the line of that sociological advance which seeks to make and keep each unit a viable member of the community, a more precise determination of the amount of hearing possessed by each pupil and the possibility of its improvement becomes a matter of great importance. Under the auspices of the National Association of Teachers of Speech to the Deaf, acting in co-operation with one of the bodies forming this Association, the American Otological Society, a systematic examination of all pupils in schools for the deaf throughout the United States has been undertaken. The purpose of this investigation is to provide not for what might be called a census-taking, but for the establishment of continuous special medical examination of the pupils, firstly, for their immediate advantage, and, secondly, to make records upon a uniform basis suitable for comparison and tabulation. The work, already begun as a preliminary investigation in the Horace Mann School in Boston, shows that out of 150 children, set apart by their infirmity and specially educated, fully eight per cent. are capable of being restored to an amount of hearing which will enable them, in some instances with the help of artificial aids to hearing, to take their places in the society of people of normal average hearing, while still others, to the extent of an additional five per cent., can be so far improved as to be materially aided in their power to acquire well-modulated articulation. Between 10 and 15 per cent. of these cases, in addition to those already mentioned, are found to illustrate the truth of the saying that disuse is abuse, for in them it is possible, by means of speaking tubes and other appliances for the direct communication of sound to the perceptive organs, to awaken what may be called, for want of a better term, the latent hearing and make it, if not a means of communication of consecutive thought, at least useful for improvement of the articulation. With the continued prosecution of this investigation there is opened a large field for the study of the causes of high grades of deafness in young children and one leading to better knowledge of possibilities of prevention.

A recent effort at compensatory education follows lines laid down nearly seventy years ago in Bavaria,

and since extended to other countries in Europe, finding its most marked success in Italy.

Five years ago there was opened in Boston a charitable institution which deserves more than passing notice for the comparative novelty, as well as the value, of the work undertaken, and for the promise which it gives of extension. The Industrial School for Crippled and Deformed Children, beginning with 11 pupils in 1895, now with quadruple that number and a large waiting list, has served as a suggestion for the establishment of other institutions of the same or similar character in Milwaukee, Chicago and Baltimore. In New York a school of this kind is now projected and in Philadelphia Mr. Widener has recently given the sum of two million dollars, the income of which is to be expended for the care, educational and industrial training of cripples.

"Strange it is," says Dr. E. H. Bradford, the practical founder of the Boston school, in a paper not yet published, but from which I am permitted to quote, "that while in every civilized country the insane, the blind, the dumb, the epileptic and the idiotic receive careful attention, but little heed is paid to the education of the most deserving of all unfortunates, namely, the cripple. The cripple is left to the almshouse or allowed to remain in a back room at home idle, useless, petted, often the only wilful member of the family whose misdirected kindness aids in ruining his character; hampered by disease and deformed, he is doomed to the injurious influence of idleness. Crippled children can be grouped under two heads: those who are suffering from a chronic disease which, during their childhood, either prevents their attending school altogether or else where their attendance is interrupted or prevented because their feeble condition will not stand the fatigue of a school day adapted only for strong children. The majority of these, if they receive good care, good food, good air, under proper medical supervision, recover with more or less resultant deformity and, although handicapped as breadwinners, are eventually able to do something as workers; that is, if trained during their childhood may become skilled in sedentary occupations, but if uneducated are necessarily idle and useless. The second class comprises those permanently crippled either by congenital deformity or by paralysis. They can never recover from their ailment and are permanently excluded from the use of their legs or arms. Special instruction is needed for these and special avenues must be made for them for certain kinds of work which they can be taught to do with the aid of suitable apparatus designed for them. This class can be of use to the community in many instances, as their affliction frequently develops a concentrated ability in certain directions not found in more active or healthier persons. If they are unable to become producers to a large extent, yet in many instances they may be trained into workers contributing to their support. They are saved from the curse of idleness and in rare instances may develop unusual and useful talent."

To make provision for these two classes in a day school, it is necessary, or at least advisable, to furnish means of transportation under conditions favorable to the most helpless, and in the school itself there must be, in addition to the ordinary recitation and study rooms, rest rooms with reclining chairs or beds, rooms for the training of the pupils in various occupations, and a diet kitchen from which food may be dispensed.

To meet these peculiar conditions the staff of teachers must be supplemented by a trained nurse and there should be regular medical visitors, preferably men, on service in orthopedic hospitals.

The census of 1890 gives as the number of feeble-minded, both children and adults, in the United States as a little less than one hundred thousand; but one of the best authorities in the treatment of this class of dependents thinks that there are probably four to every thousand of the population, or a total of very nearly three hundred thousand. Of this number about one in thirty only are in institutions and the remainder are scattered throughout the community, some in their own homes, where they are the objects of solicitous care and affectionate regard, others, and the large proportion, in almshouses, in prison and on the road as tramps. Their number is apparently increasing; in 1860 there were six hundred to the million inhabitants, in 1890, fifteen hundred to the million; and they propagate their kind. With them are linked the variable and occasional criminals, as distinguished from the criminals having criminal trades, and about the borders of this realm of the unfit circulate the merely idle, the dissolute, the profligate and the debauchee.

The differentiation of these classes, the sorting out of this waste humanity, the utilization of what is good in it and the protection of that which is feeble and useless constitute one of the most intricate problems of modern social life. He who holds the key to a situation is in a measure responsible for the situation, and the key to this particular problem is in the hands of the doctor more than in those of any other citizen. He, more than any other, as a necessity of his education, has been brought personally into contact with the deficient; his active life is spent in drawing comparisons with a normal standard of which, if he is to do his work well, he must constantly seek to keep himself, physically, mentally and morally, an example.

It is evident that among the many lines of sociological activity prescient of the growing intelligence and increasing public conscience of the people, this work of analysis of human waste and of discrimination, out of which grows helpful suggestion, is particularly the province of the doctor. A medium of work of this sort should be commanded for the medical profession by the community; not that the medical profession is not already engaged in such work and does not find in it fruitful opportunities, but that to command is to sustain and to support, and the public could with advantage make the labors of the physician for the common welfare more possible than they are at present.

The experience which has led to the substitution in the hospital supported by private charity and in the municipal hospital of an educated and trained physician for the man of business or the politician as superintendent should serve the same purpose in our public institutions. The doctor is ready and willing, and the number of young medical men who would accept positions of this kind at moderate salaries, under conditions which would give them time and opportunity for studious work, is steadily increasing.

The popular idea of an almshouse is often very much that it is a place for the storage of decrepit bodies past usefulness, an institution paying an annuity in food and lodgment to such members of the community as have not had the fortune or the fore-

sight to provide for their inactive years. It is partly due to prevalence of this idea that institutions of this class have been public jetsam stranded on the shores of the current of community life, but, the stream of humanitarian progress increasing in volume and growing ever stronger in lifting them, they are coming to be regarded more as hospitals, administered more upon the hospital plan, and in several of the largest city almshouses of this country the changes which have taken place, to the betterment of the inmates, under the influence of a regular medical visiting staff, supplemented by salaried house officers and by trained nurses, is most gratifying and promissory of still better conditions.

The same influence is at work in the domain of penology, and prisons are everywhere steadily coming to be less punitive, more reformatory, and the indeterminate sentence is a recognition, not only of the possible good underlying apparent evil, but also of the fact that betterment of the physical condition, as well as of the mental point of view, is a necessary basis for a healthier morality. Dr. Coulston, of the Royal Edinburgh Asylum, illustrates the fact that purely mental and moral causes play but a small part in the production of insanity, as compared with causes bodily and physical, by the statement that of cases examined by him only 11.5 per cent. were due to mental shock, the remainder being the outcome of causes acting on the brain through the body, drink and dissolute living, faulty development, hereditary disposition and the like; furthermore he gives it as his opinion that the late epidemic of influenza caused more insanity than all the public and private anxiety in connection with the war with Africa. The weakness of will and the inability to sustain healthy mental exertion evident in asylums for the insane are found also, though in lesser degree, in houses of refuge, almshouses and prisons, and the parallelism of conditions of the mentally, morally and physically defective with the interchangeability of their classification are nowhere more compactly observable, more readily made subject of study, than in the public institutions departments of our great cities, with their shifting population passing from one institution to another, a pauper, a drunkard, a malefactor in succession, but always a public charge. These departments, classed in the civic roster with the department of public works as channels of expenditure, fiscal administration and possible political preferment, have come to be regarded, because of their humanitarian function, as fields for the exploitation of philanthropic effort. Worthy and commendable as this is and most welcome as opening the way to still better defined conditions, it fails of its fullest efficiency because it lacks the necessary foundation of accurate information in regard to the subjects with which it has to deal and, under the ordinary existing political conditions, fails of continuity of effort.

The care of the physically, mentally and morally sick is so very serious a part of the business of life, its judicious exercise so important to the welfare of the whole community, that it is best placed, unreservedly, in the hands of those whose training has fitted them for its obligations, and who have learned by repeated experiences that an emotion however good or an impulse however philanthropic, unexpressed in carefully considered and continuously beneficial work, sinks to the level of a personal gratification. The ideal institutions department is that which,

removed entirely from political control, but still part of the city government, is adjusted and administered upon the hospital basis, bringing to its service, as does the hospital, the conjoint efforts of the man of business and the physician. The actual work is in the hands of a general superintendent or commissioner, a medical man of large experience and institution training at a salary enabling him to devote his whole time to the duties of his office; under him, as heads of sub-departments, salaried officials, among medical men and women and house officers, either senior medical students or recent graduates, holding positions the equivalent of those in general hospitals; the whole under control, both as to appointment, general management and expenditure, of a board of trustees, the majority physicians, and an unpaid visiting medical staff.

The existence of such an institutions department would mean the establishment of a biological station, which would be the means bringing the greatest benefit to its inmates and at the same time would be an educational centre from which would emanate, for professional and public information, deductions derived from conscientiously applied scientific observation.

Affiliated with the institutions department in cities is the department of police; through the police station pass a large proportion of the inmates of the city institutions, and under police supervision and inspection live the defectives with whom the medical profession could advantageously be brought into more recognizedly effective contact, either by medical appointments on police commissions or by the creation of medical bureaus as a part of police departments.

Such bureaus, in addition to rendering the professional services for which private practitioners or contract surgeons are usually employed, would provide responsible care and carefully trained investigation in cases of accident or violence, with correspondingly accurate records, and could be made to do valuable correlative work with the institutions, the police and the hospitals.

It has been said by the trainers of youth that they do not get from the doctor the help expected and needed in the inculcation of those lessons which teach the moral value and moral use of the human body and are the substructure of healthful living, but it is doubtful also if the doctor has as yet had his sufficient opportunity. The recent endowment in a large university of a professorship of hygiene, with the stipulated condition that the appointment shall bear with it the obligation of a closer relationship with the lives of the students, is an important and welcome step in this direction, and the chair so endowed might be made the centre of a department of civics.

Still another relationship which may be broadened beyond its individual phase is that between the doctor and the clergyman, and recent experiments based upon a proposition that the divinity student should have opportunities to see the practical side of hospital and other institution work under medical guidance are so promising as to lead to the serious consideration of making this a definite part of the regular divinity-school instruction.

It would be interesting to take up in detail other and various channels through which the doctor, because of the elaboration of modern community life, finds recognized opportunities for his outgo from the

unit to the mass — such, for instance, as questions of water supply and sewage disposition, food and drug adulterations, asylum and hospital construction, health and quarantine regulations, hygiene and physical training — and to cite illustrative instances; but enough has been said to emphasize the fact that his principal value to the community springs from his intimate knowledge of the personal needs of his brother man.

His sociologic status is the outcome of this distinctive privilege, and his recognition and proper use of it, as the teacher of the individual and as the exponent of the beauty and righteousness of cleanly, wholesome and useful living, make his first duty to society.

ADDRESS.¹

BY H. C. WOOD, M.D., LL.D., PHILADELPHIA,
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It is true that, as told in the historical introduction to the Pharmacopeia, there was published in Philadelphia, in 1778, for military purposes, a small pharmacopeia, but it was the counsellors of the Massachusetts Medical Society who, in 1805, first appreciated the need in America of a general pharmacopeia, and it was the result of their labors, issued in 1808, that suggested to Dr. Lyman Spaulding, of New York City, the formation of the "National Standard."

The dry bones of history, such as may be found in the opening pages of the United States Pharmacopeia, interest most of us but little, but when they are clothed with flesh and blood, it quickens heartbeats to see how near akin the men of the past were to the men of the present, and how, notwithstanding all change, the continuing brotherhood of the race reveals itself in the written lines.

In 1874, profoundly impressed with the rapid multiplication of medical books, and the phenomenal growth of medical literature, I wrote in opening the preface to my book on therapeutics: "Indeed, art is so long; life is so short, that every student has the right to demand of an author by what authority he doeth these things, and to challenge every memoir for its *raison d'être*." Judge of my surprise, when recently looking over the Pharmacopeia published by the Massachusetts Medical Society, to read among the first sentences, "Books multiply so fast that it has become necessary to preface every new work with reasons, indeed almost an apology, for its appearance." This in 1808, when America was little else than a wilderness; when, as we view the matter, neither medical journalism nor medical literature existed in the United States.

Very far from the truth is Tennyson's antithesis between the permanence of the brook and the momentary life of humanity; the fact is, that the stream of mankind flows on forever, as much as does the current of the brook; only as the drops of water in the brook change moment by moment, so do the drops come and go in the great human stream, and almost as like as drops are to drops, so is man to man. Hands from which had scarcely fallen the gauntlets of Puritanism wrote in primal New England: "It must not be understood that in adopting the modern language of

botany and chemistry we have consulted the whims of every pretender. In this, as in former ages, men are creating confusion by creating names." Wise words are these, which the coming sub-committee on nomenclature of the United States Pharmacopeia should ponder a little more seriously than have their immediate predecessors. "In this, as in preceding ages, men are creating confusion by creating names." Applicable is this to all sciences, but most applicable is it in the purely natural studies, so-called, such as zoölogy and botany. Smith or Jones, or Thomson or Cope, written at the end of the name of an animal or plant fails not in its influence on human personality. I well remember with what glee and pride in the days of my callow youth, when I should have been under taskmasters learning methods and facts, I first saw "H. C. Wood" written after the name of a piece of fossil drift-wood from the coal fields of Pennsylvania. The boy is the father of the man. Unconsciously there remains in each one of us some capacity of enjoyment, such as was in the boy who, pointing to his name in the newspaper, said to his old aunt, "That's me." If the personal element could be withdrawn from the specific nomenclature of animals and plants, there probably would be much simplification. Let it be said of none of us that we have created confusion by creating names. Why must the poisoned American perish while we are searching our memories for *ferri oxidum hydratum cum magnesia*, when *antidotum arsenicum* might have saved his life, if only he had lived in Germany.

In the preface of the Pharmacopeia of 1808 it is interesting to find the germs whose subsequent growth has cost the members of this Convention and its committee so much labor. In accordance with the statement in the preface, "As there frequently arise errors of no small importance from the promiscuous use of weights and measures, it is proper that the quantities of substances, whether fluid or solid, be determined by weight." In accordance with this the framers of the first American Pharmacopeia adopted the system of parts by weight, but, unfortunately, they went on to say:

"Yet it may suffice to measure wine, water and aqueous liquids in some instances, provided that for this purpose vessels be employed, of glass where the nature of the substance requires it, whose capacities and divisions accurately correspond with the divisions or multiples of the modern pound." And so saying our fathers sowed the tares which grew up with the wheat, and choked out the true grain until only by the labor of many years were they uprooted and the system of parts by weight in its purity reinstated in the United States Pharmacopeia. The tares grew rapidly, for in the second edition of the Pharmacopeia, that of 1820, fluid measures were employed. The sin of the men of 1820 in changing from parts by weight to liquid measures of quantity was made greater by the fact that the liquid measures were not at that time in use among the apothecaries of America. That the amblyopia of the review was not deeper than that of their contemporaries is, however, shown by the following extract from a contemporary review of the National Pharmacopeia in July, 1821: "If the American Pharmacopeia be adopted throughout the United States, as no doubt it will be, these modes of indicating quantities must necessarily come into use, and that they will be continued after having been once intro-

¹ Abstract of President's Address at the Decennial Convention of the Revision of the United States Pharmacopeia, Washington, May 1, 1900.

duced, we do not hesitate to affirm, because they are more definite and precise and consequently safer than the old methods. In such case it will be necessary that the apothecaries be provided with the measures above mentioned."

The language of the Massachusetts Pharmacopœia of 1808 was English. The first United States Pharmacopœia of 1820 was printed in Latin, with a translation of the Latin into English upon the opposite page; and the Convention of 1830, as not departing from the use of Latin, justified itself in the language of the preface because "the Latin, if not essentially necessary, may prove highly serviceable by fixing the precise meaning of an English phrase which might not otherwise be well understood." Fancy an American apothecary or an American doctor of the present time, when he could not understand the exact meaning of the English, turning to the Latin in order to clarify his thoughts.

The Pharmacopœias of 1820 and 1830 were prepared by the conventions themselves, these conventions being composed solely of physicians. In 1840 the growth in numbers of the convention necessitated the reference of the detailed work of revision to a committee, and the method still in vogue was inaugurated. The same convention made itself further historic by determining that the convention to be called in 1850 should be composed of the two professions of medicine and pharmacy, by whose co-union in labor the continuance of the Pharmacopœia of the United States as an authority has been made possible.

Since 1840 the great part of the labor of revision of the Pharmacopœia has fallen upon the successive chairmen of the Committee of Revision. In sixty years of these labors there have been only four, namely, George B. Wood, from 1840 to 1860; Franklin Bache, from 1860 to 1870; Joseph Carson, from 1870 to 1880; Charles Rice, from 1880 to 1900. As no revision of the Pharmacopœia has been more successful than the last, and as at no time have the necessary duties of the chairman of the committee been as great as they are at present, so never in the century has there been found a man more laborious, more conscientious and painstaking, or better fitted by extraordinary acquirements and personal qualities to fulfil the onerous duties of the position than the present chairman; and your President most earnestly hopes that by his continuance in office the success of the next revision of the Pharmacopœia may be ensured.

During its whole life the United States Pharmacopœia has received no governmental support, and has been free from governmental control. Under the circumstances the influence which it has exerted upon the pharmaceutical and medical professions, the voluntary obedience which has been given to it are a tribute not only to its practical excellence, but also a strong evidence of that peculiar Anglo-Saxon power of recognizing authority which is not upon the statute books, a power born of self-control and common sense, which makes the race, of all others, most capable of self-government. The indirect recognition by the Government of the Pharmacopœia becomes each year more apparent both in Federal and State legislation, so that there does not seem to be at present any danger of the Pharmacopœia losing its control in the United States.

The Pharmacopœias which have been produced in the United States by voluntary effort both in the past

and in the present contrast favorably with the governmental standards of European countries. In its scientific accuracy, in its general usefulness, and in the efficiency and elegance of its resulting preparations, our Pharmacopœia is the peer of the best.

I am not one of those who are conceited in things American, freely acknowledging that we have added very little to the great sciences which underlie the practice of medicine, and that we have been indebted to Europe for almost all of our fundamental inspirations; I still hold most strongly to the belief that there are no therapeutics superior to the American therapeutics, and that in no other country has pharmacy been carried to the perfection that it has reached in the United States.

Delegates of the pharmaceutical associations, I congratulate you on representing a profession which has attained its highest development in the United States.

There is a probably widespread, and certainly often spoken of, feeling that the medical profession of the United States does not properly appreciate and support the United States Pharmacopœia. There is some foundation for this feeling, but certainly it is exaggerated. It is true that—owing to the activity of manufacturing pharmacists, and the number and skill of their commercial salesmen (vendors of samples), aided by the deficiencies of medical education and the peculiar childlike credulity which is so common in doctors—all kinds of proprietary mixtures and proprietary articles, and extra-pharmacopœial remedies are largely used in the United States. It is so easy for the lazy doctor to write for Smith's Panacea for human ills, and so easy for the doctor who knows neither *materia medica* nor therapeutics to order Jones's Consumption Cure or Thomas's Kamianlia, that so long as laziness and incompetence remain with us so long will this thing be done. But this is no fault of the Pharmacopœia, and no perfection of the Pharmacopœia will greatly influence it. Certainly any attempt to reduce the products of the Pharmacopœia to the level of the proprietary or patent medicine would be to destroy the dignity of the work, to bring it into contempt, and finally to uproot its influence. Under the influence of State law and of public opinion the average education of the American medical profession is rapidly and steadily rising; in this and not in anything that this Convention or its committee can do lies the hope of the future. Moreover, the intensity of the feeling that the American medical profession is not so thoroughly interested in the Pharmacopœia as it ought to be rests largely upon a misconception of the intent of the Pharmacopœia and its relations to the medical profession. A pharmacopœia is not intended to be a guide to practice, or a working-book to be used by the doctor, but is really a hand-book of the apothecary. I do not believe that at any time or in any country pharmacopœias ever had much sale among the medical profession; and each year, as the professions differentiate themselves more and more, as the doctor becomes less and less of a pharmacist, the tendency of the doctors to buy pharmacopœias must grow less rather than more.

The Pharmacopœia can only be popularized in the medical profession by making it a treatise on therapeutics; in other words, by causing it to cease to be a pharmacopœia. So long as it is a pharmacopœia it is the basis upon which text-books and dispensatories are

to be written; and it becomes through these treatises a guide to the medical profession. It remains the apothecary's *code mecum*, with which in hand he does his work, and its sales must be chiefly among the apothecaries.

There may have been a time when the medical horizon was so narrow that the doctor had time to trouble himself as to how the druggist made laudanum, but at present the doctor has as much as he can do to store his mind with purely medical facts; he wants simply to know what laudanum does when he puts it into the patient, and he trusts the apothecary to give him laudanum when he calls for it.

Be these things as they may, it is certain that the present condition of the United States Pharmacopœia is one of great prosperity. The book itself ranks with the best of its predecessors or of foreign pharmacopœias, representing all that was possible in 1890. Its hold upon the people of the United States is more firm than it ever was before. Its sales have far exceeded those of any previous edition, and for the first time in the history of this Association the treasury is overflowing. Indeed, so rich have we become that the greatest danger which threatens the Association is, to my thinking, this surplus of revenue.

Standing on the great divide between the centuries, viewing the past and the present, what lesson can we draw that shall help us to make sure the future? Is it not steadfastness to the old ways? Is it not that we shall push straight out the old paths? For one hundred years they have been trodden by successive generations who have found them sure roads to scientific advancement and practical success. Why should we depart from customs whose soundness has been time-proven?

Having adopted constitution and by-laws, appointed officers and the two committees, this Convention should give instruction to its officers and the two committees together to incorporate the Convention. I am told by eminent counsel that there is no legal difficulty in the way, only it must be clearly stated in the constitution that a delegate from one of the bodies entitled under the constitution to representation becomes by virtue of his election as a delegate a member of the incorporated body, and loses his membership when he ceases to be a delegate.

Finally, gentlemen of this Convention, a word and I have finished. As the American nation of 1800 seems to us to have been but a handful of seed from whose growth we are the fruit, so will those who shall meet here in the year 2000 think of the American people of to-day as a small body from which they have themselves sprung. We live but for the moment; one hundred years from now the greatest of us will remain only as fading memories; as men whose records have been so over-written on the palimpsest of time that only here and there can a sentence be deciphered. So it ever has been and so it ever shall be with the human race; men come and go and are not; but though the worker disappears and is forgotten the work lives on. Our fathers labored and we have entered into their labors. Let us see to it that preserving in its essential lines that which has come to us, and adding to it in our day and generation as strength is given us, we may leave for the coming century good work and true, which shall remain as the eternal though unrecognized witness of our earnest living.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

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(Continued from No. 18, p. 466.)

II. STANDARDS OF DIET.

VARIOUS attempts have been made by physiologists and chemists to devise standards representing the amounts of nutrients required, under varying conditions, for daily sustenance. There are, however, two great difficulties in the way of setting up such standards. The first is that there is not sufficient definite knowledge on the subject of nutrition to permit of an exact statement as to how much the average man, doing a certain class of work, requires for the maintenance of his body in vigorous condition and for the creation of energy expended in the form of heat and work. The second difficulty is due to the fact that different individuals of the same class differ widely in their demands for food and the use they make of it. One will eat more and the other less, while both do the same amount of work; or both will eat the same food and do the same amount of work, yet one will be fat and the other lean; or both have the same diet, and yet one will be strong and capable of performing considerable work, while the other will be weak and able to accomplish little. Exactly why individuals differ in their ways of utilizing their food, and how to measure these differences and make rules to exactly fit them, are problems which are as yet far from solution. The nutrition of man is by no means a mere question of grammes of protein and units of energy, and hence the subject of dietetics can never be reduced to an exact science. The best that can be done is to make general estimates, with the understanding that such estimates are only approximately correct, even for a special class. These are reached by observing the amount and relative proportion in the food actually consumed by the individuals composing the class in question, and also by experiments in which the income and outgo of the body are directly compared. But little investigation has as yet been done by the latter method, and present knowledge of nutrition may be considered to be based entirely upon observation and analysis of established dietaries. For laboring men performing moderate muscular work, the standards for daily diet, according to Atwater,¹⁵ have been variously fixed as follows:

NUTRIENTS IN DAILY FOOD.

Author.	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories	Nutrient ratio.
Playfair, England	117.78	49.83	530.01	3,140	1:5.4
Moleschott, Italy	131.37	40.77	548.13	3,160	1:4.9
Wolff, Germany	126.84	36.24	538.07	3,030	1:4.7
Voit, Germany	117.78	54.36	498.30	3,055	1:5.2
Atwater, United States	126.84	77.01-149.49	398.64-548.13	3,500	1:7

* This essay was unanimously awarded the prize of \$100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

In determining the diet of the soldier, however, the above standards do not apply, since they are sufficient only for moderate labor and are not capable of furnishing the requisite energy for the muscular work of a high degree which troops, from the nature of their service, may at any time be called upon to perform. For the requisite data in this respect, it is necessary to refer to the dietaries of men at hard labor, the following table being intentionally made to include dietaries of this character for various countries in the northern portion of the temperate zone, since the United States Army is heterogeneous in its composition, and the foreign-born element—largely derived from the countries named—undoubtedly brings with it into the service the dietetic preferences resulting from previous habit:

TYPICAL HARD LABOR DIETARIES FOR THE NORTHERN PORTION OF THE TEMPERATE ZONE.

	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories.	Nitrogen, grammes.	Nutritive ratio (protein to energy).
England	144	83	631	3,950	23.04	1:5.7
Royal Engineers, active work. Playfair. ¹⁶						
Sweden	189	110	714	4,725	30.24	1:5.1
Mechanics. Hultgren and Landergren. ¹⁷						
Russia	132	80	584	3,680	21.11	1:5.8
Factory operatives, near Moscow. Erisman. ¹⁸						
Germany	139	113	677	4,395	22.24	1:6.7
Machinists. Krupp Gun Works. Franz. ¹⁹						
Southern Austria	159	62	977	5,235	25.44	1:7
Farm laborers, at harvesting. Ohlmüller. ²⁰						
United States	154	227	626	5,275	24.64	1:7.5
Mechanics, Massachusetts and Connecticut. Atwater. ²¹						
United States Navy Ration	143	184	520	5,000	22.88	1:6.8
Atwater. ²²						
United States Army Ration, maximum author's calculation	164.2	97.8	600	4,061	25.33	1:5
Average	152	119.5	666	4,540	24.36	1:6.2

Total carbon, 463.89 grammes; nitrogen to carbon, 1:19.4.

As compared with the United States Army ration, included in the above table, the average of these dietaries is seen to be slightly in excess in fats, carbohydrates and fuel value, but deficient in protein. On the whole, however, the difference is not great, and the sufficiency in amount and proper proportion of the food provided for the soldier serving in a more northern portion of this country is abundantly demonstrated.

In the warmer portions of the temperate zone, but still well outside the tropics, the quantities of the several proximate principles required by the inhabitants are markedly inferior to the figures above given. The dietaries of these regions have not been as thoroughly studied as in countries lying in a cooler climate, but the following data are sufficiently comprehensive to be of both interest and practical importance. These figures, however, are based upon races, with the exception of the United States negro, of less body weight than those of colder climates, and hence are not properly comparable with similar figures for the latter class until reduced to a common standard

TYPICAL WORKING DIETS OF THE SOUTHERN PORTION OF THE TEMPERATE ZONE.

	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories.	Nitrogen, grammes.	Nutritive ratio (protein to energy).
Italy	76	38	396	2,290	10.55	1:6.3
Mechanics. Manfredi. ²³						
Italy	114	14	592	3,095	18.24	1:5.5
Army ration, peace. Moleschott. ²⁴						
Japan	66	9	544	2,585	10.66	1:8.5
Prisoners at work, Tokio. Eijkman. ²⁵						
United States Mexican, New Mexico, families. Goss. ²⁶	68	73	572	3,320	10.88	1:8.3
United States Negro	62	132	436	3,270	9.90	1:11.8
Southern Gulf States, families. Atwater and Woods. ²⁷						
Average	77	53.4	508	3,012	10.72	1:8

in this respect, since, according to Church,²⁶ the capacity for muscular work may be considered as closely related to body weight. If it be assumed that laborers in the southern portion of the temperate zone have an average weight of 125 pounds, while the corresponding class in the cooler part of the same zone have an average weight of 145 pounds—about that of the mean for the United States Army—the above average figures should be corrected as follows:

Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories.	Nitrogen, grammes.	Nutritive ratio (protein to energy).
89.3	61.94	589.28	3493	14.3	1:8
Total carbon, 354.73 grammes; nitrogen to carbon, 1:24.8.					

While the foods habitually used by natives of the tropics are well known to differ widely in character from those employed in temperate climates, and while the existence of a certain deficiency in the native dietary in the matter of protein and fats has long been recognized, there has been but little investigation as to the force value of the tropical dietary or to the exact qualities and relative proportions of the several proximate principles entering into its composition. Recourse to several large medical and technical libraries, together with application to the Department of Agriculture for information on this subject have, however, shown that the question of tropical dietaries has been locally studied by Maurel,² in the Island of Gaudeloupe, by Church,²⁸ in British India, by Eijkman,²⁹ in Java, and by Lapique,³⁰ in Abyssinia. The results obtained by these investigators in diverse portions of the tropical zone, although but few in number, nevertheless agree so closely in all respects that they may be accepted as conclusive and their average as fairly representing the nutrient standard of the laboring class of natives throughout the tropics. Using figures given by Maurel,² the average diet for the West Indian native, at hard labor, appears to be made up about as shown in the first table on the following page.

Eijkman²⁹ gives the ordinary food eaten by the Malay as consisting, per day, of 800 to 1,200 grammes of boiled rice, 150 to 200 grammes of ducks' eggs, 60 grammes of meat or fish, 150 to 250 grammes of pastry rather free from fat, and a varying amount of fresh

Articles.	Amount in grammes.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	3.16	—	2.94	.470	38
Chicken and fish (mullet), average	40	12.80	—	8.40	1.344	30
Rice	340.2	13.60	268.75	26.53	4.245	1,082
Yam	566	1.13	141.78	5.66	.905	616
Bananas, ripe	566	3.39	118.83	7.35	1.176	575
Sugar cane	340.2	—	52.25	5.06	.800	234
Total	1,872.4	34.08	581.64	55.91	8.910	2,575

Total carbon, 302.85 grammes; nitrogen to carbon, 1:37.8.

fruits. The average diet of a number of Malay laborers was determined by him to have the following composition :

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
30.2	471.9	73.3	11.73	2,512	1:7.4

Lapicque³⁰ states that the native Abyssinian soldiers in the Italian service at Massowah subsist almost entirely on the native durrha (kafir corn) made into cakes without fat; various sharp sauces, and sometimes ground beans or lentils, being used as accessories. Meat is eaten not more than once weekly, and is regarded rather as a condiment than a staple article of food. As a result of a large number of analyses the dietary of the Abyssinian soldier was found by Lapicque³⁰ to be made up as follows :

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutrient ratio (protein to energy).
30	360	50	8	2,100	1:8.7

In British India, according to Church,²⁸ the coolie rarely tastes animal food of any character, but subsists almost entirely upon rice and soy beans, the latter containing a large proportion of vegetable oil as well as nitrogen. This ordinary diet of the coolie laborer, in proximate composition and food value, is thus determined by Church :

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
33.1	355.8	61.6	9.69	2,013	1:7.7

The average of the above four tropical dietaries is as follows :

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
31.8	442.2	60.21	9.63	2,300	1:8.8

For purposes of comparison, however, these figures, like those for the inhabitants of the warmer portions of the temperate zone, must be reduced to the common standard of body weight of 145 pounds, the average weight of laborers in the undersized races of the trop-

ics being regarded as about 115 pounds, and the above figures are thus proportionately increased, as shown in the following table :

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
40	560.01	76.18	12.18	2,900	1:8.8

Total carbon, 318.13 grammes; nitrogen to carbon, 1:26.1

On contrasting the several dietaries which have been shown to obtain with men having an average weight of 145 pounds, engaged at hard muscular labor, in the northern portion of the temperate zone, the southern portion of the temperate zone and in the tropics, the difference in the quantity and character of food taken is seen to be most marked, particularly in relation to the protein and fats. The difference in force value between these dietaries is also very great, and even the carbohydrates, contrary to usual ideas, are diminished in the tropics in no small degree. These typical dietaries are shown in the following table :

Climate.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Carbon, grammes.	Fuel value, Calories.	Relation of nitrogen to carbon.	Nutrient ratio (protein to energy).
Northern portion of temperate zone	119.5	666	152	24.36	463.89	4,540	1:19.4	1:6.2
Southern portion of temperate zone	61.9	589.2	89.3	14.3	354.73	3,493	1:24.8	1:8
Tropics	40	560	76.18	12.18	316.13	2,900	1:26.1	1:8.8

It may, however, be urged that the marked variation in the composition and force value apparent in the above dietaries is due rather to racial preference than to climatic influence. This claim would scarcely appear to be well founded. It is a matter of common observation that natives of the tropics removed to colder climates soon adopt the dietetic customs of the region in which they may be resident. Further, it should be noted that Atwater and Woods²⁷ showed the average daily consumption of food in 20 negro families in the rural districts of southern Alabama to consist of 62 grammes of protein, 132 grammes of fats and 436 grammes of carbohydrates, and to possess a force value of 3,012 Calories; while Frissell and Bever³¹ found that the average dietary of 19 negro families of the same class, resident in Northern Virginia, yielded 109 grammes of protein, 159 grammes of fats and 444 grammes of carbohydrates—with a force value of 3,745 Calories. It is idle to assume that this great difference in the composition and nutrient value of the dietaries for corresponding classes of the same race, resident in different latitudes, can be dependent upon other than climatic conditions. It is evident, therefore, that the food of human beings, both in relative proportion and nutrient quality, varies directly with temperature, as approximately expressed by latitude.

The standard dietaries having been established for laboring men performing hard work under diverse climatic conditions, it becomes necessary to examine the present United States Army ration with a view of as-

certaining the nutritive value of its several components, and determining whether the quantities in which their issue is authorized will permit their combination in a daily allowance, not only desirable in theory and well qualified to maintain the health and vigor of the soldier but also thoroughly practicable under all conditions of military service.

(To be continued.)

Editorial Department.

BANQUET IN HONOR OF DR. JACOBI.

THE seventieth anniversary of the birth of Dr. Abraham Jacobi, of New York, was celebrated at Delmonico's on Saturday evening, May 5th, at a banquet which was attended by four hundred of his friends and professional associates. It was a distinguished and representative gathering, and a large number of ladies, among whom was Dr. Mary Putnam Jacobi, the wife of the guest of honor, listened to the speeches from the gallery. The menu cards contained an etched vignette of Dr. Jacobi, and during the evening there was presented to him a "Festschrift," entitled "International Contributions to Medical Literature," which contained a large number of original papers by eminent physicians and scientists in all parts of Europe and America. More than a year was taken up in the preparation of the volume, which is believed to be the first of its kind published in this country, and the edition of a thousand copies will be distributed principally among the libraries and physicians of the United States. Dr. Jacobi's birthday is really the 6th of May, and so at midnight the entire company rose, and amid much enthusiasm drank a toast of long life and happiness to him.

DR. JOSEPH D. BRYANT, one of Dr. Jacobi's successors in the office of President of the New York Academy of Medicine, presided, and made the opening address after dinner.

"Fortunate, indeed, it is, in the affairs of this life," he said, "that worthy and well-directed efforts addressed to the securing of personal and public betterment frequently beget, though oftentimes somewhat tardily, the sentiments of abiding confidence and esteem for those who prudently proclaim their importance and diligently labor for their attainment. It should be recognized at the outset that the observances of the evening are not devoted more to the learned gentleman whom we so delight to honor than to the recognition of those ennobling virtues of which he is the embodiment. The notable examples of the beneficent labors of our esteemed friend in the exercise of his professional skill and fraternal devotion are singularly akin to each other in their inception and in their spirit. In the one example he dedicated, through various channels of bounty, the full measure of his professional sagacity and fervor to the alleviation and cure of the suffering incident to the freedom of individual birth. In the other we are taught by the history of his fatherland that he bestowed a like measure of patriotic zeal to liberty's cause, fostering the birth of individual freedom. To the former service the ripe abundance of his years has been given, to the latter the richness of his youth was well-nigh sacrificed; with both his name is indelibly recorded, as the wise physician and the uncompromising patriot.

"Medical thought and medical progress, here and abroad, bear abundant evidence of the potent influence on their status of the products of his studious, logical mind. Thousands of physicians, while students in medicine and at bedside consultation, have gained of inspiration and comfort from his teachings and advice, in a degree equalled only by that of the fortunate recipients of his professional ministrations. All along the avenues of commendable professional endeavor directed to the attainment of proper public recognition, of increased knowledge and *esprit*, are

noted exalted products, to the achievement of which he contributed an untiring energy, guided at all times by sincere executive thought. The justice of this statement is witnessed by the significant presence of the New York Academy of Medicine and its library, and further emphasized by the fact that in the late effort to increase the latter he supplemented a previous bountiful contribution by the major part of the recent gain. The patriotic zeal of his earlier life was an earnest of his devotion to public duty during the later, and in neither instance has the cry of distress gone unheeded, while in both the weak have been strengthened, the wavering encouraged, and the justice of a cause assured by his word and presence. What he was to those of noble aspirations of the land of his birth he has been and is to those of the land of his adoption."¹

DR. FREDERIC E. SONDERN read a number of congratulatory letters and telegrams from universities, professors and distinguished medical men in all parts of the world, after which the following original poem, sent by Dr. S. Weir Mitchell, was read by Dr. Robert Underwood Johnson:

ABRAHAM JACOBI.

Medicus, Magister, Amicus.

No honors hath the State for you whose life
From youth to age has known one single end.
Take from our lips two well-won titles now,
"Magister et Amicus"—Master, Friend.

From the gray summit of attainment you
Look on the rugged path you knew to climb.
Take, with our thanks, for high example set
The palm of honor in this festal time.

Constant and brave, in no ignoble cause,
The hopes of freedom armed thy sturdy youth;
As true and brave in the maturer years
Thy ardent struggle in the cause of truth.

Nor prison bars, nor yet the lonely cell,
Could break thy vigor of unconquered will;
And the gray hairs which build as cruel walls
Have found and left thee ever victor still.

Ave Magister! take from us to-night
The well-earned praise of all who love our art
For this long lesson of unending work,
For strength of brain and precious wealth of heart.

Your busy hand gives much; but, oh, far more,
The gallant soul that teaches how to meet
Unfriended exile, sorrow, want, and all
That crush the weak with failure and defeat.

We gave you here a home; you well have paid
With many gifts proud freedom's generous hand,
That bade you largely breathe a freer air
And made you welcome to a freer land.

Ave Amicus! if around this board
Are they who watched you through laborious years,
Beyond these walls, in many a grateful home,
Your step dismissed a thousand pallid fears.

That kindly face, that gravely tender look,
Through darkened hours how many a mother knew!
And in that look won sweet reprieve of hope,
Sure that all earth could give was there with you.

Ave Magister! Many be the years
That lie before thee, thronged with busy hours!
Ave Amicus! take our earnest prayer
That all their ways fair Fortune strew with flowers.

DR. WILLIAM H. THOMSON, the present President of the Academy of Medicine, responded to the toast, "Dr. Jacobi, the Physician." He said that he had heard of Dr. Jacobi's reputation in that special department of medicine in which he has won such distinction long before he came to New York, thirty-eight years ago. His first impression of him on hearing him address an audience was that he was a stray archangel. During his entire medical career he had often been associated with him, and one of the characteristics of the man which had most impressed him was his careful observation of cases. This invariable habit of minutely investigating every case brought before him had been of incalculable value to thousands of students who

¹ Dr. Jacobi was born in Hürteln, Westphalia, on May 6, 1830, and was educated at Göttingen and Bonn. He enlisted in the "Young German" army of 1848, and was imprisoned for treason. He received the degree of M. D. in 1851, and came to New York in 1853.

had enjoyed the privilege of attending his clinical lectures; and it was no wonder, therefore, that his unequalled skill as a diagnostician had made him prized as few others in the profession as a consultant. In conclusion, he spoke of Dr. Jacobi's characteristic of always keeping in the forefront of the advances in medical science. With the engrossing cares of an unusually busy professional life, it was no easy task to keep fully abreast of the times, but this he always did. He was an eager devourer of medical literature, and was ever the first to welcome any addition to our knowledge, whether in the field of pathology and etiology or of therapeutics, and whether it came from across the Atlantic or from the profession in America. In this way he had kept step with the wonderful developments in bacteriology which had been made in the last few years, though at the same time he was always judiciously conservative, and his vigorous mind would not permit him to accept mere theories without proof.

PROF. WILLIAM OSLER, of Johns Hopkins University, responded to the toast, "Dr. Jacobi, the Scientist." "The great point of Dr. Jacobi's writings," he said, "was that there were so few of them, a marvellous thing in a generation which writes unendingly on all conceivable subjects." After mentioning a few of his scientific communications, each of which was his "most important," he went on to say that his really most important work was his treatment of the subject of infant feeding. "He is the banisher of colic and the soother of the infantile midnight," Dr. Osler remarked. "Had the babes and sucklings of the land any other language than a cry they would rise up and call him blessed. It was not my good fortune to be present at the last convention of the Women's Christian Temperance Union, but I am in receipt of some information from a friend of mine who was there, which information goes to show how the influence of Dr. Jacobi on behalf of the natural feeding of infants has spread the light. Here perhaps I should apologize to any young ladies who may be present in the gallery, but if the W. C. T. U. can stand it, I think they ought to be able to. The fact is, that estimable organization, I am given to understand, is going to form a Women's Infant Suckling Union. Legislation is going to be proposed at the next Congress making it a criminal offence for a baby to receive anything but its natural food; and providing that if this cannot be obtained at home, it shall be applied for and received at the offices of the Women's Infant Suckling Union. Profound investigation, I understand, has discovered that the debased and criminal and cranky of our land have been bottle-fed babies. All Silver Democrats, Populists and Christian Scientists, so the investigation shows, have been raised upon the bottle. For this saving motion on the part of the W. C. T. U. the nation is indebted, without doubt, to the teachings of our friend, Dr. Jacobi." Speaking more seriously, Dr. Osler said that Dr. Jacobi had maintained a fresh and vigorous intellect to an old age, and was not one of those who had fallen behind the advance of science, but was the contemporary of the best thought of the present.

PRESIDENT SETH LOW, of Columbia University, responded to the toast, "Dr. Jacobi in Relation to Medical Education." He eulogized Professor Jacobi's work as a teacher in the College of Physicians and Surgeons, the Medical Department of the University, and said he was very sure that the trustees would not allow the year to pass without some special recognition of his thirty-five years of brilliant and faithful service. He then referred to Dr. Jacobi's declination, in 1894, of the high honor of a chair at the University of Berlin, which had been offered him with many flattering inducements; saying that here he had received his opportunities, and to this country he preferred to give his invaluable labors.

THE HONORABLE CARL SCHURZ responded to the toast, "Dr. Jacobi as a Citizen." He said: "Of Dr. Jacobi's friends here, I am, no doubt, the oldest; probably the oldest in years, and certainly the oldest in friendship, for that friendship can look back upon just half a century of uninterrupted and, I may add, unclouded duration. It was in the year 1850, in the German University town of

Bonn, on the Rhine, that we first met. He was then still a student of medicine in regular standing. I was already an exile, but had recently come back to Germany, engaged in a somewhat adventurous enterprise connected with the revolutionary movements of that period — an enterprise which made it necessary to conceal my whereabouts from those in power, with whom my relations were at the time, to speak within bounds, somewhat strained. I had the best reasons for desiring to avoid persons whose ill will or indiscretion might have brought me in contact with the constituted authorities. It was then that a mutual friend introduced Jacobi and me to each other."

After dwelling for some time longer on their early reminiscences, Mr. Schurz spoke of his knowledge of Dr. Jacobi as a fellow citizen in the new world. "In him," he went on to say, "we see one of the adopted citizens whose peculiar patriotism is not always understood and appreciated by our native friends. It may strike some of you as somewhat audacious when I say that the adopted citizen may in a certain sense be a more jealously patriotic American than the native; and yet it is true. The adopted citizen usually preserves certain sentiments and reverential attachments to the country of his birth. But, just because of this, many are especially anxious to see the country of their adoption, by its virtue and the high character of its achievements justify their separation from their native land, and enable them to point with just pride to the choice they have made. They may for this very reason, when they see the character of their adopted country put in jeopardy, or its good name in the family of nations endangered, resent this, and stand up for the cause of right, and of integrity, and of honor, in their adopted country, with an intensity of feeling even greater than that which ordinarily animates the native."

Next followed the presentation of the "Festschrift," which was made by Dr. ARPAD G. GERSTER, in the following words:

"MR. CHAIRMAN AND GENTLEMEN: — It was nearly two thousand years ago that the poet of the Augustan era, Horace, penned the beautiful but true words, *Exegi monumentum ære perennius*. Every one knows how the prediction has been literally fulfilled. However, the poet's conviction would not have been thus confidently expressed had there not been underlying it the solid fact that of all men's works there is none more enduring than the written word. It is not strange, therefore, that when a group of five men met a year ago last February to consider a way in which the seventieth birthday of Dr. Jacobi ought to be celebrated, the idea of publishing a "Festschrift" — that is, a collection of literary contributions furnished by a number of willing friends and colleagues — was immediately adopted.

"Mr. Chairman, I hold in my hand a volume containing the scientific contributions of fifty-three medical men of note, men representing two continents and eleven nations. This tribute of the veneration and esteem of the authors is adorned by a splendid etching, the product of the masterly needle of James D. Smillie, a faithful image of the Ambrosian features of the original. I trust that the contents of the volume may be found as worthy of him whom they are meant to honor as their outward garb. Mr. Chairman, permit me through you to ask Dr. Jacobi to accept this volume as kindly as it is offered. Let it serve as the outward token of our affectionate regard. Permit me also to extend to him the sincere wish for his long-continued health and happiness. May it be granted to him to enjoy the sunny afternoon of a useful life in the mellow atmosphere of philosophical contentment, surrounded by those whom he loves best. *Vivat, crescat, floreat!*"

Dr. Jacobi, who was deeply affected, was greeted with loud and repeated cheers when he arose to respond. He spoke as follows:

ADDRESS BY A. JACOBI, M.D., LL.D.

I wish I could proceed from man to man and in silence press your hands, for words of mine do not suffice for

throne of feelings that swell my heart. Before me I see men in all high walks of life, members of my own and other professions, I see statesmen, poets, university professors and presidents—to me this illustrious assembly is university indeed. Of medical men there are at least two generations, few though of mine, but many of my own pupils who long ago became my masters and my teachers. Occasions like this, which is unique in its brilliancy and scope, are apt to try a man's soul. Your appreciation and applause is elevating and encouraging, but there is an element in it of a sorrowful sense of humiliation and discouragement, inasmuch as no man I believe can be, and I certainly am not, conscious of deserving them to the degree they are tendered. I take it for granted that I am expected to speak, in part, I suppose, of the topic of the evening—myself. But how, and what? I have been glorified as if I were dead. Not being quite dead yet, I could not join in the praise. On the other hand, to speak arrogantly of my doings would be discourteous to those who expressed their good opinions. If, after all, you will be content with hearing a plain talk on some of the things that happened to me and to the profession this half century, I shall consider it an honor to be listened to.

When I speak to you of my aspirations on my arrival here nearly forty-seven years ago, I probably say nothing new to those who once found themselves in a strange world, ignorant and not known, without relatives or social influence. I wanted, both from necessity and from impulse, to work in my profession. Young years had ripened in me the ambition to be useful either to the individual or to the masses. That is what had led me into the political life of the German revolution. I wanted to be useful to the sick, and in order to reach that aim strove to reduce my ignorance, which aside from being a natural gift was vastly increased in the wasting idleness of years spent in a Prussian state prison. Aspirations, however, will grow with widening horizons. When I came here I knew nothing of American medicine. It was simply unknown in Europe. Europe was America much better informed in regard to American medicine. With the exception of a few translations from the French and a number of English republications,—called American editions,—European literature was but scantily known and appreciated except by the few who, like Jackson and Oliver Wendell Holmes, had enjoyed the opportunities of being with that great master, Louis. I felt I might help in building a bridge between the literatures of the two hemispheres, and Stephen Smith took my first extracts. That office was rendered more unnecessary from year to year. European languages and literatures are more studied amongst us now, and personal intercourse between the two continents is easier and most frequent; so frequent indeed that there are voices that seem to advise against our young men's going to Europe to embark on post-graduate studies. That advice to be deplored. I should improve it by advising Europeans to come here for that purpose. The more the languages that are studied, the wider the horizons that are attained, the more different methods that are learned in medical pursuits, the more a man, young or old, will become a world to himself. By such exchange Europe has learned, and will learn, to respect us as we have admired Europe.

At an early time, long before the foundation in 1857 of the German dispensary, the first medical institution in New York in which German-born physicians began their co-operation with American medicine, I took an interest in the physiology and pathology of infancy and childhood. Was it the helplessness of the patients, the apparent or alleged difficulty of the subject, or its neglect in the American literature, or all three of these reasons, that made me take hold of it, I cannot tell. But it fired my heart and imagination to suppose that if I labored for that honor, the history of American pediatrics would possibly contain my name amongst, as I fondly hoped, many more. Beyond that my dreams never went. I could not believe, nor do I to-night, in spite of what has been going on here, that, as medicine has it, my name should ever be mentioned amongst the best. But what I know from the history of the subject

is this, that after the foundation of the first special clinic for the diseases of children in the New York Medical College in 1860 and in the University Medical College in 1865, such clinics increased in number, so that there is at present no large medical school without one. A very prominent part of our good medical literature is pediatric, and there are two journals exclusively dedicated to the diseases of children, some full professorships have been established, and the teaching mainly in New York, also in Boston and Philadelphia, has in part become bedside instruction.

Much credit has been given me I know for the rapid development of pediatrics in our country. It is true I have the doubtful advantage of being born in advance of my collaborators; but the time was matured for the new birth, and it so happened that many of the best medical minds of the nation became interested as I had been. Beside Stewart, Eberle, Meigs, hard-working, painstaking and honest J. Lewis Smith should not be forgotten. History, indeed, is not easily made by individuals, for a Washington is not born to every century or country. Not even a Bismarck could have moulded Germany into one nation if it had not been for the preparatory labors of previous generations, that of the revolutionary youth of 1848 included. Nor could a Johns Hopkins create what we now know Johns Hopkins University to mean, without the constant and conscientious co-operation of great men whose names are on every lip. It is true, however, in science alone, as pathfinders and organizers, single men may make history, but the tribe of Paracelsus, Morgagni, Haller, John Hunter, Bichat and Virchow is not numerous.

So you see that I have been most fortunate. A large family of brilliant pediatricists has grown up around me both in private practice and in official positions. Through them to a great part clinical teaching has become the acknowledged means of medical instruction, though in most of the faculty frames their branches are still considered inferior to what is called a full professorship with didactic teaching. On the other hand, pediatrics is by force of circumstances given the very highest rank; for instance, in Columbia University. It recognizes the necessity of postponing special pediatric teaching to the fourth year; that is, after the young men are deemed to be fully prepared and capable; it also considered itself lucky when the generosity of an unknown donor enabled it to establish a pediatric ward in Roosevelt Hospital for bedside instruction.

Unknown donor! More unknown or known donors are wanted. A single half million of dollars will suffice to build and endow a child's hospital of fifty beds. When that will be accomplished, in connection with a medical school, then, and then only, will Columbia, or any other university be able to supply the Commonwealth with doctors who had ample opportunities to study the diseases of infants and children that will always form the majority of their patients. The race of Vanderbilts, Carnegies, Sloanes, Ottendorfers, Woerishoffers, Seth Lows, Paynes and Pierpont Morgans cannot possibly be extinct.

In 1853—I speak of what I have seen myself—the medical schools had the most accomplished teachers and to a large part the most immature students. The teachers were mostly men of national reputation; many of them were instructed in Europe, most of them had enjoyed a classical education. Matriculants, however, were admitted as well from the plough as from the college, and no questions asked. The curriculum extended over two years, was almost exclusively didactic, the professor would teach the same subjects annually, and clinical teaching was in its embryonic stage. There are those here who remember that time, and also the lengthening of the course to three and finally to four years. Clinical teaching I have seen extending until, together with obligatory laboratory work, it bids fair to assume the leading part in our instruction.

In that way we imitated but did not reach Europe. It takes some time to get so far. We were a young people, and where the plough was required to sustain our lives, the microscope with its scrutiny of the almost invisible had

to wait. Our scientific institutions were not endowed and had to serve immediate practical ends. Laboratory workers could but rarely be paid for lack of funds. *But now* and for some time past, well-to-do men go into medicine for love, and not for money. They invest their own in their pathologic, biologic, histologic, or chronic labors, and as good citizens of the Republic are satisfied with the interest their investment will bear to the domain of science, in the service of humanity. Medicine, like politics, will be purer for the money put into it, instead of being taken out of it.

In still another respect I have been most fortunate. While pediatrics has become the subject of special study, and while there are even those who restrict their practice to infants and children, there never was the tendency to set it up as one of the narrow specialties. In regard to them many changes have taken place. During my own early life I have seen a meritorious man whom I much admired, Horace Greene, persecuted and derided because he paid what was considered too much attention to the larynx, perhaps also—who can tell—because he knew more about it than all of the rest; and while getting older I had to observe, first in Europe, then with us, the tendency to exaggerated specialization, which has contributed much to narrow the scientific, mental and moral horizon of many a young man who means to become a wealthy and famous specialist without ever having been a physician. I know of no pediatricist with that turn of mind. To study and practise a specialty should not mean to cut loose from medicine. It is not in vain that the fourteen great national special organizations feel the good that is in the consolidation into a triennial congress.

In regard to our medical schools it should be remembered that, with few exceptions, all of them were at one time, and most of them are still, private institutions. An intelligent American audience need not be told that vanity, avarice, territorial pride, professional jealousy, had a good deal to do with the mushroom growths. St. Louis and Chicago had at one time, and have perhaps to-day, thirty medical schools between them. That is why professors are as numerous as crab-apples, and plain doctors are scarce, at least in large cities. I am certain I express the opinion of all here when I say that medical teaching will be better, and more uniform, and more in accordance with the requirements of the public, when our one hundred and fifty schools will have been reduced to twenty-five, and each of them will be connected with a university, as its medical department.

At the same time, in 1853, American medical literature was in its beginning. It is true Drake had long before written his "Principal Diseases of the Valley of North America"—an immortal work. Holmes had proclaimed the contagiousness of puerperal fever many years before Semmelweis; but such great achievements were few. Original books were scarce. Some of our few journals were of the best. I mention the honest, scientific and conscientious *Journal of the Medical Sciences*, and the always noble and refined *Boston Medical and Surgical Journal*. There were in New York the *Journal of Medicine*, which has since been transformed into the *New York Medical Journal*, and the prototype, alongside the *Boston Journal*, of our present weeklies, the *American Medical Times*. And now in 1900! Your literature is as well known to you as to me. Let me speak, therefore, only of our more than three hundred medical journals. That some represent the finest flowers of intellectual research and keen observations, many more, however, the choicest rubbish accumulated by phenomenal ignorance and advertising impertinence, is simply a sad fact. Reduce them to forty; these forty will have a larger market, may be able to select their contributions and to pay the contributors, while at present they enrich the publishers only. The larger markets will enable professional men or corporations to follow and improve upon the example of the *Philadelphia Medical Journal*, and at least strike out for independent action, and finally found an independent press, not relying for its sustenance on the advertisements of proprietary articles, whose principal element is the barbarism of their names,

or on so-called original papers which bear the unwritten signature of nostrum manufacturers on every one of its bold and shameless pages. Gentlemen, it is time things should take a turn. There was a period when they asked: Who reads an American book? American books are now read the world over by privileged men, and even translated. Verily, verily, the time should come speedily when they will ask: Where is the ignoramus that does not know American literature?

'Twenty years' exertion before the legislature on the part of the medical profession—not of the schools, some of which were opposed to the progressive movement—has at last resulted in the demands of a minimum of preliminary knowledge before matriculation, and, further, in a law according to which the license to practise depends on the results of a State examination for citizens and foreigners, that is not controlled by the medical schools. The law, in its fear of improper influences, has even, incorrectly, I think, excluded from the board of examiners whomsoever is in any way connected with a teaching faculty. In all these successful endeavors of the rank and file of the profession, I lent my hand. If there be any merit in my so doing, I claim it. For though a college professor, I saw the mistake of the schools that combated the inevitable progress on account of alleged but misunderstood interests, and kept intact and sacred my allegiance to the great profession in which I started, and in which I hope I shall remain to my last hour. With another step in the evolution of medical teaching I have much less to do than I could wish; for the growth of post-graduate schools has not only disseminated modern knowledge and methods amongst the established practitioners, but also started an impulse in the graduate schools to arrange for post-graduate courses.

Medical societies have grown in membership, numbers and influence. But latterly their number has grown so as to justify the suggestion that there is no blessing in the multiplicity of names, inasmuch as new societies have to recruit themselves either from the members of older ones, or to look for candidates amongst the young men, by more or less scrupulous canvassing. There is more strength in forceful consolidation than in fanciful expansion. Besides, it is a matter of sincere regret to many of us to note that the spirit of unfriendliness should not be buried forever, and that now and then personal vanities and grivances have the better of common sense and justice, and of the professional welfare. Many years ago one of the societies—the orthopedic—gave up its separate existence to become a section of the Academy of Medicine; there are some others that would be more useful than they are even now by taking a similar step. Within the time I speak of that Academy took wondrous strides. I knew it in a small room in the University of Washington Square, in West 31st Street, and love it in its present palace, with its ever increasing public medical library, second in importance in the country, its impartial, non-political interest and co-operation in all public sanitary questions, with its labors in matters of quarantine, cholera and watershed, with its generosity to members and non-members alike that is so recognized as to provoke callous abuse, and with its ten sections in constant working order. They have given the young men, during now more than a dozen years, the opportunity for legitimate competition, for obtaining a hearing and making their reputations. Ask them, and they will tell you that their growing renown—next to themselves and their honest work—is due to the possibilities afforded them in the New York Academy of Medicine. May its shadow grow forever!

During a long life I have seen more. Hospitals were built or enlarged, dispensaries and similar places established to such an extent as to justify anxiety about, and the battle against, the abuse of medical charities. Personally I have always seen and still see a great danger in tempting people to demand and take gratuitously services they can and should pay for. The gradual undermining of individual honesty and responsibility will prove a nail to the coffin in which republican institutions, founded as they are on equality, mutual obligations and probity, may some day be

buried. The impulse given by the profession has also resulted in the foundation of the Willard Parker Hospital, which should have been one of many, and of the Minturn Hospital, in the improvement of the factory laws referring to children, in school inspection, which should be more comprehensive and more influential than it is, and in ridding the people of part of its quacks. How difficult that office is and how serious the danger connected with it, in spite of the persistent and well-directed efforts of the New York County Medical Society, can be appreciated only by those who know the extent of quackery in all classes of the public, which for proprietary medicines alone pays two hundred millions annually, and the sympathy it meets even with the alleged spiritual heads of mankind. Says Herbert Spencer: "The incorporation of authorized practitioners has developed a trades-union spirit which leads to jealousy of the unincorporated practitioners, that is, the irregulars." In the solitude of his study, and communing with himself, he did not learn the needs of the people and the necessity of protecting their health against their own ignorance and prejudice, and of offering them unadulterated and unselfish science and art, as you feel bound to furnish them pure water and food, sometimes, or often, against their will. There are but few of us that have a high opinion of the discernment and discretion of a large part of the public. For there is too much clairvoyance, Christian lack of science, medical sectarianism and medicine-chest quackery, and too much medical dilettantism amongst our well-clad and well-fed, semi-instructed, but uncultured and mentally unbalanced classes.

Meanwhile, the profession, and I amongst them, have plodded on. Untold thousands have arisen this half century of mine, or passed away. There were the wage workers, the teachers, the pathfinders. There were those who fought disease or epidemics bravely and survived, or those who died in a single task and left their small children hungry. It is true the time has passed by when the doctor was killed when he lost a patient. That is different now; we are more civilized, we are satisfied with murdering his good name. There were, there are, only few that gained repute, local or national. If there were it was not always to their advantage. Harvey and Gall, like many others that worked for science, lost their practice and livelihood; still without them there would have been no Bichat and no Virchow. The brave physician's work was always hard, for it is as difficult to save one life as it is easy to kill a thousand. That is why I cannot feel enthusiasm for the doctor who is occasionally puffed for leaving his humane work to participate in the killing, nor for the injustice of history, that mentions a thousand generals to one physician. Some of what I have said may be objected to. But I know that the views I expressed were mine always, and are not engendered by advancing age.

What after all is age? The boundary line between the young and the old is not, I take it, in the bald head or the gray whiskers, but in the change of a man's ambitions, motives and purposes, and of his relations to the world and its ways and aims. It is true that I have been told even to-night that I am seventy, in the pleasant way you have of showing your condolence. I can bear it as long as those not so old as I am accused of being treat me as their equal and call me young — for an aged man.

Now, may I betray to my younger colleagues — I like to talk to them — how I succeeded in getting along with my age and with the young, and remain — as many say — one of them? By arranging and gradually developing a life programme, I tried to learn from my books, my patients and my colleagues, sometimes even from midwives and old women. Ambrose Paré admitted that he hated quacks only when they could teach him nothing. I think, also, I did my duty to my patients and my colleagues.

In accordance with my democratic schooling, I was fortunate enough to have respect for the individual. That is why I found it easy to imagine myself in the place of a patient, and to spare his feelings if I could not preserve his life. Where you cannot save you can still comfort. I never told a patient he had to die of his illness, and hope

I shall never be so careless or so indolent as to do so in the future. The magnetic needle of professional rectitude should, in spite of occasional deviations, always point in the direction of pity and humanity. Another lesson I learned early was this, that my patient had to be treated, and not the name of his disease, and, also, as my illustrious medico-poetical friend proclaimed in Washington a few days ago: "Tis not the body, but the man is sick." My medical education dated from a dangerous era. Symptomatic diagnosis had been replaced by the anatomic. Rokitsansky and Skoda cared more for the dead bodies than the living convalescents; the former proclaimed loudly that the only thing scientific in medicine was the autopsy, and the Nihilism of Vienna was that time's modern therapy. You and the patient met only twice — first, when you made the diagnosis of his case; the second, at his autopsy. Fortunately in F. Nasse I had fifty years ago a teacher of unadulterated humanity, combined with all the scientific eagerness of his mental youth of exactly seventy years. From him also, though he was not a democrat nor a revolutionist, I learned the sacredness of individual right and life which I never ceased to respect. Thus I learned two things: first, never to let up in my care of individual life when entrusted to me; secondly, that no single political or religious creed ever owns, or controls, or interferes with the dictates of humanity and common sense. Man is above theories or creeds.

Further, my young friends, I never thought I owned my patients and never grudged my colleagues their own. I never shrugged my shoulders when they were well spoken of, and did not believe that my reputation suffered when they were eulogized. I always preferred patients should come to me, to my running after them. When a patient left me for some other doctor I may have felt chagrined, but I did not blame the doctor he called in. When a doctor robbed me of a patient by hook or crook, or both, — such things do happen, I believe, even now, — I was sorry for the doctor and for the profession, and glad I was not he. To compete honestly I think is easy for a gentleman; to bear dishonest competition should be easy, but it worries. Not to take honest competition on the part of others kindly, shows disregard for the rights of others, either doctors or patients, and bad citizenship; or it proves premature old age, with all its occasional avidity and venomous jealousy. Now, the morbid bitterness of old age, of which we hear, I have not experienced as yet, and if, or when, it will come with the increasing atherosclerosis of my brain arteries, I wish and trust somebody will tell me. There are, besides, a few tricks of mine which prevented both my brains and heart from getting altogether too rusty. There was a time — not so long ago — when I was the youngest everywhere. When I got bravely over that, I always kept in touch with the young, either students or colleagues or writers. Literature is always young, students and colleagues sometimes too much so. But they suited me exactly, for they kept me in touch both with my former self and the new era. Mainly in the last decade or two, the young men were compelled to learn many new things which, though Leuwenhoek two hundred years and Hensle sixty years ago saw the holy land from afar, could not have been believed possible by a Sydenham, or Boerhave, or Haller, or even Bichat. We older men are either behind the time, or we have to unlearn much of our dearly bought stock and to learn with the young men, or from them. To the young amongst you all, particularly to my own accomplished assistants both in private and official positions, I here express my thanks, not only for the direct instruction I have received from them, but for the imponderable intellectual and moral influence the intercourse between intelligent creatures must always exert. Then there is another trick. When your anger rises within you over some unjust thing, be not afraid of showing the blush on your face; when an iniquity is perpetrated, resent it. Be not afraid of slapping the cheek that deserves it in private or in public. Personally I hate enemies; they always fretted and worried me and gave me sleepless nights; but I never was afraid of the enemies I made as long as I fought the

battle of professional or civic decency and dignity. If there be a bad, or a ludicrous, or a dangerous man, and if he feels offended by my telling him of his misdeeds and my trying to protect the profession or the community against him, here I plead guilty, and I shall do it again for evermore. When I shall stop, then call me old.

The facility of obtaining a diploma and the license to practise, formerly greater than now, has so filled the profession with undesirable men and women as to crowd the ideal as to what a physician should be to the wall. It is only with the growing difficulty of matriculation and increasing severity of examinations that the number of underweight doctors becomes smaller. With this increase, and with growing competition, the methods of obtaining a livelihood in every business and vocation become more doubtful. That is why the morals of the profession have been subjected to a most severe strain. Moreover, the commercialism which is the signature of the end of our century has invaded industries, arts, science and the professions, the medical professions more in Europe — as I could easily prove — than in America.

This superiority of the moral tone in our American profession is due to the innate pride of our citizens, and has certainly been commemorated or preserved by the teachings of the code of the American Medical Association. So settled is that habit of modesty and pride amongst us that when finally we resolved in the Medical Society of the State of New York that no law-book was required to guide our methods of intercourse, the observance of the rules valid amongst gentlemen became even stricter in the profession of the State of New York than ever before. Still there are those who are infected with the meretricious spirit of the times and think they cannot wait for success. Indeed, no profession should expect to be exclusively composed of men of stern character and incorruptible probity. The methods of reaching their ends are therefore, as the case may be, those of vanity, or obtrusiveness, now and then of dishonesty.

Those of us, however, who crave notoriety in the belief that the majority of the public have as little brains as fish that take every bait will meet reporters at the bar or in the sacred concealments of their offices, get into the newspaper columns with their wonderful electrical discoveries, miraculous cases, unheard-of operations, and long titles, the least of which at present is "professor."

In the words of a great cynic, "What are you going to do about it?" There are those whose egotism and vanity are not controlled by any regard for the public good and who are acrobatic experts in the art of keeping on the fence between honorable professional behavior and shameless quackery. If they knew how ludicrous they are, and how pitiful they appear in the eyes of the honest crowd about them, they would do better. And here is a word to the young. I am afraid my old men are past changing, but it is a failing in our national character to be always cordial, always courteous, always handshaking. We do not identify the sin and the sinner; we abhor the former, and are too good-natured to shun the latter. If there be a danger to our morals and our politics, it is there. If you, the young men in the profession, will refuse approval and honors to men whose actions and methods you condemn, if you will only show them that your heart is chilled against them — some of them are in public positions — there will soon be an end to offences which need not always result from wickedness, but bad taste only. There are those indeed amongst the vain who fear the display of bad taste more than the perpetration of sin.

After all, however, when I look backward, I really do not believe that the moral tone of the profession is lower than circumstances will always necessitate in this period where trade is everything. There were jealousy, strife and competition at all times; and men were always human. The "good old times" is an ideal that, while its consummation is too far ahead or beyond the horizon altogether, is searched for backward. Doctors were always what their time, their people, their surroundings made them.

The mutual relation of physicians I have seen improv-

ing during my own time, that is, within half a century. Imagine that twice that time, only one century ago, the literature on the behavior of physicians toward one another was very copious; evidently, the need of it was great. At that time consultations between doctors were declared by a well-meaning writer to be impossible, purposeless, time-killing and "revolting," and as late as 1784 famous I. P. Frank advised seriously to call in the police to arbitrate and restore order when doctors disagreed in their consultations. That was only a century after the polite scoundrel of Molière proposed to his colleagues: "Let me bleed him, and I let you purge him."

Not very long before my time the amenities of professional intercourse cannot have been very great, when Lisfranc called Dupuytren the butcher of the Hôtel Dieu, and Dupuytren dubbed Lisfranc the "murderer of the Charité." One of the later publications on the mutual relations of doctors was that of Percival in 1807; it was made the law-book of the American Medical Association in 1847. My illustrious friend in Washington, Dr. S. C. Busey, who upholds it as a necessity, still proclaims that the rule forbidding consultations with sectarian practitioners altogether should be so modified as to permit them in cases of emergency. That is what the Medical Society of the State of New York made its policy in 1882. It was a number of years afterwards that the code was abolished altogether. As far as I am personally concerned, I am still of the opinion expressed years ago that there are no statistical data to prove that more sins are committed by gentlemen without than with a written code.

On the other hand, I cannot see why whatever differences there are between those who adhere to the code of ethics, and those who believe in and act on the same principles, could not be easily adjusted. Books are made for the use of men, by men; and no fires are lit any more in this country under the impression that differences of opinion can be killed like human bodies. The spirit does not burn like flesh. Why differences of opinions as to the indispensability of a written code should lead to animosity to such an extent as to preclude the possibility of a peaceful discussion, I have never been able to conceive.

What, indeed, does all the discord amount to? The whole profession agrees about the inadvisability of consultations, in the very interest of the patient, with a certain class of medical men, in the average cases of illness. In emergency cases such consultations are permitted for reasons of humanity by both parties of the profession. One of them bases its action on the written code of ethics, the other deems a written code unnecessary for its guidance. It is my opinion that our successors will hardly believe we ever were serious men when they learn that the enlightened and public-spirited profession could go to war over differences of motives and methods when the end in view was the same.

Mr. Chairman, I have been, more than I deserve, praised as a physician, as a teacher, as a citizen. My own remarks referred mainly to the first, for I am proud of the profession to which I belong. Every individual professional man, if he be, as mostly, a good man, and the collective profession have always proved good and statesmanlike citizens. They do not, I grieve to say, take much personal part in the politics of the city or country, but whoever knows the exhausting life the medical man is leading cannot wonder we are not often seen in the political arena. That is deplorable, and my word to the young is to lend a hand to this country of their birth, or of their adoption, for it is in America that many political, economic and social problems will have to be solved. In every other respect there is no man that gives more and gets less than the physician. And the profession at large?

There is no interest connected with the life and health of the community that was not fostered by the co-operating physicians. The Sanitary Commission of the Civil War contained illustrious names like Agnew and Krackowizer. Physicians know best or feel most intensely that a people stricken with poverty and ignorance, and decimated by preventable sickness, should be deemed an anachro-

nism in this century, and that, as Virchow expresses it, every epidemic is a warning that should teach a statesman that there is a preventable or curable disorder in the organism of the Commonwealth. Unfortunately it is too often true, what Anarcharsis said of Athens, that the wise men do the talking and the others the ruling. If that was not so, it would look impossible that a quarter of a million, asked for once, in behalf of the establishment of what is to be at the same time a life-saving station and an instruction camp, should be refused, while a million a day is spent on destruction; or that an appropriation required for the solution of problems connected with the mental health and disease of tens of thousands of our fellows should be withheld. The battles against prejudice, shortsightedness, and incompetence are always fought by the medical profession, which unfortunately is too often not consulted, and that, gentlemen not of the medical profession within the hearing of my voice, is what binds us together and renders us proud of one another, with that altruistic unselfishness which is our sacred egotism. To look back upon a long life spent in that profession is my greatest satisfaction, and to know that no changing influence of the day is able to divert the profession from its manifest destiny and plain duty of being and remaining the teacher and protector of the race in all that pertains to its physical and moral welfare is a boon greater than endless millions or worldly power. Of that profession I have been one, these many decades. That is why I am here, distinguished and honored more than I personally deserve, but understanding perfectly well that my brethren have come here with the sentiment of professional good fellowship, and the lay friends to do homage to their greatest benefactors, namely, medical science and the American medical profession, in the person of one of its fellows.

What I have said, gentlemen, may look to many rather like an academic discourse than an after-dinner talk. It remains for me to thank you for your patience; remember, however, this happens only once in seventy years. I have to express my thanks for many more things. Consider my recollections of nearly half a century. I came here a foreigner, and never was made to feel I ever was a foreigner. I emerged from a European state prison to breathe the pure air of a free country. My political and social ideals were not all fulfilled, it is true, for nothing is perfect that is human; that is why it was still necessary to be an abolitionist and a mugwump, with the perfect assurance — which I still hold — that some time or other the minority turns out to be the majority. I imported nothing but a willingness to work hard and to be modest and grateful. I joined a profession that owed me nothing, and knew still less of me than I knew of the profession. The kind reception I met with surprised me, for I knew that a foreigner would not be so treated in the country I had escaped from. I had but little except the knowledge of my duties and responsibilities. With that small capital I was received and allowed to co-operate as an equal in whatever concerned the profession and its relations to the commonwealth, city or country. I repeat only what everybody knows, so I do not boast when I say that one by one almost every place of honor the profession had at its disposal has been mine. Of *this* day I must not speak, for I cannot do so without tears in my throat. Who is there that wondered that when many years ago the great honor of a responsible position in a foreign country was offered me, it took me a single minute only to decline?² I was, I am, rooted in the American profession, that I have observed to evolve without governmental aid, out of its own might, to become equal to any on the globe. I was, I am, rooted in the country that was my ideal when I was young, my refuge when, alone and persecuted, I stole away, and always, clouds or no clouds, my sunny hope forevermore.

And this "Festschrift"! These last weeks I wondered many a time, and I do so now, that I should be the receiver of that honor. When many years ago heroes like Virchow, and then again Henoeh, were to be held up for the

admiration of the medical world, on both occasions I had the privilege of co-operating in the expression of the estimation in which they were held. This distinction is rare even in the country of my birth. In our country I know only of two such dedicatory volumes, the "Wilder Quarterly-Century Book of 1893," dedicated to Professor Burt Green Wilder, of Cornell University, and the volume presented to Professor W. H. Welch, of Johns Hopkins, once a hospital assistant of mine, now one of my honored masters, yesterday evening. That the country which adopted me, and gave me a peer amongst peers, opportunities to work, should in true cosmopolitan spirit adopt this method, rare enough in Germany, of raising a man to the greatest possible height of distinction and making him shine above all men — and this man I — is far beyond what was the culmination of all my possible hopes. That men here and the world over should respect me to the last day of my life was the extent of my pardonable wishes. If nothing else, however, this book, the work of others, will carry my name to posterity. I accept it with the gratitude due for that immeasurably rich gift. Amongst its contributors I see the names of many old friends, and some whose faces I never saw; the names of men from all civilized countries, honored in the realm of medical literature, known to one another by their achievements, separated by seas and boundary lines, but working for the same ends in the service of science and of mankind. Aims, methods and persistency are common to the medical profession of all countries. On its flag is inscribed what should be the life rule of nations: Fraternity and solidarity.

MEDICAL NOTES.

REPRESENTATION OF THE AMERICAN DERMATOLOGICAL ASSOCIATION AT PARIS. — At the meeting of the American Dermatological Association held in Washington in connection with the Congress of American Physicians and Surgeons, a Committee was appointed consisting of Dr. J. Nevins Hyde, of Chicago, Dr. Henry W. Stelwagon, of Philadelphia, and Dr. T. Caspar Gilchrist, of Baltimore, to represent the Association at the International Dermatological Congress to be held at Paris in early August, and to extend a warm invitation, in the name of the Association, to the members of that Congress to hold the next international meeting in this country in New York. The Committee was further instructed, in the event of the Congress giving a favorable response, to present the name, and urge the election, of Prof. James C. White, of Boston, the first President of the American Dermatological Association, and an honorary member of the French and Italian dermatological societies, for the presidency of that Congress.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS. — At a meeting of the American National Committee of the Thirteenth International Medical Congress, held at Cosmos Club, Washington, May 2d, with Dr. W. W. Keen in the chair, the secretary read the minutes of the preceding meeting and reported that already about two hundred American physicians had joined the Congress. It was unanimously voted that the President of the American Medico-Psychological Association be added to the Committee; and further voted that the organizations whose presidents compose the Committee be requested to contribute to the expenses of said Committee.

² Dr. Jacobi was offered a professorship in the University of Berlin. — ED.

A NEW SOCIETY FOR PATHOLOGY AND BACTERIOLOGY. — At a meeting recently held in Washington of a number of pathologists and bacteriologists, a new national society was decided upon. A committee of seven was appointed to arrange plans of organization: William T. Councilman, Harold C. Ernst, Simon Flexner, Ludvig Hektoen, William T. Howard, Jr., W. H. Park, Theobald Smith, were the original promoters of the plan.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 9, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 72, scarlatina 48, measles 89, typhoid fever 5.

TRANSMISSION OF PARASITIC DISEASE BY INSECTS. — At the next meeting of the Boston Society for Medical Improvement Dr. Theobald Smith will read a paper entitled "The Comparative Etiology of Malarial Diseases." During the course of the evening Dr. Smith will demonstrate, under the microscope, the malarial mosquito. This paper is of special interest on account of the valuable pioneer work in which long ago Dr. Smith tried to show the transmission of parasitic disease by insects.

FIFTIETH ANNIVERSARY OF THE NORFOLK DISTRICT MEDICAL SOCIETY. — Exercises commemorative of the fiftieth anniversary of the Norfolk District Medical Society were held at Hotel Vendome, Tuesday, May 8th. The address was delivered by Dr. H. C. Ernst, an historical sketch by Dr. C. Ellery Stedman, and after an enjoyable dinner a number of felicitous speeches were made by representative physicians of Boston.

BACTERIOLOGICAL LABORATORIES OF THE RHODE ISLAND HOSPITAL. — The new Bacteriological Laboratories of the Rhode Island Hospital were formally opened Thursday, May 10th. Drs. W. T. Councilman, J. W. C. Ely and G. Alder Blumer made remarks appropriate to the occasion.

METEOROLOGICAL RECORD

For the week ending April 28th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...29	29.97	52	60	44	71	100	86	N.	N.	4	10	O.	R.	.12
M...23	29.89	50	58	43	90	96	93	N.	E.	8	6	O.	O.	.03
T...21	29.96	48	52	43	94	75	84	N.	N.	8	7	R.	C.	.10
W...25	29.98	52	64	39	42	33	40	N.W.	N.W.	10	13	C.	C.	
T...26	29.81	54	64	45	34	49	42	N.W.	E.	13	4	F.	C.	
F...27	29.80	46	51	40	47	53	50	N.W.	N.W.	10	10	C.	F.	
S...28	30.01	46	52	39	53	68	60	N.	W.	10	10	O.	O.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, APRIL 28, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York . . .	3,651,514	1538	531	21.12	12.60	.18	2.82	1.62
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	618	210	21.76	29.20	2.88	3.31	4.96
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	237	62	27.84	21.18	1.44	4.32	1.92
Baltimore . . .	506,389	222	62	16.20	15.30	1.35	2.25	1.85
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	359,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	153	49	24.05	14.95	3.75	1.95	1.30
Washington . . .	277,000	110	23	22.34	2.47	3.64	.91	.91
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	92	21	21.69	22.68	—	2.16	—
Nashville . . .	87,754	—	—	—	—	—	—	—
Charleston . . .	65,165	28	7	7.74	10.71	—	—	—
Worcester . . .	111,732	38	16	15.78	18.41	—	—	—
Fall River . . .	103,142	25	8	16.00	16.00	—	—	4.00
Cambridge . . .	92,520	23	8	21.85	17.40	4.35	8.70	—
Lowell . . .	90,114	31	9	16.15	19.28	—	—	—
New Bedford . . .	70,511	31	13	16.15	12.92	—	3.23	—
Lynn . . .	68,218	12	—	25.00	16.66	—	—	—
Somerville . . .	64,394	20	8	25.00	20.00	—	5.00	—
Lawrence . . .	59,072	17	13	5.88	17.64	—	—	—
Springfield . . .	58,266	29	11	6.90	20.70	—	3.15	—
Holyoke . . .	44,510	24	11	8.30	12.45	—	—	—
Brockton . . .	38,759	—	—	—	—	—	—	—
Salem . . .	37,723	21	6	9.32	4.76	4.76	—	—
Malden . . .	36,421	6	1	—	16.66	—	—	—
Chelsea . . .	34,235	10	1	—	—	—	—	—
Haverhill . . .	32,651	10	—	—	50.00	—	—	—
Gloucester . . .	31,426	5	—	—	—	—	—	—
Fitchburg . . .	30,523	5	—	40.00	20.00	—	—	—
Newton . . .	30,461	12	2	25.00	5.88	—	16.66	—
Taunton . . .	28,527	12	3	28.76	14.28	—	—	—
Everett . . .	28,192	7	3	50.00	—	—	—	—
Quincy . . .	24,578	4	—	—	—	—	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	7	—	28.56	11.28	14.28	—	—
North Adams . . .	21,583	4	1	25.00	—	—	—	25.00
Chicopee . . .	18,316	11	6	—	9.09	—	—	—
Medford . . .	17,190	8	4	12.50	12.50	—	—	—
Newburyport . . .	15,956	7	—	—	14.28	—	—	—
Melrose . . .	14,721	6	3	—	—	—	—	—

Deaths reported 3,405; under five years of age 1,156; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 727, acute lung diseases 539, consumption 379, diphtheria and croup 98, measles 72, typhoid fever 54, whooping-cough 31, diarrheal diseases 28, erysipelas 25, scarlet fever 25, cerebrospinal meningitis 15.

From whooping-cough New York 21, Pittsburg 2, Boston, Washington, Providence, Cambridge and Lynn 1 each. From diarrheal diseases New York 13, Pittsburg 5, Baltimore 4, Fall River 2, Boston, New Bedford, Somerville and Holyoke 1 each. From erysipelas New York 16, Boston 5, Providence 3, Medford 1. From scarlet fever New York 13, Philadelphia 6, Boston 4, Providence and Everett 1 each. From cerebro-pinal meningitis Boston 4, New York, Worcester and Somerville 3 each, Lynn and Newton 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 21st, the death-rate was 21.3. Deaths reported 4,747; measles 159, whooping-cough 123, diphtheria 56, diarrheal 32, scarlet fever 30, fever 29, small-pox (Liverpool) 3.

The death-rates ranged from 12.9 in Birkenhead to 30.6 in Plymouth; Birmingham 23.2, Bradford 18.4, Croydon 16.7, Gateshead 21.0, Hull 17.3, Leeds 19.6, Liverpool 26.9, London 20.6, Manchester 28.8, Newcastle-on-Tyne 18.9, Nottingham 17.2, Portsmouth 17.7, Sheffield 22.7, Swansea 13.8, West Ham 17.1.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 5, 1900.

(BY CABLE FROM ASIATIC STATION.)

W. E. HIGH, assistant surgeon, detached from the "Manila" and ordered to the hospital.

D. G. BERBE, assistant surgeon, detached from the "Yorktown" and ordered to the "Isle de Luzon."

T. A. BERRYHILL, surgeon, detached from the "Monongahela" on reporting of relief and ordered home and to wait orders.

W. M. WHEELER, passed assistant surgeon, detached from the "Vermont," May 3d, and ordered to the "Kearsarge."

G. H. BARBER, passed assistant surgeon, detached from the "Kearsarge" and ordered to the "Monongahela."

D. H. MORGAN, assistant surgeon, ordered to the "Vermont," May 3d.

J. C. BOYD, medical inspector, detached from duty as assistant to Bureau of Medicine and Surgery, Navy Department, and ordered to the "New York" as fleet surgeon of the North Atlantic Station.

P. FITZSIMONS, medical inspector, detached from the "New York" as fleet surgeon of the North Atlantic Station and ordered to proceed home and wait orders.

J. D. GATEWOOD, surgeon, detached from the Bureau of Medicine and Surgery, Navy Department, May 8th, and ordered to duty as assistant to Bureau of Medicine and Surgery, same day.

C. D. BROWNELL, passed assistant surgeon, ordered to the Naval Training Station, Newport, R. I.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MAY 3, 1900.

BAILHACHE, P. H., surgeon. Detailed to represent the Service at the Convention for the Decennial Revision of the U. S. Pharmacopeia at Washington, D. C., May 2, 1900. April 30, 1900.

WASDIN, EUGENE, surgeon. Detailed to represent the Service at the meeting of the American Medical Association at Atlantic City, N. J., June 5-8, 1900. May 1, 1900.

COBB, J. O., passed assistant surgeon. To report to Chairman of Board of Examiners for examination to determine fitness for promotion to the grade of surgeon. April 30, 1900.

GEDDINGS, H. D., passed assistant surgeon. Detailed to represent the Service at the Convention of the Decennial Revision of the U. S. Pharmacopeia at Washington, D. C., May 2, 1900. April 30, 1900.

ROSENAU, M. J., passed assistant surgeon. Detailed to represent the Service at the meeting of the American Medical Association at Atlantic City, N. J., June 5-8, 1900. May 1, 1900.

TABB, S. R., assistant surgeon. Upon being relieved from duty at Savannah, Ga., to report in person at the Bureau for further orders. May 3, 1900.

McMULLEN, JOHN, assistant surgeon. Granted three days' extension of leave of absence. April 29, 1900. Granted three days' extension of leave of absence. May 1, 1900.

VON EZDORF, R. H., assistant surgeon. Relieved from duty at New Orleans, La., and directed to proceed to Savannah, Ga., and assume command of the Service. May 3, 1900.

FRICKS, L. D., assistant surgeon. Relieved from duty at Washington, D. C., and directed to proceed to Manila, P. I., and report to the chief quarantine officer for duty. April 27, 1900.

CORPUT, G. M., assistant surgeon. To proceed to Mullet Key, Fla., and assume command of the Detention Camp and the steamer "W. D. Bratton." April 30, 1900.

STANSFIELD, H. A., assistant surgeon. Relieved from duty at Honolulu, H. I., and directed to proceed to Manila, P. I., and report to the chief quarantine officer for duty. April 27, 1900.

MAGUIRE, E. S., hospital steward. Relieved from duty at Evansville, Ind., and directed to proceed to New York, N. Y. (Stapleton), and report to the medical officer in command for duty and assignment to quarters. May 1, 1900.

MASON, M. R., hospital steward. To proceed to New York, N. Y., and report to the medical purveyor for temporary duty. April 28, 1900.

HOLT, E. M., hospital steward. To proceed to Portland, Me., and report to the medical officer in command for temporary duty and assignment to quarters. April 28, 1900.

BOARD CONVENED.

Board convened to meet at Washington, D. C., May 3, 1900, for the examination of Passed Assistant Surgeon J. O. COBB, to determine his fitness for promotion to the grade of surgeon. Detail for the Board: Surgeon J. H. WHITE, Chairman; Surgeons R. M. WOODWARD and G. T. VAUGHAN, Recorder.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The last regular meeting of the Society for the season 1899-1900 will be held at the Medical Library, 19 Boylston Place, on Monday evening, May 14th, at 8 o'clock.

Dr. Edward H. Nichols will speak on "The Etiology of Cancer; Observation of the Work in Foreign Laboratories."

Dr. Theobald Smith will read a paper entitled "The Comparative Etiology of Malarial Diseases."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Clinical Medicine, Pathology and Hygiene will hold its last regular meeting at 19 Boylston Place, Wednesday, May 16, 1900, at 8 P. M.

At 8 o'clock: Dr. G. G. Sears will present a short communication entitled "A Note on Rectal Feeding in Peptic Ulcer."

At 8.10 o'clock: Dr. H. F. Hewes, "An Achlorhydria."

At 8.20 o'clock: Dr. M. P. Smithwick, "Eye-Strain as a Cause of Gastro-intestinal Disturbances."

J. BERGEN OGDEN, M.D., Secretary,
Harvard Medical School, Boston.

RECENT DEATH.

CHARLES CARROLL STREET, M.D., M.M.S.S., died in Boston, May 7, 1900, aged sixty-four years.

BOOKS AND PAMPHLETS RECEIVED.

First Annual Report of the State Board of Insanity of Massachusetts for the Year ending September 30, 1899. Boston, 1900.

Annual Report of Major Frank J. Ives, Surgeon U. S. Volunteers, Chief Surgeon, Department of Matanzas and Santa Clara, 1899.

Transactions of the Louisiana State Medical Society at its Twentieth Annual Session, held at New Orleans, La., May 16, 17, 18, 1899.

Twenty-ninth Annual Report of the Trustees of the City Hospital of the City of Worcester for the Year ending November 30, 1899. Worcester. 1900.

Some Remarks on the Symptoms and Operative Treatment of Bronchocele, especially in Relation to Graves' Disease. By Francis J. Shepard, M.D. Reprint.

A Hand-Book for Nurses. By J. K. Watson, M.D. (Edin.). American edition under the supervision of A. A. Stevens, A.M., M.D. Philadelphia: W. B. Saunders. 1900.

Anesthetics: Their Uses and Administration. By Dudley Wilmot Buxton, M.D., B.S. Third edition. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1900.

Ulcer of the Stomach and Duodenum and its Consequences. By Samuel Fenwick, M.D., F.R.C.P., and W. Soltan Fenwick, M.D. (Lond.), M.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1900.

Transactions of the New York Obstetrical Society from October, 1898, to October, 1899. With Complete Index. New York: Published by the American Gynecological and Obstetrical Journal. 1899.

Paralytic Deformities of the Lower Extremities; The Principles of their Surgical Treatment. By E. Noble Smith, F.R.C.S. (Edin.), L.R.C.P. (Lond.), etc. Illustrated. London: Smith, Elder & Co. 1900.

Elements of Clinical Bacteriology for Physicians and Students. By Dr. Ernst Levy and Dr. Felix Klemperer. Second enlarged edition. Authorized translation by Augustus A. Eshner, M.D. Philadelphia: W. B. Saunders. 1900.

Transactions of the Obstetrical Society of London. Vol. XLI, 1899, with a List of Officers, etc. Part IV for October, November and December. Edited by John Phillips, M.A., M.D., Sr. Secretary, and Percy Boulton, M.D., London.

Transactions of the American Dermatological Association at its Twenty-third Annual Meeting, held in the College of Physicians, Philadelphia, Pa., May 30 to June 1, 1899. Official Report of the Proceedings by George T. Jackson, M.D., Secretary.

Twentieth Century Practice: An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by Thomas L. Stedman, M.D., New York City. In 20 volumes. Vol. XIX, Malaria and Micro-organisms. New York: William Wood & Co. 1900.

Essentials of Diagnosis, arranged in the Form of Questions and Answers, prepared especially for Students of Medicine. By Solomon Solis-Cohen, M.D., Professor of Clinical Medicine, etc., and Augustus A. Eshner, M.D., Professor of Clinical Medicine. Illustrated. Philadelphia: W. B. Saunders. 1900.

Essentials of Surgery, together with a Full Description of the Handkerchief and Roller Bandage; arranged in Form of Questions and Answers, prepared especially for Students of Medicine. By Edward Martin, A.M., M.D. Illustrated. Seventh edition, revised and enlarged, with an appendix, etc. Philadelphia: W. B. Saunders. 1900.

Stricture of the Esophagus as a Complication and Sequel of Typhoid Fever; Report of a Case Cured by Abbe's Operation. What Should be the Position of the Surgeon Relative to the Treatment of Appendicitis? A Contribution to the Surgery of the Common Bile-Duct; Report of a Case of Choledochenterostomy. By John E. Summers, Jr., M.D., Omaha, Neb. Reprints. 1899-1900.

Original Articles.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

BY EDWARD L. MUNSON, M.A., M.D.,
 Captain and Assistant Surgeon, United States Army, Washington Barracks, D. C.

(Continued from No. 19, p. 492.)

The following table, compiled from data elaborated by Atwater and Bryant,⁸² shows the chemical composition and nutrient values of the various articles of the ration; the soap and candle, coffee and seasoning components, which are merely accessory to the nutritive articles, and possess little if any force value, not being taken into consideration, as requiring no alteration in quantity for the tropics:

In the following table are included those articles of food which, taken together, may be considered to constitute the ordinary ration for troops in the field or during campaign:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Bacon	12	210.12	—	31.28	4.99	2,085
Hard bread	16	5.90	370.50	65.70	10.44	1,712
Beans	2.4	1.22	40.18	15.16	2.42	240
Dried fruit	2	1.02	33.80	1.18	.27	147
Sugar	2.4	—	64.60	—	—	264
Total	34.8	218.26	489.08	113.32	18.12	4,448

Total carbon, 432.78 grammes; nitrogen to carbon, 1:23.8.

Articles of Ration.	Quantities per ration, ounces.	Per Cent. of					Amounts Present in Ration (Grammes).				Fuel Value per ration, Calories.
		Water.	Protein.	Nitrogen.	Fat.	Carbohydrates.	Protein.	Nitrogen.	Fat.	Carbohydrates.	
Fresh Beef (fore and hind quarters)	20	50.5	14.7	2.35	15.8	—	83.35	13.3	89.5	—	1,180
Or Fresh Mutton	20	43.8	16.3	2.60	22.2	—	92.4	14.7	125.8	—	1,440
" Pork	12	16.2	16.2	2.59	66.2	—	55.08	8.8	225.08	—	2,187
" Bacon	12	16.8	9.2	1.47	61.8	—	31.28	4.99	210.12	—	2,055
" Salt Beef	22	49.6	14.2	2.27	22.8	—	88.6	14.16	142.3	—	1,534
" Dried Fish (Cod)	14	40.3	16	2.56	.4	—	63.52	10.16	1.59	—	276
" Fresh Fish (Cod, whole)	18	38.7	8	1.28	.2	—	40.8	6.5	1.02	—	155
Flour	18	12.8	10.8	1.55	1.1	74.6	55.08	7.9	5.6	380.46	1,850
" Soft Bread	18	35.4	9.5	1.36	1.2	52.8	48.45	6.9	6.12	269.28	1,355
" Hard Bread	16	9.2	14.4	2.30	1.3	72.8	65.7	10.44	5.9	330.5	1,712
" Cornmeal	20	12.9	8.9	1.41	2.2	75.1	50.4	7.99	12.4	425.8	1,956
Beans	2 2-5	13.2	22.3	3.56	1.8	59.1	15.16	2.42	1.22	40.18	240
Or Rice	1 3-5	12.4	7.8	1.24	.4	79	3.5	.56	.18	35.55	163
" Peas	2 2-5	10.8	24.1	3.85	1.1	61.5	16.38	2.62	.75	41.8	246
" Hominy	1 3-5	11.9	8.2	1.31	.6	78.9	3.69	.59	.27	35.5	172
Potatoes	16	78.9	2.1	.336	.1	18	9.5	1.52	.45	81.7	380
Or Potatoes 80 per ct. and onions 20 per ct.	16	78.8	1.9	.312	.16	16.1	8.6	1.4	.72	73.09	340
" Potatoes 70 per ct. and canned Tomatoes 30 per ct.	16	83.7	1.8	.288	.13	13.8	8.16	1.30	.58	62.59	297
Dried Fruits (average of varieties issued)	2	29.5	2.09	.334	1.8	59.7	1.18	.19	1.02	33.8	147
Sugar	2 2-5	—	—	—	—	95	—	—	—	64.6	264
Or Molasses	16-25 gill.	25.1	—	—	—	69.3	—	—	—	41.25	198
" Cane Syrup	16-25 gill.	—	—	—	—	69.5	—	—	—	41.36	198

2.4 per cent. nitrogenous matter present, probably not protein.

From the above table it is apparent that the ordinary variation of the articles composing the food of the soldier, as contemplated in the establishment of the ration, does not furnish dietaries of the same proximate composition or nutritive value. How great this difference may be, from day to day, it is of importance to determine.

Using the figures just given, the proximate composition and nutrient value of the maximum quantity of food material which may be drawn as a daily allowance by the United States soldier is seen to be as follows:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	89.50	—	83.35	13.30	1,180
Flour	18	5.60	380.46	55.08	7.90	1,850
Beans	2.4	1.22	40.18	15.16	2.42	240
Potatoes	16	.45	81.70	9.30	1.52	380
Dried fruit	2	1.02	33.80	1.18	.19	147
Sugar	2.4	—	64.60	—	—	264
Total	60.8	97.79	600.74	164.27	25.33	4,061

Total carbon, 427.03 grammes; nitrogen to carbon, 1:17.

* This essay was unanimously awarded the prize of \$100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States

A selection of food stuffs which may fairly be assumed to represent the usual dietary of the soldier in garrison is shown in the following table:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	89.50	—	83.35	13.30	1,180
Soft bread	18	6.12	269.28	48.45	6.90	1,355
Potatoes and onions	16	.72	73.09	8.60	1.40	340
Dried fruit	2	1.02	33.80	1.18	.19	147
Sugar	2.4	—	64.60	—	—	264
Total	58.4	97.36	440.77	141.58	21.79	3,206

Total carbon, 314.57 grammes; nitrogen to carbon, 1:16.3.

The following dietary combines the several articles of the ration which approach most closely in character to the foods commonly employed by natives of the tropics:

Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh fish (cod, whole)	18	1.02	—	40.80	6.50	155
Soft bread	18	6.12	269.28	48.45	6.90	1,355
Rice	1.6	.18	35.55	3.50	.36	163
Potatoes and tomatoes	16	.54	65.80	8.17	1.36	297
Dried fruits	2	1.02	33.80	1.18	.19	147
Sugar	2 4	—	64.60	—	—	264
Total	56	8.88	469.03	102.10	15.51	2,321

Total carbon, 241.84 grammes ; nitrogen to carbon, 1:16.7.

On consideration of the preceding four dietaries it is seen that the first combination, as compared with the average dietary for individuals of the same weight native to the tropics, presents a great excess in protein, fats and fuel value — even the carbohydrates being largely increased. In the second arrangement the fats are present in five times the quantity apparently sufficient and desirable under tropical standards, the protein is in considerable excess and the fuel value unnecessarily high, while the deficiency in carbohydrates is noticeable. In the third dietary the fats and protein are both in excess, but the quantity of carbohydrates is markedly deficient. The force value of this combination is not far from the actual requirements of the system, in the tropics, as regards energy. In the last arrangement of the articles of the ration the protein is seen to be present in slight excess, while the fats and carbohydrates are markedly deficient, the former especially so. The force value of this dietary, also, is wholly insufficient to meet the needs of even moderate muscular labor. The conclusion is therefore justifiable that while the several articles composing the ration are well selected, the quantities in which their issue is now authorized are so proportioned that their combination in a dietary, approximately similar to the nutrient standard of native laborers in the tropics — even under conditions of equality as regards weight — is theoretically as well as practically impossible. It may, therefore, be accepted that the proportions of the ration as at present existing do not permit the fulfilment of proper dietary requirements under conditions of tropical service.

III. THE RATION FOR TROPICAL SERVICE.

Quantity.—Prolonged heat exerts an unfavorable influence upon the digestive and assimilative functions. Hence work should not be imposed upon the alimentary tract in excess of its powers and the diet should be restricted as compared with that of temperate climates, particularly since both diarrhea and dysentery are known to be favored by the presence of a large amount of undigested food in the intestine, while tropical anemia may be hastened by malassimilation resulting from overtaxation of the digestive powers. The respiration, as has already been shown, is much less energetic after arrival in the tropics, and this, combined with rarefaction of the atmosphere and other factors, results in a much less amount of oxygen being introduced into the blood than is the case in temperate climates. If the reduced quantity of oxygen available finds in the organism an excess of alimentary substances it is evident that oxidation of the latter will be delayed even if ultimately complete, and metabolic

equilibrium is thus disturbed. Further, according to Foster,³³ the amount of heat evolved by the internal organs depends largely on their stimulation. In the case of the salivary glands the temperature of the saliva during irritation of the chorda has been found to be 1° to 1.5° higher than that of the blood in the carotid artery at the same time; and the same author states that, in all probability, the investigation of other secreting glandular organs under excitement would yield similar results. Particularly is this true of the liver, an organ in which a large amount of heat is produced, as is shown by the fact that a temperature of 40.73° C. has been observed in the hepatic vein, while that of the right heart was 37.7° C. and that of the inferior vena cava 36.35° C. Hence the excitation of the liver, either through the improper selection of foods or an excess of nutritive material requiring disposal, is to be avoided in hot climates. It is obvious that the consumption of any considerable amount of food for the production of internal heat is here as unnecessary as it is undesirable, while the nutritive needs of the organism require a smaller amount of material to repair the systemic losses resulting from the decreased oxidation and normally less active life of the tropics.

Protein and nitrogen.—The proteid molecule, as shown by Krukenberg,³⁴ Pavy,³⁵ Schuetzenberger³⁶ and others, is not to be considered as a perfect chemie body, but as a complex, composite mixture of a glucosidal nature, containing nitrogenous, carbohydrate and fatty radicles. Protein has been experimentally decomposed into these radicles, outside the body, by the above investigators; and it has been determined by Cohnheim,³⁷ Seegen,³⁸ Külz,³⁹ Mering⁴⁰ and others, through artificial conditions of diet, that the same cleavage occurs as a result of the processes of oxidation within the organism. The non-nitrogenous radicles have as their object the production of energy; and when the systemic needs are satisfied as regards nitrogen, it is obvious that, for the tropics, such force-food as may still be required is preferably supplied in the simple proximate forms not requiring such cleavage — with its necessary production of heat — and not yielding, in the process of decomposition, considerable quantities of a substance which is in excess of the immediate requirements of the organism, and, as stated by Foster,³⁸ can be stored up in but extremely small part, and hence merely requires elimination as an excrementitious body. Particularly is this the case where the need for internal heat is obviously lessened, and where the renal function, from the causes already mentioned, operates at a disadvantage. It is hence extremely important that protein be supplied in the tropics purely for the purpose of systemic repair and not be relied upon for the creation of any considerable proportion of the energy required by the organism. The ingestion of a certain amount of nitrogen is indisputably necessary to health, and with its deficiency the food ceases to be digested and a condition of inanition ensues. This, however, is no argument for its supply in excessive amount; and the nitrogenous intake — for the most satisfactory accomplishment of the metabolic processes — should be directly proportioned to body waste. According to Gayet,⁴¹ the average man at ordinary labor, in the temperate zone, loses 20 grammes of nitrogen daily, nearly all of which is in the urine. Eijkman,⁴² in Java, found that the average excretion of nitrogen in a similar class

of Malays was 7.817 grammes; which, being reduced to a common standard of weight at 145 pounds — the Malays averaging 111 pounds — gives 10.21 grammes, or about one-half the quantity ordinarily eliminated in temperate regions. The nitrogen in the standard diets for laboring men in cool climates, proposed as above by Playfair,¹⁶ Moleschott,²⁴ Atwater¹⁶ and others, varies from 18.35 grammes to 20.29 grammes. Notter and Firth⁴² give 11.6 grammes as the daily allowance for a mere subsistence diet in temperate regions and state that even as much as 32 grammes may be required during great exertion. On referring to the table given elsewhere showing the dietaries actually employed by laboring classes in the tropics, reduced to the above standard of weight for purposes of comparison, it is seen that the hard-working native of the low latitudes ingests an average of 12.83 grammes of nitrogen, or an amount only slightly in excess of the requirements for bare subsistence in temperate climates. This deficiency in the amount of nitrogen ingested by the native is, however, apparent rather than real; for the above quantity, small though it may seem, has been shown by experience through untold generations to be not only sufficient for the maintenance of life and health in the tropics, but also ample for the greater demands upon the organism resulting from labor. Maurel,² in his study of the natives of Gaudeloupe and Guiana, found that their diet was almost wholly vegetable. From estimates based on official figures, he showed that the inhabitants of Gaudeloupe used a daily average of only 20 grammes of meat per capita, and that only one-seventh of the vegetable food was imported in the form of the cereals of the temperate zone; the remaining six-sevenths being made up of yams, cassava, sweet potatoes, bananas, mangoes and other fruits. Similar customs as regards food are said by Eijkman¹² to prevail among the Javanese Malays; and in India and Abyssinia, Church²⁸ and Lapicque³⁰ found that the native rarely used animal material in any form. For natives of the tropics, it may therefore be accepted that the vegetable kingdom is almost wholly the source from which their food is drawn, and that but little of the vegetable material so used is imported in the form of cereals grown in cool climates. These facts are extremely important, for data supplied by the Department of Agriculture⁴⁸ show that fruits and vegetables grown in the tropics, at least as far as the western hemisphere is concerned, are much less rich in nitrogenous constituents than are the vegetable foods indigenous to the temperate zone. A comparison of the vegetables most commonly employed as staple foods in the tropics and in cool climates shows the following differences:

VEGETABLE FOODS CHIEFLY USED IN THE TROPICS.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbohydrates, per cent.	Crude fibre, per cent.	Ash, per cent.
Cassava	61.30	.64	.102	.17	36.50	.88	.51
Sweet potato (edible portion)	69	1.8	.288	.70	26.10	1.30	1.10
Yam	71.86	1	.160	.20	25.05	1.03	.86
Sugar cane	75.41	1.49	.230	—	15.36	7.04	.69
Ripe bananas (edible portion)	75.3	1.3	.208	.6	21	1	.8
Rice	12.3	8	1.280	.3	78.8	.2	.4

Average amount of nitrogen, per cent., .378.

VEGETABLE FOODS CHIEFLY USED IN TEMPERATE CLIMATES.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbohydrates, per cent.	Crude fibre, per cent.	Ash, per cent.
White potato (edible portion)	78.3	2.2	.352	.1	18	.4	1
Wheat flour	12.8	10.8	1.552	1.1	74.6	.2	.5
Oatmeal	7.3	16.1	2.575	7.2	66.6	.9	1.9
Corn meal, granular	12.5	9.2	1.472	1.9	74.4	1	1
Barley flour	11.9	10.5	1.520	2.2	66.3	6.5	2.8
Rye	12.7	7.1	1.135	.9	78.5	—	.8

Average amount of nitrogen, per cent., 1.431.

In these two groups of food stuffs the great inferiority of the vegetable diet of the native in the tropics, as regards available nitrogen, is at once apparent; the vegetable and cereals most commonly used as food in the temperate zone containing, in a given weight, almost exactly four times more nitrogenous material. Hence it is evident that the native diet in the tropics is doubly inferior as regards nitrogen, meat being but little used, while the vegetable foods which replace the cereals of temperate climates contain but a small proportion of this element.

The fact may here be emphasized that nature has laid down certain laws as regards alimentation, which it is the highest wisdom to follow. It is not a matter of theory but an unrecognized chemical instinct which leads the native of the tropics to make his choice of diet and nature's provision of aliment accord so closely. The inhabitants of warm climates, civilized and savage, succeeded in properly adjusting their diet through experience alone long before any theories as to the proper diet for such climates were advanced; and it is worthy of note that not only is a light vegetable diet, containing proportionately little nitrogen, sufficient to maintain health and strength in the native of the tropics, but whites even, who may have been born in hot countries, intuitively adopt a similar regimen and thrive upon it. Habit in the use of certain classes of food stuffs certainly operates against a change of diet; yet Eijkman¹² found, in Java, that the food of resident whites — born in Europe — approached the native dietary, presenting a marked decrease in both protein and fats. Analyses of this modified European diet gave an average of 99.6 grammes of protein, 83.8 grammes of fats and 284.2 grammes of carbohydrates. The fact that an excess of meat in any form, greasy meat especially, soon becomes distasteful in the tropics is certainly a powerful argument for an alteration in diet in favor of a diminution of protein as well as fats.

The most striking effect of a highly nitrogenous diet is the increase in the nitrogenous metabolism of the body, and to a lesser degree of the non-nitrogenous also. This increased metabolism, through the amount of heat necessarily generated in the process, is clearly undesirable in warm climates. Further, the deficient supply of oxygen available in the tropics impairs the combustion of proteids, and under such conditions the overloaded system habitually contains an undue amount of unoxidized nitrogenous matter, which in an oxidized state would be expelled by the kidneys. Albuminates, and nitrogenous compounds generally, undergo change and are excreted principally as urea; therefore an excess of albuminous food throws more work on the kid-

neys, which may induce disease. Nitrogenous matter being in excess and the secretion of the urine by the kidneys being decreased, there may be deposits in the urinary passages in the shape of uric acid, or in other parts as urates, through the lack of sufficient fluid for their solution.

As to the liver, Rochard,⁴¹ Moore,¹³ Nielly,¹⁴ Rattray,⁵ Jousset,⁸ Maurel,⁴⁶ Treille⁴⁶ and others have observed the directly injurious influence of a too nitrogenous and greasy diet in the production of disorders of this organ. Hepatic disease, while extremely common among the whites of India and other tropical regions, is rare among the native population. The idea has been advanced that the native enjoys an immunity to this affection as a result of acclimation rather than diet; but this theory is contradicted by Maurel,⁴⁵ who states that he, with others, has repeatedly seen congestion of the liver occurring in natives of the tropics, who a few months before, by reason of circumstances, had adopted the much more nitrogenous diet of the temperate zone. This view is upheld by a recent medical publication,⁴⁷ which calls attention to the greatly increased liability to disease of the liver among Asiatics who have become semi-Europeanized, and connects it with the fact that these individuals crave and use the same bulk of the more concentrated and nitrogenous diet of the European as they do of their own native foods. Further, to show the injurious effect of a nitrogenous diet in hot countries, laboratory experiments are not wanting. Maurel,⁴⁵ in Guiana, fed a series of rabbits upon a vegetable diet, while another group was fed entirely on cheese. The investigation extended over a period of ten months and the results were conclusive, showing a less increase in the weight of the first group than occurred in the cheese-fed rabbits. Not only, also, was the total weight of the second series of animals much greater than that of the first, but the disparity in hepatic enlargement was even more marked, the livers of the latter class not only showing disproportionate increase in size but also exhibiting manifest changes—being hard, mottled, and presenting a condition of hypertrophic cirrhosis. In a second series of experiments the results, though positive, were slightly less marked, since the experimental feeding continued for only six instead of ten months, and the influence of a nitrogenous diet was not so pronounced upon the liver. The following results were obtained by him:

DURATION OF EXPERIMENT, 10 MONTHS, JUNE, 1881,
TO APRIL, 1882.

	Total Weight.		At end of experiment.	
	Before experiment, grammes.	After experiment, grammes.	Weight of liver, grammes.	Relation of weight of liver to total weight.
Rabbit No. 1, (Vegetable diet).	650	1,210	37	1:32.70
Rabbit No. 2, (Cheese diet)	560	1,780	86	1:20.69

For the three rabbits given a vegetable diet the ratio of the weight of the liver to the total body weight was 1:36.85 at the time of death, while the ratio for the cheese-fed rabbits in this respect was 1:26.52. In view of the clinical experience and experimental re-

sults, as noted above, no further argument as to the influence of a too nitrogenous diet in the tropics in provoking liver disease is required.

SECOND EXPERIMENT, DURATION 6 MONTHS,
APRIL, 1882 TO OCTOBER, 1882.

Rabbits.	Diet.	Total Weight.		At end of experiment.	
		Before experiment, grammes.	After experiment, grammes.	Weight of liver, grammes.	Relation of weight of liver to total weight.
No. 1 . . .	Vegetable	629	1,160	33	1:35.15
No. 2 . . .	"	645	1,880	44	1:42.72
No. 3 . . .	Cheese	467	1,365	48	1:28.44
No. 4 . . .	"	565	1,370	45	1:30.44

From what has been said it is evident that the nitrogenous constituents of the United States Army ration, for troops serving in the tropics, may be safely and advantageously reduced. This is preferably accomplished at the expense of the meat component, which, besides protein, also contains a considerable proportion of fats. A complete fall to the nitrogenous level of the native of the tropics is, however, undesirable, since a single nutrient standard for the military service must always contain within itself the elements necessary in emergency to repair the losses incident to the greatest physical effort of which the human being is capable. For this reason the daily allowance of protein provided for the soldier, unless separate dietetic standards for conditions of peace and war prevail, must necessarily be in considerable excess of the actual needs of the organism under ordinary circumstances. Hence it is probable that the daily allowance of nitrogen cannot be safely reduced below 16 grammes—represented by 100 grammes of protein—even though this amount is in considerable proportionate excess of the nitrogenous normal of the corresponding native class of the tropics.

(To be continued.)

A STUDY OF THE NATURE AND SIGNIFICANCE OF THE SYMPTOMS IN DISORDERS OF THE STOMACH.¹

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For several years I have conducted a systematic investigation of all cases of disorder of the stomach which have come under my care. The investigation has been directed primarily to the study of the secretory function and the chemical phenomena of digestion with a view to determining what rôle variations in this function and in the chemical conditions play in these maladies. The investigation has included a careful study of the symptoms and symptomatologies, and of the relation or association of these factors with the chemical findings in the various cases, and has revealed certain facts in regard to the nature and significance of symptoms in the disorders of the stomach, of importance to the understanding not only of

¹ Read in part at a meeting of the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, January 19, 1900.

these disorders, but also of the nature of symptoms generally.

To obtain the necessary data for this study, there was made in each case a systematic qualitative and quantitative analysis of the gastric contents, a careful investigation of the physical conditions of the stomach, as motility, size, position, the contents of the stomach washings, and a careful study of the symptomatology. By this means it was possible to determine just what the chemical condition was in each case, whether or not it was associated with signs of definite organic disease, as cancer, ulcer, dilatation, stasis, gastritis, or disorders of the organ other than chemical, as hypomotility, and what the associated symptoms of each definite chemical condition were.

The method of investigation employed was the following: A preliminary history of the case was taken at the first visit. The patient was instructed to return the next morning with stomach empty after a twelve to eighteen hours' fast. Upon arrival the tube was passed, to judge of condition of empty stomach. A meal consisting of one slice of bread (weight 60 grammes) and one glass (300 cubic centimetres) of water was then given. A careful history of the patient, made with a reference list of questions, was then taken by a special assistant. This regular list of questions was placed in a book, and followed accurately, so that each case went through the same examination. One hour after the ingestion of the meal the stomach tube was passed and the total contents expressed by expression and suction. The stomach was then washed out to ascertain how much residue remained. It was then inflated with air, and the position and size, the location of the lower, and where possible the upper, border, ascertained by percussion. The expressed contents were measured and a careful qualitative and quantitative analysis of the contents made.²

The method of analysis employed was that published by me in the *Boston Medical and Surgical Journal*, January 4, 1900. In each case qualitative tests for free HCl and for lactic acid, and quantitative estimations of the total acidity, the total quantity of HCl, and the total quantity of free HCl were made. In cases where no free HCl was present a qualitative test for combined HCl was made. Finally, when all this data was in, a careful review history of the patient was taken by me, with the purpose of adjusting as accurately as possible the relations of the symptomatology or of special symptoms with the chemical findings. By this method of a triple history the effect of leading questions was to some extent controlled and a very accurate record of the symptomatology obtained. In most cases where the chemical finding was abnormal a second or even a third examination was made at intervals of a week or a month.

A study of the records of the chemical findings in the cases investigated gives the following results:

Two hundred and fifty cases were investigated. Of these, 120, or 48 per cent., had chemical findings normal in all respects; that is, the contents in these cases contained, according to the standard tests, free HCl and no lactic acid, and in each the total acidity, the total quantity of HCl, and the total quantity of free HCl were all within the limits of the average normal findings. One hundred and thirty, or 52 per

cent., of the cases, showed variation from these normal records.

In these 130 cases with abnormal chemical findings the variations present were either qualitative or quantitative. The qualitative variations consisted of (1) the absence of free HCl; (2) the absence of both free and combined HCl; (3) the presence of lactic acid. Of the 130 cases, 33 showed absence of free HCl, 15 showed absence of both free and combined HCl, 11 showed the presence of lactic acid. The quantitative variations consisted of the presence of greater or less quantities of total acid, of total HCl, or of total free HCl, than normal. All of the 130 cases showed some variation from the normal in the quantitative records. Eighty-four showed records of total acid above the normal averages; that is, were cases of hyperacidity. Of these, seven were cases of hyperacidity due to lactic-acid formation, having no free HCl, but large quantities of lactic acid, while 72 were cases of hyperacidity due to excessive secretion of HCl, having records of total HCl above the normal; that is, cases of hyperchlorhydria.³ Forty-eight of the 130 cases with abnormal findings were cases of hypochlorhydria having records of total free HCl below the normal. Of these, 33 had no free HCl. Fifteen had no free or combined HCl; that is, were cases of achlorhydria.

That is, of 250 cases of disorder of the stomach taken without discrimination in regard to the nature of the disorder and classified solely upon the basis of the chemical findings present, 120, or 48 per cent., were cases with normal chemistry, 84, cases of hyperacidity, 72, cases of hyperchlorhydria, 48, cases of hypochlorhydria, 15, cases of achlorhydria, seven, cases of hyperacidity due to lactic-acid fermentation.

The records which I have used as the standard normal records for this comparative study are those obtained by me in an investigation of the gastric contents of 100 healthy individuals of both sexes in Boston. According to these records, the average limits of variation in the total acidity, total HCl, and total free HCl, of the contents of the normal stomach obtained one hour after the ingestion of an Ewald test meal are as follows:

TABLE OF ACIDITY OF NORMAL CONTENTS; 100 CASES, INCLUDING BOTH SEXES.

	Average Limits of Variation.		Extreme Limits of Variation.	Number above Average Limits.	Number below Average Limits.
	Grammes per mille.	Equivalent in cubic centimetre decinormal soda solution.			
Total acidity . . .	1.5-3	41-83	1.3-3.2	2	3
Total free HCl . . .	.35-1.5	10-41	.2-1.9	3	2
Total HCl (free and combined) . . .	1.2-2.5	33-70	1.1-2.6	1	1

In making up the average limits the highest figure which was obtained in at least four cases was taken as the maximum limit and the lowest reached by four, the minimum. These results differ somewhat from those

² This method was strictly adhered to in a majority of cases. In some cases certain steps were necessarily omitted.

³ It is to be noted that I use the record of total HCl, not the total acidity, as the index of hyperchlorhydria.

obtained under the same conditions in other places, as, for example, those published by Ewald in Berlin, Hemmeter in Baltimore, Einhorn, Mintz, Friedenwald, Leo, the records of Boston averaging higher than those of most other places. Those of Straus from Riegel's clinic are the only records obtained under similar conditions in which the averages approach these of my cases. But inasmuch as they are the records of normal conditions for this region, and were obtained by the same method and same observer as the pathological records here given, they form a more useful standard for comparison for these cases under investigation than the records of Berlin or Baltimore or those given in the various text-books.

Of these 250 cases which we have classified according to the chemical findings, 32 of the cases of hyperacidity, including all seven cases of lactic-acid hyperacidity, 25 of the cases of hyperchlorhydria, 23 of the cases of hypochlorhydria, including five cases of achlorhydria, and 30 of the cases with normal acidity, showed evidence of the existence of diseased conditions other than those of abnormality in the secretion or the chemistry of digestion; that is, 85 of the 250 cases were cases with some organic lesion of the stomach, as cancer or ulcer, dilatation, stenosis, or ptosis with stasis of contents, or gastritis of a type marked enough to give definite symptoms of inflammation or irritation. The remaining 165 cases, consisting of 47 cases of hyperchlorhydria, 90 cases of normal acidity, and 28 cases of hypochlorhydria, were cases in which the chemical abnormalities or conditions clearly associated with or secondary to these were the only objective lesions which could be determined; that is, they showed either chemical abnormalities or no evidences of disorder other than the symptoms.⁴

These are the records of the objective signs or characters of the cases of disorder of the stomach included in this investigation, which it was possible to obtain by the methods of investigation employed. As already stated, a record of the subjective signs or symptoms of disorder was also made in all the cases. We have, therefore, through the possession of these objective and subjective records in all our cases, an opportunity to study upon an extensive scale the subject of the association of objective and subjective phenomena in disorders of the stomach, to determine by a scientific method of observation certain important elements in the relation of symptoms to the underlying associated physical or chemical conditions present, and thus to gain much definite knowledge in regard to the significance of symptoms in these disorders and perhaps also some indications of the nature of subjective symptoms generally.

In this investigation of the relationship of the symptoms and objective conditions in these disorders of the stomach I have selected for my preliminary study the 165 cases in which the abnormality in the chemical finding was the sole objective abnormality discoverable, since it is possible to gain much more accurate determinations in regard to the causes and significance of symptoms in these conditions where there is but one variable in the objective conditions, a variation in the acidity of the stomach, than in the more complex cases of organic disease. It is my pur-

pose to first gain as much knowledge as possible in regard to the association and significance of the symptoms in these simple cases, and then to test the general application of these results and of the conclusions drawn from them by subjecting them to the testimony of all the cases. The cases included in this preliminary study, then, include 47 cases of hyperchlorhydria, 28 cases of hypochlorhydria and 90 cases with normal acidity. For greater simplicity in nomenclature I shall speak of these three sets as cases of hyperacidity, cases of hypoaecidity and cases of normal acidity.

If for the purpose of this comparative study we review the symptomatologies of the cases in each of our three sets, we shall at once note the fact that there is great variation in the symptomatologies among the cases included in a single set. Thus of our 47 cases of uncomplicated hyperacidity (hyperchlorhydria) four have the single symptom distress as the whole symptomatology. Twenty have the symptomatology of distress and eructation of gas or desire to raise gas as the total symptomatology. In two of the above cases the distress is described as pain, in two as nausea, in seven as a burning sensation, in five as a sense of weight or fulness or the sense of a lump in the stomach, in three as an empty feeling, in five as a dull distress. In 10 of these cases the distress occurs from two minutes to three-fourths of an hour after the ingestion of food; four of these describe the distress as pain or burning, six simply as distress. In 14 of these cases the distress occurs from one to three hours after food. In five of these the distress is pain or burning. In 19 cases the symptomatology consists of distress, heartburn, pyrosis. In seven of these latter the symptoms occur within a half hour after food, in 12 later than one hour after food. All of these show relief of symptoms by soda. Ten of the latter 12 show relief of symptoms by ingestion of an egg or bread. Five cases show distress, heartburn, pyrosis, vomiting; marked relief by soda.

That is, in 47 cases with the same chemical abnormality we have the following separate symptomatologies: Distress, nausea or pain, or burning; distress plus eructations of gas or desire to raise gas occurring soon after ingestion of food; distress plus gas occurring more than an hour after ingestion of food; distress, heartburn, pyrosis, occurring soon after food; distress, heartburn, pyrosis, occurring long after ingestion of food; distress, heartburn, pyrosis, vomiting; acute pain, heartburn, pyrosis, occurring soon; acute pain, heartburn, pyrosis, occurring late, and so on.

Of the 28 cases of hypoaecidity (hypochlorhydria), five have distress as the whole symptomatology; 14 have distress and eructations of gas. In three the distress is described as pain; in ten, as nausea; in six, as an empty sense; in nine, as fulness or weight, or a lump. In 15 the distress comes from two minutes to one-half hour after food; in 13, from one to three hours. In six cases the symptomatology is distress, eructations of gas, water brash or regurgitation of food. In three cases there were distress, gas and vomiting. About one-third of the cases showed relief of symptoms by soda; few by food. In our hypoaecidity cases we had, then: Distress; distress with gas coming soon; distress with gas coming late; distress, gas and water brash; pain, gas and vomiting.

Of the 90 cases with normal acidity, 17 had distress as the only symptom; 41 had distress with de-

⁴ Of course it was impossible to eliminate the existence of organic disorder in these cases other than chemical absolutely. Some of the cases doubtless had conditions of hypomotility not discoverable by our tests; some may have had ulcer or cancer with the signs masked, but the elimination was as careful as possible.

sire to raise gas or eructations of gas; 15 had distress, heartburn, pyrosis; 11 had distress, gas, regurgitation or water brash; six had distress, gas, vomiting. The time of the appearance of symptoms and the character of the distress varied as in the cases of hyper- and hypo-acidity.

This comparative study of chemical findings and symptoms thus demonstrates to us at the start one fact of importance, which is that there is no uniformity in the symptomatology associated with definite conditions of acidity, the cases included in each set of cases showing several varieties of symptomatology.

If, now, we study the symptomatology of our cases of all three sets together, we find that among the varieties of symptomatology in each set there are certain symptomatology common to a considerable number of cases of all three sets; that is, that many cases of hyperacidity have symptomatology similar to those found in many cases of hypoacidity or in many cases of normal acidity. Thus of our cases of hyperacidity, the symptoms distress (of some kind) and desire to raise gas or eructations of gas, make up the whole symptomatology in 20 of the cases. In eight cases the distress appears from five minutes to one-half hour after food; in 12 from one to three hours. Distress alone makes up the symptomatology in four cases. Of the hypoacidity cases, the same symptomatology, distress and desire to raise gas or eructations of gas, characterizes 14 of the cases. In six cases the distress is from five to thirty minutes after food; in eight from one to three hours. In five cases distress is the only symptom. Of the cases with normal acidity, 41 had this symptomatology of distress with desire to raise gas or eructations of gas; 17 had distress as the single symptom. That is, 20, or 42 per cent., of the cases of hyperacidity, 14, or 50 per cent., of the cases of hypoacidity, and 41, or 45 per cent., of the cases of normal acidity, making 45 per cent., or nearly one-half, of all the cases included, had the same symptomatology. And an even larger number of cases in each set could be found with symptomatology similar to those in the other two. This is the second fact of importance to be gathered from these observations.

The third fact that we note in a study of the cases is that this symptomatology of distress, which forms the sole symptomatology of some cases of all these types, forms a part of the symptomatology of all the cases. And the common symptomatology of distress plus desire to raise gas or eructations of gas, which forms the sole symptomatology in so many of our cases belonging to each of the three types, is present in a large majority, 80 per cent., of all our cases. That is, one symptom or a certain definite group of symptoms forms a common groundwork of the symptomatology in all cases. In 45 per cent. of our cases this common groundwork is the whole symptomatology. In the remaining cases it forms a base to which certain special symptoms, as heartburn, pyrosis or vomiting, are added.

To sum up, the facts which this study of the association of subjective and objective signs, in cases in which the objective abnormality present is limited to chemical abnormalities, give us, are:

OBSERVATION I. One symptom, distress, was present in practically all cases.

OBSERVATION II. One definite symptomatology, distress plus desire to raise gas or eructations of gas, was present in 80 per cent. of all cases.

OBSERVATION III. This symptomatology formed the whole symptomatology of nearly one-half (45 per cent.) of all the cases, including 42 per cent. of the cases of hyperacidity, 45 per cent. of those of normal acidity, and 50 per cent. of those of hypoacidity.

OBSERVATION IV. The symptomatology present in the cases of a single chemical type showed great variation. Thus of the cases of hyperacidity, 42 per cent. showed simply the symptomatology common to a large number of cases of all types, distress plus gas, while 49 per cent. showed these symptoms combined with symptoms as heartburn or pyrosis, special symptoms more or less peculiar to this class of cases.

If, now, we investigate our second division of cases, the 85 cases in which the objective signs or history showed evidence of abnormalities other than those of a chemical nature, in regard to the application of these facts, we find that this application is as true in these cases as it is in the simpler cases, included in our first study. Distress is a symptom in all but three of these cases;⁵ distress plus gas was present as part of the symptomatology of a large number. The chief variation between the symptomatology of these cases and those of the first set consisted in the fact that the symptomatology was as a rule more complex, special symptoms of greater variety in type being present in a larger per cent. of cases.

The bearing of these facts which have been disclosed through these observations upon our understanding of the nature and significance of the symptoms in the disorders of the stomach is, it seems to me, very direct. Among these facts the most striking and important in this regard is that there are certain common symptoms, which are present as the whole or a part of the symptomatology in practically all cases, including cases with the most diverse and opposite objective findings.

This fact brings us to one very definite and fundamental conclusion in regard to the symptoms of disorder of the stomach; namely, that all causes affecting the stomach of whatever nature will produce as a part of the symptomatology of the affection which they bring about, certain common symptoms, which are therefore manifestations of the nature or habit of the stomach when disturbed, rather than manifestations of special reactions to special causes of disturbance. In the light of this, and of the several other facts which our investigations have disclosed to us, the general explanation of the symptoms and symptomatology which occur in the various disorders of the stomach would appear to be the following: When the stomach is influenced by any untoward agency the normal accomplishment of its function is impeded or disturbed, and in performing this function under these adverse conditions it gives certain definite manifestations of this extra labor or of this disturbance of function. These particular manifestations are simply the habitual or natural reactions of the organ working under untoward conditions, or the subjective symptoms which result from such reactions, and are thus independent of the special cause of the impairment of function, occurring wherever there is impairment from any cause whatsoever. They are, as our observations have demon-

⁵ These three exceptions were cases in which no subjective symptoms pointing to disorder of the stomach were present. In two of them lack of appetite and progressive loss of flesh and strength were the only symptoms complained of. Both proved to be cases of carcinoma of the stomach. In one the tumor could be felt. In the other the diagnosis was proven by autopsy. The secretion was normal in both these cases.

strated, distress and restlessness or increased peristalsis. The distress may be pain or nausea, or a burning sensation or a sense of weight or fulness. The restlessness or peristalsis may give rise to eructations of gas. Both the distress and the restlessness may incite the individual to attempts to raise gas for relief. So that, as a result of impairment of function, not perfectly compensated, the symptom distress or the symptomatology of distress plus a desire to raise gas or actual eructations of gas, the symptomatology present in all our cases, arise in any stomach (Observations I and III). And thus any affection of the stomach, that is, any condition in which an untoward agency has influenced the stomach sufficiently to impede the performance of its function, to make its labor in performance greater than its normal output of energy will accomplish, will be attended with this symptom distress or the symptomatology distress plus desire to raise gas or eructations of gas.

Many affections of the stomach of various causes will have this symptom or group of symptoms as their whole symptomatology (Observation III). If the affection of function is severe these symptoms will be marked and additional gastric phenomena and symptoms may be superimposed, as, for example, vomiting (Observation IV). When special causes are present we may have special symptoms produced by the peculiar action of this cause upon the stomach or the system, added to the general symptoms (Observation IV).

Thus an irritant cause, as an excess of acid, may produce symptoms peculiar to itself, as heartburn or pyrosis. Whether such a cause capable of producing special symptoms produces merely the general symptoms of disorder of function, or these plus its special symptoms, depends upon the strength or severity of the causal agent or the susceptibility of the stomach to this agent in a given case.

The derivation of these explanations from our observations and the application of them to the special cases included in these observations can be clearly traced. In regard to these cases it will be noted that a certain number had present a possible, even a probable, cause for symptoms in the form of an external irritant or source of irritation. Thus the hyperacidity cases had an excess of acid, a condition which, as is well known, and as I myself have proved by special experiments, proves itself sufficient to cause symptoms of a very definite and distinctive character in some cases. The remainder of the cases, including many of the cases of normal acidity, and probably a majority of the cases of hypochlorhydria, had no visible evidence of irritation. There was in some of them hypomotility, in some the position of the stomach was lower than the normal, in some no signs of any abnormality save the symptomatic signs of incapacity to perform the function without discomfort.

In the cases in which the presence of some special irritant was indicated by our methods of analyses, as, for example, the cases of hyperacidity, there was marked lack of uniformity in the symptoms. Some, 42 per cent., of the cases had merely the general symptoms of disorder of function. Others, 49 per cent., had these plus special symptoms, as heartburn, pyrosis, vomiting. In the second set, owing to the strength of the acid or the susceptibility or idiosyncrasy of the patient, the affection resulted in the manifestations of the special irritant action of acid upon

the membrane of the stomach, as burning or pain, and raising of the acid contents of the stomach into the esophagus and mouth, where these same subjective symptoms of irritation were produced; or the disturbance of the stomach was so great that vomiting was produced. In the first set the strength of the acid was so small, or the susceptibility of the patient to this form of irritation so slight, or the habit of the stomach was such, that no raising of acid to the esophagus and no vomiting occurred, and thus we had simply the regular symptoms of distress or distress plus gas, which in these cases have arisen from the disorder of function by the hyperacid contents.⁶ Perhaps the cases in which the distress is described as a burning sensation or distinct pain are those in which this special irritant action is prominent.⁷ Doubtless the symptoms of cases where ulcer or cancer is the special cause are to be explained along the same general lines of special action of the lesion.

It is interesting to note in these cases in which we have evidences of the presence of an irritant, how great a rôle individual susceptibility or idiosyncrasy plays in the symptomatology of disorders of the stomach. If we examine our cases of chemical hyperacidity, for instance, we shall note that the severity of the symptoms, or the presence or absence of the special symptoms of acidity, are not proportionate to the records of the acidity in the various cases. Cases with very high totals, as a rule, have severe symptoms, giving evidence of the nature as well as of the presence of the irritant. But some of these have very mild symptoms, while cases with but moderately high records frequently have symptoms much more severe and typical of acid irritation than many cases of far higher totals. The inference which we draw from this is that it is not the amount of the irritant alone, but also the susceptibility of the individual to this particular irritant, which regulates the severity and the character of the symptoms. The symptoms in a given case are a compromise between these two factors. This is true, whether the cause be an acid irritant, an obstruction to motion, or an impulse from the nerve centres.

The cause of a clinical hyperacidity may as well be a hyperesthesia as an excess of acid. A number of my cases with normal acidity had symptoms suggestive of acid irritation, much more marked than those of many cases with chemical hyperacidity. That is, these individuals had an amount of acid well within the normal, an amount borne by the average individual without symptoms, which in them caused symptoms. Practically, they were suffering from the presence of greater quantities of acid in their stomachs than they could bear. We can call these cases cases of hyperacidity or hyperesthesia, according to whether we use a chemical or a clinical basis for our classification.

In the second division of our cases, those in which there was no evidence to chemical or physical tests of the presence of any external or objective source of irritation or cause of impairment of function other

⁶ Of course I do not mean to imply here that the disorder of function which is associated with hyperacidity is due to the irritant action of the acid alone. It is due also in all probability in some cases to untoward influences of the acid upon the chemical process of pepsin digestion or upon the digestion of starches, which is inhibited at an earlier stage than normal by the acidity.

⁷ That an increased amount of acid in the stomach may irritate the stomach is proven by the fact that certain of the symptoms in such cases at once disappear when the acidity is lessened or neutralized by the ingestion of alkalies, while not affected by ingestion of neutral substances, as bismuth or other drugs.

than one coming through the nervous system or inherent in the constitution of the stomach or individual in a particular case, — that is, the cases with normal acidity and no evidences of organic disease, as cancer, ulcer, gastritis, dilatation, or of hypomotility of a degree sufficient for demonstration by marked stasis of contents, — we have the symptoms which are present in any condition of disorder of function, and which are simply the manifestation of this condition, the distress and desire to raise gas, or actual eructation. The fact that we find these purely symptomatic cases of disorder of the stomach, in which no evidence of organic lesion or secretory disturbance can be determined, these so-called functional conditions, nervous dyspepsias, neurasthenias, or hyperesthesias of the stomach, has always been suggestive evidence to us of the fact which we have proven by these observations, that certain of the symptoms of stomach affections were manifestations either of hyperesthesia or of the stomach performing its functions under untoward conditions, and not necessarily results of irritation, or inflammation or organic lesion.

The results of this investigation have been :

(1) To show that there are certain symptoms — those which as a rule make up the whole symptomatology of cases where no objective cause of the disorder of function can be determined — which are common to all affections of the stomach, whatever the cause, and that they frequently form the whole symptomatology of cases with distinctly opposite causes, as in cases of hyperacidity and hypoacidity (this latter fact showing that the symptomatologies are a habit of the stomach, not a special reaction to a special causal agent).

(2) To show what the symptoms are which are the manifestation of this habit.

(3) To suggest an explanation of the nature of the habit.

The explanation of the exact nature of this symptom habit of the stomach is a matter of hypotheses. It may be considered as a manifestation of the condition of hyperesthesia; that is, we may conjecture that in all cases where we have symptoms of stomach disorder without signs of a definite cause we have a hyperesthesia of the stomach — a stomach or an individual from nervous conditions so hyperesthetic that the presence of food or the normal action of the organ causes distress. Such a hypothesis would explain our functional cases. The habit may on the other hand be considered as the manifestation of the organ working to perform its function under untoward conditions. This is the hypothesis which I have adopted in my explanations of the symptomatology so far given.

Hyperesthesia of the stomach would explain our functional cases to some extent. And that it may play a part in the symptomatology of the cases with some discoverable cause present, our analysis of the cases of chemical and clinical hyperacidity have indicated. But it does not explain satisfactorily many of our functional cases or the hypoacidity cases. In these there is no evidence of the presence of an irritant. The food may be considered as such in some cases where the symptoms appear soon after ingestion. But the distress and restlessness occur two or three hours after the ingestion of food. The explanation that the normal acidity, which reaches its maximum at one hour or so after food, is a cause in these cases of late

distress, the hyperesthetic stomach being sensitive to even moderate, normal amounts of acid, may be urged to account for some of these cases, but it cannot account for those with hypoacidity and anacidity which have these symptoms. There can be no irritant in these cases one hour after food, unless we consider that the weight of undigested food is greater here than the normal, and thus acts as a foreign body. But we have no evidence of hypomotility sufficient to act thus in some of these cases, and in general symptoms coming late after food and the character of the symptoms in many of our cases are not at all suggestive of hyperesthesia. That it is an element in the symptomatology of many cases, there can be little doubt. But the constant condition which it is reasonable to suppose is present in all cases with symptoms is some impairment of normal function which necessitates a greater output of power by the stomach for the accomplishment of this function. The presence of irritants, the diminution in digestive secretions, lack of nervous tone, psychological causes, reflexes, might all cause this. In many cases of gastric disease, we get evidence, other than symptomatic, of this disorder of function, finding hypomotility, stasis of contents. In many, however, we can get no physical evidence, the function being performed; presumably according to our hypothesis, by the extra labor the output of which causes the symptoms.

In support of the hypothesis that the performance of its function by an organ in the presence of untoward conditions may give rise to symptoms, we have several examples.

Thus, the performance of function by the hypermetropic eye causes pain. The use of a muscle in a condition of fatigue causes pain and often tremor of the muscle or the part moved by the muscle. Individuals with hypertrophied or dilated hearts frequently suffer from distress or irregularity of action. The occasional spells of distress associated with irregularity of action which are seen in such cases may quite reasonably be considered as manifestations of the fact that the heart is performing its function at the time with considerable difficulty, some additional untoward condition besides the constant lesion to meet the effects of which the heart has hypertrophied, having intervened. And so the stomach in disorder may have distress and restlessness as manifestations of the fact that it is performing its function under difficulties, giving rise to the symptom which is the common witness of this fact in the case of most organs, distress, or to the group of symptoms of distress associated with restlessness.

I wish to state that I am much indebted to Dr. Morton Prince, of Boston, for the definite conception of this hypothesis in regard to the symptomatology of organs working under conditions of impaired function which I have here applied to the explanation of the symptomatology of the disorders of the stomach.

I have considered these investigations in this paper solely in regard to the light which they throw upon the general nature of symptoms in the disorders of the stomach. The bearing of the results upon questions of diagnosis in disorders of the stomach is self-evident.

It is clearly understood by all investigators of the stomach and its diseases that great care must be observed in drawing conclusions from the findings of single or even several analyses of the gastric contents in

particular cases. The variation in the findings of different periods in a normal individual is often marked. The abnormal condition from which the patient suffers may not be present upon the day of examination, or it may be prominent only in the afternoon, while the contents are obtained in the morning. A finding of a normal acidity upon the day of the examination does not, therefore, necessarily prove that the patient has not a hyperacidity present at the time when symptoms are marked. The knowledge of such facts makes us very slow to argue from negative findings in particular cases. But it does not prevent us from accepting the indications in cases of positive abnormal findings. And, what is of special importance, these facts in no way invalidate the conclusions which we have drawn from the special study outlined in this paper.

The facts upon which we have built our conclusions and hypotheses are, first, that certain common symptoms are present as a groundwork or part of the symptomatology of practically all cases of gastric disorder of various causes, and, second, that the same group of symptoms forms the symptomatology of many cases of opposite chemical findings. Neither of these facts or conclusions is invalidated by the assumption that in several of our cases the chemical finding recorded was not that present at the time or as a cause of the symptoms complained of. For it is not reasonable to assume that all our cases examined belonged to one type only, or that all our cases of hyperacidity and hypoacidity with similar symptoms were in reality all cases of hyperacidity. And unless we adopt some such conclusion we must accept the facts as valid for the deduction of general conclusions, such as we have deduced.

It may be suggested that in this work I have assumed that where I found an abnormal chemical condition as the sole discoverable abnormal condition in a case, this was the cause of the symptoms or the disturbance in that case. I have not intended to make any such absolute assumption, and such an assumption is not necessary to support our conclusions. Such a finding is suggestive in this regard and gives us definite ground to go upon in our treatment. It is doubtless the cause of symptoms in some cases in which it occurs, but not necessarily in all. Some of the cases with hyperacidity and some of those with hypoacidity which had similar symptoms may in both sets have been suffering from a similar cause not connected with the secretions. Whether the apparent abnormality was the real cause of the disturbance in each case or not, one cause for symptoms was present in and common to all cases, a disturbance of function, and one symptom or set of symptoms was common to all cases, and these we have connected as cause and effect.

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.¹

BY E. L. TWOMBLY, M.D., BOSTON,

Gynecologist to St. Elizabeth's Hospital and Boston Dispensary.

THE patient was a young married woman of thirty, residing in one of our pleasant suburban towns. She was quite tall, with a stout figure, and had always been healthy and well. No disturbance at the monthly

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periods, which had been regular; no kidney trouble. First pregnancy began about September 15, 1897, and vomiting commenced about the end of October (after skipping one period) and continued until her death. She had been confined to her bed from November 1st, and had not been able to retain any food.

I was sent for on December 30, 1897. She was then three and one-half months along, and had been vomiting eight weeks. During this time she had been treated by two other physicians without relief, and the last attendant "did not seem to be alarmed at her condition until, perhaps, two or three days at the last, during which time she was partially unconscious," when he had told the family that there was no hope for her. Realizing that it was a desperate case, and that immediate action might be necessary, I asked Dr. Kingman to go out in consultation with me. On arrival at 9 A. M., we found the patient nearly moribund, without power of speech, and she simply turned and looked at us without any sign that we were as strangers to her. Rectal temperature was 96°, pulse 150. Subcutaneous injections of strychnia, applications of heat, and solutions by the rectum revived her a little, and then a vaginal examination was made showing the pregnant uterus crowded down in the pelvis with sharp antelexion of the cervix. The cervix was dilated and the pressure somewhat relieved by packing. Within one hour she began to swallow small quantities of liquids without vomiting, and the temperature rose to 98° and pulse came down to 100. After hard work over her all the morning she seemed more comfortable at 2 P. M., but did not become fully conscious, and at 10 P. M. collapsed again, and in spite of prompt treatment applied by Dr. Dennett, whom I had asked to help me, died in about one hour. I find in my note-book this comment: "Treatment too late to be effective."

On reviewing this sad case, it seemed to both Dr. Kingman and myself that the doctor who had taken care of her had trusted too much that the vomiting would some time stop of itself, and, from our point of view, he had neglected to take even the ordinary helpful measures. We felt that if there had been given us a week, or possibly even three or four days, the result might have been different, for we had a healthy woman with a good physique to work upon, although she was much emaciated.

The two points which I wish to bring to your notice by this case, and which I hope may be thoroughly and widely discussed, are these:

(1) That displacements and faulty positions of the pregnant uterus which delay its rising out of the pelvic cavity and press upon the neck of the cervix are more often the causes of excessive vomiting than has been generally supposed. This takes for granted that the irritant is the local one, and that we exclude vomiting originating from other conditions than those connected with a pregnant uterus (chronic gastritis, cancer of stomach, tubercle of brain, fatty degeneration of liver, icterus, etc.). Many cases might be cited where these displacements were rectified with the immediate betterment of the patient. Sometimes the cervix is so rigid, indurated, thickened, or compressed by the fundus doubled on it, that dilatation is necessary to relieve the tissues of the cervix (especially at the internal os) from compression. Not only must the body of the uterus be brought into a favorable position but it must be kept there. When allowed to return

to its faulty position, the vomiting recurs. Physicians often examine and find the uterus in the anterior position, either anteverted or anteflexed, and they consider that position practically normal, and let it alone. Graily Hewitt calls particular attention to this condition, where the fundus is behind the pubic arch and can be so held by it that it is delayed in rising from the pelvis and prevents symmetrical growth, and is also causing a constant pressure on the nerves of the cervix, compressing it in anteflexion. He says: "The cause of the sickness is, in the majority of cases, practically the same, namely, compression of nerves in the cervical tissue, associated with a bent, indurated condition of this part of the uterus, and the consequent loss of the natural pliability and expansibility of the tissues." Elevating the fundus and keeping it so produced a cure in 10 cases out of 12. In the two unfavorable cases, one died—uterus was allowed to return to faulty position, and patient lived at a distance and was very ill before she could be treated; in the second one abortion occurred. The retrodisplacements are more commonly recognized, and replacement or partial replacement by packing is followed by immediate improvement. Hewitt quotes 19 cases, with success in 13, where reduction was effected and maintained. If replacement alone is not effective then dilatation of the cervix should also be tried, which incidentally draws the cervix forward and down, and lessens its cramped condition.

(2) That if all these measures fail in the early months of pregnancy, we should not trust to nature and time to effect a cure, but should proceed to empty the uterus by surgical means, as soon as a consultation has been carefully held, provided the religious beliefs of all concerned are not against such a step. When the patient cannot retain sufficient food to nourish her, either by mouth or rectum, when rest in the horizontal position, when rectifying the displacements of the uterus so far as possible, and the dilatation of the cervix, have been faithfully tried without relief, these measures should not be persisted in while the patient is rapidly losing flesh and strength and getting into the condition where nothing will avail. If we put off the evil day, knowing that there is a risk even in operating early, hoping that, after the third month when the uterus rises out of the pelvis, vomiting will cease, we increase the chances of a fatal result.

Our text-books teach delay. Klein says: "In hyperemesis of the third degree the artificial induction of labor is *occasionally* required." Bacon² says: "Induction of abortion is *never* indicated." Leclere states: "Good results . . . by simple cauterization of cervix; this measure is *far superior* to artificial abortion." Lush says that uncontrollable vomiting is a *rare event*, but when it occurs "there remains as an *ultimate* resource the artificial induction of abortion." A. F. Currier, New York, says in review: "Finally there remains the emptying of the uterus as a last resort, *and only as a last resort*. It should only be done after careful deliberation and with the approval of skilled counsel." Edward Reynolds justly remarks that the solution of the question depends in "a certain degree upon the religious beliefs of the individual family, and upon their estimate of the relative value of maternal and fetal life. Among Protestant physicians in Protestant families it is generally considered the best practice to advocate abortion when all other

treatment has failed, but patients are constantly lost by over-conservatism in the most skilled and experienced hands." Gardner³ says: "As regards the ultimate procedure of emptying the uterus, the general tendency is to delay too long the operation, one which in itself is not without danger." Jewett⁴ states: "Evacuation of the uterus is often too long delayed."

Delay and its dangers are emphasized by these last three men. Delay and its dangers are what I am emphasizing to you, and I enter my plea for earlier interference, before the patient's courage is gone, her vitality exhausted, and her system in the worst condition to withstand the shock.

Indications for emptying the uterus.—(1) Inability of retaining any food taken by the mouth; (2) intolerance of rectal enemata; (3) more or less albuminuria; (4) progressive emaciation; (5) headache constant; (6) frequent and feeble pulse; (7) a certain apathy of the patient.

BICORNATE UTERUS, WITH TWIN PREGNANCY; ABORTION FROM ONE HORN.¹

BY CHARLES H. WINN, M.D., BOSTON.

In presenting the following case, it is with no intention of using it as an introduction for a paper upon any of the subjects which it naturally suggests, nor do I care to speak dogmatically concerning even this particular case. It has, however, seemed to me a case of sufficient interest, by reason of the unusual and instructive elements which it presents, to be worth placing upon record.

Mrs. S. E. W., thirty years of age, was a healthy woman of New England birth and parentage, with sufficient intelligence to know better. After having one child at full term nine years previous to the experiences about to be related, she soon became adept in the art of inducing abortions, admitting three prior to 1897, she being each time from two to three months pregnant. On one occasion there was a twin pregnancy, one fetus coming away partially decomposed, the other in normal condition. This incident becomes exceedingly important in the light of subsequent events. She was first seen by me in April, 1897, when she admitted another operative abortion. Intra-uterine douches were used and recovery was complete in two weeks' time.

I next saw her November 8, 1898, when she gave the following history: Her last menstruation was September 17th, and supposing herself pregnant she had inserted a catheter into the uterus one week previous to my visit. Flowing had begun the next day and had continued, with the accompaniment of more or less pain and the occasional expulsion of clots. There had also been moderate gastric disturbance. The os was dilated to size of a quarter dollar. There was moderate flowing and offensive odor. Abdomen tympanitic and slightly tender. Temperature 100°, pulse 92. I removed several vaginal clots and gave a hot intra-uterine douche of lysol. Next day she was quite comfortable, her temperature being normal, pulse 88;

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.

² American Journal of Medical Sciences, 1898.

³ British Medical Journal, 1897.

⁴ Canadian Practitioner, September 18, 1897.

flowing slight and no odor; intra-uterine douche morning and night; stimulants and quinine.

November 10th, next day, several clots passed; odor offensive. Temperature 100°, pulse 96. Headache and slight gastric disturbance. Intra-uterine douches continued.

November 11th, general condition being the same, she was etherized and, assisted by Dr. W. F. Temple, I dilated the cervix and thoroughly curetted the uterus, removing much débris which was rankly offensive; one piece of tissue was nearly as large as a walnut. After douching with lysol, the uterus was packed with iodoform gauze. After this, all pelvic symptoms quieted down and the temperature remained normal, but severe and persistent vomiting proved intractable. There were occasional remissions, when light nourishment would be retained, but these were brief.

One month after curetting, I find by my notes that nothing whatever could be retained, and even the smell of food would cause vomiting. For two weeks it had been noticed that the stomach disturbance was more marked in the morning. Rectal feeding was now begun, and used exclusively for four days. Gastric symptoms gradually abated, and by January 1, 1899, was able to take some solid food. General condition is improving. She still vomits occasionally, at least one meal being lost every day. Temperature continues normal. Menstruation has not appeared and patient is growing anxious.

January 12th. Called Dr. Kingman in consultation and he kindly supplies me with the following notes of his examination: "The cervix is softened almost one-half its length. The uterus is much enlarged and softened, and presents an irregular contour. At the right there is a softly elastic, globular mass, being apparently a pregnancy of about four months' development. Continuous with this at the left and slightly behind is a smaller and firmer mass, about the size of a small fist."

In view of the history, Dr. Kingman stated as his belief that there had been a twin pregnancy in a bicornate uterus, abortion having occurred from the left horn, while the fetus in the right horn had remained undisturbed.

From this time on, gastric symptoms gradually subsided and ceased entirely about April 1st. On July 12th, after eight hours of labor, she was delivered of a healthy nine-pound female child, forceps being required. The placenta was normal. She made an uninterrupted recovery, and mother and child are to-day in good health.

The salient points of the case to which I would call attention are as follows:

(1) The abortion with twins some years ago, in which one fetus was macerated and the other not. In the light of our present knowledge it seems very likely that each horn of the bicornate uterus contained an embryo. Violence being done to one, it underwent changes due to its death and maceration and then both were expelled together.

(2) A second twin pregnancy, both horns being occupied. The abortion in November was complete, as shown by the foul, decomposing tissue removed by a vigorous curetting, and the immediate relief of the septic conditions which resulted.

(3) The demonstration of the bicornate condition, by the facts just mentioned, and by the finding of the contracted horn on the left side of the pregnant

uterus in the course of Dr. Kingman's examination in January. Dr. Kingman assures me that the mass described did not suggest the presence of a fibroid tumor, and the preceding and subsequent history contains no indication of such disease.

(4) The probability of superfetation. The last menstruation occurring September 17th, and the child being born July 12th, nearly ten months later, impregnation must have occurred nearly a month later than the menstruation. But abortion in the first week of November must have been of more than a month's development, as proved by the large piece of tissue removed by the curette. It seems, therefore, highly probable that pregnancy occurred in the left horn of the uterus shortly after the cessation of menstruation in September, that a few weeks later, about October 12th, pregnancy occurred in the right horn; that when abortion was attempted, the catheter passed more readily into that horn which contained the larger and more advanced ovum; that this horn emptied itself or was emptied by the curette without any disturbance to the contents of the right horn.

(5) The tolerance of the pregnant uterus to adverse influences is markedly shown by the persistence of pregnancy in spite of catheters, abortion, sepsis, curetting, intra-uterine douches and iodoform-gauze intra-uterine packing.

Incidentally it may be edifying to contemplate the predicament of the physician who attends a woman during an abortion, curettes her uterus, assures her that her uterus is empty and is prepared to take his oath that he has left nothing in it, and who is then brought suddenly face to face with the fact, not only that she is still pregnant, but that the very vomiting which followed the ether of his operation was actually the so-called vomiting of pregnancy.

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.¹

BY H. S. KNIGHT, M.D., WORCESTER, MASS.

THERE are two elements about this case which are very personal to me: (1) the confession of my failure, and (2) the obligation I feel under to Dr. Kingman for correcting the difficulty which existed and restoring my patient from a condition of extreme emaciation, where it seemed as if death was near, to a condition which promises the very best result.

This patient was a primipara, twenty-seven years old, who menstruated the last time September 20th. On October 27th or 28th I was consulted at my office in reference to the vomiting she complained of. The patient was carried along without very great complaint until November 13th, when the vomiting was so excessive and her rejection of almost all forms of food was so constant, that rather more urgency was expressed on the part of the patient and the friends that something be done, and of course I reported to the house at very short intervals. The usual treatment by the stomach which you all are familiar with, and probably have tried with more or less success in various cases, was that which was adopted by me. Suffice it to say that while it gave a certain amount of relief the result was not permanent, and on December 7th I was asked to renew my visits because of the ex-

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.

cessive trouble that was developing, namely, the emaciation and weakness.

We followed along very patiently and very carefully, but produced no results until Dr. Kingman called December 20th, when he pointed out to me the difficulty which existed in this case, and which I am willing to confess I had not recognized, that the vomiting was due to an ante-flexion of the neck of the uterus, whereas it had seemed to me in the normal position. There was a distinct angle between the neck of the uterus and the body at about the junction of the vaginal wall and the uterus. Dilatation had been tried by me but without result. Dr. Kingman suggested relieving the pressure by packing the vagina, and so raising the uterus and giving nature an opportunity to straighten out the flexion. That was not altogether successful, that is, immediately so, when he sent me a ball pessary, to be inflated after it was put in position, for the purpose of pressing the neck of the uterus back. For a few days this use of the ball pessary was satisfactory. Our plan was to leave the ball in position twenty-four hours, follow its removal with a cleansing douche, and then replace the pessary. This, however, produced so much irritation and discomfort to the patient that we decided to discontinue its use, substituting therefor a small, soft-rubber pessary, which raised the uterus and also gave an opportunity for the cervix to straighten itself. These means were followed with the most satisfactory results. The temperature was a very variable factor in the latter part of December, showing a periodic rise every second day, suggesting possibly a malarial infection as a complicating factor; that disappeared as a mere chimera.

The first relief that was noticed did not come until about a week after the endeavor to correct the malposition by the use of the pessary. The vomiting kept up about a week. After about a week the patient began to sleep. The nurse's reports showed each morning that the patient slept well the preceding night, whereas she had had constant nausea through the daytime and night-time and vomiting regularly every two hours through the day and night. In a very short time the nausea began to decrease during the daytime, and the periods between the various attacks of vomiting were increased. I remember well with what joy we all welcomed the report that she had gone two or three times, during the twenty-four hours, five hours without vomiting. On January 8th vomiting entirely ceased and the patient began to eat with the utmost freedom. The coated tongue disappeared; loss of appetite disappeared; food began to be relished and digested by the stomach without any medication until January 20th, when there was another twenty-four hours of vomiting. This attack of vomiting, I think, was sufficiently explained by two or three circumstances. Suffice it to say that since then there has been a return to the generous diet with an ever-increasing appetite. The emaciation which had characterized the early weeks and the excessive weakness have entirely disappeared, flesh is returning, and everything promises the very best of happy results.

APPOINTMENT OF C. W. GREEN, M.D.—Dr. C. W. Green, of Leland Stanford University, has been appointed to the professorship of physiology in the University of Missouri. Dr. Green is an A. B. of Leland Stanford, 1892; A. M. of 1893, and Ph. D. of Johns Hopkins in 1898.

THE QUESTION OF SUPERNUMERARY FALLOPIAN TUBES; WITH SPECIMENS OF FALLOPIAN TUBES WITH SUPERNUMERARY OSTIA.¹

BY AGNES C. VICTOR, M.D.,
Assistant Surgeon, New England Hospital, Boston.

With the tendency of the modern science of medicine to be increasingly exact in all matters of detail, there is to be observed a growing tendency to be similarly exact in the use of words to express such details. The widespread training in laboratory methods of analysis and observation has its effect not only on the cortical areas which receive the sense impressions but also on those associated areas which attempt to transform these sense impressions into words. Who that has studied the karyokinesis of cells, for example, and has recorded the wonderful impressions received through his eyes, but (as enriched his vocabulary, and has found his words more mobile and their combinations more facile and suggestive of the fairy-like evolutions of the nuclear network?

One traces this line of thought in the tendency of later writers to an increasing delicacy in the use of the word *supernumerary*, as distinguished from the related descriptive word *accessory*. As I say this last phrase, we feel as though we had passed through a laboratory door, since it is only by the use of the finer, more painstaking methods prevailing in the laboratory that such distinctions are determined.

As to the subject of this paper, when one finds a Fallopian tube with two fimbriated extremities, one's older thought is, "This is a 'double Fallopian tube,' a case of 'supernumerary tube.'" And on looking up the literature, one will find such cases so recorded. I wish to ask whether the other, the newer, the later method of thinking will so quickly be satisfied with the same answer.

I have here a beautiful specimen of a tube with double fimbriated extremity, which Dr. W. F. Whitney is kind enough to loan us from the Warren Museum; and I have also a similar but more complex specimen from my own collection. You will find a certain number of such cases reported by various observers since about 1851. There are curious variations in the experience of those who have searched for them. The earliest writer I have found is Richard,² who, in examining 30 bodies, found more than one fimbriated extremity in five subjects. Sappey³ was stimulated by Richard's report and he found in one year 10 cases in 109 dissections; he continued his searchings, and later announced as his conclusion that this anomaly occurred in the proportion of about one in 16. Alban Doran,⁴ in nine years, examined 1,000 uterine appendages; he found malformations of the Fallopian tube in only six cases, five out of the six being removed in the course of operations. Even less fortunate was the experience of Winckel,⁵ who reports one of his assistants searching a large series of tubes and finding abnormal ostia only twice.

One finds the Fallopian tube the subject of many vagaries: it is misplaced; more or less atrophied; wholly or partially impermeable; detached from the uterus; absent on one side or on both sides; finally,

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1901.

² Pavillons multiples rencontrés sur des Trompes Uériques, Gaz. Med. de Paris, 1851.

³ Traité d'Anatomie Descriptive, 3 ed., Paris, 1875.

⁴ Malformations of the Fallopian Tube. Transactions London Obstetrical Society, xxviii, 1886.

⁵ Lehrbuch der Frauenkrankheiten, 1886.

as in one instance, no trace of it is found except the fimbriated extremity. In the literature to which I have had access I find no report of two tubes on one side. You will notice the vagaries I have enumerated are not specially interesting; they are the common variations of every organ or tissue in the body.

The special interest in the Fallopian tube lies in its outermost part, about the region of the outer third and the abdominal opening — the fimbriated extremity.

(1) The most common variation here is the presence of more than one fimbriated extremity. The supernumerary openings, or ostia, may be one or more in number (one to three), and resemble the terminal ostium in being surrounded by fimbriae and by leading into the canal of the tube.

(2) Another variation is the appearance of a bunch of fimbriae without an ostium but growing from a pedicle which springs from the wall of the tube a varying distance from the fimbriated extremity. [Doran reports a modification of this (*a*) in which the pedicle had atrophied and the fimbriae appeared to lie loose in a fold of the broad ligament; and he reports a case (*b*) where the fimbriae were attached to the pedicle of the hydatid of Morgagni, and a second case (*c*) where the hydatid of Morgagni had disappeared, and in its place was a bunch of fimbriae on a long pedicle.]

(3) The third variation is the presence of a tubular prolongation projecting from the main tube, after the manner of a branch; this tube may be blind and may have fimbriae at its extremity and along its side. [Klob has called attention to a small example of this blind tube amounting to little more than a small bulging of the wall of the tube, which is thinned at the apex and situated near the root of the normal fimbriae; an example of this is seen in my specimen.]

It seems quite possible to trace a relationship between these last two classes and to combine them into one, making the second class the presence of a secondary projection from the wall of the tube, this projection being impervious, like a pedicle, or ending in a blind extremity and containing a canal communicating with the canal of the tube; in either case the projection may have fimbriae attached to its extremity or along its side.

Further, it now seems possible to trace a relationship between this second class and the first class and to combine them into one. We would then say: The outer portion of the Fallopian tube may vary in the direction of supernumerary fimbriated extremities. These supernumerary extremities may be (*a*) exact counterparts of the normal fimbriated ostium; they may appear (*b*) as minute fimbriated openings in the side of the tube; (*c*) as groups of fimbriae attached to the side of the tube without any opening; (*d*) as groups of fimbriae attached to a tubular prolongation of the wall of the tube, this *accessory* tube opening into the cavity of the main tube but not into the peritoneal cavity; (*e*) as groups of fimbriae attached to a solid prolongation of the wall of the tube without any opening into the cavity of the tube or into the peritoneal cavity, and, finally, (*f*) as groups of fimbriae which may be attached to, or may replace, the hydatid of Morgagni.

We know there is general agreement among embryologists that the Fallopian tubes develop from the ducts of Müller, but there is some diversity of opinion as to the origin of this duct, and it is generally felt that it is to the origin of this duct that we must go to

find an explanation of the variations enumerated above. It is agreed that the ducts of Müller arise in the neighborhood of the Wolffian ducts, one on each side of the median line; that these Müllerian ducts converge and grow backward, uniting in their middle and lower portions to form the uterus and vagina, but that they remain separate in their upper portions, forming the Fallopian tubes. The diverging views are as to the mode of origin. Briefly stated, according to one group of embryologists, the Müllerian duct first appears as a groove which closes in to form a closed tube, and later opens again at its outer portion to communicate with the peritoneal cavity, the edges of this secondary fissure developing fimbriae. According to this theory, supernumerary ostia are due to a faulty closure of the edges of the secondary fissure. Doran adopts this theory and explains the blind accessory tube as probably developed through an eversion and prolongation of one of the edges of the primitive groove of the Müllerian duct. He does not suggest how the fimbriae would then be added.

The majority of embryologists, however, claim that in all amniota the epithelial covering of the Wolffian bodies, where these latter project into the pleuroperitoneal cavity, proliferates, and that a triangular area of this epithelium then becomes invaginated, forming an oblique funnel with a closed, tapering apex, the mouth of the funnel being open and corresponding to the abdominal opening of the Fallopian tube. The closed point of the funnel grows rapidly backward, elongating as a solid cord which becomes a canal by the gradual backward extension of the lumen of the funnel into the cord.⁶ It is at once evident that any variations in the abdominal end of the Fallopian tube occur at the very beginning of the development of this duct of Müller.

I have seen no hypothesis as to the formation of supernumerary ostia according to this mode of origin of the Müllerian duct, and I now venture to advance one. In studying the comparative embryology of the development of the Fallopian tube, I have been impressed with the resemblance between the normal development of this organ in birds (especially in the fowl) and the types of abnormal development which have been enumerated in this paper. In addition to this, all embryologists have been impressed by the fact that the early stages in the development of the embryo in mammals closely resemble those of birds. As a further evidence of the relationship existing between man and the fowl, I might call attention to the fact that the occasional atrophy of one Müllerian duct, and the consequent occurrence of a one-horned uterus, is an abnormality in man corresponding to the normal state in the fowl, where one Müllerian duct habitually atrophies, leaving only one side functioning.

In the development of the Fallopian tube (oviduct) in birds, both groups of embryologists agree that the abdominal end is more or less multiple. On the one side, it is said, "The invagination [of the mesothelium] is somewhat irregular, so that there may be more or less marked modifications of from one to even three or four invaginations." The other side says, "In the fowl, Sedgwick and Balfour have shown that the anterior end of the Müllerian duct arises as three grooves connected by an internal thickening of the peritoneum of that region. The thickening separates as a solid

⁶ Minot: Human Embryology, 1897, p. 245.

rod of cells which before long acquires a central lumen. The whole structure now consists of a short tube opening anteriorly into the body cavity by three ductules. . . . The permanent abdominal opening [of the oviduct] or fimbriated extremity corresponds with the anterior of the three grooves, the two posterior disappearing. . . . The hydatid [of Morgagni] is probably a degraded remnant of a primitive tubule."⁷

It is not out of accord with similar occurrences in the development of the embryo to think that occasionally the evolution of the embryo halts in this particular point, attempts to revert to an earlier type, then impelled to advance higher in the scale, responds to the impulse, but does not quite succeed in removing all traces of its momentary faltering.

The only missing link in the specimens reported is the intermediate form of an accessory tubule not only crowned with fimbriae but opening also into the peritoneal cavity. Bovée⁸ recently reported the case of a Fallopian tube with two fimbriated extremities, one of which led into the normal canal of the tube; the other opened from the peritoneal cavity into a canal about two inches long; beyond this point the probe would not pass. As the tube was not removed, a dissection could not be made. Possibly this is my missing link.

Description of tube shown by writer.—Both tubes, with large cystic ovaries, were removed from a profoundly anemic adult who suffered from uncontrollable menorrhagia.

The abnormal tube is six centimetres long (one centimetre longer than the tube on the other side) and both tubes seem more slender than usual. Nothing noteworthy about the fimbriated extremity, which is similar to that on the other side. On the upper surface of the tube, about five millimetres internal to the fimbriated extremity, is a second ostium, similar in every respect to the terminal one, but about five millimetres across its base. It communicates with the canal of the tube and with the terminal ostium. About four millimetres internal to this second ostium is a small tuft of fimbriae, one and a half millimetres across the base, apparently growing directly from the wall of the tube. Just internal to this, separated by about one and one-half millimetres, is a small blind pouch, like a sacculation of the wall of the tube. It measures six millimetres across the base and projects about five millimetres beyond the surface of the tube; it opens freely from the canal, and it shows no trace of fimbriae. About two millimetres internal to this is an apparently solid projection from the wall of the tube, measuring three millimetres across the base and projecting about three millimetres beyond the surface of the tube. Its summit is crowned by a tuft of fimbriae. Apparently it has no communication with the canal of the tube, or with the peritoneal cavity.

HER HAIR A WOMAN'S GLORY.—A young woman has brought suit for \$10,000 damages against the Metropolitan St. Railway Co. of New York for the loss of her hair. While alighting from a car she was thrown to the ground and received injuries to her head which rendered her unconscious. She was taken to the J. Hood Wright Memorial Hospital, where her hair had to be removed for the treatment of her wound.

⁷ Haddon: An Introduction to the Study of Embryology, London, 1887, p. 251.

⁸ National Medical Review, July, 1899.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, January 17, 1900,
Dr. H. F. VICKERY in the chair.

Dr. H. F. HEWES read a paper entitled

A STUDY OF THE NATURE AND SIGNIFICANCE OF THE SYMPTOMS IN DISORDERS OF THE STOMACH.¹

Dr. CUTLER: I am very much interested to hear Dr. Hewes's paper, but I am surprised at some of the figures he gives. Although I never tabulated what cases I have had, I had supposed that the diseased condition could be made out from the symptomatology a little more frequently than he has given in his statistics. I should say his estimate in his last statement that in 50 per cent. of cases the chemical examination is of service is rather a conservative one, which shows how misleading general impressions may be. I should have supposed that its service was a good deal more than that. The especial value, I think, of his investigation is that it occurs here amongst patients such as we all of us meet. We do not have to compare our findings with those of some foreign source or another city. I was rather surprised at the small number of cases of increased acidity he found. I should have supposed it would have been a good deal more than 84 out of 250 cases. I feel convinced that this method of research is one which is going to be of very great value to us, and it is the only way we can make our knowledge of service.

Dr. JOSLIX: The paper is especially interesting because it illustrates how little value can be attached to the examination of the chemical contents alone. Forty-eight per cent. of these cases showed normal condition of HCl, but did not have normal digestion. This is not strange. The amount of acid in the stomach does not correspond more closely to the symptoms, because the symptoms of which the patients complain are the average of their symptoms for the last day, week, month or even years. The examination of the stomach, on the other hand, is at one special hour, and that when patients are under considerable nervous strain. In the next place, symptoms of hyperacidity occur late in the morning, several hours after meals, but the test breakfasts are given early and on an empty stomach. At that time the mild cases have no symptoms of hyperacidity. It is more surprising to me that 72 did show the HCl increased under such conditions than that some others did not.

The amount of hydrochloric acid is a variable factor anyway, and Rosenheim has pointed out that in cases of nervous dyspepsia on one day the acid in the stomach is increased, on another day normal, and on still another diminished. Riegel² has lately called attention to another influence which must be considered. It is known that HCl is secreted if one simply chews bread, and that a greater amount is formed if, instead of bread, meat is chewed. Riegel examined a cook with this in view, but found that neither bread

¹ See page 501 of the Journal.

² Münch. med. Woch., 1899, No. 45.

nor meat led to the pouring out of the acid. An Ewald test breakfast also failed and it was only after the mechanical irritation of meat on the stomach wall itself that the acid appeared. Here was a case which ordinarily would pass for achlorhydria, but in reality was not.

As to the normal standard of acidity in Boston, Dr. Hewes's statistics are most suggestive. It is certainly a very good idea to form a standard of our own, and all should contribute, that we may have many cases on which to form an average. We must remember, however, that ulcer of the stomach in Boston is more common than in many other cities and possibly this may be due to the greater acidity of our stomachs. Thus, after all, our standard of acidity may be a diseased standard.

In Eccles's book on "Difficult Digestion" no mention is made of the strength of the acidity of the stomach. This is but one of the faults of this very readable little book, but it illustrates how easy it is to let one single symptom dominate the whole clinical picture. When a diagnosis of gastric disease is made, it must be based, as far as the examination of the stomach is concerned, on its chemical condition, its position and, much more, its motility. Only when these three are combined are satisfactory results obtained.

Dr. SMITHWICK: I have been very much interested in Dr. Hewes's paper. In a general way I should agree. I have examined about 150 cases carefully in the last year and a half, and it seems to me that only in a small proportion of the cases can you get an accurate idea of the stomach from the symptoms. Dr. Joslin's remark about the prevalence of ulcer in this vicinity affecting the standard for normal acidity as determined by Dr. Hewes recalls a case that I examined in the Out-Patient Department of the City Hospital. By the way, I would say I think the point he made was ingenious, but a little bit overdrawn; still, this case might emphasize the liability of overlooking ulcer even in the presence of symptoms. A nervous, but healthy-looking girl, with varied symptoms, a case of Dr. H. D. Arnold's, was observed two weeks and several analyses made. We were unable to come to a conclusion as to what was the matter, the patient's untruthfulness casting suspicion on all of her statements. At last Dr. Arnold recommended her to the house for constant observation. Soon after admission to Dr. Buckingham's service she vomited a large quantity of blood. This occurred two or three times. Before admission the acidity was a low normal.

What Dr. Hewes has said about cases of low acidity showing all the symptoms of high acidity is quite commonly seen, and I think that is especially noticeable in the cases of hyperchlorhydria, which temporarily have a remission. I can recall six cases examined recently where the free HCl and total acidity were both at a low normal, and where successive examinations proved a hyperchlorhydria later; perhaps the sixth or seventh examination would show a marked hyperchlorhydria. My most marked case of hyperacidity as judged by symptoms was one of continuous secretion where there was hypochlorhydria. In this case I examined both in the morning and in the afternoon and after different test meals. What Dr. Joslin has said about the test usually being made in the morning certainly has some truth in it, but in the marked cases of hyperchlorhydria successive exam-

inations will usually bring it out. If I suspect it I always make an examination in the forenoon.

I have done a careful digestive test in practically every case, especially those examined for data, but am not sure of how great practical value that is. Simon seems to think that the estimation of pepsin secretion gives more exact evidence of the condition of the stomach than the estimation of free HCl.³ Certainly the pepsin estimation often suggests a pathological basis for symptoms that might otherwise be considered imaginary. A good example was a case reported by me at the October meeting. A girl who evidently had had gastric ulcer, treated in the hospital in Dr. Williams's service, later came to the out-patient with symptoms, to her, just like those of the previous attack, and examination showed perhaps one part to 1,000 of free HCl. Nobody doubted when she came that it was a case of ulcer. The digestive test was delayed about five hours. At that time we concluded that only gastritis was proven, but the treatment was for ulcer, on account of the symptoms. Several examinations at intervals showed no blood and gradually the digestive period shortened as the free HCl increased. I think sometimes the digestive test will point out a mild gastritis that otherwise you would miss if you simply made the test for HCl.

Dr. PRINC: If I may say one word on this subject, I would like to, because I would like to advance a theory for the explanation of symptoms in cases of this kind which seems to me to offer the best explanation of them. Before doing so I would like to say one or two words on some of the other points brought up here, and, first, in reference to the one upon which Dr. Joslin anticipated me, namely, that of the fallacy of test examinations made in the morning. Looking at it purely from a clinical point of view we are well aware that many patients can digest without discomfort in the morning and cannot digest at other times of the day; some digest in the middle of the day and cannot in the morning, some at night, etc.; therefore whatever may be the results of an examination after any given meal these do not, it seems to me, necessarily give us an insight into the condition of the stomach at other periods of the day. When I say do not digest, I mean, of course, do not digest without difficulty. I think a most common condition for dyspeptics is to be able to digest a light meal, such as is the ordinary test meal in the morning, although they cannot digest except with the greatest difficulty their lunch or the evening meal, so that it has always seemed to me that the inferences on which these things are based have certain fallacies. However that may be, this question of motility of the stomach is one of the most important of those connected with the symptomatology of functional diseases of the stomach, for inasmuch as the expulsion of the contents is essential to perfect digestion, if that is disturbed the symptoms are quite as likely due to it as to primary chemical changes in the contents.

I have been very much impressed by the results obtained by Dr. Hewes in this very thorough and systematic series of observations. It seems to me, on the whole, one of the most valuable contributions which has been given to us upon the subject. It is good work, a real contribution to medical science.

Regarding his theory of irritation in explanation of the symptoms, it seems to me that it is a very plausible

³ Simon's Clinical Diagnosis, p. 143.

ble theory, and has much to be said in its favor. It certainly is a far better explanation than that based upon the chemical contents, and yet an objection can be made to it which I think has some significance. Yet it does not seem to me that irritation is quite a satisfactory explanation, because, as he himself has already told us, there are cases of hypoacidity which were relieved by an alkali. Now unless he assumes that the irritation was afterwards due to later secondary acid formation it would hardly seem there could be any irritation from the absence of HCl, yet at the same time be relieved by an alkali. Furthermore, we know most intense gastric symptoms occur before it is possible to have any secondary changes, and at a time when the food must be substantially unchanged in the stomach. The explanation which I would like to offer, which has seemed to me from thinking upon the subject is the most probable explanation of the symptoms, is this: I think we ought to take a broader view and look at it from a biological standpoint. I mean this: We ought to look at it from analogy with other organs the functioning of which is better known. Take the eye, for instance. It is a physiological law that when any organ of the body performs its functions with difficulty the performance of its functions is always accompanied with pain or its equivalent. The hypermetropic eye, as a rule, cannot see without pain. The eye performs its function perfectly or may perform it perfectly; it does see, and is able to do its work, but the doing is accompanied by pain or its equivalent. Take the heart; in cases of interstitial myocarditis, where the heart structure is weakened, a most common symptom is pain extending down the arm; not only pain in the precordia, but extending down the arm. There we have again an organ doing its work with difficulty and accompanied by an "associated pain" or its equivalent. Take the bladder; whenever the bladder finds a difficulty in holding or expelling its contents it is accompanied by pain, whether that difficulty be functional or organic. I have seen most distressing symptoms of a purely functional nature referable to the bladder and due entirely to a functional difficulty of holding or expelling the urine. Take the ear; Erb has reported cases in which hearing was accompanied by pain. The pain and other disagreeable symptoms accompanying functional uterine trouble is classical. We all know it is sometimes absolutely impossible to explain the pain accompanying menstruation by any of the anatomical facts that are found. Even in the muscles there is a disagreeable symptom known as *akinesia algera*. Any attempt to use the muscles when they are weakened by functional disease, especially in neurasthenia, is accompanied by pain. So we find that the functioning of the eye, the ear, the heart, the bladder, the uterus, when performed with difficulty is accompanied by pain or its equivalent, as a physiological law, even where there is no irritation whatever. Now, if we apply the same law, which certainly is true of all the organs of the body of which we have any complete knowledge, to the stomach, I think we may have a probable explanation of the symptoms accompanying these functional diseases of the stomach; in other words, I would look upon pain and the other distressing symptoms as simply associated phenomena. They are association symptoms of that kind which follow as a biological law. When we are asked what is the cause of these associated symptoms I think it is not difficult

to find it in the law of the diffusion of energy. It is not necessary at this time to go deeper into the question of the pathology for the purposes of the hypothesis, for I am dealing with general principles. But to illustrate what I mean I may say that, undoubtedly, the pains in the head and eye which accompany eye strain are due not to any real irritation of the eye, but to the diffusion of the nervous energy which is required for the increased strain to hold the muscles of the eye at that tension which is necessary for proper vision; the nervous energy is diffused to the sensory centres as well as to the muscular centres. It is probably the same law which holds in all the various organs of the body. That at least seems to me, from long speculation on this subject, as the most likely hypothesis. It certainly is more in harmony with the clinical facts as brought out; for, as Dr. Hewes has pointed out, we find the same symptoms where there is very little acidity and where there is a great deal of acidity, and I think if we take a broader view of it, that so far as treatment is concerned we are much more likely to get at successful results than if we take the narrow view and look for the symptoms of changes in the chemical secretions alone.

I want to say in closing I have rarely listened to a paper which has impressed me so strongly as this paper to-night by Dr. Hewes, and I think he has done much to clear up a great deal of hazy knowledge which some of us at least have had in our minds on this subject.

DR. VICKERY: It occurs to me that we have etiology as one important guide in the treatment of stomach cases, perhaps a comfort to us to bear in mind, considering the uncertainties of symptoms and the as yet unsettled questions about chemical and other attempts at accurate analysis of the physical condition. Patients treated according to the etiology of their cases will pretty often respond favorably. I would like to ask Dr. Hewes whether treatment adapted to the chemical reactions independently of the symptomatology of the cases is almost always satisfactory in its results.

DR. JOSLIN: I should like to ask Dr. Hewes how close a connection he has found to exist between the condition of the tongue and hyperacidity.

DR. HEWES: I did not mean to imply, as Dr. Cutler apparently understood it, that the analysis of the contents was useful in only one-half the cases. I said that it gave evidence of abnormality of the secretion in this per cent. of cases. The finding of a normal condition, as in the other half of the cases, is also of use towards our understanding of the case.

In answer to Dr. Vickery's question I should say that the treatment of the cases upon the lines of the findings by analysis gives very satisfactory results, curative results in at least 75 per cent. of the cases in which abnormality of a chemical nature is present. Treatment along these lines is in my experience about twice as successful by this method, if we consider rapidity of relief, as that instituted without analysis of the contents. The proper treatment is now as a rule instituted at the start. Formerly we had to experiment with treatment to reach our conclusion in regard to diagnosis.

I should not agree with Dr. Joslin's suggestion that the facts that the average acidity of the stomach in Boston determined in this way was higher than in other places, and that gastric ulcer was more common

in Boston than elsewhere, indicated that the average stomach was abnormal in its secretions. The association of these facts may indicate why gastric ulcer is more common; that is, it may serve as a suggestion of the causative connection of high secretion of hydrochloric acid and gastric ulcer.

It is quite true, as several of the speakers have suggested, that the chemical findings at a given time are not necessarily representative of the findings at other periods. Our patient with a finding of normal acidity at the time of examination may suffer from his hyperacidity at a later period of the day than that at which we obtained the contents. A negative finding does not in all cases rule out the existence of some chemical abnormality as a cause of symptoms. Where a positive finding exists with symptoms, however, we are justified in treating our case according to the indication of the analysis and shall if we follow this rule, have a much clearer understanding of our stomach cases and a much greater success in their treatment than if we relied upon our symptoms. For these, as we have seen, give no indications of a positive nature in two-thirds of our cases.

I wish to say in closing that this paper is not intended as an exact consideration of the usefulness of the method of analysis of the gastric contents as an aid in clinical work. Such a presentation would include the records of the study of individual cases over long periods, and of the results of treatment, etc., and other control data in reference to the accuracy of our findings by this method. I have merely given you the results of some observations, in which by the use of these methods, we have succeeded in gaining some knowledge of value to the understanding of the disorders of the stomach.

In regard to what Dr. Prince has said in connection with the theory of the nature of symptoms, I meant my explanation to convey much of the same idea as his hypothesis. I spoke of irritation or hyperesthesia merely as examples of causative factors in some cases. Dr. Prince's explanation is, however, much more complete and clear than mine and my observations would lead me to adopt it as the most probable hypothesis of the nature of those symptoms which are constant in all or most of the disorders studied.

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SUFFOLK DISTRICT MEDICAL SOCIETY.
SECTION FOR OBSTETRICS AND DISEASES
OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting, Wednesday, January 24, 1900,
Dr. R. A. KINGMAN in the chair.

Dr. AGNES C. VIETOR read a paper on

THE QUESTION OF SUPERNUMERARY FALLOPIAN
TUBES, WITH SPECIMENS OF FALLOPIAN TUBES
WITH SUPERNUMERARY OSTIA.¹

Dr. C. H. WINN reported a case of

BICORNATE UTERUS, WITH TWIN PREGNANCY; ABOR-
TION FROM ONE HORN.²

Dr. BRECK: Has the uterus been examined since
the labor?

Dr. WINN: No, it has not.

¹ See page 513 of the Journal.

² See page 511 of the Journal.

Dr. KINGMAN: That is a point I had in mind, and I am sorry I did not ask Dr. Winn to urge her to allow another examination.

It occurred to me while Dr. Winn was reading the paper that this case is instructive in connection with the paper to follow. I doubt not we shall hear something about the Copeman treatment by dilating the cervix. If dilatation of the cervix is of any value in the treatment of vomiting of pregnancy this ought to have been a case in which to note benefit, because the cervix was dilated so as to admit the finger and curette, to allow the fetus to pass out and the gauze packing to be put in, and yet the vomiting was extreme from the day of the operation, more so than before. I believe it is very common in the ordinary normal uterus for pregnancy to begin in and develop from one horn.

Dr. VIETOR: I want to ask the Chairman how he was able to make that diagnosis, excluding fibroid of the uterus, for example, and whether he felt the depression between the two horns on which the books lay so much stress. I have not met a case of any of the varieties of double uterus myself, but I have a patient now under observation who suggests to me the possibility of a double uterus because I find an unsymmetrical contour which I am not able to explain. The right horn of the uterus feels normal, the left one appears to be flattened and, if I might express it so, as if it extended into the tube, were elongated, as we see in the pictures of the uterus unicornis; it suggests one of those pictures, but I distinctly feel the right horn and I have not been able to make out any depression near the fundus. I would like to know of how much practical value that symptom is. There are complications in this case that I think may make a celiotomy necessary and I shall be able to verify the diagnosis later.

Dr. KINGMAN: So far as I know, she has never been examined except during the pregnant state, so that the exact contour of the uterus is not known, but at the time I examined her there was a typical normal pregnancy, and upon that was this mass that has been referred to, which did not have the ordinary feel of a fibroid, but a soft elasticity which comes from the softening of the uterus during pregnancy. The further fact that Dr. Winn, while treating her during the abortion a year or two previous, when he gave her several intra-uterine douches and examined thoroughly, found no suggestion of any tumor, and the absence of any subsequent indications of tumor, would tend to confirm the diagnosis. It is only a matter of inference, not given as a positive diagnosis. The suggestion is very well made by Dr. Vietor.

Dr. E. L. TWOMBLY reported

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.³

Dr. H. S. KNIGHT, of Worcester, also reported

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.⁴

Dr. BOLAND: I have been very much interested in the papers and hope to profit by what they teach. I am not willing to accept it as all due to malposition of the uterus, because it cannot explain the persistence of vomiting; after four months the uterus rises out of the pelvis and there is no further possibility of flexion or malposition. I have patients

³ See page 510 of the Journal.

⁴ See page 512 of the Journal.

I have carried through several successive pregnancies who vomited up to the delivery, and who dread pregnancy not from the labor but from the nine months of nausea and misery. I have been blundering along painting the cervix with nitrate of silver and possibly doing some corrections of malpositions with the old Ferguson speculum. In the last twelve years I have never seen a fatal case and never had but one case in which an abortion had to be induced. There is one objectionable point in regard to the treatment, and that is packing the cervix. We are taught to do that to bring on labor, and I remember one poor woman I did not do very much for and she called some one from the dispensary and he promptly packed her and she promptly miscarried. I should like to ask how you would avoid a possible miscarriage in consequence of packing?

DR. VIETOR: I have had no experience with the pernicious vomiting, but, in common with all physicians, I am troubled by the vomiting of my pregnant patients. In some cases I am able to relieve it; in some cases I am not. I was rather skeptical at first, but I have had some very good results from the method mentioned by the last speaker; that is, painting the cervix and cervical canal with nitrate of silver. I began by doing it really as a matter of the last resort and was surprised to find occasionally I have had very good results from it. Then I have used the same remedy with a definite purpose in cases where I had reason to suspect a gonorrhoeal infection. In several such cases I have found the nausea and vomiting, as well as the local symptoms, relieved. I have also corrected the malpositions of the uterus, and have used tampons, pessaries and postural treatment; and then I think I am perhaps inclined to lay a great deal of stress upon the general treatment of the patient. I am not satisfied that the cause is always a local one. Indeed, I question whether a changed metabolism may not really be at the bottom of it. It has seemed to me in many cases that at least the predisposing cause was in other portions of the body, for instance, in the digestive tract. In one case I had the patient ride a bicycle. She had been riding a bicycle a long time, but had discontinued it and thought her vomiting was progressively worse. I had her try it again under my supervision; in less than a week the vomiting stopped. The patient was a skilled and careful rider; she continued to ride till the seventh month and remained in perfect health.

DR. FAY: This subject is of particular interest to me on account of a case to which I was called as being probably a case of pernicious vomiting. There was a history of two previous abortions, the last at any rate, and I am not sure but the first, to save life, the belief being that vomiting could not otherwise be stopped. This was about the third month of the third pregnancy. The patient was of good physique and otherwise in good health, but could not rise from her bed without a good deal of vertigo. There was persistent vomiting some ten days before I saw her. I tried the usual remedies, such as oxalate of cerium and bismuth, for a day or two with no result, painted the cervix of the uterus with nitrate of silver with no direct result. I noticed one thing on account of which I speak of the case, not knowing how common it is. The vomitus seemed to be a very large quantity of clear, limpid mucus very much like salivary fluid, as though it was secretion from the salivary glands that passed into the

stomach. I have had a patient with very marked salivation during every pregnancy without the vomiting being very persistent, with which I compare it, and it seemed to me in this case there was persistent swallowing.

The patient was partially conscious of swallowing, until the stomach seemed to be loaded and then this came up. After further vomiting it appeared a greenish, thin fluid. Finally, while taking fractions of a drop of iodine improvement began and the condition passed to a condition of reasonable comfort.

DR. BRECK: I recall three cases. The first was a lady in whom pernicious vomiting recurred several times. I saw her with the late Dr. Doe. She had abortion performed at that time, and she has had it also two other times, I think, with relief. The second case was a patient of the lower ranks of society who had vomiting which I think could fairly be called pernicious, lasting weeks and weeks. No local cause was apparent, medical treatment was given and cervical applications; finally recovered. The third case was a fatal one which I saw in the country, almost in the backwoods, with a physician who had not recognized the pregnancy, thinking the case one of tumor, and in that case at the time I saw the patient she was *in extremis*. The pregnancy must have been about five months advanced, yet the vomiting had continued. We delivered the fetus, but the patient died within a few hours. It is reasonable to suppose if that case had been operated on as Dr. Twombly advises the patient might have been saved. I think it is a fact that even induction of labor does not always relieve.

As to the cause of the vomiting, this question of antelexion has interested me. I do not exactly understand the way in which it is supposed to cause vomiting. I feel sure that in many of those cases some other cause is at work. We know that where vomiting persists with retroversion and sensitive uterus, evidently a congested one, if we replace that and relieve the congestion vomiting ceases as a rule, and I also suspect that in many of those cases the congested condition exists from prolapse or some other cause, and the packing and treatment such as has been described may relieve not by relieving the antelexion, but by relieving the uterine congestion which exists. I simply throw that out as a suggestion.

DR. KINGMAN: I have been thinking much upon this matter during the past dozen years and have definite ideas with which you may not agree. I would assert that those who treat vomiting of pregnancy on scientific lines with a definite theory at the bottom of their method will get much better results than those who treat empirically. Why one should treat the stomach for vomiting caused by trouble in the pelvis is more than I can understand. In many cases there is disturbance in the stomach or intestinal tract that wants attention, just as one should attend to the teeth or skin or any other part of the body that is affected. But I want distinctly to draw the line between the vomiting of pregnancy and the vomiting *in* pregnancy. They are two different things. Vomiting may occur from gastritis, cancer of the stomach or obstruction of the bowel, but that has nothing to do with the pregnancy. We are talking now of the vomiting *of* pregnancy, that is, vomiting directly and distinctly and only caused by the pregnancy. I desire to state as my belief that there is absolutely no difference whatever, except in degree, between the

ordinary so-called physiological vomiting of pregnancy and the pernicious vomiting of pregnancy. People take it for granted that the ordinary vomiting of pregnancy is a thing to be expected. Patients are told that it comes to every one. It does not come to every one. A woman who has a healthy uterus and pelvis and cervix does not vomit and this exemption I have been able to predict. Now, believing that there is a definite cause for the vomiting of pregnancy and that the cause resides in the pelvis, I want to urge upon you, and upon any one to whom this word may come, the importance of ascertaining definitely what the cause of vomiting is in severe cases and of possessing a good theory for the probable cause in the mild cases which do not necessitate examination. Treatment can then be instituted on an intelligent basis. Believing, then, that there is a local cause, and believing that the cause ordinarily pre-exists before the pregnancy, I believe that we ought to look out for prophylaxis. I have operated upon many patients in the past few years who would, I believe, were they to become pregnant, be subject to pernicious vomiting of pregnancy. Such patients have an extreme ante-flexion of body and cervix, the uterus being held back firmly against the sacrum by contracted uterosacral ligaments. We do not cure these cases. Ask the gynecologist how many cases of extreme ante-flexion he has cured, and he will tell you, very few.

Now with regard to the cause, Dr. Boland has questioned whether it is always ante-flexion. I do not believe it is; nor do I believe it is always displacement of the uterus. I would agree with Graily Hewitt in his statement that the vomiting of pregnancy is due in almost all cases to an irritation of the nerve fibres situated in the cervix uteri, chiefly of those fibres about the internal os. It may be that the irritation of the cervix is caused by retroversion or retroflexion. As the uterus dilates that cervix is pushed upwards against the anterior vaginal wall and flexion necessarily occurs. In the case of ante-flexion the moment the uterus begins to enlarge and descend in the pelvis the cervix has still more compression. It is not only flexion, but compression of that cervix, and Hewitt's theory is that the irritation of those fibres is caused by anything which interferes with the normal expansion of the cervix. The body of the uterus expands with the developing ovum, the cervix is compressed, restricted, cannot expand. I have seen one fatal case, in which case there was no displacement, no flexion, but that patient had a tear of the cervix up to the internal os, which had been neglected. The whole cervix was to all intents and purposes a piece of cicatricial tissue. That cervix could not expand, could not yield to the expanding uterus, and had that patient lived she would probably have vomited to the end of pregnancy.

I would like to say with regard to the treatment of the simple forms of vomiting that mechanical means are better than stomach medication. As a routine treatment prescribe the knee-chest position, but be sure that it is properly used and that air is admitted to the vagina.

Copeman's method of dilating the cervix is simply a treatment of flexion of the cervix. In cases where the cervix will not yield to simpler methods it may be well to dilate, but I believe that if cases are properly treated in time it is never necessary to dilate, unless to produce abortion.

In closing I want to urge once more that you treat cases of vomiting of pregnancy from some scientific standpoint and not empirically. Do not pin your faith upon stomach medication, or Copeman method, or packing, or any other one thing, but find out the cause of the vomiting and treat it, considering the ordinary cases of everyday morning sickness as vomiting of pregnancy just as certainly as pronounced cases and not permitting patients to go on suffering three or four months until nature comes to their relief.

Dr. Boland spoke of a case that went to the dispensary and was packed and came back and aborted. I remember packing one case at the Boston Dispensary ten years ago with subsequent abortion. That was a case of incarcerated retroverted uterus, where the patient would in one week probably have been in mortal danger had the uterus not been gotten out of the pelvis. There is scarcely a more dangerous predicament for a woman than incarcerated retroverted uterus, and I do not believe the packing was as much responsible for the abortion as the disease that called for the packing.

DR. TWOMBLY: In reading my paper I purposely limited the discussion to the facts connected with the early months of pregnancy. We know that vomiting will sometimes continue into the late months. I purposely wished to limit my paper in the first point I made, namely, that the displacements and faulty positions of the uterus are more often the causes of excessive vomiting than has been generally supposed. I did not say that they were the only causes, but "more often than has generally been supposed," and that a careful, intelligent raising of the uterus, if it is displaced, and straightening out the cervix, will accomplish much. As Dr. Kingman has said, there is the vomiting *in* pregnancy and the vomiting *of* pregnancy and perhaps we should drop that term "pernicious" and say "excessive vomiting of pregnancy." I must second Dr. Kingman in his belief that the cause is in the cervix near the internal os. Whether the nerve centres are within or near it is impossible to state, and I think no examinations post mortem have yet proved any pathological condition there. At the same time we know how sensitive the internal os is when we try to dilate, and we know the external os is comparatively not sensitive, and there are a great many cases in point where the cervix is bent and compressed, from which we get the symptoms reflex of vomiting. I cannot but think that the cause of much vomiting, as Graily Hewitt states, and as I asserted in my paper, is the compression of those nerves in the cervical tissue which are associated with this bent and indurated condition, and there is interference of the natural pliability and expansibility of the tissues. I should not agree entirely with Dr. Kingman when he says that Copeman's method of dilatation of the cervix need not be employed. It seems to me useful and it seems to me it is not likely to produce abortion if carefully employed. Certainly where we cannot entirely rectify a malposition of the uterus, we can gain a great deal by straightening the cervix by dilating so that the compression is taken off for a while. It gives temporary relief and allows those tissues in the natural cervix at least a chance to recover their tone and allow the growth of the fetus to go on. As regards packing, we do not pack the whole vagina. The packing is used to take the place of a pessary, to elevate in retroversion, or to push back in

anteversion and I have never seen packing cause abortion.

I wish there might have been more discussion on the second point, where we have found that all efforts do not avail, namely, the induction of abortion immediately, rather than waiting until the patient has lost her strength and health, vigor and vitality. The general opinion is delay, and delay to my mind is fatal, the long-continued delay such as practitioners are apt to advise in their cases. Although we do take a risk in emptying the uterus early, yet we have a much better chance to save the woman's life.

DR. BOLAND: I have thought that the getting up in the morning might intensify the flexion or malposition. We have to remember that the stomach is an organ of uncertain equilibrium and its time of greatest lack of equilibrium is in the morning. The toper vomits in the morning. The intractable vomiting of pregnancy, as I have seen it, has continued throughout the day, as much after each meal as after breakfast. While I feel I have got some points to-night and shall try to put them in practice, I am not convinced but what there are some other factors than malposition in certain cases.

DR. BRECK: While the dietum has been given that the vomiting comes from the nerves about the internal os, I have not heard any direct proof whatever that such is the case.

DR. KINGMAN: I do not think any proof has been given, but rather evidence gained in treating these cases and in watching the causes that apparently operate. There is also the self-evident fact that the vomiting is due to pregnancy and is present only in cases where an actual departure from the normal is found in that spot and nowhere else in the pelvis. It is a matter of inference, not a matter of scientific demonstration.

DR. BRECK: Would you regard the matter of tenderness important?

DR. KINGMAN: Not at all.

DR. BRECK: You expect to find tenderness where there is irritation?

DR. BRECK: The body of the uterus very often is tender in retroversion, and the tenderness relieved by correction suggests the possible relation between relief of tenderness and relief of vomiting.

DR. KINGMAN: A patient in my office this afternoon was severely nauseated when I touched a tear of the cervix, there being no tenderness whatever. The tear had been for some months a cause of nausea. Another case under my care two months, not pregnant, has had up to the time of treatment constant nausea from a flexion. You may have a reflex vomiting from a local disease without tenderness. I do not think tenderness is necessarily a part of it at all.

Recent Literature.

A Text-Book of Physiology. By WINFIELD S. HALL, Ph.D. (Leipzig), M.D. (Leipzig), Professor of Physiology in the Northwestern University Medical School, Chicago, etc. New York: Lea Brothers & Co. 1899.

The main fault with this book is that in it too much has been attempted and not enough accomplished —

principally, it would appear, from lack of space. To write a book on general, comparative and chemical physiology, one would think would require the work of a lifetime, and a good-sized library to hold the result, yet here we have an attempt in 600 odd pages.

True enough, these subjects are all interesting, but for the instruction of a student is it not best to keep each of these studies separate? The lavish expenditure throughout the work of formulae, chemical symbols and reactions is uncalled for — certainly an expert mathematician and chemist is required to understand them. The principal aim of the book seems to be that everything should be very concise, and in some cases it is carried to an unpleasant extreme — the physiology of "nerve muscle" could easily be benefited by a fuller description.

It may be noticed on p. 335, where the digestion of milk is discussed, that the statement is made that the "proteid pellicles which surround the oil globules are digested off and the oil escapes." Is it known that the oil globules in milk possess a proteid envelope? Surely this is a very definite statement settling, according to Hammerska, a very doubtful and difficult problem. The less said about the chapter on internal secretion the better. Cyon's work settles the physiology of the thyroid, and according to the author "other investigators confirm these theories of Gley and Cyon." In our judgment many other investigators do not.

The book is beautifully illustrated throughout, although on p. 61, Fig. 21, the drawing of a Pohl commutator is unique. Let us trust that some day it will be corrected. The figure illustrating the inter-relation of the food stuffs is excellent (p. 382). The letterpress and paper is of the best and the binding good.

In conclusion, it may be said that the reviewer, even after carefully reading the preface, is doubtful for what class of readers the book is intended, and to what class it will be the most beneficial, — to the unfortunate student, the hard-driven practitioner or to that peculiar class of people who wish to learn the science of physiology for curiosity's sake, and learn it (? to their own satisfaction) by reading one book — usually a tiny one — looking at the illustrations and reading the titles of many others?

Ringworm and Some Other Scalp Affections: Their Cause and Cure. By HAYDN BROWN, L.R.C.P., etc. Edinburgh and London: J. and A. Churchill.

This well-printed book of 169 pages serves to proclaim its writer's belief that in ringworm, alopecia areata, favus and impetigo, a so-called fungous dyscrasia exists, without which the parasite cannot take root. Very little that is logical is to be found in this production, a constant repetition of the word dyscrasia, with rather sarcastic comments on the prevalent scientific views, being about all that one remembers at the close. Very little support is given to his dyscrasic theory beyond the fact that some people contract ringworm when exposed to it and others do not, just as is the case with every known contagious disease. The author claims to have had unusual success with his method of treatment, which is hygiene and a simple tonic; but no figures are given, no comparisons with other modes of treatment have apparently been essayed, and he always combines his treatment of the "dyscrasia" with some external application.

Venerae Diseases. By EDWARD L. KEYES, M.D., and CHARLES H. CHETWOOD, M.D. New York: William Wood & Co. 1900.

The name of the senior author of this work is a guarantee of the excellence of any publication that bears it, and in choosing Dr. Chetwood as a collaborator he has not impaired the quality by which his own writings have been made notable.

Dr. Keyes has confined his part of the work chiefly to its latter half, which deals with syphilis and chancre. Of this it is unnecessary to say more than that it deals with these subjects in a concise, practical and lucid manner. Its teachings are, in our judgment, sound throughout, and it is perhaps as good a guide for the young practitioner and student to follow as any in the English language with which we are acquainted.

The first portion of the volume is devoted to the consideration of acute and chronic urethritis, complications and sequelae, including non-specific as well as specific urethritis, and while retaining the general plan of a former work of Dr. Keyes, has been brought up to date by Dr. Chetwood and contains much new material, conspicuously in the matter of the bacteriological study of urethritis. The various methods of distinguishing the gonococcus from the numerous other forms of diplococci found in the urine and discharges and secretions of the genitals are well set forth in the first chapter. The judicious use of solutions of permanganate of potash and silver nitrate or protargol for urethral irrigations, the first in the acute stage in weak solutions and the two last in the later stages of the disease, are given the first place in the treatment of gonorrhoea, but the medicinal and hygienic treatments are not neglected in the chapter dealing with this subject. Both the acute and the chronic forms of gonorrhoeal urethritis are well presented and illustrated, the various contrivances for irrigation of the urethra and bladder and also some of the endoscopic instruments being acceptably shown by accompanying figures.

That part of the work with which we are least in accord, and which perhaps on this account seems most open to criticism, is that concerned with stricture and its treatment. We do not concur, for instance, in the author's approval, even in its limited application, of the practice of continuous dilatation in cases in which, beginning with a filiform bougie in the surgeon's office, the patient is sent home and told "to keep quietly about the house" for a week or more, during which gradually increasing sizes of instruments are passed, being of the opinion that this treatment should be frankly condemned.

Again, while sharing the author's view, which does not accept the more extreme teachings of Otis, with regard to urethral calibre, we do not find in the substitute proposed in the place of Otis's standard of measurements—namely, the adoption of a slightly smaller size as the normal one—any ground presented for thinking it more correct, and with regard to internal urethrotomy the adoption of the normal meatus—stated, as it seems to us, erroneously as 30 French—for a guide in internal urethrotomy has nothing to recommend it.

The volume is fairly well illustrated and admirably planned in its arrangement, and may be recommended especially, as it seems to us, for students.

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HOSPITAL ENDOWMENT AND HOSPITAL
ABUSE.

WITH the gradual but inevitable disappearance of prejudice regarding treatment in hospitals for all classes in the community, it is becoming clear that new possibilities for abuse are more and more imminent. Not many years ago a person of means, ill with an acute disease or suffering from a surgical affection requiring operation, would have considered a long time before entering a hospital, if he could possibly be cared for at home. Now all this has changed; prejudice has been laid aside in great measure, and persons quite free from the implication of poverty are continually seeking admission to our hospitals, confident that there they will receive the most skilled care under the very best surroundings for ultimate benefit. This somewhat anomalous state of affairs has been met by various hospitals in various ways. Probably all hospitals of any considerable size now have so-called private wards, access to which means the payment of a varying sum, and often a large one, into the general hospital treasury, for the supposed privilege of occupying such a private ward or room. In some of the more conservative institutions any added payment for medical services is absolutely discomtenanced. The rule is stringent that no physician connected with such a hospital is permitted to accept any fee from a patient while under treatment in the hospital. Other institutions assume the justifiability of charging extra amounts for certain special privileges and also of permitting the attending physician to make his own independent charge for services rendered, this fee to be regulated presumably by his caprice rather than by any standard fixed by the hospital. This has been the entering wedge for the reception of private patients into wards controlled by the physicians of such patients; in other words, a system of special privileges has been accorded men who are usually eminent in their profession, and who likewise hold hospital appointments; the hospital is, therefore, made directly to subserve the private interests of individual physi-

cians. This position of the hospital is by no means universal as yet; on the contrary it is rather exceptional, but it has been adopted by one, at least, of the most influential New York institutions, and there is every reason to suppose that others will follow its example. We have, for example, recently had occasion to note in these columns the details of a bequest to Mt. Sinai Hospital, in which provision is distinctly made for an increase of facilities for treating private contributing patients. The tendency is, in fact, everywhere apparent, and is certainly one to be seriously considered in anticipation of the developments of the future. The question which directly faces us is: Should hospitals, founded and maintained as charitable institutions, be so far diverted from their original uses as to lead to the direct financial benefit of the medical staff? Like many other matters, this is evidently a question which future tendencies in medicine must decide. No aphorism is truer than that "to him who hath shall be given," and in medical practice the application is especially apparent. It is, however, equally certain that the many who are not so favored are likely to raise an increasingly vigorous protest against the injustice of the whole hospital system, if it encourages the well-to-do as well as the poor to take advantage of its offices. The small private hospital is, no doubt, a necessary and desirable adjunct to modern practice, particularly of a surgical character, and has no objections on the ground of favoritism, since it permits any reputable physician to treat his patient in its wards. The matter assumes, however, an entirely different aspect when such privileges are extended to the very few to the absolute exclusion of all others, as must clearly be the case in any large hospital, the chief function of which is the wise bestowal of medical charity. A conservatism here is certainly justified, and we should be glad to see a stop put to such tendencies in all of our large institutions. The use of money to advance the interests of individual physicians to the manifest detriment of their colleagues is not consistent with the ethics upon which hospital foundations are made, nor with the spirit of fairness which should prevail among medical men. To add to the advantages which a hospital appointment already gives, the possibility of money rewards is clearly a step fraught with many dangers.

As the President's Address before the Association of American Physicians in 1898, Dr. F. C. Shattuck read a paper on "Some Remarks on Hospital Abuse," in which he drew attention to certain of the facts to which we have alluded. Writing of the admission of well-to-do patients to charity hospitals, he said in part:

"It seems to me that injustice to somebody is inevitable when well-to-do patients are admitted to hospitals designed for the sick poor. If the staff is allowed to receive fees for attendance on such patients, its members are given an unfair advantage over those members of the profession without hospital appointments, and the hospital becomes a sort of medical trust. The indirect benefits of hospital service are

quite sufficient. If the members of the staff are not allowed to take fees, the well-to-do patient is injured by receiving gratis services for which he is able to pay and should pay; the time and skill of the attendant is diverted from the sick poor or from such use as he might wish to make of them, and the sum of professional earnings, now none too large, is unfairly diminished. Commercialism tends to degrade the medical profession, and if well-to-do patients are to be cared for in our great hospitals, it seems to me that the evils of free are less than those of paid professional service." Since this was written the tendency which Dr. Shattuck deprecates has grown to ominous proportions, and we may well pause to consider whether it is leading, and the possible consequences it will bring in its train, however discouraging the attempt to check the tendency may be.

THE FILTERING POWER OF THE SOIL AND THE CONVEYANCE OF BACTERIA BY MEANS OF SUBSOIL WATER.

At the instance of the Town Council of Turin, in conjunction with the waterworks company, a commission was appointed in March and April, 1896, comprising authorities in hygiene, bacteriology, chemistry, engineering and geology, to study and report upon the character of the soil above and on either side of the intake of the filter galleries connected with the waterworks of Valsangone, and Drs. F. Abba, E. Orlandi and A. Rondelli were placed in charge of the bacteriological researches connected with the inquiry.¹

The principal matters they were called upon to investigate were the nature of the soil and its suitability for filtering purposes, also the extent to which bacteria derived from the upper layers were capable of penetrating into this subsoil, and the effect of surface pollution upon the quality of the water entering the filter galleries. It was obvious that for this purpose it would be necessary to employ pure cultures of some non-pathogenic micro-organism, not of common occurrence in the Turin water supply; one, moreover, of ready and rapid growth in ordinary nutritive media, and capable of easy recognition by some well-marked property, such as the production of coloring matter. Nothing could be more suitable for the purpose than the bacillus prodigiosus, which was used in these tests.

An account also is given of the method of cultivation adopted of the mode of adapting the area of land selected for the experiments, and of preparing and introducing the water impregnated with the cultures. The water employed was in certain cases intensely colored either with methyl eosin or with uranin, which had been found by means of previous tests to have no injurious effects upon the bacteria. A plan is given to explain the relative positions of the experimental area, the filter galleries and the testing-stations. The numerous experiments are set forth in tables, each of

¹ Zeitschrift für Hygiene, vol. xxxi, 1899, p. 66.

which is followed by a statement of the conclusions to which the authors were led in consequence of the same. Thus from the first set of tests it was ascertained that the bacillus prodigiosus penetrated through the soil above the right-hand filter gallery in one and one-quarter hours, while it took seven hours to percolate to the left gallery. Under other conditions the test bacillus took in both cases seven hours to reach the filtering galleries. Again, when colored water tests were employed, the prodigiosus took forty-two hours to attain the gallery, while the coloring matter needed seventy-five hours to traverse the same distance through the same soil. It was further ascertained in connection with these experiments that the test bacillus remained for two months in the soil and was then still capable of further cultivation. It was also present in considerable numbers in the deeper layers of the subsoil. The bacillus prodigiosus, moreover, occurred two years later in the Turin water supply, which would seem to prove that it remained in the soil for an additional period of two years.

The authors, in conclusion, compare the results of their investigations with those of a similar kind undertaken in 1897 by Pfuhl, and claim the priority for their researches.

MEDICAL NOTES.

BILL FOR THE RELIEF OF ACTING ASSISTANT SURGEONS, U. S. A. — We are in receipt of a bill and brief of Senate Bill 4,323, being House of Representatives Bill 11,077, providing for the relief of acting assistant surgeons of the United States Army. Among other provisions the bill provides that acting assistant surgeons are and shall hereafter be entitled to admission to, and to the privileges of other inmates of, the National Home for Disabled Volunteer Soldiers in any of its branches, in like manner and upon the same conditions as all other inmates of said Home.

FIFTIETH ANNIVERSARY OF THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA. — Exercises commemorative of the fiftieth anniversary of the Woman's Medical College of Pennsylvania were begun May 16th, in connection with the annual commencement. Dr. Mary Putnam Jacobi addressed the graduating class, and remarks were made by the Chinese minister.

BEQUESTS TO HOSPITALS. — Prof. David Edward Hughes, the physicist, has left the greater part of his estate to four London hospitals, which will receive ultimately between \$1,500,000 and \$2,000,000. Other bequests were made for various scientific objects.

FIRST INTERNATIONAL CONGRESS OF THE MEDICAL PRESS. — An International Congress of the Medical Press will be held at Paris, on the 26th of July, in connection with the general Exposition.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 16, 1900, there were reported to the Board of Health of Boston, the following

cases of acute infectious diseases: diphtheria 100, scarlatina 37, measles 111, typhoid fever 10, small-pox 2.

OFFICERS OF THE NORFOLK DISTRICT MEDICAL SOCIETY. — At the recent meeting of this Society the following officers were elected: President, Dr. F. W. Goss; Vice-President, Dr. C. F. Withington; Secretary and Librarian, Dr. James C. D. Pigeon; Treasurer, Dr. Edward G. Morse; Commissioner of Trials, Dr. W. V. Pierce; Nominating Councillors, Dr. C. A. Cheever, Dr. J. J. Sewall; Censor, Dr. H. M. Cutts; Supervisors, Dr. G. B. Stevens, Dr. C. G. Dewey, Dr. G. H. Francis, Dr. H. R. Hitchcock; Councillors, Dr. H. D. Arnold and twenty-seven others.

NEW RULES FOR ICE DEALERS AND BARBERS. — The Board of Health has recently issued orders to further protect the community against impure ice. The ice companies and dealers will hereafter be required to fill out a blank giving details of the source, kind, method of storing, etc., of all ice sold. The barbers have also come under the notice of the Board, and will hereafter be required to sterilize all implements used, and to dispense entirely with certain accessories, as, for example, powder puffs and sponges.

DEATH OF ABRAHAM PARSONS, THE "BUNTER." — Abraham Parsons, a negro popularly known as the "bunter," because of the use to which he was accustomed to put his head, has recently died at North Adams, Mass. The autopsy revealed a skull one and one-half times as thick as that of an ordinary person. The frontal region was three-fourths of an inch in thickness. He is said to have died of old age, not of any injuries inflicted during his bunting days.

A CENTENARIAN. — Mrs. Sally Baker has recently died at Marshfield, Mass., at the age of one hundred and one years and eleven months. She was the only pensioner of the War of 1812 in this part of the country.

NEW MEDICAL SCHOOL BUILDING FOR YALE. — The Yale University authorities are now likely to purchase land for a new medical school, adjacent to the New Haven Hospital, at an estimated cost of about \$75,000.

REAPPOINTMENT OF DR. H. P. WALCOTT. — Dr. H. P. Walcott, of Boston, has been reappointed a member of the State Board of Health. He has been officially connected with the Board for twenty years.

A CASE OF SMALL-POX IN PORTLAND, MAINE. — A case, for a time simulating measles, and later considered small-pox, has been reported from Portland, Me. Quarantine precautions have been taken.

A SALEM SCHOOL CLOSED. — The Board of Health of Salem has closed the Pickman School in North Salem, in order that it may be disinfected, because of the prevalence of diphtheria.

NEW YORK.

MISSIONARIES AND MEDICINE. — Dr. D. B. St. John Roosa, of New York, presided at a meeting of

the Ecumenical Missionary Conference on May 1st. One of the speakers was Dr. Robert Beebe, of Nankin, President of the Medical Missionary Society of China, who in discussing the question as to whether, when medical work is projected, it should be done by means of hospitals or dispensaries, or both, advocated the establishment of both a hospital and dispensary simultaneously, wherever this is practicable. On account of the large amount of work falling upon the physicians of mission hospitals it is necessary to have native assistants, and it is also very desirable to have at least one trained nurse for every such institution, especially for the purpose of training native women as helpers in the wards. Dr. John Cross, of Amoy, China, was very emphatic in his condemnation of quackery in mission work: "Medical quacks in China," said he, "consisting of missionaries who have very little or perhaps no training at all and finding their work somewhat unproductive and unattractive, take to distributing quinine, pouring oil on sores with hen's feathers, and pray over those they are helping to die, must be an abomination to God. I emphatically do not believe in half doctors, and I do not think you are wise in subscribing one cent that pretends to produce such. What China needs to-day is an army of well-equipped, liberally supported, unsectarian surgeons. It is not with the point of the bayonet but with the point of the lancet that we are to Christianize China." Dr. William H. Thomson, of New York, also thought that the training received should be the best that can be obtained, and said he had no patience with any system that would make it easier for a man to become a medical missionary than to become a practitioner in this country.

MISSIONARIES AND LEPROSY.—At another meeting held on the same day the work among Oriental lepers was related in a paper by Wellesley C. Bailey, Secretary and Superintendent of the Mission to Lepers in India and the East. There were, he said, fully one million and a half of these unfortunate creatures, whose condition, notwithstanding all that has been done for them, is scarcely less terrible than in the most barbarous ages of the world's history. Only a few months ago a missionary reported the burning alive of a number of lepers in Sumatra, and all through the East the piteous cases of the victims of this disease are the very quintessence of human misery. Having given some account of the relief work by missions among lepers since the beginning of the century, he spoke of that by his own society, which was organized in 1874 and is now operating 56 centres in India, Burmah, Ceylon, China and Japan, while it has in contemplation an extension of its work into Korea and Sumatra. It has 24 asylums or homes for lepers and 14 homes for untainted children of lepers, and it aids 15 other institutions. A Christian leper asylum, he said, is a sermon in itself, which has a wonderful effect upon the surrounding heathen.

TENEMENT HOUSE COMMISSION.—The Governor is to be congratulated on the excellent selection he

has made for members of the new Tenement House Commission. In order to get all the different sides of the problem involved properly considered, he wisely deemed a large commission advisable, and therefore made it to consist of fifteen. It contains physicians, architects, builders, lawyers who have paid special attention to the questions concerned, and representatives of both the tenants of tenement houses and the owners of reformed tenement houses who have managed to make such buildings remunerative. Among the members of the Commission are Dr. George B. Fowler, President of the Medical Society of the County of New York, who served as a Commissioner of the Board of Health at the time when Governor Roosevelt, as President of Police Department, was also a member of the Board; Dr. E. R. L. Gould, President of the Suburban Homes Company; Hugh Bonner, Ex-Chief of the Fire Department of New York City; James B. Reynolds, head worker of the New York University Settlement; Alfred T. White, President of the Brooklyn Bureau of Charities, and Robert W. De Forest, President of the New York Charity Organization Society. At the first meeting of the Commission, which was held on April 20th, Mr. De Forest was elected chairman.

A MISCARRIAGE OF JUSTICE.—Justice Hatch, of the Appellate Division of the Supreme Court, on May 11th rendered a decision, concurred in by all his fellow-justices, setting aside the verdict of six cents damages, awarded to Charles B. Morris against the Metropolitan Street Railway Company for the death of his son. Young Morris, in December, 1898, received fatal injuries from the collision of the brougham in which he was riding with a trolley car, and his father, as administrator, sued the railway company for \$25,000 damages. The case was tried before Justice McAdam in the Supreme Court in June, 1899, and the foreman of the jury afterward explained to the plaintiff's attorney that so small a sum was given because the father was rich and the verdict carried the costs, amounting to \$134. Justice McAdam denied a motion for a new trial, and an appeal was taken to the Appellate Division. Justice Hatch, in his opinion, argued that the jury failed fairly to comprehend the elements of damage which the case necessarily presented, and that they erred in awarding nominal damages. The case is now to be retried in the Supreme Court.

TRAINING SCHOOLS FOR NURSES.—The Society of Superintendents of Training Schools for Nurses, a body of more than 300 women representing the largest hospitals in the country, held a three days' meeting in New York, on April 30th and May 1st and 2d. Among the subjects discussed were the extension of the course of training from two years to three (a measure that has already been adopted in 50 hospitals), and the practicability of giving up the monthly stipend to pupil nurses. In lieu of this it was proposed to furnish the latter with uniforms and textbooks (expenses which the salary was designed to meet), a plan which would result in a considerable

saving of money, which might be used for enlarging the work of the schools, etc. The following resolution in regard to the Army Nursing Bill, which failed to pass in the United States Senate by one vote, was unanimously adopted: *Resolved*, That this Society strongly indorses the principles set forth in the Army Nursing Bill recently brought before Congress, and pledges itself to use every effort to further the objects therein set forth.

PRESENTATION TO DR. JACOBI. — On Sunday, May 6th, Dr. Jacobi was presented with a silver tankard, on which was engraved an inscription reading: "To Dr. Abraham Jacobi, on the seventieth anniversary of his birthday, from the Mount Sinai Hospital, in grateful recognition of forty years of devotion and fidelity, May 6, 1900." The ceremony took place at Mount Sinai, in the presence of the Medical Board and the Managers, and the presentation address was made by Isaac Wallach, President of the Board of Managers. The tankard is nearly two feet high, and is decorated with the figure of a child touching the rod of Esculapius, and other designs emblematic of Dr. Jacobi's life work in the field of diseases of children.

MEETING OF THE TENEMENT HOUSE COMMISSION. — At a meeting of the Tenement House Commission recently appointed by the Governor, held April 26th, Laurence Vieller, the Secretary of the Tenement House Committee of the Charity Organization Committee, was elected Secretary of the Commission, and it was decided that the members of the Commission should begin a series of personal inspection tours through the tenement districts on May 2d.

GIFTS TO ST. JOHN'S GUILD. — Mrs. Augustus Juillard, who last year presented a complete new floating hospital to St. John's Guild, has now contributed \$50,000, the interest on which is to be used to defray the expenses of operating the boat. Mrs. Frederic E. Lewis, in memory of a deceased son, has arranged for the erection, at a cost of \$10,000, of a new cottage hospital on the Guild's grounds.

SEVENTIETH ANNIVERSARY, COLLEGE OF PHARMACY. — The seventieth annual commencement of the New York College of Pharmacy was held at Carnegie Hall on May 2d, when there were 105 graduates, including seven women. The valedictorian of the class was Miss Frances Blair, of the Borough of Richmond.

THE TUBERCULOSIS HOSPITAL VETOED. — Mayor Van Wyck has seen fit to veto the bill passed by the Legislature providing for a tuberculosis hospital for New York City. It is somewhat difficult to understand just why he should have done this, as there was apparently no opposition to the measure.

APPOINTMENTS. — At the annual meeting of the State Board of Health, held at Albany, May 11th, Dr. Daniel Lewis, of New York City, was re-elected president. A commission on tuberculosis was appointed, and also a committee to report on the best system of refuse disposal plants.

TENEMENT HOUSES. — In order to become familiar with the problems which they are to endeavor to solve as far as may be found practicable, the new Tenement House Commission is now making a series of personal inspection tours through the tenement districts of the city.

Miscellany.

MEASUREMENTS OF BOSTON SCHOOL CHILDREN.

The following extracts from the records of the School Committee meeting, April 24, 1900, will be of interest to those interested in physical education: "Mr. Calderwood, for the Committee on Hygiene and Physical Training, to whom was referred, February 27th, a communication from the Boston Society for the Advancement of Physical Education, requesting permission to make a series of measurements of the height and weight of the Boston school children, beginning with the primary grades and continuing through the period of growth, reported that they have granted a hearing to representatives of the Society, and have very carefully considered the matter. Your committee fully agree with the statement that observations of this sort on the same individual at successive periods would be of great practical value from an educational as well as a physiological standpoint, and welcome the advice and co-operation of the Boston Society for the Advancement of Physical Education, which they are assured will be willingly rendered, with respect to the manner in which the plan should be carried into effect, and in the arrangement and study of the facts to be collated, but feel that the actual measurements should be made under their own supervision by the Director of Physical Training, who is directly responsible to this board. Furthermore, as the value of observations of the nature under consideration will depend upon their continuance during a series of years, in a systematic and definite manner, your committee recommend the adoption of an amendment to the rules, the passage of which will be sufficient to ensure the successful carrying out of suggestions made by the memorialists."

MR. TREVES'S ESTIMATE OF WOMEN AT THE SEAT OF WAR.

At a dinner given by the Reform Club to Sir William MacCormac and Mr. Frederick Treves, recently returned from the South African War, Mr. Treves is reported in the *British Medical Journal* as saying, among other things: "So far as the sick were concerned there were two plagues in South Africa — the plague of flies and the plague of women. The flies could be got rid of by means of horsehair wisps, gauze and other appliances, and the flies disappeared at night. But the women mentioned in Sir Alfred Milner's proclamation were absolutely a terror. They came out in the guise of amateur nurses, having exhausted every other form of excitement; they took up the time of the officers, and, in fact, had the camp to themselves. Considering the kind of war in which we

were engaged and the number of lives lost, the picture of a number of elaborately-dressed ladies masquerading in summer toilets and arranging picnics about Capetown was a blot on the campaign.

Obituary.

LANDON CARTER GRAY, M.D.

DR. LANDON CARTER GRAY, the eminent neurologist, died at his home in New York on May 8th, from Bright's disease. He was of an old Virginian family, and was born in 1850. He entered Columbia, but, on account of ill health, was not able to complete his collegiate education. Later, however, he received the degree of A.M. from Columbia. He studied for a considerable time in Germany, and in 1873 was graduated from Bellevue Hospital Medical College. For a number of years he practised in Brooklyn, devoting himself more and more to neurological work, and afterwards removed to New York, where he was soon in much demand as a consultant and as an expert in the courts. In addition to numerous monographs, he wrote a general text-book on diseases of the nervous system which is greatly esteemed. At different times he was President of the New York County Medical Society, the Society of Medical Jurisprudence, the New York Neurological Society, and the American Neurological Association, and he was also one of the charter members of the Medical Association of the greater City of New York, incorporated in 1899.

Correspondence.

DEATH IN THE DENTAL CHAIR.

DOVER, N. H., April 27, 1900.

MR. EDITOR:—On April 25, 1900, Mrs. E. P., of Dover, N. H., American, age thirty-two, in apparent good health, entered a dental office for the purpose of having a tooth extracted.

The operator injected the gum at two points on the palatal side and at one point on the labial side of the tooth, with "thymene." He then extracted the tooth and for five minutes afterwards the patient conversed with him; she then began to complain of a "queer feeling" in the head and commenced to rub it vigorously; a few minutes later she had a sighing respiration which was soon followed by convulsive movements of the arms, and in ten minutes after the extraction of the tooth she was in a state of coma.

At this point two physicians who were near were called, and found the respiration had ceased, but that the heart's action was still good; the pupils were contracted to a mere point, but before death they relaxed irregularly. Artificial respiration was established, atropine was injected subcutaneously, and other remedies were used, but the heart beat became weaker and weaker and death ensued in about thirty minutes after the "thymene" was injected.

I saw the body fifteen minutes after death, and found the face, ears, neck, fingers and surface of the body were deeply cyanotic. I drew off the urine with the catheter and on testing it found it to be heavily loaded with albumin; heat and nitric acid rendered it so solid that it would not flow out of the inverted test tube. An autopsy showed cirrhotic kidneys, less than one-half natural size, and hypertrophy of left ventricle of the heart, with deficient mitral valve.

This woman, with the exception of slight dyspeptic attacks, considered herself well, her family shared this opinion with her, and she was doing the work of her household on a farm.

"Thymene" is a proprietary article made by the "Thymene Mfg. Co.," 232 Tremont Street, Boston, Mass., and while the constituents are not divulged to the dental profession, is said to contain three-quarters of one per cent. of eucaïne in an alkaline solution.

Another fact has come to my knowledge, namely, each bottle of "thymene" has a copy of a certificate from H. L. Bowker, State Assayer of Massachusetts, dated June 13, 1894, in which he says the mixture thymene "contains no cocaine or chloral hydrate, and is free from poisonous or injurious substances."

As I understand the matter, eucaïne was not brought to the notice of the medical profession till the summer of 1896; but I have a letter from the Thymene Mfg. Co., in which they state that thymene "depends for its anesthetic properties on eucaïne in three-fourths of one per cent. in an alkaline solution."

If I am correctly informed as to the discovery or introduction of eucaïne in 1896, what shall be said of the honesty of a firm that puts on this mixture the certificate of analysis from the State Assayer dated June 13, 1894?

If I am correctly informed there could have been no eucaïne in the thymene analyzed June 13, 1894, the makers seem to have substituted a deadly drug since 1896 and to be dishonestly using the old certificate of analysis.

Yours truly, JOHN R. HAM, M.D.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, MAY 5, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.	
New York . . .	3,654,594	1514	516	17.46	20.34	.78	2.16	1.92	
Chicago . . .	1,619,226	—	—	—	—	—	—	—	
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—	
St. Louis . . .	623,000	—	—	—	—	—	—	—	
Boston . . .	539,416	209	57	19.36	16.80	—	2.40	2.40	
Baltimore . . .	506,389	183	65	17.05	22.55	1.10	2.20	.55	
Cincinnati . . .	405,000	—	—	—	—	—	—	—	
Cleveland . . .	350,000	—	—	—	—	—	—	—	
Pittsburg . . .	305,000	107	34	11.16	22.32	—	1.86	—	
Washington . . .	277,000	114	26	22.00	14.96	.88	4.40	1.76	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	74	36	16.20	32.40	—	2.70	—	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Charleston . . .	65,165	28	9	17.85	10.71	7.14	—	—	
Worcester . . .	111,732	34	16	26.46	14.70	—	5.88	—	
Fall River . . .	103,142	—	—	—	—	—	—	—	
Cambridge . . .	92,520	25	6	28.00	16.00	—	—	—	
Lowell . . .	90,114	38	5	7.9	20.04	2.63	—	—	
New Bedford . . .	70,511	20	5	10.00	15.00	—	—	—	
Lynn . . .	68,218	15	4	6.66	13.33	—	—	—	
Somerville . . .	64,394	20	5	30.00	25.00	—	10.00	—	
Lawrence . . .	59,072	24	9	16.66	16.66	—	—	4.16	
Springfield . . .	58,266	30	7	20.00	20.99	—	3.33	—	
Holyoke . . .	44,510	—	—	—	—	—	—	—	
Brockton . . .	38,750	—	—	—	—	—	—	—	
Salem . . .	37,723	13	4	7.69	—	—	—	—	
Malden . . .	36,421	11	5	9.09	9.09	—	—	—	
Chelsea . . .	34,235	14	5	7.14	—	—	—	—	
Haverhill . . .	32,651	15	2	13.33	13.33	—	—	—	
Gloucester . . .	31,426	5	—	—	—	—	—	—	
Fitchburg . . .	30,523	8	3	—	37.50	—	—	—	
Newton . . .	30,461	9	3	11.11	11.11	—	—	—	
Taunton . . .	28,527	9	—	11.11	11.11	—	—	—	
Everett . . .	28,102	2	2	—	—	—	—	—	
Quincy . . .	24,578	6	1	50.00	—	—	—	—	
Pittsfield . . .	23,421	—	—	—	—	—	—	—	
Waltham . . .	22,791	8	1	—	12.50	—	—	—	
North Adams . . .	21,583	12	4	16.66	25.00	—	—	—	
Chicopee . . .	18,316	10	3	20.00	—	10.00	—	—	
Medford . . .	17,190	2	1	—	—	—	—	—	
Newburyport . . .	15,036	5	2	20.00	20.00	—	—	—	
Melrose . . .	14,721	3	2	33.33	33.33	—	—	—	

Deaths reported 2,574; under five years of age 828; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 491, acute lung diseases 526, consumption 270, diphtheria and croup 61, measles 43, whooping-cough 25, diarrheal diseases 24, scarlet fever 22, typhoid fever 19, erysipelas 17, cerebrospinal meningitis 10. From whooping-cough New York 15, Boston 4, Pittsburg 2,

Baltimore, Providence, Cambridge and Salem 1 each. From scarlet fever New York 13, Boston 6, Pittsburg, Worcester and Melrose 1 each. From typhoid fever Pittsburg 11, New York, Boston and Baltimore 2 each, Newton and Taunton 1 each. From erysipelas New York 12, Boston and Baltimore 2 each, Springfield 1. From cerebrospinal meningitis New York 4, Boston 3, Baltimore 2, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 21st, the death-rate was 20.3. Deaths reported 4,509: acute diseases of the respiratory organs (London) 411, measles 168, whooping-cough 132, diphtheria 54, diarrhoea 44, scarlet fever 34, fever 34, small-pox (Liverpool 4, London and Cardiff 1 each) 6.

The death-rates ranged from 12.9 in Birkenhead to 30.8 in Wolverhampton: Birmingham 23.6, Bradford 20.4, Cardiff 20.4, Gateshead 20.0, Hull 17.3, Leeds 23.2, Liverpool 26.0, London 19.6, Manchester 26.1, Newcastle-on-Tyne 14.0, Nottingham 18.0, Portsmouth 24.5, Salford 21.7, Sheffield 22.2, Swansea 16.3, West Ham 15.6.

METEOROLOGICAL RECORD

For the week ending May 5th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.*		Rainfall in inches.	
	Daily mean.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S...29	29.96	74	63	38	56	36	46	W.	N.W.	8	6	C.	C.	.01
M...30	29.73	66	81	50	44	82	63	W.	W.	8	17	C.	O.	.03
T...1	29.83	55	64	46	57	36	46	N.W.	W.	24	9	C.	C.	
W...2	29.97	58	71	45	70	80	75	S.E.	S.	10	12	O.	C.	
T...3	29.51	54	60	49	97	86	92	E.	S.	15	7	R.	O.	2.40
F...4	29.81	50	56	41	72	50	61	W.	W.	22	7	O.	C.	.06
S...5	29.97	50	54	45	68	49	58	W.	W.	21	10	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 12, 1900.

- G. P. LUMSDEN, surgeon, ordered to the "Kentucky," May 15, 1900.
- G. F. FREEMAN, ass. stant surgeon, detached from the Naval Hospital, Washington, D. C., May 10th, and ordered to the "Essex."
- C. H. DELANCY, assistant surgeon, detached from the "Essex," when relieved and ordered to the Naval Hospital, Washington, D. C.
- S. C. EVANS, passed assistant surgeon, ordered to the "Kentucky," May 15, 1900.
- W. C. BRAISTED, passed assistant surgeon, detached from the "Detroit," when put out of commission, and ordered home and to be ready for orders to sea.

CORRECTION.

It was stated in our issue of May 10th that Dr. J. C. White is an honorary member of the French Dermatological Society. This, we learn, is an error.

SOCIETY NOTICE.

VERMONT SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS. — The second annual meeting will be held at Burlington, Vt., May 22 to 24, 1900, inclusive. An attendance of over two hundred is expected, an increase over last year.

STATE BOARDS OF MEDICAL EXAMINERS, STATE LIBRARY, CONCORD, N. H.

NOTICE TO PHYSICIANS.

The seventh examination for licenses to practise medicine in the State of New Hampshire will be held at the State House, Concord, on Tuesday and Wednesday, June 19 and 20, 1900, beginning at 8 o'clock A. M.

All physicians who were not in practice in this State on and before March 16, 1897, must pass the examinations in order to receive a license to practise legally their profession.

Application blanks should be procured early, as these papers must be filled out and in the hands of the Regent by June 15th.

All information regarding the coming examinations will be cheerfully given by the Department of Public Instruction, State Library, Concord.

CHANNING FOLSOM, Regent.

BUREAU OF INFORMATION.

The Directors of Philadelphia Co. Medical Society, aware of the large number of physicians who will pass through Philadelphia on their way to and from the meeting of the American Medical Association to be held at Atlantic City, N. J., June 5th to 8th, will establish a Bureau of Information, of which will be located at the College of Physicians of Philadelphia, northeast corner of 13th and Locust Streets. It will be in charge of a competent physician and will be open from 10 A. M. until 5 P. M.

RECENT DEATHS.

JOHN RICHARDSON BRONSON, M.D., M.M.S.S., died in Attleboro, May 9, 1900.

GEORGE WASHINGTON WARREN, M.D., M.M.S.S., died in West Boylston, April 22, 1900, aged eighty-one years.

CHARLES H. MERSEREAU, M.D., of New York, died on May 2d, from cardiac disease. He was thirty-seven years of age, and was graduated from the College of Physicians and Surgeons, New York, in 1884. For two years he was house surgeon in the Hartford Hospital and later he served for several years as a sanitary inspector of the New York Health Department.

MATTHEW M. BAGG, M.D., a prominent physician of Utica, died on May 3d, at the age of eighty-three. He was an original member of the New York State Medical Association. He was also one of the founders of the Oneida Historical Society and a local historian of considerable repute.

BOOKS AND PAMPHLETS RECEIVED.

Bulletin No. 1, Issued by Vermont State Board of Health, March, 1900.

Experimentelles und Klinisches über Orthoform. Von Dr. August Luxenburger.

Forty-fourth Annual Announcement, Portland School for Medical Instruction, 1900.

Report of a Case of Fibroma of the Neck. By J. A. Sutcliffe, A.M., M.D. Reprint. 1900.

Section of Medico-Legal Surgery, Medico-Legal Society, Annual Report, January 1, 1900.

Manuel Complet de Gynécologie. Par A. Lutand. Nouvellet edition. Paris: A. Maloine. 1900.

Economical Disposal of Sewage with Purification by Small Communities. By Robert Fletcher, Ph.D.

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Address.

SOME THOUGHTS ON MEDICAL EDUCATION.¹

BY FREDERICK C. SHATTUCK, M.D., BOSTON.

MR. DEAN, MEMBERS OF THE GRADUATING CLASS IN MEDICINE OF WASHINGTON UNIVERSITY, LADIES AND GENTLEMEN:—What evil microbe or subtle toxin upset the balance between heart and head for which my old friend, your dean, is noted I know not; but his heart did get the better of his head some two months ago, when he did me the honor to invite me to address you on this occasion. If haply in any small measure your kindness may think this selection justified, I want the credit and beg that you charge off against him all my shortcomings. He graciously left the choice of a subject to me, and, in view of the active fermentation now at work in medical teaching and its methods, I venture to lay before you some thoughts on medical education.

Is medical education making reasonable progress in this country? What are its lines of progress? What can we do to encourage and foster healthy growth? These are questions which every physician who cares for his profession must ask himself from time to time, and which constantly rise unbidden in the minds of those whose privilege it is to be connected with a teaching body. You, gentlemen of the graduating class in medicine of Washington University, have doubtless thought a good deal on these questions or some of them from the point of view of the student, anxious to acquire the best possible equipment for his life work. Your point of view is about to change somewhat, and to enlarge much with time, as you get into practice and become teachers yourselves, as doubtless some of you will. In no way does one learn so much one's self as in trying to teach others. Nothing so clarifies one's knowledge and defines its limitations as the necessity for accurate and terse statement. These advantages accrue especially to the young teacher. The older man crystallizes more slowly and defers ankylosis of his brain cells by contact with younger minds, by the influence of their enthusiasm and by the greater incentive for keeping abreast of the times afforded by the demands of the teaching position. In the history of your own school there is no lack of inspiring examples.

But to return to our first question: Is medical education making reasonable progress in this country? The adjective "reasonable," I employ advisedly, because the question before us is not an abstract one. Its answer implies a consideration of our circumstances, of the conditions which obtain in this country and under which we must work. Some of these conditions are adverse; some the opposite. All must be kept in mind when we compare medical education in this with that of other countries.

On the European Continent are ancient civilizations, centuries old civic aggregation and organization, centralized paternal, and relatively despotic, government. The influence and power of the State is all-pervasive. It protects and watches over the higher as well as the lower education. In France, indeed, the clergy of all denominations are paid by the State.

The hospital is primarily an outgrowth of city life. Rural districts are not only sparsely inhabited, but the

¹ Delivered in St. Louis, April 26, before the Graduating Class in Medicine of Washington University.

people know one another and one another's needs and afford the help needed in the degree needed in time of illness. In a city there is not the same community of interests that there is in the country. The very poor are in larger numbers and are very inadequately known to one another or to their more prosperous neighbors. Hospitals, therefore, in old cities were founded long ago mainly by religious orders, and were ready to the hand of the university as soon as it was realized that clinical instruction must form a part of medical teaching. The State took over the hospitals and the universities, of the medical faculties of which the hospitals became practically an integral part. The universities have the ear of the State and demand laboratories with the means for maintaining them. Circumstances, centralization and the German character have thus put Germany in the forefront of scientific medical research. Back of the higher education is the public purse; back of that is a highly trained and intelligent bureaucracy. Results are hence prompt and striking.

In Great Britain we have, as on the Continent, ancient cities with an aggregation of the sick poor, the indispensable condition for hospital formation and growth. But this is the only common factor. The English theory of government is that of minimum interference with private action. Hospitals were provided and are now maintained almost exclusively by private benevolence, and the higher education is, under the English theory, only indirectly fostered, but in no way ruled or supported by the State. The medical school is thus the direct outgrowth and an integral part of the hospital. The part played by Oxford and Cambridge in medical education has been trifling, mainly because they are situated in small towns so near London that they could not compete with the clinical facilities afforded by the great metropolitan hospitals. We now see signs of awakening of medical interest in these old universities, especially in Cambridge, a result, doubtless, of the growth of the laboratory side of medical progress. The degree of Doctor of Medicine is still a purely university title in England, is taken by very few medical men, and carries with it no license to practise. The avenue to practice is through the examining boards of Apothecaries' Hall, the Royal College of Physicians and the Royal College of Surgeons, before one or more of which come the young men who have received their training at Guy's, St. Thomas's, St. Bartholomew's, St. Mary's, the London Hospital Medical School. We note that the hospital gives the name to the school, and that the medical school is entirely independent of the university—a notable contrast to Continental conditions.

The absolute unity of the hospital and school makes it possible to exact that every student must serve his term as dresser in the surgical, and clinical clerk in the medical, wards, coming thus, while still a student, into intimate touch with the sick, training his senses and his hands, and actually employing himself the methods of investigation and diagnosis which have been described to him. Among the disadvantages of the English method may be mentioned the scattering of first-rate teachers among a multiplicity of teaching bodies, as contrasted with the opportunity for grouping them afforded by the Continental system. Again, the lack of university connection has distinctly lowered the dignity of the medical profession and would seem to

be partly responsible for the widely different social rank accorded to the clergyman or to the barrister, and to the doctor. Until very recent times the practice of medicine was not regarded as a proper career for a "gentleman" in England. To become a wine merchant was less lowering. Thirdly, the increasing necessity for laboratories for teaching as well as for research must complicate the work of the London schools, which have at present little money and less land available for the purpose. It would lead us too far to consider the Edinburgh and Dublin schools and their points of difference from the London schools; but in passing I cannot help alluding to the extramural school in Edinburgh, the stimulus it affords to the professors in the university, and the chance of selection which it gives when a chair in the university is vacant. Training may do as much for a teacher as for a student.

Having thus briefly and imperfectly sketched the growth of medical education in Europe and England and contrasted them, permit me to turn to our own country. With us the growth of large cities and the enormous immigration on which it is partly dependent is, roughly speaking, a matter of fifty years. Even in the centres of population before this time, there was relative uniformity of race as well as of fortune. The number of poor who could not get along at home with neighborly aid in illness was small, while anesthesia and cleanly surgery had not infinitely extended the bounds of medical activity. Tartar emetic, calomel and opium could be given heroically at home, where also the lancet could be plied. Before and for some time after the Revolution a real medical education was not to be had in this country. Clinical and practical knowledge were gained by watching and assisting in the work of a busy practitioner; while the foundations of medicine and its principles were derived from the few months' course of lectures delivered by a few men who associated themselves into a so-called medical school, practically purely proprietary in character. The Harvard School is now in its one hundred and seventeenth year, but started with three professors, and did not become really a department of Harvard University until 1872. Up to this time the university merely conferred the degrees on those recommended by a self-appointed medical faculty, which collected the fees from the students, paid its running expenses and divided the balance, if there was any. Your own school was founded in 1841, and in 1891 formed its university connection. In an enormous, undeveloped and, even in its older parts, thinly settled country, the medical school preceded the hospital. The two then grew up entirely independent of one another, instead of being indissolubly connected, as in Europe and England. We inherited the English theory of the minimum interference of government, and, like the English, our medical schools were not parts of the universities, but, unlike the English, our schools had no or but very scanty clinical facilities. A hospital and a university both have continuity of life and afford a guarantee of permanent unselfish benevolence to which a proprietary medical school can lay no claim. There is but small temptation to the successful layman who wishes to return to the public a portion of the wealth which the laws and institutions of the country have aided his own efforts and abilities to acquire; to such there is small temptation to bestow either his surplus money or energy

on private enterprises such as our medical schools have been until recently.

As hospitals were founded, grew and multiplied, the schools were not slow to form such connection with them as they could, and the clinical lecture appeared, the thin edge of the wedge in the dislodgment of the didactic lecture. Among the motives for the establishment of hospitals, the overshadowing one was the alleviation of suffering, the care of the sick poor of the neighborhood. The teaching function of the hospital, which even many laymen to-day realize as on a par with its curing function, was but dimly felt. In order to unite the medical profession of the town and enlist the general interest of the community, the broken service came about and has persisted to the present day. Many a busy practitioner is glad to have hospital wards two to four months in a year, and so fascinating is the work he may be led to hold on to his service even after it has ceased to be of any direct advantage to him. To the clinical teacher wards are a necessity; hence, a school in filling a clinical chair must consider not simply the qualities of the candidate, but his dowry, *les beaux yeux de sa cassette*, as the French say. It may be necessary to pass over the young, enthusiastic, and, in the long run, superior man for the inferior man who has the command of indispensable material. The teaching body rarely has any say as to appointments on the hospital staff, among whose qualifications for the position an interest in and capacity for medical education are seldom considered. Influence may count for more than merit in these appointments. To meet the demands for clinical material and to control its use, some schools set up outdoor clinics of their own; a few schools own hospitals with beds. Whether such hospitals command the full confidence of the community and receive support and endowment from it depends much upon their mode of management. Doctors are proverbially poor business men, and a strong and active body of lay trustees to manage the funds and to administer the hospital is generally felt to be necessary. A modern hospital of any size is so expensive that it is nearly impossible for a school to run it without much outside aid, and this aid is not likely to be afforded unless the school has close university connection. In a teaching hospital the teaching body requires initiative and virtual control in two points alone: appointment to the staff and regulation of the term of service. There are other points in which the lay trustees will frequently want the advice of the professional body, but the main responsibility should rest on the trustees. This seems much to ask; but experience shows that those who are willing and competent to assume it are not lacking. The Johns Hopkins Medical School occupies a seemingly ideal and unique position in this country. The University, the Medical School and the hospital have just the right relation to each other. The best citizens are ready to do their full duty as trustees of the University and of the hospital, the two boards working in harmony. The professors of medicine and surgery are the physician and surgeon in chief of the hospital. Each of the other great departments of medicine has a single head with full responsibility. The size of the original endowment, the freedom from traditions and makeshift expedients which have grown up about and may hamper an old institution of slow growth, and the wide discretion allowed a judiciously selected board

of trustees who have amply justified their selection, made the result possible. The influence on medical education which the Johns Hopkins has exerted is already notable though so recent.

We thus see that the independent growth of the hospital and the medical school and the lack of close affiliation of medical school and university have retarded progress in the past. But we see, especially within the past twenty years or so, one school after another getting under the wings of a university, where alone is salvation to be found. We see the gradual extension of the graded course lasting eight or nine months in the year, an increase in the duration of the course from two to three and then to four years, the gain of clinical on didactic teaching, the diffusion of the idea throughout the general community that no large hospital can keep in the front rank if it excludes teaching from its wards, an increasing disposition on the part of rich men to give to medical objects. These are all most encouraging signs of the times and, as it seems to me, allow an unhesitating affirmative answer to the question: Is medical education making reasonable progress in this country? We cannot go so fast under our system and theory of government as can a country with a more centralized government. But we Americans modestly believe that the best is none too good for us, we are quick-witted, not afraid of innovation, and our wealth increases enormously, much of it being in the hands of men who recognize their stewardship. I am no admirer of spreadeagleism; but I am firmly convinced that we shall go far, as far or farther than countries now ahead of us in the scientific race. And I believe that our slower progress is and will be amply compensated for by the education which comes from doing for ourselves instead of being passively done for. In a democratic country like ours, with almost unlimited opportunities for the amassing of wealth, it seems to me of the last importance that every public outlet for such wealth should be widely opened. It seems to me a much healthier state of affairs that we should each and all, in our several spheres and in proportion to our power, feel the direct responsibility for providing, maintaining and constantly improving the higher education, and for promoting the general well-being of the community, than that we should rely on even a government which we choose ourselves to do those things for us. A wise and public-spirited use of wealth best inhibits the growth of the noxious germs of envy and jealousy arising from inequality in wealth. Inequality in opportunity is probably less in this than in any country.

The second question is: What are the lines of future progress and how are we to encourage and foster healthy growth? Some points bearing on this question have been indicated or dwelt upon already. The problem which confronts most of us is not that which confronted the first trustees of the John Hopkins. We must take things as we find them and be content gradually to struggle towards an ideal more or less clearly defined in our own minds. *Ohne Hast ohne Rast* is a good motto. Place and circumstance do not alter the main features of the ideal medical school, though they must be reckoned with in details. We must often be satisfied with contributing towards the attainment of our ideal, much as we should like ourselves to see it in full operation. Moreover, our ideal is apt to change with progress, as the nearer

and lower lies the more distant and higher mountain peak.

The main requisites for a modern medical school in this country are university connection; the control of sufficient clinical material in hospitals; scientific laboratories, each under the charge of a competent head undistracted by the demands of private practice, and a corps of enthusiastic teachers who care more for the work than for its immediate money return. University connection and a body of competent and devoted teachers in the so-called practical branches are comparatively easy to secure in the larger and older centres of population. In these centres clinical material is generally ample, more ample, unfortunately, than it is available, for reasons already indicated. Very few schools in this country can call an inspiring teacher in any clinical branch from another school and give him such facilities for his work as he absolutely needs. The lack of hospital control may thus tie hands which but for that were free. Too exclusive dependence on home talent involves the dangers of narrowness of view and of complacent inertia. In a sense we are worse off than were our predecessors of a half century ago, when the lecture term was short and a course of lectures with a charter constituted a medical school. A brilliant lecturer could travel about and give several courses of lectures in different places in the same year. We see the remains of this to-day in the Dartmouth School, for instance. Here a summer course gives the chance to round out medical teaching by city specialists, as would otherwise be impossible in a small country and essentially university town. But the light is unquestionably breaking. We see the continuous service appearing here and there, not only in newly established, but even in the older hospitals. We see a greater recognition on the part of the public of the teaching function of the hospital.

Hospitals we find ready to our hand. Laboratories worthy of the name, centres alike of teaching and of research, have only recently become necessary parts of a medical school. They greatly enhance the expense of medical teaching so that it can no longer be self-supporting. If there is any branch of human knowledge which requires so much outlay for instruction as does medicine to-day I know not what it is. I believe twenty millions to be a conservative estimate of the sum which could be economically used as a building and endowment fund for a complete medical school, with a hospital of, say, four hundred beds, all started *de novo*. Given the hospital, and we can cut the sum required in half. The salaries of the heads of clinical departments need not be large, but the heads of departments and laboratories, who should not do private practice and who get little or no indirect pecuniary reward, ought to be well paid, especially in a country like ours, where the pecuniary is too often the sole standard of success. In addition to laboratories of physiology, anatomy, and pathology, human and comparative, we should have those also of biological chemistry, hygiene and experimental pharmacology. General chemistry belongs rather to preparatory than strictly medical study. It is only by gifts, and mainly large gifts, from the public that our aim can be realized. We know what is needed and it is our duty to make the needs known. The needs are not ours, except in so far as we are members of the community. So clear is the need, so sure the return to humanity, so small the chance of doing harm, that the public-

spirited, intelligent citizen cannot but see what the opportunity is when it is properly set before him. I firmly believe that the next quarter century will see great sums flowing toward the prevention and alleviation of human suffering through investigation into the causes of disease. The antitoxin of diphtheria, like every other discovery in medicine, is unpatented, is equally within the reach of poor and rich. What an illustration it affords of the blessings and of the possibilities of medicine! How can a rich man so well spend a portion of his wealth as by helping to convert these possibilities into facts? Every gain is a gain for all time as well as for all humanity; indeed, it extends beyond humanity, and may be conceived as reaching all forms of life. Those who are not physicians and who are immersed in their own interests and affairs cannot be expected to see these things of themselves. I repeat that it is our duty to present the facts and the needs. If these needs are not gradually yet surely filled it will be the fault of the medical profession, not of the public. The pathology of the public is that of the medical profession x years ago. On our own ground we are and must be in the lead. What we ask is not for ourselves. If here and there selfish use is made of what we receive, such selfish use is transitory. What is the life of one man or set of men to the life of man? We shall get what we deserve, and our desert will be in direct proportion to our freedom from self-seeking. Physicians have better opportunities than even lawyers to influence gifts and bequests. It is true we are not so often consulted with reference to these points, but it is not necessary to wait to be consulted. Sooner or later all the world passes through our hands. There is nothing unbecoming in setting forth the needs of medical education and the opportunities which medical education in the broader sense offers for the welfare of mankind. It is interesting to note that one-half the funded endowment of the Harvard Medical School has come directly from physicians. Another quarter has come from the families of physicians. A son endows a professorship in memory of his father who was a physician; parents endow another in memory of their son who was a physician. Scholarships are similarly founded. The very large proportion of all these gifts dates from the intimate union of the medical school with the university. These facts seem to me very significant. The medical profession does not lead to the winning of large fortunes. No other class of men is so competent to estimate the needs and the opportunities of medical education as are physicians, and see how they have led the way. The formation of your Medical Fund through the self-denial of your professors who took no salaries is a striking case in point. So genuine and urgent are the claims of medical education that the corporation of Harvard University has lately appropriated several hundred thousand dollars, derived from unrestricted bequests, for scientific medicine. This is the first time in the history of the University that the Medical School has shared in the general University fund, and it is a most encouraging sign of the times. The general public will not be slow to do its share if the matter is properly and widely presented, unless I greatly overrate the intelligence and public spirit of the American people. And my confidence in the ultimate wisdom of the people is not shaken even by the failure of Congress to exempt in the War Revenue

Bill legacies to charitable, educational and religious institutions from the succession tax. France and Germany, which support universities and hospitals out of the public funds, can properly lay heavy legacy taxes and thus force liberal contribution from large estates toward high purposes. Our principle has always been to entrust the provision and maintenance of the higher education to private benevolence. The real estate of educational and charitable institutions, used for the purposes of the institutions, is ordinarily free from taxation, and in so far the State fosters them.² And then Congress deliberately discourages those who are disposed to leave money in their wills for public purposes. Had Johns Hopkins died in the past year, all provisions of his will remaining the same, from the seven millions left the University and hospital, more than one million would have gone to the United States Government, which extracts fifteen per cent. of estates of a million or more. Is this not monstrous stupidity? It is true that any man can avoid the tax by giving in his lifetime; but most men will not. We must take human nature as we find it. The average man at present will give more freely from what he leaves than from what he has. Not many will imitate the example of a gentleman I have heard of, who had left a generous sum in his will to an object which interested him. On the passage of the War Revenue Bill he borrowed the money and gave it away, making the debt a lien on his estate, and thus making sure that all his money went where he wished it to go. Every one of us who has any interest with a member of Congress should make it his business to exert his utmost influence toward the repeal of this un-American provision of law. I find it hard to understand how we have submitted so tamely and made so little protest. Among the methods of reducing taxation, which seems to be admittedly unduly large, I have seen no suggestion of this obvious one.

Some standard of preliminary education and four full years of medical study are now prerequisites for those seeking to obtain the degree of doctor of medicine from the leading schools of the country. No uniform standard is possible or desirable in a country so large as ours, presenting so many and so widely varying conditions. Medicine has and always will have its commercial side. It never has had and never will have a purely commercial basis. The small bank and small store are all-sufficient to the needs of a small community. Not so the small doctor. The small community may or may not get the best medical skill, but it needs it just as much as the larger. The ailments and the means of relief are in the main the same in rich and poor alike; hence the foundation of hospitals, in which oftentimes the poor get better medical care than does the millionaire, who may exercise less judgment in the selection of his physician than in that of subordinates in his business, who may care for his dollars more shrewdly than he does for his health. Hence the laws for the regulation of the practice of medicine in force in so many States.

Of course, as a general rule, ambitious men, those conscious of power, and those who have made the largest investment of capital in their education, will seek the centres of population and the varied advantages which these offer. We do see men otherwise

² Since coming here I have learned that all the property of Washington University is exempt from taxation.

qualified for success anywhere settle in small communities, sometimes because they prefer to do so, often because they need a more immediate support from their profession than can ordinarily be earned in large cities. It has been my fortune to have seen something of the practice of many physicians over a considerable portion of New England, and it is a pleasure to testify to its general high character. In small places I meet men whose character, intelligence, professional knowledge and skill excite my admiration and respect. But I think it will be many years before the country as a whole can get along without three-year schools with low or lax admission requirements. There are men whom neither the community nor the profession can afford to lose, who simply cannot afford a longer or more expensive undergraduate training. I should not be surprised to see a few schools before many years pass extend their requirements to five years; but I should be surprised to see many schools take this stand, unless a service in hospital wards similar to that customary in the London hospitals is included in the five-year term. No small number of men now spend five and even six years in professional study before entering private practice, serving one or two years as hospital interne after graduating in medicine. To this a few add a year or more in European schools and men are nearly or quite thirty before they engage in practice. There was a time when European study was almost necessary to the American who wished a complete medical education. From a purely professional standpoint I do not believe it to be so now. A year or so judiciously spent on the other side of the water and a working intimacy with one or more foreign languages still make and will long make for mental enlargement and development. But first-rate opportunities are now offered in one or another place in this country for the thorough prosecution of any and every branch of medical study. Now that we have our four years of graded study, so often followed by hospital internship, it seems to me that the urgent problem for the present is to make these years tell to their utmost limit, by (1) encouraging a better preliminary training for medical study than is now common or commonly enforced; by (2) most careful economy of the student's time through sequence and organization of his work, and (3) by a wise discrimination as to the dividing limits of required undergraduate and optional post-graduate study necessitated by the development of special knowledge and skill along many lines. It is absolutely impossible to go over the whole ground thoroughly in four, or even in five years for that matter. Medical teachers must train their sense of proportion, or of value, as the artists say. Those who settle in or near large cities have in their earlier years of practice time enough to take post-graduate courses. Many of those who settle in smaller places find a month or so in the year for study in a post-graduate school, and more will find that they also can do so. Undergraduate study is after all only a foundation. The physician is and must be a student all his life, and can learn something from every case which comes under his observation. If in the medical school a man learns the leading principles of medicine as a science, becomes acquainted with the methods of examination and cross-examination which the investigation of disease demands, and becomes imbued with the truth that more mistakes arise from not looking than not knowing—imbued with the principle of

thoroughness—his Alma Mater will have small cause to be ashamed of him. The rings of annual growth may be even broader in practising than in school days. In the application of our knowledge we come to know its limits and defects—and ourselves. It is not until we come into actual practice that we can apply our knowledge fully, because it is not till then that the undivided responsibility for our action rests upon us. No course of study in a medical school can ever make the finished physician.

Much thought is being devoted to medical education at the present time. We are told on high authority that the medical education of the past has been all wrong, that the didactic lecture has no place in a proper curriculum, that the clinical lecture is only less bad, that the only method is one which forces the student to do and think for himself, the guidance of the teacher being reduced to a minimum, his inspiration raised to the maximum. That good practitioners abound, that the more scientific branches of medicine are taught and practised by men trained under the old methods, is neither proof that the methods cannot be improved, nor is it adequate argument against doing all we can to improve them. Claude Bernard, in his early days in Paris, and Helmholtz in Königsberg had small facilities; but true genius cannot be kept down and is apt to make its own opportunities. It is the average man who must mainly be considered in any scheme of medical education. To him opportunity and inspiring example may make all the difference between full and stunted growth.

Somewhat radical changes in method have been introduced for the first two years of the Harvard School and are now on trial. The first half year is devoted to anatomy and histology, the second half to physiology and physiological chemistry. The first half of the second year is given to pathology and bacteriology. Clinical work begins with and occupies much of the second half of the second year, with medical chemistry and materia medica. In reorganization of the third and fourth years section work will occupy a more prominent place than it ever has before, doubtless with great advantage to the student, who must get more from what he sees, feels and thinks for himself than merely from what is told him. At the same time he must be told something. It seems to me that the systematic or didactic lecture has a very small place in the teaching of practical medicine and surgery. There are some important diseases it is difficult or impossible to illustrate adequately on the living subject. Among the medical diseases coming under this class, the contagious eruptive diseases may be mentioned, as also yellow fever, dengue and actinomycosis. In obstetrics the nature of the subject will always call for a number of pure lectures in preparation for practical work, except possibly in some small schools with unusual clinical facilities. The general principles of therapeutics and their application to the more common important diseases are probably best taught by lectures. The place of the clinical lecture seems to me larger and more permanent. The spoken is apt to be more vital than the written word. The actual illustration of a disease strikes deeper into the mind than does any description in the text-book, which is apt, moreover, to lead the student to think that the typical is the usual instead of being, as is really the fact, the rare case. A lecturer of large experience, clear head and

good judgment can with well-chosen illustrations teach what can be taught in no other way to a large class. The power of conducting a recitation in such a way as to keep alive the general interest and really profit a considerable class I believe to be a rare one, much more rare than the power to get good results from the clinical or didactic lecture. A combination of methods is useful, for different men learn in different ways. So also it seems to me wise that more than one teacher should give, let us say, clinical lectures on the same class of subjects. No two minds work exactly alike and the combined merits and defects of two or more teachers may well yield a larger result than can only one personality, unless a very great one.

A method of teaching by the printed statement of cases furnished to each member of the class and discussed by the members under the guidance of an instructor has been introduced into the Harvard and, I believe, some other schools. I think it likely to prove of high value in every school to a greater or less extent; to a greater extent the less the clinical facilities which a school may happen to enjoy. This method tends to train especially the reasoning faculties; but affords a direct stimulus to profitable textbook study, inasmuch as the purpose of such study becomes specific rather than general. It is a pleasant duty to state that the suggestion of this method is practically due to a member of the present fourth class of the Harvard Medical School, Mr. W. B. Cannon, to whose admirable statement of the method⁴ I would refer those interested.

The lantern will play a larger part in the medical education of the future. All the special senses as well as the reasoning power of the student must be trained and appealed to in every possible way. I am sure that much can be gained by inviting the friendly criticism of the best students. As we grow older we are apt to grow lazy and averse to innovation. What was good enough for us we are liable to think good enough for our successors. The point of view of the young student is different from that of the old teacher and it is well to look at things from all sides. "Out of the mouths of babes and sucklings Thou hast ordained strength,"—strength, not all strength. I well remember how, in my student days, we packed the lecture-room of a brilliant lecturer on therapeutics at eight o'clock winter mornings. But to-day I am not alone in feeling that we were not getting as much as we thought we were getting. We were carried away by the personality of the teacher, a very able and impressive man, who knew how suggestion may be made to enhance the desired effect of a remedial agent as do few practitioners.

The main lines of progress then for the near future, as it seems to me, are the training of the student, as far as is possible, as an individual, rather than merely as a member of a class, and such a wise organization of his work as will conduce to economy of time and effort. This means a great expenditure of thought and energy on the part of a very busy class of men; but unless that expenditure be made, and I have no question that it will be, medical education will not progress as it should. It involves also the aid of the public, which should be taken into our confidence and will certainly provide the means. As the scope of medicine includes more and more the prevention of

disease in general, rather than merely the alleviation and cure of individual cases of disease; as the training of the physician for the performance of his high functions becomes more and more complete, the influence of the medical profession cannot fail to increase. Physicians have for some time sat in the House of Commons. Lord Lister is the first medical man to be raised to the peerage in England; he will not be the last. The rapid advance in medical knowledge tends to bring to the front more and more legislative questions towards the solution of which the wise physician can contribute indispensable aid, and the broad training of the modern physician must strengthen his mind and increase his power of dealing with large questions.

In conclusion, Gentlemen of the Graduating Class, may I venture on one word of advice? You have been undergraduate students. You are about to enter on a lifelong period of post-graduate study. Remember that you are, every one of you, debtors to the medical school, debtors even in the lower and pecuniary sense of the term, in that the fees you have paid for your instruction do not nearly represent its cost. You are, therefore, under obligation to so conduct yourselves as men, as citizens, as physicians that you may reflect credit on the school. The exemption you enjoy from jury duty makes it the more incumbent upon you to do your share of service on Boards of Health, School Boards, and the like. If you make and carry out the inflexible rule of doing each piece of work, whether public or private, that comes to you, just as well as you possibly can, you will satisfy your Alma Mater and justify your existence. In as far as genius consists in the capacity for taking infinite pains, we are all potential geniuses.

I thank you for the patience with which you have listened to me, and wish you one and all the attainment of your heart's desire.

Original Articles.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

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(Concluded from No. 20, p. 504.)

Fats.—In hot climates, where the human organism instinctively feels the need of a loss of heat rather than its creation, the consumption of fat—a heating food of the highest degree—should be reduced to the minimum and largely replaced by that of sugars and starches. Rubner⁴⁵ calculated that 100 parts of fat burned within the body yield as much heat as 232 parts of starch or cane sugar; and the distaste for fats in any considerable quantity, so early acquired in the tropics and so noticeable during the summer weather of temperate climates, may be considered as evidence of an unconscious but instinctive recognition of the fact that a dietary of decreased caloric value is sufficient for the needs of the organism exposed to high

* This essay was unanimously awarded the prize of \$100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, 7th U. S. Infantry.

⁴ Boston Medical and Surgical Journal, No. 1, p. 31, 1900.

temperatures, the more concentrated heat producers being rejected, while the desired distention of the stomach is secured by bulky vegetable foods of lower potential value. This dislike of fat under conditions of high temperature is too fully appreciated to require the production of evidence on this point. It is of interest, however, to recall the aversion with which the ration of bacon was regarded by troops in Cuba and Porto Rico during the war with Spain; while Cardwell⁴⁹ reported from Manila that "the salt meat (bacon) was in great part wasted and need not have been issued except in sufficient quantity to provide cooking fat."

As compared with carbohydrates, fats, as a whole, are notably less digestible and thus increase the evolution of heat through the more active chemical processes in the intestines. Furthermore, they are burned with more difficulty within the organism, since there is sufficient oxygen in the carbohydrate itself to form water with the hydrogen present, while fats require additional oxygen to combine with their hydrogen for their combination and elimination. Hence, in herbivora, according to Foster,³³ a larger proportion of the oxygen consumed reappears in the form of carbonic acid than is the case with carnivora, subsisting chiefly on proteid and fat. That this difference is by no means small is shown by the fact that the so-called respiratory quotient, obtained by dividing the excretion of carbonic acid by the consumption of oxygen, by volumes, is about .9 in herbivora, and about .7 in carnivora; a difference of 22 per cent. In the tropics, however, it has already been shown that there is a greatly diminished value, as regards oxygenation, to the respiratory act; and under such circumstances the amount of oxygen, already small, available for the needs of the organism as regards the elimination of carbon would be seriously encroached upon in the oxidation of a diet largely composed of fatty material. Furthermore, an excess of hydrocarbons in the food calls for increased hepatic action in the production of bile, since it has been abundantly demonstrated that the latter is a prominent factor in the digestion of fats, as shown by the fatty stools which follow obstruction or ligation of the bile ducts.

That this hyperstimulation of the liver — with its many evil results, elsewhere discussed — actually does occur in the tropics where more fats are introduced into the system than can be readily utilized, is shown by the bilious diathesis so common among high livers in warm climates, as characterized by excessive bile production and later by hepatic congestion. Fats and carbohydrates are much more akin to each other than is either to proteid; and if, as stated by Foster,³³ fat may be converted into sugar either when about to be incorporated into the organism or when being decomposed into its ultimate products, it might reasonably be expected that carbohydrates and proteid, with little or no fat, would form a satisfactory diet. That this conclusion is, in practice, largely borne out by facts is shown by reference to the foregoing tables, in which the fatty constituents of the vegetables ordinarily composing the diet of the native of the West Indies is only .32 per cent. while the corresponding part of the diet in temperate climates contains 2.23 per cent., or an amount seven-fold greater. On this point, however, experience is probably to be trusted. Natives of hot countries, when they can afford it, generally use a small amount of fats as such — as the clari-

fied butter of India, the salt pork of tropical America, the olive oil of the Mediterranean district and the palm oil of equatorial Africa — and it is probable that a small quantity of such material, together with the proteid and carbohydrates, assures a better use of the alimentary principles and reduces to a minimum the quantity of each which should be ingested. While it may, then, be conceded that a certain quantity of fatty food is a desirable component of the diet in warm climates it is certainly true that the amount so taken should be relatively small, and that the proportion commonly maintained in temperate climates is far in excess of the needs of the organism in the tropics. This fact is demonstrated beyond the possibility of question by referring to the average dietary for men at hard work in the north temperate region and that for the corresponding class in the tropics, as given elsewhere; the fats and carbohydrates being seen to exist in the ratio of 1:5.5 in the cold climates, while in the tropical dietary the relative proportion is 1:14 for men of the same weight. With such wide variation in the relation of these proximate principles, and in view of the fact that a considerable diminution in protein has also been shown to be desirable, it is evident that a sudden reduction of fat in the ration to the low standard of the tropical dietary might readily provoke such alteration of metabolic function and such interference with existing processes of digestion as would result in serious discomfort and positive detriment to the individual. The dietetic customs of a lifetime cannot be entirely changed in a day, and a stomach accustomed to rich and concentrated food would undoubtedly find difficulty in at once properly digesting a far more bulky and less nutritious diet composed chiefly of vegetable material. For the new comer in the tropics, habit as well as climate must be given consideration in the selection of diet; and it is therefore probable that no smaller proportion than that of one part of fats to ten of carbohydrates would be to the best interests of the United States soldier.

Carbohydrates and carbon. — Carbohydrates are justly regarded as the chief source of carbon supplied to the organism in the production of energy. This, however, is due rather to the much greater quantity of carbohydrates ingested, as compared with the fat and protein constituents of the ordinary diet, than to a high proportion of this element in the carbohydrate itself, for the amount of carbon in starch and sugar is relatively low. Notter and Firth⁴² state that carbohydrate contains only 44 per cent. of carbon, where fat contains 76.5 per cent. and even protein contains 53 per cent. Through the considerable quantity of protein which enters into the diet, it is evident that the latter plays no small part in determining the carbon intake, as utilized for the creation of energy. The urea of the urine practically represents the whole of the nitrogen which passes from the body, and in any given quantity of urea the amount of carbon is far less than that found in the quantity of protein containing the same amount of nitrogen. Foster³³ states that the percentage composition of the two is as follows:

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Sulphur.
Urea . . .	25	6.66	26.67	46.67	—
Protein . . .	53	7.30	23.04	15.53	1.13

It is thus readily seen that 100 grammes of protein, which have been suggested as furnishing about the amount of nitrogen desirable for the daily allowance of the United States soldier in the tropics, contains as much nitrogen as 33.3 grammes of urea; but the 100 grammes of protein contain 46.4 grammes more carbon than do the 100 grammes of urea (53:6.66, or about the proportion of 8:1). Hence the daily allowance of protein for tropical service in passing through the body and giving rise to urea, would leave behind 46.4 grammes of carbon to combine with oxygen and undergo elimination as carbon dioxide. It has been shown that the average diet of laboring men at hard muscular work in the cooler portion of the temperate zone contains 152 grammes of protein, and reduction in this respect to 100 grammes, the proposed standard for the tropics, implies a loss of 24.12 grammes of carbon previously available for purposes of energy. It is true that a certain amount of protein taken in as food, as shown by Mallet,⁵⁰ is not directly decomposed to the comparatively simple forms of urea and carbon dioxide, but, retaining a greater proportion of carbon, is excreted as creatinin or uric acid — bodies which, intermediate between protein and urea, form a series in which the proportion of nitrogen becomes larger and the carbon smaller — and it is probable that the amount of these substances is considerably increased in the tropics through the deficiency of oxygen available for the metabolic processes of the organism. In quantity, however, they are undoubtedly at all times so small as to be safely disregarded for the purposes of the present calculation.

As regards fats, as stated above, carbon enters into their composition to the amount of 76.5 per cent. and it has been shown that for the tropics the proportion of one part of fats to ten of carbohydrates in the dietary probably redounds to the best interests of the American soldier. On referring to the table giving the proximate composition of the average diets of hard-working men in the cooler portion of the temperate zone, it is seen that the amount of fats ingested by this class, 119.5 grammes, would be reduced, according to the above proportion, to 66.6 grammes; or, in round numbers, to a daily allowance of about 65 grammes in hot climates. This amounts to a reduction of 54.5 grammes of fats and 41.69 grammes of carbon; making the loss in carbon, due to diminution in the fat and protein constituents, amount to 65.81 grammes daily. The average working diet for cool climates, just referred to, contains 453.39 grammes of carbon available for the maintenance of body heat and the performance of external muscular work; this quantity, on subtracting the 65.81 grammes of this element withdrawn from the same diet through proposed reduction in fat and protein, being reduced to 387.58 grammes. But it has been shown that the native of the tropics performs hard labor on a diet which, even when proportioned for an average weight of 145 pounds, yields only 319.16 grammes of carbon presumably available for purposes of energy. It is undoubtedly true that this relatively small amount of carbon required by the natives of the tropics expresses to a considerable degree the lessened amount of energy necessary in the maintenance of body heat in hot climates; and hence approximation to the carbonaceous level of the native dietary would undoubtedly be desirable if the nutrient allowance for the soldier could be based

upon requirements as to energy which, even if considerable, are at least fairly uniform. Unfortunately, however, for dietetic ideals, and undoubtedly, also, for the physical welfare of troops on duty in the tropics, a single fixed nutrient standard, as has already been advanced, must be determined with reference to the excessive requirements of infrequent emergency rather than by the ordinary conditions of military service. It has been stated that a greater part of the carbon oxidized within the organism is derived from carbohydrates, the latter being regarded purely as a force food and as the chief source of energy within the body. Carbohydratic material is capable of largely replacing fat in the dietary, diminishes nitrogenous metabolism, yields no end products to be excreted by the kidneys, is readily assimilated and, when in excess, is largely stored up within the organism as glycogen and adipose tissue. The ingestion of carbohydrates, therefore, in quantities greater than are required for the immediate needs of the economy, while not without certain untoward effects upon the system, is undoubtedly far less inimical to health than where there is an excess of protein or fat in the dietary for the tropics. It is probable, therefore, that further reduction in carbon for the proposed tropical ration need not be great, as far as any seriously unfavorable effect upon the organism is concerned; considering at the same time that a certain carbonaceous excess in the tropical ration, as compared with native standards, may justly be regarded as a reserve of energy upon which the soldier may draw at such time as the routine duties of garrison are exchanged for the arduous labors of campaign. For this reason, it may be accepted that the tropical ration should be capable of supplying about 380 grammes of carbon available for purposes of energy, not including the carbon required in the formation of urea. This quantity is yielded by the proximate principles of the subjacent dietary.

The tropical ration. — From what has been advanced it is seen that the proportionate composition and fuel value of the proposed standard dietary for United States troops serving in the tropics is as follows:

Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Nitrogen, grammes.	Total carbon, grammes.	Fuel value, Calories.	Nutrient ratio, protein to energy.
100	65	650	16	392	3,491	1:8

The proximate alimentary principles, whose quantities and relative proportions are given in the above nutrient standard for the tropics, can be properly apportioned in the ideal ration for hot climates only as a result of an accurate knowledge of the percentage composition of such articles of food as may be selected to enter into its composition. The determination of these food stuffs, for the American soldier, is an easy task. The present United States Army ration, as already stated, is made up of admirably selected articles in more than sufficient variety; and it is therefore not only wholly unnecessary but quite inadvisable to consider, in this connection, any nutritive substances outside those articles legally established as components of the food for the United States soldier. The proximate composition of these has long since been deter-

mined — as given elsewhere — and hence the matter resolves itself into the simple problem of so proportioning the quantities of the nutrient articles already provided that, when brought together in varying combination, the resulting dietary will in each case approach the theoretical standard to a reasonable degree. It is not, however, intended that the daily intake of the several proximate principles shall exactly correspond with the quantities laid down therein, for this is manifestly impracticable for the military service, and even if its accomplishment were secured it is more than doubtful if there would be any resulting advantage. The economy readily adapts itself, in the matter of food, to present necessity, and slight deficiency in any nutritive principle is readily made good, particularly in the matter of fats and carbohydrates, from the reserve of these materials stored up within the organism — small systemic losses being subsequently compensated for by corresponding excess. It is true, also, that the needs of the economy, as shown by appetite, are subject to wide variation; and hence it may be accepted that slight but carefully considered alterations in the constituents of the daily dietary, far from being detrimental, are productive of actual benefit. It is obvious, also, that the soldier will require less nutriment in garrison than is necessary to furnish the energy for the greater labors of campaign, and hence the several components of the ration should be so proportioned as to furnish dietaries properly varying in potential and nitrogenous value. It is believed that this is accomplished in the following modifications of the dietaries already shown to be most commonly used by the United States soldier in temperate climates; the subjoined table showing the nutrient value of a proposed dietary for the tropics, containing the greatest amount of food material which can be drawn by the soldier :

TROPICAL DIETARY I.

Articles.	Quantity, ounces.	Fats, grammes.	Carbobydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef . . .	10	44.75	—	41.68	6.67	590
Flour	18	5.60	380.46	55.08	7.90	1,850
Beans	2.4	1.22	40.18	15.16	2.42	240
Potatoes	16	1.45	81.70	9.50	1.52	380
Dried fruit . . .	3	1.53	33.80	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.9	53.55	630.39	123.19	18.78	3,677

Total carbon, 395.14 grammes; nitrogen to carbon 1:19.6.

The following table shows a proposed dietary for the tropics, especially applicable to field service, in which the fatty constituents attain their maximum and the potential energy is high :

TROPICAL DIETARY II.

Articles.	Quantity, ounces.	Fats, grammes.	Carbobydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Bacon	6	105.06	—	15.64	2.49	1,042
Hard bread . . .	18	6.62	371.81	73.12	11.74	1,926
Beans	2.4	1.22	40.18	15.16	2.42	240
Dried fruit . . .	3	1.53	50.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	32.9	114.44	556.94	105.69	16.92	3,825

Total carbon, 328.76 grammes; nitrogen to carbon, 1:23.

The nutrient value of the ordinary dietary as proposed for garrison duty in the tropics is as follows :

TROPICAL DIETARY III.

Articles.	Quantity, ounces.	Fats, grammes.	Carbobydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef . . .	10	44.75	—	41.68	6.67	590
Soft bread . . .	20	6.80	299.20	53.83	8.61	1,506
Potatoes and onions	16	.72	73.09	8.60	1.40	340
Dried fruit . . .	3	1.53	50.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.5	53.80	517.24	105.88	16.95	3,053

Total carbon, 328.76 grammes; nitrogen to carbon, 1:18.

For the following combination the several articles of the ration most closely approaching in character to the food materials used by natives of the tropics — proportioned in quantity according to the standard proposed for hot climates — have been selected :

TROPICAL DIETARY IV.

Articles.	Quantity, ounces.	Fats, grammes.	Carbobydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh fish (cod) whole	14	.79	—	31.73	5.07	120
Soft bread . . .	20	6.80	299.20	53.83	8.61	1,506
Rice	4	.45	88.87	8.75	1.40	407
Potatoes and tomatoes	16	.54	65.80	8.17	1.36	297
Dried fruit . . .	3	1.53	50.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	341
Total	64.5	10.11	598.82	104.25	16.71	2,947

Total carbon, 327.50 grammes; nitrogen to carbon, 1:19.6

On averaging these four dietaries, as furnished by the ration proposed for the tropics, the mean nutrient composition is seen to be as follows :

Dietary.	Quantity, ounces.	Fats, grammes.	Carbobydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
No. I	52.9	53.55	630.39	123.19	18.78	3,677
No. II	32.9	114.44	556.94	105.69	16.92	3,825
No. III	52.5	53.80	517.24	105.88	16.95	3,053
No. IV	64.5	10.11	598.82	104.25	16.71	2,947
Average	50.7	37.97	560.85	109.06	17.34	3,375

Total carbon, 350 grammes; nitrogen to carbon, 1:20.

It will be observed that while the above dietaries differ considerably among themselves, yet when averaged together in equal proportions they do not greatly vary from the nutritive standard for the tropics already proposed — and this is an additional reason why a selection of the same articles of the ration should not be made from day to day. It is seen that the above average dietary, as compared with the proposed nutrient standard, is still slightly deficient in fats and fuel value and a trifle in excess as regards protein. These defects, if they may be considered as such, are, however, readily corrected by a rotation of dietaries, in which Dietary II is used twice where Dietaries I,

III and IV are each employed but once. The results of this change are as follows :

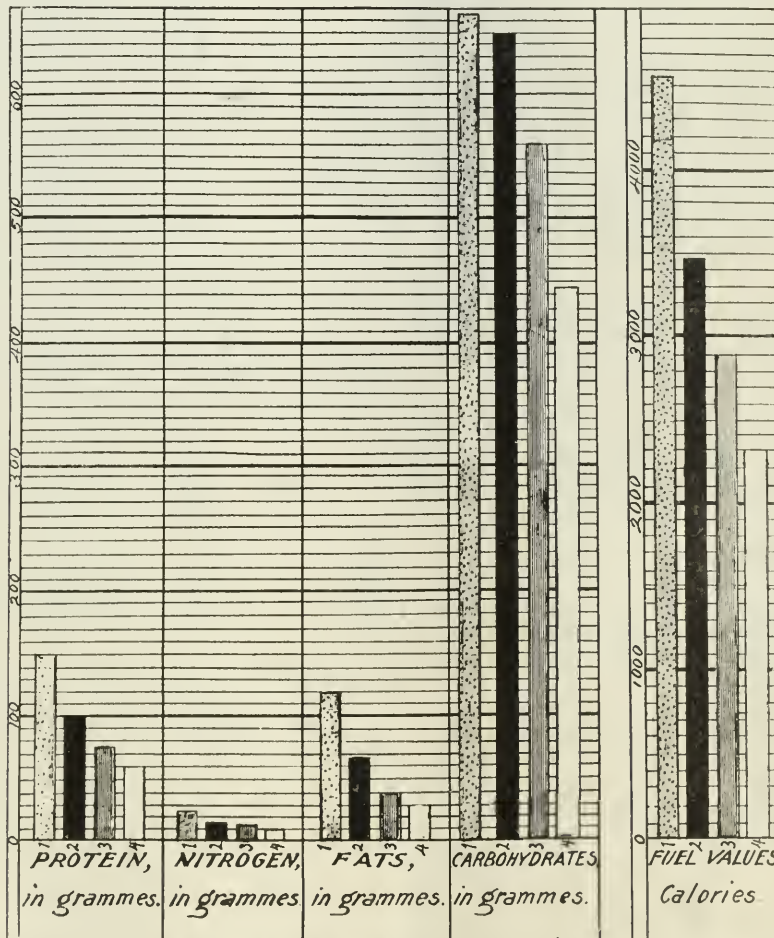
Dietary.	Quantity in ounces.	Fats, grammes.	Carbolydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
No. I	52.9	53.55	630.39	123.19	18.78	3,677
No. II	32.9	114.44	556.94	105.69	16.92	3,825
No. III	32.9	114.44	556.94	105.69	16.92	3,825
No. IV	52.5	53.80	517.24	105.88	16.95	3,053
Average	64.5	10.11	598.92	104.25	16.71	2,947
Average	47.1	69.43	572.06	108.38	17.26	3,465

Total carbon, 363.33 grammes; nitrogen to carbon, 1:21.

From the above tables, it is evident that such changes as are advisable in the adaptation of the United States Army ration to tropical conditions are chiefly in the line of a reduction in quantity of the foods at present provided by a too generous government. It is true that the sugars and starches should be slightly augmented, but their increase is small when compared with the considerable reduction of nitrogenous and fatty material which is proposed. Many of the components of the present ration, as is seen by the following table, require no change in the consideration of

the tropical dietary, being not only admirably selected but also properly proportioned :

Articles.	Quantity per ration, ounces.	Protein, grammes.	Nitrogen, grammes.	Fat, grammes.	Carbolydrates, grammes.	Fuel value, Calories.
Fresh Beef (quarters)	10	41.68	6.67	44.75	—	590
Or Fresh Mutton	10	46.20	7.35	62.90	—	720
" Pork	6	27.54	4.40	112.54	—	1,093
" Bacon	6	15.64	2.49	105.06	—	1,042
" Salt Beef	10	40.27	6.44	64.68	—	688
" Dried Fish (cod)	10	45.37	7.26	1.13	—	197
" Fresh Fish, average (whole)	14	31.73	5.07	.79	—	120
Flour	18	55.08	7.90	5.60	380.46	1,850
Or Soft Bread	20	53.83	8.61	6.80	299.20	1,506
" Hard Bread	18	73.12	11.74	6.63	371.81	1,926
" Corn Meal	20	50.40	7.99	12.40	425.80	1,986
Beans	2.4	15.16	2.42	1.22	40.18	240
Or Peas	2.4	16.38	2.62	.75	41.80	246
" Rice	4	8.75	1.40	.45	88.87	407
" Hominy	4	9.20	1.47	.67	88.75	430
Potatoes	16	9.50	1.52	.45	81.70	380
Or Potatoes 80% and Onions 20%	16	8.60	1.40	.72	73.09	340
" Potatoes 70% and Can'd Tomatoes 30%	16	8.16	1.30	.58	62.59	297
Dried Fruit (average)	3	1.77	.27	1.53	33.80	220
Sugar	3.5	—	—	—	94.25	397
Or Molasses	1 gill	—	—	—	56.05	269
" Cane Syrup	1 gill	—	—	—	56.25	269



1. Standard dietary as given by typical dietaries of men at hard labor in the northern portion of the temperate zone.
2. Standard dietary as given by proposed United States Army ration for tropical service.
3. Standard dietary for native laborers in the tropics; based on the weight of 145 pounds for purposes of comparison.
4. Standard dietary of the laboring class of natives in the tropics (Java, British India, Guadeloupe, Abyssinia), as determined from the food actually consumed by them at normal body weights.

The ideal ration for an Army of United States soldiers on duty in the tropics is therefore suggested as being of the foregoing composition.

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ON ISCHEMIC PARALYSIS AND CONTRACTION OF MUSCLES.¹

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At long intervals the literature of medicine is adorned by a contribution from the master hand which not only marks an advance in our science, but which also is a work of art from a literary standpoint. Papers of this kind are sometimes epoch making. Others, because they are complete and leave no room for discussion, do not mark an epoch in the literature of medicine, but become no less potent in their final influence upon the actions and views of physicians and surgeons.

A paper of this latter kind is the wonderful memoir of Prof. E. Leser, which was first published in *Volkman's klinische Vorträge*, Surgical Series, No. 77, whole No. 249, under the title of "Untersuchungen über ischämische Muskellähmungen und Muskelcontracturen." It is my intention to give in this paper a short résumé of this subject in a historical way and then to add my own observations and conclusions. In the introduction I will follow Leser, as he has looked up the subject thoroughly. I desire to say that this subject is of the greatest practical importance to all surgeons because it explains fully and in a satisfactory manner the bad results which often follow the treatment of fractures by means of hard and tight splints or unyielding plaster-of-Paris bandages which have been improperly applied.

The fact that muscles become paralyzed and stiff in consequence of interruption of the blood supply is one which has long been known to physiologists. In his work, "Elementa Physiologica,"² Albrecht von Haller states that Stenson was the first to make the experiment of tying the abdominal aorta in a warm-blooded animal. Stenson observed that the posterior extremities were paralyzed a very short time after the ligation. Shipper and many other physiologists have found that this experiment was faulty because it also cut off the blood supply from the spinal cord below the point of ligation. If the ligature was loosened soon afterwards mobility returned to the muscles, but if permitted to remain *in situ* perfect stiffness of the muscles followed inevitably. The muscles become rigid and hard and remain so. I varied this experiment slightly by ligating both common iliacs and ligating the aorta itself a short distance below the bifurcation where in tailless animals it is called sacralis media. The effect was the same and has been found similar by many experimenters when ligating the vessels supplying solitary muscles. The result which Kühne arrived at may be stated as follows: The loss of irritability, the paralysis of the muscle, finally the rigor of the muscle is a consequence of the inhibited nutrition; the latter is caused by the interference with the circulation.³

¹ Read before the Tri-State Medical Society of Iowa, Illinois and Missouri, April 4, 1900, at St. Louis, Mo.

² Lausanne, 1766, p. 544.

³ W. Kühne: "On the Movements and Changes of the Contractile Substances," in the Archives for Anatomy, Physiology, etc., edited by Reichert and Du Bois-Reymond.

Richard Volkmann, the great surgeon and the first apostle of Lister in Germany, sought to elicit the interest of practitioners in these remarkable observations made by physiologists. He was the first who saw that the restricted circulation is the cause of the grave contractures and paralyses of the hand and fingers which are sometimes seen after the application of firm, unyielding bandages and splints to the forearm.

The first remark on the subject in literature is found in Volkmann's book on the diseases of the organs of locomotion.⁴ I quote him literally, that is, I translate:

"The severe contractures of the hand after the application of too tight bandages upon the forearm in cases of fracture depend largely upon an inflammatory contraction of muscles and not upon primary nerve paralysis, the result of pressure. We know that these cases of *Greifenklaue* (*main en griffe*), claw-like stiffness of the fingers, offer a most hopeless prognosis. The flexed contracture of the fingers and of the wrist persists in spite of all imaginable efforts, such as electrical treatment, passive motions and forced extensions under anesthesia; even amputation has been resorted to in extreme cases. I have never seen a complete cure and not even a satisfactory improvement, and once only a slight amelioration of the stiffness was achieved after long-continued painstaking exertions on my part. The contracture in these cases occurs rapidly and in a few weeks has reached the highest degree, which may cause ulcerating gangrene in the palm of the hand from the pressure of the finger-nails. In cases of paralytic contractures following apoplexy or nerve lesions, contracture is never observed in so short a time. In spite of these facts, the physician who has the misfortune to apply too tight a bandage very commonly resorts to all kinds of passive movements and attempts at extension of the contracted fingers upon all kinds of splints. In cases of interference with the nerve supply these manipulations always suffice to prevent the contracture."

In a very similar strain, a few years later, Volkmann⁵ says: "The inflammatory or cicatricial contracture seems to be characterized by the rapidity with which it is developed, by the enormity of mechanical effects which are produced by it, and by the extraordinary resistances which it offers to our endeavors to remove the deformities, almost immediately after the inception. Many of the contractures which follow injuries, and which have heretofore been looked upon as contractures of nervous origin, depend upon inflammatory processes in the muscles, which are followed by shrinkage and cicatricial changes of the muscle tissues."

In a still more emphatic and unmistakable manner does this great surgeon express his conclusions about the etiology of paralyses and contractures in an article published in the *Centralblatt für Chirurgie* in 1881, No. 51:

"The paralyses and contractures occurring on the forearm and hand, in rarer cases also in the lower extremities, after the application of tight bandages, must be called ischemic. They arise after a prolonged pressure, which prevents the afflux of the arterial blood; the venous hyperemia which no doubt is very

commonly present only seems to hasten the paralysis and stiffness. The paralysis is caused by the death of the primitive muscle fibres which have been deprived of oxygen. The contractile substance coagulates, falls into pieces, and is afterwards absorbed. The following contracture may be considered simply as a condition closely akin to rigor mortis, and indeed the limbs, if, as is usually the case, all the muscles of a part are equally affected by the ischemia, assume the well-known position as after death. It is characteristic of this affection that the paralysis and the contracture are simultaneous or follow closely upon one another, while in nerve lesions of the extremities the contracture is always of slow and gradual development, and often very tardy. Months and years pass before a contraction which is not easily reduced by manual pressure is found. The ischemic contracture, however, is recognized by the power of resistance which it opposes to any attempt at reduction from the very moment of its inception. The affected muscles have lost their elasticity and become unyielding and stiff, as in rigor mortis, even in fresh cases of ischemic paralysis. The reactive and regenerative processes which follow the death and disintegration of the contractile substances, which are unfortunately very imperfect in man and the warm-blooded animals, make the affected muscles more unyielding and stiffer and still further increase the atrophy by cicatricial contraction. Ischemic contracture and paralyses are sometimes observed in other cases than those following too tight bandaging. In cases of prolonged use of the Esmarch constriction of the limbs and after ligations, lacerations and contusions of large vessels, possibly also after prolonged freezing, these affections may occur, and it is possible that a part of the so-called rheumatic contractions are of an ischemic origin."

I have given these quotations from Volkmann's writings in full because they represent all that was known on these grave and eminently practical matters up to that time. Leser says that he is really astounded and surprised that not more can be found in medical literature on these most interesting and serious troubles, because they are not nearly so rare as might be supposed. I can say that I have never failed to illustrate the subject clinically during the past eleven years by a number of striking instances to my hearers at the college during each winter course.

Besides the grave and extreme cases there are a large number of less pronounced lesions of the muscles which are found after removing tight bandages, which no doubt are also due to ischemia of single muscles or groups of muscles. These peculiar affections have never been correctly explained, nor have they been carefully reported, though I think every surgeon must have met with them. The various degrees of stiffness and lack of motion in the fingers, which are so frequently found lasting for months after the removal of a splint or plaster-of-Paris bandage from a fractured limb, must no doubt also be classified under this head.

I desire to add that Carl Ludwig, the great German physiologist, proved by experiments that rigor mortis, death of the muscular tissues, takes place just as rapidly when blood free from oxygen is conducted through the muscle as when no circulation at all exists. On the other hand, Ludwig was able to show that when oxygenated blood was conducted through the vessels of an extirpated, isolated muscle the rigor of

⁴ Pitha-Billroth System of Surgery, vol. ii.

⁵ Contributions to Surgery, p. 129.

the muscle could be delayed for a long time. Brown-Séquard succeeded in making muscles in the human cadaver contractile and even irritable by electric currents as long as four hours after death, when indeed the first stage of rigor mortis had begun, by injecting oxygenated blood.

These physiological experiments prove sufficiently well the effect of oxygenated blood upon the condition of the muscles, and establishes beyond a doubt that interruption of the circulation within a muscle must produce grave damages to the contractile substance, and must inevitably produce rigor mortis if continued longer than a few hours. Kraske⁶ has shown that the muscles of animals cannot stand the complete absence of the arterial blood current for six hours. I know of one case where a long-continued use of the Esmarch constricting rubber band caused loss of mobility, and several similar cases have led to damage suits, both in this country and in Europe. Ischemic paralysis and contracture from this cause will produce a most aggravated lesion, because all the muscles of the affected limb distal to the constricting band will be ruined. This is not usually the case after tight bandaging. In these cases the ischemia is not complete and the amount of injury will depend upon the number of muscular fibres which become bloodless by the pressure. I have known cases where an entire muscle escaped. The case above referred to where a constricting Esmarch bandage caused ischemia and death of the muscles was not in a surgical case, but it concerned a case of placenta previa. The attending physicians, seeing their patient collapsed from acute anemia, resorted to the process known as autotransfusion. Both lower extremities were raised high up and a rubber bandage applied, beginning at the toes, thus forcing all the blood into the trunk and leaving the limbs bloodless. A strong rubber tourniquet was left around the middle of the thighs or a little below from about midnight until morning, and ether and whiskey were freely injected during this time. I imagine that these remedies deadened the sensibilities so much that the pain from the constriction was borne as long as it was—about eight or nine hours. The effect of the auto-infusion was satisfactory, but the patient's limbs were entirely motionless, hard and swollen below the middle of the thigh until she died from "prolonged shock" on the third day after her delivery.

The histological changes which are found in ischemic contractures of the muscles have been thoroughly investigated and described by three authors. The first experiments and histological examinations were made by Heidelberg, who published his paper in the *Archives of Experimental Pathology and Pharmacy*, Vol. VIII. The next work was by Kraske and is entitled, "Experimental Researches on the Regeneration of Striated Muscle Fibres," published in Halle, 1878. The third paper is the classical paper by Leser, published in 1884, in the same publication. Besides these, many examinations have been made of the muscles of limbs which were amputated because they were entirely atrophied and useless, or had become partially gangrenous. These examinations have completely corroborated the results of the experimental researches. I have made a small number of microscopical investigations, both experimental and clinical, and I prefer to report what I found to quoting from

others, although there is no essential or important difference.

I must begin by stating that a limb which has undergone ischemia as a result of tight bandaging will usually show all stages of the histological changes, from complete fibrous or cicatricial tissue to the ordinary lumpy disintegration of the contractile substance within the sarcolemma, as we find it in muscles which have become rigid after death. To the naked eye the slightly affected muscles will appear somewhat edematous and will be harder than normal, and may be paler and appear almost as if boiled. The most severely ischemic parts will be almost white and infiltrated with young gelatinous tissue.

Microscopical examination will show the fibres in an irregular arrangement, of unequal thickness. Some will be twice as thick as others, and I regard these as being pseudohypertrophied, which condition leads to atrophy in the end. Some of the fibres appear to have vacuoles, but the most characteristic change is the absence of nuclei or their very scant presence in the primitive fibres. This decrease in the number of muscle nuclei is striking and oftentimes I saw a little granular detritus in the place of the nuclei, or only a few nuclei scattered alongside of the bundles of fibres. Whenever the fibres appear broadened, no trace of the transverse striation can be found. The explanation of this histological picture as given by Heidelberg is that the nutrition and life of the nuclei are destroyed by the lack of blood circulation, and that afterwards when a new circulation is built up again the dead nuclei are absorbed and carried away. In more advanced portions of the tissue leucocytes abound between the fibres; we have the picture of small round-cell infiltration. This inflammatory condition of the intermuscular tissue soon changes it into young connective tissue, which eventually undergoes cicatricial contraction and assumes the structure of fibrous or tendon tissue. The muscle fibres and remnants of these finally become atrophic, fall to pieces and are absorbed. Thus as a final result of the disintegration and absorption of the muscular elements, together with the new formation of fibrous tissue, which shrinks into a cicatricial mass, we find the bellies of the muscles changed into hard fibrous and inelastic cords.

It is impossible to report cases, as each report could be made the basis of a damage suit against a surgeon, because the terrible condition in which the unfortunate patients are left is clearly due to tight bandaging, and the trouble thereby induced could have been avoided.

The recognition of ischemia produced by tight bandaging, as the cause of these damaging results, will prevent them in future. Therefore, the publication of these observations and their careful study by the members of our profession is, in the opinion of the writer, a most timely warning to those who have not devoted the time and attention demanded by the importance of the subject. It has been customary to teach that pain, after the setting and fixing of a fracture in a splint or cast of any kind, was an imperative indication to remove and loosen the whole dressing. This rule was the result of experience. The reason was unknown. In other words, it was a purely empirical rule of action. The scientific basis and true reason for the adoption of this rule has been given above. Nearly every physician and surgeon of any

⁶ *Centralblatt für Chirurgie*, 1879, No. 12.

considerable experience will not only appreciate the truth of what has been said, but if he be honest will recognize wherein he has erred and fully appreciate the wrongs he has unwittingly done. I say this from having experienced the pangs of remorse and self-ac-cusation in two cases in which loss of the use of a limb is only ascribable to my own ignorance of the facts I have set forth above.

Among those who have seen and reported more than three cases may be mentioned :

- (1) Leser.⁷ Seven cases. (1884, Leipzig.)
- (2) Bardenheuer. (Traumatism of the upper ex-tremity.) 1888. Four cases.
- (3) Helferich. (Griefswald, 1893.) Three cases.
- (4) König. (Göttingen, 1893.) Seven cases.

These names of celebrated surgeons who have ob-served and written upon the subject would seem to show that the peculiarly interesting condition is well known and that further observations are unnecessary. As an apology for this report, I may be permitted to call attention to the fact that I can find no allusion to this subject in any of the new and comprehensive text-books or systems of surgery published recently. When it is further remembered that the subject was made a special order of discussion at the annual session of the German Society of Surgeons in 1888 in Berlin⁸ and that its practical importance can hardly be over-estimated, I feel that my work in reporting the mat-ter in this manner will be productive of good.

The only operation or therapeutic measure that promises any real benefit that suggests itself to my mind, and which I intend to try on a suitable case, is the excision of a transverse section of the radius and ulna. The piece to be resected should be from two to four centimetres in length, and both long bones would be shortened just that much—the contracted muscles and their tendons could then possibly exert a greater play upon the wrist and fingers.

It is clear that the muscular tissue in the forearm would not be increased by this operation, as indeed it cannot be by any possible surgical proceeding. The effect of the operation would be to give such remnants of contractile substance as may be in existence a chance to exercise their power to a greater advantage. The function of the fingers would thus be more or less improved, and the usefulness of the crippled hand in-creased.

Reports of Societies.

THE ASSOCIATION OF AMERICAN PHYSI-CIANS.

HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

THE President, DR. E. G. JANEWAY, opened the meeting with the following brief address :

For the fifteenth time it devolves upon the Presi-dent to welcome the members of the Association to that gathering which has its chief interest in meeting those engaged in like work. We will hear from them that which, during the past year has seemed of all

that they have met and observed the most fit to bring before colleagues interested in learning some new fact as regards the old diseases, or some new interpreta-tion of the phenomena of those maladies. Fortu-nately we also have amongst our members those who are able to give themselves up to the study of pathol-ogy, and from whom, in the past, we have learned much of the pathological processes which underlie dis-eases, who will at this meeting continue their good work. Of late we have also been fortunate in having members who have given anxious thought to the chemi-cal side of the study of the alterations of disease and who will again strive to enlighten us on this, the most difficult of the questions with which we have to do. Each of us who have attended the past meetings must admit of having received much of benefit from the presentations and the discussion of our associates.

Your President of this year looks back with regret at certain of the opportunities which he wasted in the past, under the stress of his professional work, and he only alludes to it in passing that he may stimulate the younger members to so arrange the year that they may find the time to both give and receive knowledge, thus making the meetings of this Association more valuable with each passing year. Let us endeavor to make this Association, so far as in us lies, as regards those matters which it falls under your province to consider, the equal of any throughout the world. If we are each possessed by such a noble spirit of rivalry, I am sure that our Association will not only maintain, but will surpass in the future that high regard in which it has been held.

Your President, in the fear that not enough of the members would bring material, sent out, as you know, two appeals. Results show that he was not sufficiently aware of the deep interest which you had in the suc-cess of our meeting on this year of the Medical Con-gress. The calendar, as you have read, is more than full, and in so far as he may have been responsible for this, the motto that "brevity is the soul of wit" is forced home upon his inner consciousness. It is his duty, as well as his privilege, to so allot the time that each member may be heard, and not himself to con-sume such time by his general introductory remarks as to infringe upon that which is the moral right of the member under the circumstances. But for this he would have been tempted to touch upon the theme—truth in medicine. This could have been handled un-der such heads as truth in statistics; truth in diagno-sis; truth in therapeutics; truth in pathology.

Any society which has its annual meeting in the City of Washington, a city named after a man whose name could stand as a synonym for truth, should, so far as its members are concerned, need no other re-minder of the value of truth; nor do I think that the members of this Association need even this reminder, for I take it we are all seekers after truth. Would that all who come to Washington could be so impressed by his name that only truth should be spoken in this city, or only honest methods followed in the pursuit of power, place and gain.

We mourn this year that two of our old associates can no more participate in these meetings; each has been conquered by death, whose ravages they have so long attempted to avert from others. I allude to our original member, J. E. Graham, of Toronto, Canada, and to D. W. Prentiss, of Washington, D. C., who joined in 1888.

⁷ The Archives for Experimental Pathology and Pharmacy, vol. viii.

⁸ See the Transactions, vol. xi, 1888, Berlin, A. Hirschwald.

DR. JAMES B. HERRICK, of Chicago, read a paper entitled

NOTES ON DIABETES: (1) ON THE OCCASIONAL LOW SPECIFIC GRAVITY OF DIABETIC SACCHARINE URINE; (2) ON CASTS IN THE URINE DURING DIABETIC COMA.

The author has noted the low specific gravity of saccharine diabetic urine, in some cases even below that of the normal urine. At any time in the course of the disease an interstitial nephritis may begin and the specific gravity may then fall. Consequently, if in a case of diabetes the specific gravity becomes low this condition should be looked for. Again, the drinking of large quantities of water will lower the specific gravity; in one case the urinometer showed as low a reading as 1.004. One patient who had been drinking beer and was partially intoxicated also presented a specific gravity of 1.004. Cases have been reported in which urine containing sugar showed as low a specific gravity as 1.002. These facts show that it is not safe to exclude the occurrence of sugar from a given specimen of urine because the specific gravity is low. The only plan is to examine all urines for sugar if there is any possibility that this abnormal ingredient is present.

Casts are common in many cases of diabetes mellitus when there is an accompanying nephritis. But casts may also occur just at the time of development of coma in diabetic patients. The author has seen this phenomenon in three cases in which it has been sought for. The sediment found in cases of diabetic coma is composed almost entirely of casts, which are short, broad and granular. They may appear long enough before the occurrence of coma to warrant preventive treatment. The first case occurred in a man, age sixty-five, in whom coma was advancing. The urine, obtained by catheter, contained a sediment composed almost entirely of finely granular "coma casts"; there was also a trace of albumin. The second case was in a woman, age eighty-four, who complained of sleeplessness and mental depression. The urine contained sugar and coma casts. The third patient was a woman, age sixty. Sugar had been present in the urine for three years and finally coma developed, which resulted in death. The urine at the time of the development of the coma was loaded with sugar and albumin and contained casts. The pathologic conditions causing the appearance of casts are unknown. The author expressed himself as believing that the condition might be due to toxic substances acting on the kidneys.

DR. JAMES J. PUTNAM, of Boston, read in behalf of himself and Dr. F. PFAFF

A COMMUNICATION ON THE RELATION OF URIC-ACID SECRETION TO EPILEPTIC ATTACKS.

They think that the toxic theory of the neuroses and the psychoses is not well proved and that further search for anatomic changes should be made. They made twenty-four examinations of urine from three patients in the Massachusetts State Hospital for Epileptics. The results of these examinations do not bear out the statements that have been made that uric acid is below the normal for two or three days before the attack, then normal just before the attack, and above normal just after the attack.

DR. CHARLES G. STOCKTON, of Buffalo, read the

REPORT OF A CASE OF ACUTE ASCENDING PARALYSIS, SHOWING HEMATOPORPHYRINURIA.

The patient was a woman, age twenty-seven, a domestic by occupation. For two years before she was taken ill she had been overworked. She had lost weight but had no definite disease. She had been constipated for fourteen days, was irritable, anemic, restless at night; the appetite was good, the bowels regular. The urine was dark in color, acid in reaction, and free from sugar and albumin. Later she developed pain in the back and insomnia, for which sulfonal and trional were given. Both these drugs were vomited, however. The symptoms continued and the urine became claret colored, 1.025 in specific gravity, acid in reaction, contained neither albumin nor sugar, but showed a trace of indican. Physical examination showed areas of prolonged expiration in the supra- and the infra-scapular regions. The buttocks became anesthetic and the feces and the urine were passed involuntarily. There was weakness in the legs, with some shooting pains, and later the deep as well as the superficial reflexes were abolished, there was no response to electric stimulation of the muscles of the legs, and still later both the legs and the arms became paralyzed. The temperature rose as high as 100° and the pulse was 135 per minute. Just before death the patient was practically without sensation except in the head. The consciousness was perfect up to the time of death. The treatment was by hypodermoclysis, diaphoresis by hot baths, and the administration of codeine for the restlessness. The claret color of the urine was found to be due to the presence of hematoporphyrin. The author believes that there must be some relation between irritation of the nerve roots and the appearance of hematoporphyrin in the urine.

DR. JAMES J. PUTNAM said that he had seen a case of similar character. The patient was debilitated from accident and from chronic disturbance of nutrition from the use of morphine. He had numbness in the extremities, paralysis, tenderness of the muscles and emaciation. The patient died from failure of the respiration and of the circulation. The urine in this case was claret color. Sulfonal and trional had both been used. At autopsy there was no change in the cord, but the lesions of degenerative neuritis were found.

DR. E. G. JANEWAY had seen a woman who was an invalid from dyspepsia, to whom 10 to 20 grains of sulfonal had been given at night. Nausea and vomiting developed, the urine became claret colored, paralysis developed, and the murmur of mitral insufficiency developed. This patient recovered in one and one-fourth years. The speaker believed the case to be one of multiple neuritis.

DR. A. C. ABBOTT, of Philadelphia, read a paper on the

RELATIVE INFREQUENCY OF ACUTE TRANSMISSIBLE DISEASES DURING THE FIRST YEAR OF CHILDHOOD, WITH A DISCUSSION OF THE PROBABLE REASONS FOR THE SAME.

He presented charts showing the mortality from measles, scarlet fever and diphtheria in children under one year old, in children between one and five years, and in children between five and ten years of age. The tables show that the death-rate is greatest be-

tween the ages of one and five years, that from measles being 64.8 per cent., from scarlet fever 63.9 per cent., and from diphtheria 63.6 per cent. British statistics divide the mortality periods in the first year of life into three classes: between one day and three months, between three and six months, and from six to twelve months. The following death-rate is seen in these periods, given in order: measles, 2.7, 7.7 and 89.6 per cent.; scarlet fever, 7.6, 12.3 and 80.1 per cent.; diphtheria, 8.3, 13.3 and 28.8 per cent. It will thus be seen that there is a great increase in the death-rate in the third period. The author believes that the mother transmits something to the child with the milk during the nursing period that acts as an immunizing agent and prevents infection. He quoted Ehrlich's experiments with mice, in which he was able to show the transmission of immunity to certain microorganisms from the mother to the nurslings through the milk, in support of his hypothesis.

DR. E. L. TRUDEAU referred to the fact of the possibility of the inoculation of young animals with tuberculosis in spite of the assertion by some authorities that young animals could not be infected.

DR. GEORGE B. SHATTUCK suggested that the number of mothers who had had diphtheria was comparatively few, that immunization against this disease was comparatively for a brief period, and that some other explanation must therefore be sought in this disease.

DR. J. B. C. GRIFFITH, of Philadelphia, read a paper on

RECURRENT VOMITING IN CHILDREN.

He had seen four cases. The attacks were characterized by severe vomiting, which was grave and continuous, by which everything was ejected from the stomach and which frequently continued when nothing was put into the stomach. The bowels were obstinately constipated, but even after relief the vomiting continued. The patient was restless, the respiration was of a sighing character, the urine was diminished in quantity. Two of the cases died. In one, autopsy showed an extensive degeneration of the epithelium of the stomach and of the intestine, parenchymatous changes in the pancreas, and the lesions of glomerulonephritis. The condition usually begins suddenly, without gastro-intestinal disturbance, and the vomiting is continuous. Constipation is present, relief of which does not stop the vomiting. Sighing respiration, which is noted, may be due to toxic action on the medulla or to weakness. Recovery begins from no apparent reason and convalescence is rapid. The attacks occur in from one to eleven days, but there is no distinct periodicity. Holt's theory that the cases are due to a change in the relation of the uric acid to urea is not confirmed by these cases. If it is a neurosis it is probably a toxic manifestation. The treatment is unsatisfactory; morphine sometimes does good and at times is of no use.

DR. CHARLES G. STOCKTON said that in a case that he had seen the vomitus consisted of almost pure gastric juice. When the improvement began in his case the hydrochloric acid disappeared from the vomitus. He had noted a periodicity. He believed the condition to be a neurosis.

DR. W. W. JOHNSTON had seen a patient suffering from the disease who had vomited blood. The blood was usually altered, although it was at times bright red. He had noted the rapid development of great

prostration with cyanosis. All the children that he had seen were the offspring of nervous parents and were precocious and the victims of child-neurasthenia themselves. There seems to the speaker to be some connection between precocity and the occurrence of the disease. In one patient the attacks ceased suddenly after an attack of scarlet fever at the age of thirteen years. One of his cases had improved under rest and diet. The prostration was best treated by enteroclysis and hypodermoclysis. He believes that the development of a toxin, which may be the same as that concerned in the causation of neurasthenia in general, may be the cause of the disease.

DR. KINNICUTT agreed with Dr. Johnston in the use of hypodermoclysis and enteroclysis. He always had the fluid injected at a high temperature.

DR. FORCHHEIMER had seen several cases of periodic vomiting in children who were constipated and neurotic. These children had the anatomic basis of constipation, the exaggerated development of the descending colon. He thinks the toxins might be absorbed from the fecal matter contained in this dilated colon. Toxins thus absorbed are eliminated by the stomach. He thinks the treatment should be between the attacks.

DR. F. C. SHATTUCK had seen one fatal case in a neurotic and precocious child. The autopsy showed extensive fatty degeneration of the liver, kidneys and heart, which was recent and which suggested toxic origin.

DR. GRIFFITH thought that the vomitus should be more carefully studied. He believes in hypodermoclysis and enteroclysis and has observed the neurotic tendency in the subjects of the disorder.

DR. E. L. TRUDEAU, of Saranac Lake, read a paper on

SANITARIUM TREATMENT OF PULMONARY TUBERCULOSIS, AND ITS RESULTS.

For him the pretuberculous stage of pulmonary tuberculosis is the first stage of the disease, before the physical signs have developed. He uses the x-ray apparatus and the tuberculin test before the physical signs have appeared in suspected cases. By the x-ray apparatus the diaphragm may be seen to be higher or to be limited in its excursions on the affected side. The tuberculin test had not resulted in injury to any of his patients. In the treatment rest is essential, especially when taken in the open air. The patients at rest digest well although taking no exercise. Tuberculin as treatment is injurious whenever the process is progressing. It should be used only in apyretic cases and should be given in small and frequently repeated doses, watching carefully the nutrition and the temperature. The remedy probably stimulates the formation of fibrous tissue. During the past fifteen years, of the 1,176 patients discharged alive, one-half are living, and one-half of these are perfectly well.

DR. NORMAN BRIDGE thinks that when we begin to use sera we are apt to neglect the sanitary and hygienic measures that are so useful. He is an advocate of absolute quiet, full and free feeding, and fresh air. It may at times be necessary to wash the stomach and the large intestine.

DR. S. S. COHEN asked Dr. Trudeau what method of diagnosis he employed before the disease was far enough advanced to give results by x-ray examination; and whether under the term rest he included

local rest of the lung, as well as general rest of the body.

DR. TRUDEAU said that he made the diagnosis in early stages of tuberculosis by the temperature record. If the evening temperature is between 99.5° and 100° and there is a slight disturbance of health he makes the diagnosis. Tuberculin should be used only when necessary. Experiments with corneal lesions in rabbits artificially produced show that tuberculin does not cause the spread of the lesion. He procures rest of the lung by rest of the individual.

The Secretary read a paper for DR. C. A. HERTER, of New York, on work done in his laboratory by Dr. Helen Baldwin, on

THE ORIGIN OF OXALURIA FROM FERMENTATION IN THE GASTRO-INTESTINAL TRACT.

The author concludes that in health there is no oxalic acid formed in the body, but that it is ingested with the food. In morbid conditions, on the other hand, particularly those associated with the absence of free hydrochloric acid in the gastric juice, oxalic acid may be formed in the stomach, possibly by a ferment.

DR. JAMES TYSON stated that he had studied urines containing deposits of oxalate of lime. As many healthy persons have oxaluria as those who are old and diseased. In those who present the condition the oxalate of calcium is present at all times. Milk is the only food that will cause total disappearance of the oxalate of calcium clinically.

DR. F. P. KINNICUTT, of New York, showed the specimen from a case of

ACUTE PILEGMONOUS GASTRITIS.

The patient was a male, age forty-one years. There was no history of syphilis, but the patient was an alcoholic. The disease followed a drinking spell and was ushered in by vomiting, first of food and later of a brownish fluid. There was abdominal pain, constipation, dry tongue, shallow respiration, 48 per minute, regular pulse, 108 per minute, restlessness, and an anxious expression. The temperature was 101° by rectum. The physical examination was negative except for a slight hypertrophy of the left ventricle. The abdominal walls were rigid and deep palpation was sensitive in the epigastric and left hypochondriac regions. There was crepitation beneath the left costal cartilages. The urine contained casts. The patient grew progressively worse and surgical intervention was deemed inadvisable. At the necropsy the organs were normal except for the hypertrophy of the left ventricle of the heart, before alluded to. The peritoneum presented a slight serofibrinous exudate. The stomach wall was thick, especially at the pyloric end. The thickening was due to a purulent infiltration of the submucous coat, with a yellowish exudate. There was a linear cicatrix on the posterior wall of the stomach, near the pylorus, on which was a necrotic area. The endothelium was desquamated on the serous coat. The muscle was invaded by mononuclear leucocytes. The submucosa was swelled to four or five times its normal thickness, and contained leucocytes and microorganisms. The lymphatics contained bacteria. The necrotic area in the scar had nearly exposed the submucosa and was possibly the point of infection. The streptococcus was found throughout the stomach.

The bacilli in the lymphatics were possibly of post-mortem origin.

DR. WILLIAM H. WELCH stated that he had seen a similar case in which there was a fibrin-purulent peritonitis. The patient was an alcoholic. The pus was found principally in the submucous coat of the stomach.

DR. E. G. JANEWAY had seen three primary cases and two secondary cases. One of the patients was not a drinking man, and the two secondary cases followed sepsis and were local in their areas of involvement.

SECOND DAY.

DR. J. H. WRIGHT, of Boston, read a paper on

THE ORGANISM AND LESIONS OF ACTINOMYCOSIS.

The author believes that the disease is frequently unrecognized, and that it is much more common than is ordinarily supposed. He gave a lantern demonstration of the lesions produced by the organism. In the liver of a fatal case there were dark areas that represented colonies of the organism, which grows as masses of radially disposed filaments, which are situated in the middle of an abscess, which, in turn, is surrounded by fibrous tissue so that it is walled off from the surrounding liver tissue. Within the colony the individual filaments are seen to be separated from each other by masses of hyaline substance which represents masses of dead filaments. Sometimes the central portion of the colony is composed entirely of this hyaline substance with the living filaments surrounding it at the periphery in a radiating manner. Some of the filaments have clubbed ends, and, again, in the periphery of the colony there is a zone of rays or clubs which represent degenerations in the filaments. This latter form is seen particularly in chronic forms of the disease. The specimens were taken from a case in which the liver, the lung, the kidney, the foot and the abdominal wall were involved. The primary involvement was in the dorsal region, the abscess perforating the pleura. There was an abscess in the wall of the heart that projected into the left ventricle. Macroscopically, the pus from these abscesses contains pearly granules that are composed of filaments. Cover-glass preparations made from these granules, after they have been crushed, show the filaments and their characteristic branching. A certain diagnosis is to be made only after having examined both the crushed and unstained granules and the stained specimens. Culture of the actinomyces is difficult on account of the secondary infections which are so likely to occur. The organism is anerobic, and in a bouillon culture is seen as a granular deposit on the bottom and sides of the tube. It will also grow on agar-agar and on blood serum. It is, in all probability, a streptothrix.

DR. J. M. DA COSTA called attention to the fact that large doses of potassium iodide give remarkable results in the treatment of the disease, even producing cure in some cases.

DR. L. HEKTOEX, of Chicago, read a paper on

A NEW PATHOGENIC FUNGUS (SPOROTHRIX SCHENCK).

The patient who furnished the text for the paper was a boy who presented multiple refractory abscesses on the arm as the result of an injury to the hand with a hammer. The disease was of three months' duration and twenty-four operations had been done. The abscesses contained a thick, viscid pus, culture of which

resulted in the growth of a fungus. These cultures became brownish as they grew old. Plate cultures show a central mass of mycelium, and radiating from the periphery of the central portion masses of spore-bearing threads. The organism is pathogenic for mice and white rats, producing chronic suppurative processes. After peritoneal inoculation tuberculous nodules develop that contain at first masses of coagulation necrosis, with fibrin, and later thick pus filled with spores, but no threads.

DR. SIMON FLEXNER said that he had no doubt but that this fungus and the organism of Schenck were identical. He called attention to the fact that in small animals the organism of Schenck produced a septicemia, with enlarged lymphatic glands, the latter containing micro-organisms.

DR. HEKTOEN said that he had not been able to produce a septicemia in mice, and that that was the only difference between this organism and the fungus of Schenck.

DR. RICHARD C. CABOT, of Boston, read a paper on SOME OF THE CONCLUSIONS ARRIVED AT AFTER A STUDY OF 110 CASES OF PERNICIOUS ANEMIA.

Of the 110 cases reported 57 were males and 53 were females. Of the cases occurring in the female subject four followed parturition and in one of these, in which an autopsy was had, there was leucocytosis and diphtheritic endometritis. The disease is one of late middle life. He had seen all the cases within seven years and thinks that the disease must be common in New England. Not a few of the cases in the series were originally diagnosed as general tuberculosis. Fourteen cases occurred at about the time of the menopause. Hemorrhage is probably a symptom and not a cause of the disease; it has been observed from the bowels, the nose, the gums, the stomach and the ear. The symptoms are constant; in certain cases they are very mild; there is a lack of relation between the severity of the blood lesions and the severity of the symptoms, and it is not the lack of the corpuscles only that causes the symptoms. Muscular weakness, dyspnea, gastro-intestinal symptoms, such as vomiting and diarrhea, are seen. The latter train of symptoms is often paroxysmal. This fact is evidence against the hypothesis that atrophy of the gastric tubules is a cause of the disease. Hemic murmurs are always heard and occasionally a true regurgitant murmur is to be made out. The liver was enlarged in 30 cases, the spleen was enlarged in 13 cases. There were hemorrhages into the retina in 36 cases and 15 eye grounds were normal. In 66½ per cent. of the cases fever between 99° and 100° was noted. The urine was usually pale. The urine was normal in 53 cases. In other cases albumin, with hyaline and granular casts, was seen. There were nervous symptoms in one-third of the cases; but this must not be construed as representing the total number of nervous lesions, because lesions may occur without giving rise to symptoms. In 106 cases the red blood corpuscles were below 2,000,000 and in four they were above that figure. The leucocytes in 72 cases were below 5,000, and in 38 cases they were above that figure. The hemoglobin in 79 cases was high and in 31 cases normal or low. The red cells were usually increased in size and megaloblasts were found at some time in 107 of the cases. In the three cases in which they were not found the blood was examined only once.

The percentage of lymphocytes on differential count of the leucocytes was high, but the explanation of this result is that the lymphocytes were in reality normal, and the polymorphonuclear leucocytes were decreased. Myelocytes were present frequently. In the periods of remission of the disease the red corpuscles usually rise and the hemoglobin falls, resulting in a condition that resembles chlorosis. The leucocytes also increase during this period, the additional number of cells being polymorphonuclears. The megaloblasts disappear, normoblasts take their place, to disappear in turn. The symptomatology and course of the disease, as well as the result of the blood examination, are not at all like those of secondary anemia. In those cases in which latent carcinoma has been found the carcinoma is not necessarily the cause of the pernicious anemia. No case recovers. In mild cases diarrhea is common. Twenty cases were progressive, in 69 cases one or more remissions were seen and 21 of the patients went to work. Remissions may take place in from 10 to 14 days. In 76 cases the duration of the disease was from one to three years. Treatment is hopeless; arsenic and bone marrow have no effect, but in some cases laxative treatment seems to have done some good. This bears out Hunter's idea that the disease is a toxemia.

DR. FRANK BILLINGS, of Chicago, showed charts to illustrate

A REPORT OF CASES OF PERNICIOUS ANEMIA, WITH A SPECIAL REFERENCE TO THE BLOOD FINDINGS.

In all 19 cases were reported, 11 in males and eight in females. The average age of the patients was forty-six years. No exciting cause could be determined except syphilis in one case. The symptoms were muscular weakness, dyspnea, palpitation, gastro-intestinal symptoms, and diarrhea, as a rule. Nervous symptoms were frequent, particularly paresthesia of the lower extremities. The lemon-yellow tint was constant, the body-weight was preserved, cardiovascular symptoms were common, the spleen was enlarged in four and the liver in three cases. The stools were negative in all cases except one, and in that one infusoria were present. The disease, as a rule, progressed rapidly. Hemorrhages were frequent, retinal in three cases. The hemoglobin varied from 15 per cent. to 74 per cent.; the red blood corpuscles varied between 150,000 and 4,000,000; the color index was above normal in 53 out of 66 examinations, sometimes it was low. The leucocytes were usually below the normal. The color index diminished during the remission and increased during the exacerbation, as does the number of nucleated red corpuscles. Direct infusion of blood produced, in one case, very little effect. The myelocytes were most abundant when the patient was at the lowest ebb. The occurrence of megaloblasts are of importance in the diagnosis and when the nucleus of the cells is irregular it indicates an increased degenerative change.

DR. FREDERICK P. HENRY, of Philadelphia, reported five cases of pernicious anemia in a paper entitled

CLINICAL NOTES ON CASES OF PERNICIOUS ANEMIA.

In one of the cases the transfusion of blood from an epileptic patient was followed in ten days by convulsions. One case has been under observation six years

and was completely restored to health. In this patient naphthaline, bismuth salicylate, Fowler's solution, cod-liver oil, and calomel were the drugs used. The author thinks that patients suffering from pernicious anemia often present peripheral neuritis. He also thinks that the disease is likely to be complicated by erysipelas. He has never seen a case of gastric carcinoma in which the red blood corpuscles were reduced below 30 per cent. and he thinks that a reduction in the number of red cells below this figure is a diagnostic feature in pernicious anemia. He is of the impression that the muscular system preserves its power. He believes that the corpuscles seen in the blood in this disease are reversions to the type of those seen in the cold-blooded animals.

DR. RICHARD C. CABOT said that he did not consider the case that Dr. Henry reported as having recovered to be a case of pernicious anemia; he should consider it a case of grave secondary anemia of unknown cause.

DR. KINNICUTT thought that one of the most important points elicited by the papers was that bearing on the prognosis. He hopes that some means will be found to benefit the condition.

DR. HOBART A. HARE said that he believed that the disease is more common than the text-books teach. The majority of patients that he has seen suffering from the condition were from the country. The duration is at times long. He believes that arsenic causes improvement and that transfusion is futile. He said that he thought that the changes of the blood in health should be more thoroughly studied and that the knowledge of the changes in the normal blood is one of the weakest points in hematology.

DR. W. H. THOMSON referred to a case of pernicious anemia in which the roots of the teeth and the gums were the seat of a purulent disease. He referred to the theory of Hunter, that in such conditions the constant swallowing of pus containing streptococci might give rise to lesions in the gastro-intestinal tract that, in turn, might lead to pernicious anemia.

DR. A. MCPHEDRAN reported two cases of permanent recovery from pernicious anemia. He believes in saline infusion as a method of treatment. In one case he administered antidiphtheritic serum because there was no other serum obtainable. The patient so treated remained well for one and one-half years, but then died. Other patients have received blood serum. He has looked for diseased teeth and gums in many of his patients and all have healthy gums except one. In the excepted case the gum condition gets worse with the exacerbations of the disease.

DR. S. WEIR MITCHELL said that all blood counts were relative and not absolute. He called attention to the work of Dr. J. K. Mitchell on the influence of massage on the blood count. After one-half or one hour of massage the red cells increase 500,000. He thinks that the stagnation of the red blood corpuscles in various parts of the body is greater in disease than in health, and he is of the opinion that disturbing these reserve corpuscles by massage would greatly change the blood count.

DR. CHARLES G. STOCKTON said that he had always found that the gastric secretion in pernicious anemia was different from that obtained from cases suffering from secondary anemia. In the former disease the hydrochloric acid always disappears during the exacerbations and returns during the remissions.

DR. W. S. THAYER said that he had seen cases of gastric carcinoma in which the red blood corpuscles were lower than 1,500,000; in one case, indeed, the red cell count was below 500,000. The blood count alone is insufficient for diagnosis. The most important cells are the large ovoid cells, two or three times as large as the red blood corpuscles and with pale staining nuclei. In one case that had been diagnosed as pernicious anemia, carcinoma of the pylorus subsequently developed.

DR. J. M. DA COSTA called attention to the fact that the remissions were at times very long, in one case lasting for eleven months. The fever sometimes resembles the high fever of typhoid and is more marked than in other grave blood diseases.

DR. JAMES B. HERRICK said that the improvement of the patients depends, apparently, upon a relative increase of red cells and hemoglobin and not on an absolute increase to normal.

DR. RICHARD C. CABOT said that systematic massage had been given to four cases of pernicious anemia after Dr. Mitchell's paper had appeared, and that in these patients there had been less increase in the number of corpuscles after the massage than in perfectly normal persons. The lagging corpuscles, therefore, in cases of anemia seem to be less in number than in health. He does not consider the splenization of the bone marrow characteristic of pernicious anemia, because any secondary anemia may show the condition if it is severe enough. He thinks the large-sized corpuscles with the pale staining nuclei to be characteristic. Transfusion may produce nephritis and is, therefore, not advisable. Since spontaneous improvement occurs when arsenic is not used, arsenic cannot be thought to be the cause of improvement. He was in accord with Dr. Da Costa concerning the occurrence of fever. Since all patients in the medical wards of the Massachusetts General Hospital have systematic blood examinations made, he thinks that the normal condition of the blood is well understood.

DR. HENRY repeated his statement that he had never seen a case of gastric carcinoma in which the red blood corpuscles were reduced below 30 per cent.

DR. F. B. MALLORY, of Boston, read a paper on

PROLIFERATION AND PHAGOCYTOSIS.

As a result of the action of toxins we find four processes: (1) Degeneration of cells; (2) exudation from the vessels; (3) proliferation of cells; and (4) phagocytosis. Strong toxins cause degeneration and exudation, while weak toxins cause proliferation and phagocytosis. The pneumococcus produces proliferation of the cells lining the pleura, and the cells in the lymphatic vessels, and in the lymphnodes of the lung; these cells are phagocytic. The toxins that are eliminated by the kidney produce proliferation of the cells of the glomerulus and of the epithelium at the beginning of the uriniferous tubules. The typhoid bacillus usually produces a mild toxin that causes proliferation of the lymph cells and of the endothelial cells in the digestive tract and in its neighborhood. The majority of these cells are phagocytic. The phagocytic cells block up the blood and the lymph channels and may also pass into some tubular structure and do harm by pressure. In tuberculosis there is sometimes proliferation of cells and sometimes exudation. When polymorphonuclear leucocytes, lymphoid cells, myelocytes or red blood corpuscles are included within the

phagocytes their nuclei disappear, showing that they are undergoing degeneration. The phagocytic cells are possessed of ameboid motion. When epithelium takes on phagocytic properties it is usually epithelium of an undifferentiated type, such as that in the lung. In the kidney the phagocytic cells are found in the tubules and in the connective tissue between the tubules. Some of the cells contain structures that resemble the colon bacillus. These cells possibly originate in the connective tissue and pass through the walls of the tubules. In the epididymis phagocytic cells were found that were digesting the spermatic filaments. They were probably endothelial cells. In a case that was thought to be one of papillomata of the bladder the tumors were found to be composed entirely of phagocytic cells containing what were probably colon bacilli. Cells that have proliferated under the action of a toxin degenerate when the toxin disappears. The proliferated cells are not reparative and may work harm.

DR. WILLIAM H. WELCH said that toxins and bacteria appear to cause proliferation of the cells primarily; but Weigert assumes some pre-existing damage to the cells. He thinks that an important function of toxins is to excite necrosis, and that the plugging up of the vessels is not the entire extent of the damage done. He believes that the large cells containing leucocytes and lymphoid cells are cells of low resisting power and that they are being attacked by the leucocytes.

DR. MALLORY said that he thought that the passive cell in the phagocytic process was the one that degenerated. The included cells, lymphoid cells and leucocytes show degeneration of the nuclei.

DR. W. S. THAYER, of Baltimore, read a report of
CASES OF DIARRHEA ASSOCIATED WITH THE PRESENCE OF STRONGYLUS INTESTINALIS IN THE STOOLS.

He reported two cases. The relation of the parasites to the diarrhea is questionable. One of the patients had lived in Austria and then six years in Baltimore; the other patient had lived all his life in Virginia. He believes the worm to be more common in this country than is supposed. He made a plea for more frequent fecal examination.

DR. STILES, of the Bureau of Animal Industry, said that when the farmers had cases of obscure disease develop in their cattle feces are always sent for, and that a diagnosis could often be made from the examination of this material. He thinks that troops returning from the tropics will bring back worms. The forms found in these patients are found in the lungs of the frog. Male fern has given good results therapeutically.

THIRD DAY.

DR. W. T. COUNCILMAN, of Boston, reported for
DRS. LOTHROP and PRATT

A CASE OF FILARIA, WITH SPECIMENS OF THE ADULT PARASITE.

The patient was a male, age twenty-two years, who had resided for some time in the Barbadoes. He complained of pain and swelling in the groin of one month's duration. A plexus of dilated lymphatic vessels was removed from the groin, and two weeks later the left tunica vaginalis became swollen, and a

fluid that contained filaria embryos was withdrawn. The blood examination showed the presence of the adult filaria at night. The left testicle was removed and worms were found in the substance of the gland near the epididymis. The author then described the morphologic characteristics of the worm and of the embryos. A brother of the patient, apparently in good health, had filariæ in his blood at night. Dr. Councilman showed specimens of the adult female worm and drawings of the adult worms of both sexes, as well as of the embryos.

DR. WILLIAM H. PARK, of New York, read a paper on

THE ELIMINATION OF DELETERIOUS SUBSTANCES FROM ANTITOXIC SERA.

That the antidiphtheritic sera contain some deleterious substance is shown by the development of rash, fever, and joint symptoms after its use in certain cases. Filtering an antitoxin serum has no effect on these substances. Heat has no effect upon them. Bleeding from some horses has given rise to sera that produce far less complications than bleeding from other horses, and bleeding from the same animal gives rise to sera of varying deleterious contents at different times. Experiments show that chemically antitoxin is either a globulin or a globulin-like substance, and that it is inseparably attached to the globulins. A dried globulin, produced by precipitation and used after being dissolved in water, showed that the antitoxic strength was the same as that of the serum, but it was slightly more irritating locally. The best method of producing sera that shall be devoid of deleterious substances is to select the horse the serum from which produces the least complications, and to put serum from that animal on the market.

DR. GEORGE L. PEABODY said that he had divided one bottle of antitoxic serum between three people for purposes of immunization. Two of the patients injected had no symptoms, while the third developed joint symptoms, urticaria and fever.

DR. MELTZER inquired whether one could be immunized against the occurrence of rashes by the repeated injection of the same serum.

DR. PARK said in one individual repeated injections were not likely to produce repeated rashes.

DR. F. F. WESTBROOK read a paper for himself and DRS. WILSON and MCDANIEL entitled

VARIETIES OF THE DIPHThERIA BACILLUS.

The classification of the diphtheria bacillus is based on the morphology of the individual bacilli. Three classes are recognized: (1) Granular forms with granules in the body of the organism that are metachromatic; (2) barred forms; (3) solid color forms, including those that look like diplobacilli. In pure cultures all three forms may be found.

DR. ABBOTT said that the great difficulty in classifying the diphtheria bacillus is that we do not know its normal morphology. In fact, we are not sure that the organism is a bacillus. He believes that by altering the environment of the different forms they are interchangeable. The original descriptions of the characters of the organism are more satisfactory than the later descriptions. The difference in the preparation of the medium, which gives us a hard, leathery serum instead of a granular, soft mass, may account for the discrepancy in the descriptions. The third

group that is described is probably composed of involution forms.

Dr. PARK said that the appearance of the micro-organisms does not indicate their virulence. In an institution that he knew of, measles was always followed by diphtheria; but now the officers give an immunizing dose of antitoxic serum to all patients that develop measles, and no diphtheria cases develop.

Dr. WESTBROOK said that the alteration in the environment of the micro-organisms had been studied. The organisms in the third class had always been found in connection with those of other classes, and not in pure culture.

Dr. W. W. JOHNSTON, of Washington, presented a
CASE OF ADDISON'S DISEASE UNDER TREATMENT
WITH SUPRARENAL EXTRACT.

The patient was a male, a farmer, in whom the symptoms had appeared suddenly with loss of flesh, weakness, and gastro-intestinal symptoms. Pigmentation appeared later, and was accompanied by exhaustion, vomiting, purgation, and was progressive. The blood was apparently normal. The symptoms became worse in the summer and improvement was noted in the winter. The patient is being treated with suprarenal extract, with rapid improvement. The author has collected 43 cases of the disease that have been treated with suprarenal extract; of these, 13 were improved, nine recovered, 11 died, three showed no improvement, and the result was not recorded in seven. In answer to a question by Dr. Kinnicutt, Dr. Johnston stated that there had been slight enlargement of the liver, but no glycosuria. In answer to Dr. S. Weir Mitchell, he said that the temperature had been subnormal and that he had used nine grains of the suprarenal extract, three times a day. In answer to Dr. McPhedran, he said that at first the heart beat had been feeble and the tension low, but that later the heart beat had been stronger and the tension higher.

Dr. WILLIAM H. WELCH, of Baltimore, read a paper entitled

VENOUS THROMBOSIS AS A COMPLICATION OF CARDIAC DISEASE.

Distinct venous thrombosis is not usually recognized as a complication of cardiac disease. He recorded four personal observations. In the first the patient was a woman, age seventeen years. She had aortic and mitral insufficiency. During the course of the disease hard edema of the left arm developed, and at autopsy adherent pericardium was noted and thrombosis of the innominate, the internal jugular, the external jugular, the subclavian, and the axillary veins of the left side. The oldest part of the thrombus was in the lower part of the internal jugular vein and in the innominate vein. Cultures from the body of this patient were sterile, except those made from the lung and the thrombus; these gave the streptococcus pyogenes. The second case was in the person of a woman, age thirty-five years, who was suffering from mitral stenosis. The left side of the neck became swollen in the line of the internal and external jugular veins; later the left arm also became swollen and a thrombosed axillary vein could be felt. The collateral circulation was established and the symptoms disappeared. Later the patient had an embolus lodge in the popliteal artery, from which she also recovered. The third case was that of a boy,

age sixteen years, who had mitral and aortic insufficiency. The left arm became markedly edematous, and worse than the right, which was also swollen. The left axillary vein was thrombosed, as well as the lower part of the internal jugular vein. The boy died, but there was no autopsy. In the fourth case the patient was a man, age seventy-eight years. He had mitral insufficiency, with thrombosis of the left femoral vein, and recovered. Dr. Welch has collected from the literature 23 additional cases. The location of the thrombus was in the veins of the neck and the upper extremities in the majority of instances. In 23 cases in which the thrombosis affected the veins of the upper part of the body, 17 were in females, four were in males, in two the sex was not stated. The heart condition in 20 cases was a complication of mitral disease, and, since this form of heart disease is more common in females than in males, the preponderance of female patients in whom this complication occurred may be explained. The age at which the majority of cases occurred was between fifteen and thirty. Rheumatism, while the underlying cause of the heart disease, was probably not the cause of the thrombosis. In the majority of cases the thrombosis appeared during the failure of compensation. The veins of the left side were affected in 21 out of 23 cases. Usually the veins of both the neck and the arm were thrombosed. The case reported by the author is the only one in which micro-organisms were found. In one case, reported by Dr. Helen Baldwin, the mouth temperature was seven degrees lower than the rectal temperature. The prognosis is grave, mainly on account of the gravity of the cardiac condition. The more frequent occurrence of the thrombus in the left side may be explained by the anatomic condition of the veins, blood coming into a common receptacle from various angles, valves in the jugular veins that are frequently deficient, and the regurgitation of the blood into the great veins causing the whirling motion that favors clotting. The thrombus is probably of micro-organismal origin.

Dr. KINNICUTT spoke of a similar case.

Dr. CARY thought that dilatation of the left auricle might have an etiologic significance.

Dr. BIGGS spoke of a similar case.

Dr. WELCH said that a dilated left auricle would undoubtedly assist in determining the coagulation. Dilated pulmonary vessels, also, might have an etiologic significance.

Dr. SIMON FLEXNER, of Philadelphia, read a paper on

THE NATURE OF THE NEW TISSUE IN CIRRHOSIS OF THE LIVER, AND ITS DISTRIBUTION.

Much of the new tissue in cases of cirrhosis of the liver is of the elastic variety. By digestion of sections with pancreatin, by which the cells and the elastic tissue are digested out, much new tissue, of the white fibrous variety, together with reticulum, is found. If the connective tissue and the reticulum are digested out the elastica may be left behind. In cases of atrophic cirrhosis the elastica is usually seen in the periphery of the lobules, although there is some slight extension into the lobule. In the hypertrophic form it follows along the capillaries into the lobule. The elastica appears to be developed from the other tissues and seems to come from the adventitia of the blood-vessels.

Dr. F. C. SHATTUCK said that the pathologic findings do not seem to agree with the clinical features of the disease, because, clinically, there is one form in which the disease is seen in the portal spaces, atrophic form, and another in which the disease seems to be around the bile-ducts, hypertrophic form or cirrhosis with icterus, of the French.

Dr. R. H. FITZ, of Boston, reported a

CASE OF CYSTOMA OF THE PANCREAS.

The tumor was a multilocular cyst of the pancreas. It seemed to be due to the formation of new fibrous tissue and the dilatation of the ducts with the production of new epithelium, both of the kind seen in the ducts and that seen in the acini of the gland. The cyst was removed and the patient is doing well.

Dr. CHARLES CARY, of Buffalo, reported a case of

DEGENERATED ECHINOCOCCUS CYST OF THE PLEURA.

The patient had what seemed to be chronic pleuritis. He had always lived with dogs until the age of twenty-one years, but he had never been out of the United States. Palpation of the thorax revealed a rough, vibrating friction, and friction was heard on inspiration. Exploratory puncture brought a fluid containing cholesterol, albumin and sugar. Aspiration later brought one-half litre of fluid. At operation, a soft mass of collapsed cysts was removed, which proved to be degenerated echinococcus cysts. At first no hooklets were found, but later two hooklets were seen.

Dr. ALFRED STENGEL, of Philadelphia, reported a case of

ANEURISM OF THE AORTA WITH RUPTURE INTO THE SUPERIOR VENA CAVA, RECOGNIZED DURING LIFE.

The patient was a man, age thirty years, who developed a murmur similar to that already reported in a similar case. The patient lived for twenty-four days and finally died in a convulsion. It is not beyond the range of possibility that recovery might ensue in such a case. Venesection may do as much harm as good in a similar case, because the overfilling of the vena cava and the equalizing of pressure on the two sides might allow the formation of a clot in the aneurism.

Dr. BEVERLY ROBINSON, of New York, read a paper entitled

MINOR FORMS OF CARDIAC DILATATION.

Two classes of patients, particularly, are likely to present mild attacks of cardiac dilatation: (1) anemic girls just past the age of puberty, and (2) obese women, married or unmarried, between forty and fifty years of age.

Dr. W. H. THOMSON, of New York, read a paper entitled

GRAVES'S DISEASE WITHOUT EXOPHTHALMIC GOITRE.

The specific symptoms of Graves's disease are (1) tachycardia, which is persistent and above 100. This symptom was absent in only two out of 67 cases; (2) nervous symptoms both sensory and motor; (3) gastric symptoms; (4) intestinal symptoms; (5) nutritive disorders; (6) death by syncope. Exophthalmos and goitre are not essential symptoms. The author thinks the source of the symptoms is not

in the thyroid body, but rather that we should look for it in the alimentary canal.

Dr. EDES said that one symptom that he had noted in Graves's disease was an uncomfortable sensation of heat.

Dr. MCPHEDRAN called attention to the lack of sinking of the eyes with emaciation as indicating some slight exophthalmos.

Dr. W. H. THOMSON had not noted the lack of relation between the emaciation and the sinking of the eyes.

Dr. M. HOWARD FUSSELL, of Philadelphia, read a paper on

PERICHONDRITIS OF THE LARYNX IN TYPHOID FEVER, WITH EXHIBITION OF A PATIENT AND A SPECIMEN.

He showed the specimen from a fatal case and exhibited a patient who recovered after tracheotomy. This patient wore the tube for six months. The crico-aretenoid joint in this patient is ankylosed. The complication is rare.

Dr. H. A. HARE, of Philadelphia, read a paper entitled

THE ATTITUDE OF THE PHYSICIAN AND SURGEON TO APPENDICULAR SYMPTOMS COMPLICATING TYPHOID FEVER.

There is great difficulty, in the early stages of acute disease in which there are symptoms that refer to the appendicular region, in diagnosing between appendicitis and typhoid fever. The author thinks that the absence of leucocytosis is an indication that a given case is not one of appendicitis. The absence of leucocytosis, however, is not pathognomonic.

Dr. IRA VAN GIESON, of New York, read a paper entitled

OBSERVATIONS ON APPENDICITIS.

He thinks that the tortuous blood supply of the appendix predisposes it to undergo retrograde and obliterative changes. He thinks that the attacks of appendicitis are the result of the evolution of the species, providing for a race in which the appendix will be absent. Attacks of appendicitis are predisposed to by these obliterative changes. Acute appendicitis is not an accident but is a factor in natural selection. If the appendix was to be removed as soon after birth as is safe, the individual would probably be benefited, but the process of natural selection would be delayed.

Dr. NORMAN BRIDGE, of Los Angeles, read a paper entitled

SOME OBSERVATIONS ON HUMAN TEMPERATURE IN DISEASE.

He thinks that a temperature of 102° is not dangerous. Free catharsis at the beginning of a fever may relieve the gut of ptomaines and thus benefit the condition; but it is doubtful that it reduces fever. He does not believe in the use of antipyretics or of aconite to reduce temperature, but thinks that the secret of treatment is pointed to by the results of the injection of antidiphtheritic serum.

Dr. J. K. MITCHELL read a

STUDY OF A MUMMY AFFECTED WITH INFANTILE PARALYSIS.

The mummy had one leg shorter than the other with no sign of fracture. The pelvis was perfectly

formed and the vertebral column presented no sign of compensatory scoliosis. The author thinks that this indicates the wearing of a high-soled sandal. He thought that the defect in the development was due to a poliomyelitis, that might have been intraterrine.

DR. ROBERT T. EDES, of Jamaica Plain, showed a

NEW MODIFIED SPHYGMOGRAPH.

The following papers were read by title: "The Existence of Bacteria in the Normal Tissues," Dr. G. J. Adams, for Dr. W. Ford, of Montreal; "Subpectoral Abscess," Dr. J. H. Musser, of Philadelphia; "Stone in the Kidney and Conditions Simulating It," Dr. D. D. Stewart, of Philadelphia; "The Circular Fibres of the Heart (Mitral Sphincter) as a Factor in Functional Disturbances of the Heart with Mitral Insufficiency," Dr. Morton Prince, of Boston; "Clinical Types of Uric-Acid Diathesis; Treatment; Completion of Paper," Dr. J. N. Danforth, of Chicago; "Sarcoma of the Stomach," Dr. George Dock, of Ann Arbor; "A Case of Multiple Fibromas of the Nerves with Arthritis Deformans," Drs. L. Hektoen and R. B. Preble, of Chicago; "Multiple Myeloma," Dr. J. H. Wright, of Boston; "The Urea Content of the Blood in Cases of Nephritis," Dr. J. S. Thacher, of New York; "A Study of 24 Cases of Typhoid Fever with Symptoms of Peritoneal Infection; Laparotomy," Dr. George B. Shattuck, of Boston, for Drs. George B. Shattuck, J. Collins Warren, and Farrar Cobb, Committee of the Boston Society for Medical Improvement.

Recent Literature.

A Practical Treatise on Diseases of the Skin, for the Use of Students and Practitioners. By JAMES NEVINS HYDE, A.M., M.D., and FRANK HUGH MONTGOMERY, M.D. Fifth and revised edition. Illustrated with 111 engravings and 24 plates in colors and monochrome. Philadelphia and New York: Lea Bros. & Co. 1900.

This well-known American text-book has now reached its fifth edition. New chapters have been added on prokeratosis and blastomycetic dermatitis, and a great many of the subjects have been carefully revised. Also twelve plates and two engravings have been added. The popularity of this excellent text-book is indicated by the fact that the previous edition was exhausted in less than two years.

International Clinics. A Quarterly of Clinical Lectures and Especially Prepared Articles in Medicine, Neurology, Surgery, Therapeutics, etc. By leading members of the medical profession throughout the world. Edited by HENRY W. CATTELL, A.M., M.D. Volume I. Tenth Series. Philadelphia: J. B. Lippincott Co. 1900.

This volume of this now well-known publication has so far altered in policy as to devote special attention to the more generally practical sides of medicine, rather than to lay stress merely on the unusual. The editorial staff has also undergone changes. The latter part of the volume is taken up with an epitome of the progress of medicine during 1899, and though, of course, not complete, is of distinct value.

THE BOSTON Medical and Surgical Journal.

THURSDAY, MAY 24, 1900.

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FIRST REPORT OF THE MASSACHUSETTS STATE BOARD OF INSANITY.

THE first annual report of this State Board, which was organized for official business October 1, 1898, is a noteworthy document, which will, no doubt, have a wide bearing on the future policy of the State towards its insane. The first year of the Board's work was an arduous one, requiring a large number of meetings, and a painstaking investigation of institutions throughout the State, with the supervision of the twenty-four State, municipal and private institutions for the insane, feeble-minded, epileptic, dipsomaniac and inebriate. Among many reforms and suggestions, one of practical use to others as well as to those particularly concerned with the problems of insanity is the provision for uniform certificates for the commitment of the insane, the dipsomaniac or inebriate. These blanks, now in general use by the courts are printed and distributed at the expense of the Board. There is a concise discussion of the important matters regarding the relations of curable and incurable cases, and their separate treatment, and also of the question of the colony system for the chronic insane. The report makes a number of recommendations which we quote:

(1) Such legislation as will provide that all insane persons who are now, or may hereafter become, public charges shall be supported at the expense of the Commonwealth on and after January 1, 1904.

(2) That all such insane poor shall be committed according to the laws for the commitment of the insane to the custody and control of the authorities of the Commonwealth as soon after January 1, 1904, and in such a manner as may be deemed advisable by the State Board of Insanity.

(3) That all such insane poor shall be cared for in buildings which shall be owned or controlled by the Commonwealth.

(4) Such legislation as may be necessary to acquire for the State the land, the buildings and equipment in use by the Boston Insane Hospital.

(5) That a colony for the chronic insane should be established, according to the general plan outlined in this report.

(6) That the Legislature appropriate a sum not exceed-

ing \$25,000, to be expended under the direction of the State Board of Insanity for the purchase of not less than 2,000 acres of land for such a colony.

(7) That the Legislature appropriate a sum not exceeding \$50,000, to be expended under the direction of a board of trustees for the proper organization of such a colony, and toward the construction of buildings and the procuring of other equipment necessary for that purpose.

A large part of the volume is taken up with a series of brief reports from the various hospitals, and valuable statistical tables of the details of management. We repeatedly notice allusions to the good work being done by the pathologists, the greater care taken in the study and classification of disease, and the introduction of accurate hospital methods in place of methods which have too long characterized the medical work of institutions for the insane. There is ample evidence to show that this "asylum" period is past, and that our great insane hospitals, aided by a liberal-minded board of directors, will, in the near future, accomplish results commensurate with these possibilities.

THE TRANSMISSION OF SYPHILIS TO THE LOWER ANIMALS.

THE difficulty which has persistently stood in the way of an accurate knowledge of syphilis has been the impossibility of transmitting the disease to animals experimentally. Why this should be, when so many diseases of man may be with ease reproduced in animals, affords a problem which remains for the future to decide. For the present we must experiment with such means as we have at our disposal, in the hope that repeated investigation may lead to results of significance. It should, in such work, always be remembered that negative evidence is never worthless, and that through negative evidence not infrequently generalizations of importance may be made.

We have before us an interesting paper by Dr. Mazyck P. Ravenel, of Philadelphia, recently published in the *American Journal of the Medical Sciences*, in which the writer describes two very carefully conducted experiments on calves. As Ravenel says, the interest of such inoculation experiments lies not only in the scientific evidence they may bring regarding the main problem, but also as setting at ease the minds of those often well-meaning but misinformed persons who apprehend dangers from syphilitic infection in the operation of vaccination. In fact the agitation against vaccination in Philadelphia and Pennsylvania, and the unwarranted assertions of certain physicians regarding the dangers of syphilitic infection from animals used in the preparation of the virus, led to the work under discussion.

It has been claimed that certain of the lower animals, especially the domesticated animals and monkeys, have been successfully inoculated, claims which need, however, further substantiation. Of seventy inoculations, in which rabbits, dogs, guinea-pigs and apes were used, Duplan in 1884 had absolutely negative

results with the exception of two rabbits, in which there is considerable evidence to show that the transmitted disease was tuberculosis and not syphilis.

The recent experiments done by Ravenel were with two calves, a species of animal in which no claims for successful inoculation have been made. The material for the inoculations was obtained from a mucous patch on the lip and a sore about the genitals of a venereal patient, the case being in an early secondary stage. The inoculations were made two and a half hours after the material from the sore was obtained. The technique of inoculation is given in the words of the author as follows: "The area selected was shaved, washed thoroughly with soap and water, and well rinsed with sterile water, after which a surface about the size of a silver half-dollar was scraped with a sharp scalpel until a slightly bloody serum began to exude. It was next scarified with the ordinary scarifier used in vaccination, in two directions at right angles to each other, and into this the syphilitic material was rubbed for not less than five minutes. A second scarification was then done, and the animals kept down until the surface had dried."

The following day the scarified areas were covered with a thin scab, surrounded by a small inflammatory zone. By the fifth day the scabs had dropped off and the animals showed no signs of discomfort whatever. At the autopsies, made respectively fifty-four and one hundred and thirty-eight days after inoculation, absolutely nothing was found pointing to syphilis, even the areas of inoculation being no longer discoverable. The animals were, however, slightly tuberculous, which in no way vitiates the significance of the experiment, but rather adds to its value, since the presence of tuberculosis is thought to increase the susceptibility to syphilis. The nervous system likewise showed no alterations. As a result of his work Ravenel is inclined to the opinion, already expressed by Neumann, that it is impossible to transmit syphilis to the lower animals, a fact which should do much to relieve the solicitude of the opponents of vaccination.

MEDICAL NOTES.

PLAGUE IN SAN FRANCISCO. — It has been definitely determined by the San Francisco Board of Health that bubonic plague exists in the Chinese quarter, and measures are being taken to prevent its spread. A strict quarantine has been instituted and both prophylactic and curative serum employed. On March 8th Surgeon Kenyon reported that a suspicious case had died in Chinatown, and on March 11th that he had found plague bacilli. On April 27th another case occurred, verified by bacteriological examination, and so reported on May 2d. On May 15th there were two deaths from plague. May 16th another case was reported. There have been six deaths, and, so far as known, the disease has appeared only among the Chinese. Dr. W. H. Kellogg, City Bacteriologist of

San Francisco, writes as follows in the *Journal of the American Medical Association*: "I am of the opinion that the thorough disinfection and cleaning up of the Mongolian quarter, which the San Francisco Board of Health has been carrying out with considerable vigor, has been of invaluable service in checking the spread of the disease before it had fairly gained a foothold. Vigilance should not yet be relaxed in the least, for it would not be surprising if other cases were discovered in the near future. In such event the measures taken will have to be most radical, for the reappearance of the pest will be evidence that a focus of infection has been established which nothing short of fire will obliterate."

THE PROFESSORSHIP OF MEDICINE IN EDINBURGH.—Dr. John Wylie was elected to the chair of medicine in Edinburgh University, May 4th. He is fifty-six years of age, and has had a wide experience in teaching. In 1897 he received the degree of LL.D. from the University of Edinburgh. During the illness of the late Sir Thomas Grainger Stewart, Dr. Wylie was appointed to discharge the duties of the chair. His chief publication is a book entitled "The Disorders of Speech," which appeared in 1894.

ADMISSION TO THE PARIS EXPOSITION FOR MEMBERS OF THE MEDICAL CONGRESS.—Dr. H. B. Jacobs, Secretary of the American National Committee of the Thirteenth International Medical Congress, informs us that during the week of the International Medical Congress, August 2d to 9th, free admission to the Paris Exposition will be granted to members of the Congress. To secure this, members will receive a special card by applying to the office of the Congress, 21 Rue de l'École de Médecine.

DEDICATION OF NEW LIBRARY BUILDING OF THE MEDICAL SOCIETY OF THE COUNTY OF KINGS.—The dedication of the new library building of the Medical Society of the County of Kings was held at 1313 Bedford Ave., Brooklyn, N. Y., Saturday, May 19, 1900. Addresses were made by Drs. George M. Gould, James R. Chadwick and Abraham Jacobi, followed by the formal transference of the building to the Society.

NO YELLOW FEVER IN MANILA DURING APRIL.—A report from Major W. C. Gergar, of the medical corps, chief sanitary officer of Manila, states that while the death-rate for April was 482, there were no deaths from yellow fever, the first month so favored since May, 1899, and the only month when there were no deaths from this disease during the past ten years with two exceptions, February and May, 1899.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, May 23, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 74, scarlatina 58, measles 114, typhoid fever 17.

EPIDEMIC OF TYPHOID FEVER AT FORESTVILLE, CONN.—In the *Monthly Bulletin* of the State Board of Health of Connecticut for April, Dr. C. A. Lindley, Secretary of the Board, gives the following preliminary account of the successful search for the cause of the recent epidemic of typhoid fever at Forestville: "The water supply common to all the patients is a spring from which the water is pumped and distributed to the people of the village. A small river separates the spring from the pumping station, and two supply pipes are laid in the river through which the pump draws the water to discharge through the distributing pipes. On examination, Dr. Smith, the investigating officer, found that one of these supply pipes had been accidentally broken quite in two, probably by collision with some floating object in the freshet of March 1st, so that the water pumped through it was wholly river water. In consequence of this, the pump was delivering to the distributing pipes a mixture of spring and river water. This fact was discovered by working the pump after closing the connection with the spring, and afterwards finding the fractured ends of the pipe. Samples of water were taken from the three sources, the spring, the distributing pipes, or mixed water, and the river water as pumped through the broken pipe. Analyses of each have been made. The river water is of course polluted more than the others, but that from the distributing pipes showed sewage contamination by chemical tests, and bacteriologically, by the presence of intestinal microbes. The source of this contamination was not far to find. About 300 feet above the broken pipe is situated a factory, employing about 200 operatives. In this factory are twenty-six water closets and six urinals, discharging into this river. Reports of 35 cases, six of which were fatal, have been received at this date."

CHANGES IN REGULATIONS OF THE BOSTON BOARD OF HEALTH.—After May 15th the following changes took effect: (1) Pulmonary and laryngeal tuberculosis are now included in the list of diseases of which compulsory notification is required. After removal or death of the patient, the Board of Health will disinfect the premises. (2) Release of diphtheria cases from isolation is now granted only on receipt of two consecutive negative cultures from the nose and two consecutive negative cultures from the throat of each patient; a culture from the throat for release must always be accompanied by a culture from the nose, and *vice versa*, until release is granted. (3) Free examinations are made at the Laboratory of the Board of Health (607 Sudbury Building, corner of Sudbury and Hawkins Streets, Boston) for physicians in the following: Tuberculosis, diphtheria, typhoid fever, influenza and other bacterial diseases and malaria. For veterinarians, free examinations in glanders and rabies are made. Outfits for tuberculosis, diphtheria, typhoid fever and glanders may be obtained at a large number of drug stores throughout the city and environs.

BOSTON SOCIETY OF MEDICAL SCIENCES.—At a meeting of the Society held May 15th papers and

communications were presented as follows: Dr. R. W. Lovett spoke on "Movements of the Normal Spine in their Relation to Scoliosis," being the general results of an experimental investigation. Dr. F. P. Graham described a number of improvements in laboratory methods. Mr. W. R. Brinkerhoff and Dr. A. W. Baleh reported an investigation on the pathology and probable cause of azoturia, the preliminary conclusion being that lead is the probable etiological factor. Dr. Allen Cleghorn read a paper on "The Physiological Effects and the Nature of Extracts of Sympathetic Ganglia."

AN IMPORTANT LEGAL DECISION.—A plaintiff seeking damages for personal injuries has recently claimed that much of his disability was due to the effect of the medical examination made by the corporation physician. The full bench of the Supreme Court in returning a verdict for the defendant held that even if the act of the physician did cause trouble, it did not render the railway company liable, the physician being an independent contractor, for whose acts defendant was not responsible.

NEW SURGICAL BUILDING FOR NEW ENGLAND HOSPITAL.—Appropriate exercises were held Saturday, May 19th, at the New England Hospital for Women and Children, Dimock St., Roxbury, on the occasion of the opening of the new surgical building, the corner stone of which was laid June 27, 1899.

BEQUESTS TO HOSPITALS.—By the wills of the late J. N. and Harold Brown bequests are made, among others, to the following institutions: Rhode Island Hospital, \$54,000; Butler Hospital, \$50,000; Newport Hospital, \$33,000.

A CASE OF SMALL-POX IN BOSTON.—Another case of small-pox has been reported from a house in which two cases have already occurred. Strict precautions are being taken to prevent any possible spread of the disease.

INDICTMENT OF FRANCIS TRUTH.—Francis Truth, the so-called "divine healer," whose arrest we noted some weeks ago, has been indicted by the grand jury on twenty counts.

A CENTENARIAN.—Mrs. Lucy Davis, of Auburn, Me., has recently died at the reputed age of one hundred and six. It is claimed that her mother attained an equal age.

NEW YORK.

MORTALITY STATISTICS.—In comparing the mortality of the city for the four weeks ending April 28th with that of the four weeks ending March 31st, it is found that the death-rate in April was 22.87, against 24.09 in March. There was, indeed, a gratifying and progressive decrease in the death-rate from the week ending March 10th, when it reached the high figure of 25.31, to the week ending April 28th, when it was 21.96. Still, throughout the present year, the death-rate has been considerably higher than

in 1899, when the mortality was exceptionally small. Thus, in the corresponding weeks of March and April last year the death-rate was only 18.61 and 18.88 respectively. One very important element in the increased mortality of the present year has been the excessive fatality of pneumonia, which in the first quarter is credited with 2,486 deaths, against 1,654 in the first three months of last year. At the same time the number of deaths from influenza, aside from pneumonia, in the first quarter of 1900 was only 221, against 267 in the corresponding period of 1899. The climax in the mortality from pneumonia was reached in the week ending March 10, 1900, when it caused 455 deaths, or more than one-fourth of the total mortality of the city. In April of the present year the weekly average of deaths from pneumonia was 359, against 394.5 in March. The weekly average of deaths from influenza declined from 49.75 in March to 36.75 in April, and the deaths from bronchitis, from 68.75 in March to 58 in April. There was but little change in the number of deaths from diphtheria, scarlet fever, measles, whooping-cough and typhoid fever, but the weekly average of deaths from pulmonary tuberculosis increased from 178.5 in March to 193 in April. Excluding the Borough of the Bronx, in which the mortality is usually disproportionately high, on account of the large institutions located there, we find that the largest mortality reported in any of the boroughs during April was in Richmond, in the week ending April 7th, when it represented an annual death-rate of 27.12. The smallest was in the same week in the Borough of Queens, where the death-rate was 20.25.

A VERDICT FOR NEGLECT.—Miss Helen D. Ward, a sister-in-law of Judge Henry E. Howland, at a third trial in Supreme Court, has just obtained a verdict for \$10,000 in a suit for \$30,000 damages against St. Vincent's Hospital which was commenced several years ago. In February, 1894, she took a private room at the hospital for one week, at the rate of \$25, with \$3.00 a day additional for the services of a skilled nurse. An operation was performed on her right leg by the late Dr. Wm. T. Lusk, assisted by Dr. Hughes, the house surgeon. In consequence of a hot-water bag being left in contact with the wound by the nurse in charge, while she was still under ether, she suffered from burns which were not healed for two years and which permanently disabled her. The suit came to trial in the Supreme Court in 1898 before Judge Cohen, who directed a verdict for the defendant, on the ground that the hospital was a charitable institution, and, accordingly, not liable for negligence of employes. This ground had been taken in decisions handed down in Massachusetts and Pennsylvania. They were based on an English case which, it is said, has since been reversed by the House of Lords. Miss Ward appealed, and in April of last year the Judges of the Appellate Division, in a unanimous opinion, ordered a new trial, holding that although the hospital was in part a charitable institu-

tion, it had also a department for pay patients, and that as the action was brought not on the ground of negligence, but for alleged breach of contract, the case should have been tried. A second trial was accordingly held in December last, and at this trial there was a disagreement of the jury.

MEDICAL ASSOCIATION OF THE COUNTY OF NEW YORK NO LONGER INDEPENDENT.—At a special meeting held May 11th, the Medical Association of the County of New York voted away its independence by adopting a resolution dictated by the Council of the State Medical Association, by which it is constituted a subordinate county association of the State Association, and binds itself to obey the laws, rules and regulations of the latter.

ARMY NOTES.

ASSOCIATION OF MILITARY SURGEONS.—The coming meeting of the Association of Military Surgeons at New York City, May 31st to June 2d, presents an interesting programme in spite of the fact that so large a number of the members of the Association are now serving at foreign posts and are not in position to give this meeting their active support. A number of papers have already been received by the secretary. The headquarters of the Association will be at the Murray Hill Hotel; the meetings at the New York Academy of Medicine. The social programme includes visits to the various army and navy stations around New York, together with the usual dinner. It is understood that the business meeting of the Association will be unusually interesting, through efforts to be made to increase the membership and value of the society, especially through its official organ.

NO PLAGUE AT HONOLULU.—Surgeon-General Sternberg has received a report from Major B. D. Taylor, the chief medical officer of the Hawaiian Islands, dated April 27th, in which he states that there have been no cases of bubonic plague since March 31st, and that if none occurred in the interval the quarantine at Honolulu would be raised April 30th.

SANITARY AFFAIRS AT HAVANA.—A recent issue of the *Havana Post* compliments Major W. C. Gorgas, Surgeon, United States Army, on his administration of sanitary affairs in that city.

Miscellany.

PRESERVATIVE QUALITIES OF HYDROCHLORIC ACID.

DURING a discussion on "Internal Antisepsis" at a meeting of the Medical Association of the Greater City of New York, held May 14th, Dr. George B. Fowler mentioned, as illustrating the remarkable preservative qualities of hydrochloric acid, that the late Prof. John C. Dalton was accustomed for many years to exhibit before his class at the College of

Physicians and Surgeons the digestive power of a specimen of the gastric juice of the dog which he extracted in the year 1865. In 1868 Dr. Fowler became his assistant, and for the ten years that he remained in this position this was annually demonstrated to the students. The original specimen consisted of eight ounces of gastric juice. Being somewhat curious to know whether this interesting specimen was still in existence, Dr. Fowler recently wrote to Prof. John G. Curtis, Dr. Dalton's successor in the chair of physiology at the College of Physicians and Surgeons, and received the following reply:

NEW YORK, April 27, 1900.

DEAR DR. FOWLER:—I still show a bottled specimen of dog's gastric juice obtained by Dalton in 1865, as the label, in his handwriting, shows. This is dark brown and has a sediment, but it is not decomposed. I have never tested it in any way, but it does not change in its appearance from ten years to ten years. Specimens I myself withdrew from dogs over twenty years ago are still acid. I filter them from time to time, but they seem "sweet," although what I suppose are cryptogamic growths of some kind spring up in them. I have not tested the digestive powers of these old specimens, but they do not change, as specimens, except as indicated.

JOHN G. CURTIS.

Correspondence.

NOTE ON X-RAY EXAMINATIONS OF THE LUNGS.

BOSTON, May 18, 1900.

MR. EDITOR:—In making examinations of the thorax with the x-rays I have observed in some patients that the excursion of the diaphragm was limited and low down in the chest on one or both sides, as in emphysema, and yet the lungs were not unusually clear, as is the case in this disease, but were of normal brightness or darker than normal. A second x-ray examination made after an interval of some days showed that the lung or lungs were brighter and that the excursion of the diaphragm had much increased. The explanation of these appearances which offers itself is partly suggested by the appearances seen in other patients where the conditions are known. For instance, I have observed that the diaphragm was low down in the chest, and that its excursion was limited in cases where the passage of the air through a bronchus was obstructed by a foreign body or by the pressure produced by a new growth upon the bronchus or the trachea. In such cases there is more difficulty in getting a large part of the air out of the lungs than in getting air into the lungs. It seems probable, therefore, that in the cases we are considering the presence of considerable mucus had obstructed the passage of the air through the smaller air passages—abundant râles were noted as in bronchitis—and that this obstruction caused the diaphragm to be lower down and more restricted in its movement than normal; and that the excessive secretion, accompanied probably by congestion, made the pulmonary area less bright than in health. Or the excursion of the diaphragm might be temporarily increased by the expulsion of the mucus from the lungs when the patient coughed, and decreased as the mucus again collected. Naturally, if this explanation is correct, as the conditions improved the excursion of the diaphragm would increase, and the pulmonary area would become brighter. Thus by observing the lungs and diaphragm we may get appearances that have their cause in the air passages rather than in the alveoli or the lung itself.

Truly yours,

FRANCIS H. WILLIAMS, M.D.

METEOROLOGICAL RECORD

For the week ending May 12th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...6	30.03	50	60	39	40	48	44	S.W.	W.	8	12	F.	O.	.06 .26
M...7	30.20	49	60	38	52	30	41	N.W.	N.W.	10	6	F.	C.	
T...8	29.88	54	67	42	64	90	77	S.W.	S.W.	19	14	O.	O.	
W...9	29.63	57	75	39	65	69	67	S.W.	N.	18	15	F.	O.	
Th...10	30.01	42	49	34	79	54	66	N.W.	N.	13	10	C.	C.	
F...11	30.00	48	62	33	62	65	64	W.	S.W.	12	12	F.	F.	
S...12	30.06	52	63	42	66	62	64	E.	S.	4	8	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 12, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York	3,654,594	1353	442	23.03	19.18	.84	.91	3.51
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	203	59	21.50	15.50	1.50	1.50	3.50
Baltimore	506,389	2 2	44	19.00	15.50	2.00	1.50	2.50
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	114	38	17.60	—	3.52	5.28	3.52
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	66	15	18.24	18.24	3.04	1.52	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	36	15	22.16	5.54	5.54	—	—
Worcester	111,732	37	16	18.90	18.90	2.70	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,520	24	6	33.33	16.66	—	—	4.16
Lowell	90,114	36	7	11.08	11.08	—	—	—
New Bedford	70,511	21	3	4.76	19.04	4.76	—	—
Lynn	68,218	18	2	16.66	—	—	—	—
Somerville	64,394	15	3	20.00	20.00	—	—	—
Lawrence	59,072	46	24	32.55	13.02	4.34	—	2.17
Springfield	58,266	22	4	12.45	37.35	—	—	—
Holyoke	41,510	18	6	38.88	16.66	—	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	11	3	9.09	—	—	9.09	—
Malden	36,421	6	1	16.66	—	—	—	—
Chelsea	34,235	11	1	9.09	—	—	—	9.09
Haverhill	32,651	7	1	28.56	14.28	14.28	—	—
Gloucester	31,426	4	—	25.00	—	—	—	—
Fitchburg	30,523	11	4	18.18	9.09	—	—	9.09
Newton	30,461	7	1	14.28	14.28	—	—	—
Taunton	28,527	9	2	—	11.11	—	—	—
Everett	28,102	7	2	—	14.28	—	—	—
Quincy	24,578	7	3	14.28	—	—	—	—
Pittsfield	23,421	1	—	—	—	—	—	—
Waltham	22,791	—	—	—	—	—	—	—
North Adams	21,583	5	—	20.00	20.00	—	—	—
Chicopee	18,316	5	3	—	—	—	—	—
Medford	17,190	6	3	—	—	—	—	—
Newburyport	15,036	5	—	—	—	—	—	—
Melrose	14,721	1	—	—	—	—	—	—

Deaths reported 2,231; under five years of age 719; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 519, acute lung diseases 402, consumption 299, diphtheria and croup 72, diarrheal diseases 33, typhoid fever 27, whooping-cough 24, scarlet fever 23, measles 22, erysipelas 12, cerebrospinal meningitis 7.

From whooping-cough New York 20, Pittsburg 3, Somerville 1. From scarlet fever New York 12, Boston 3, Worcester and Lawrence 2 each, Pittsburg, Providence, Holyoke and Pittsfield 1 each. From measles New York 14, Lawrence 4, Boston 2,

Pittsburg and Holyoke 1 each. From erysipelas New York 9, Providence, Charleston and Holyoke 1 each. From cerebrospinal meningitis Boston and Baltimore 2 each, New York, Worcester and Holyoke 1 each.

SOCIETY NOTICES.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES. — The ninth annual meeting of the Association will be held May 31st, June 1st and 2d, at the Academy of Medicine, New York City.

MEETING OF BOARDS OF HEALTH OF NORTH AMERICA. — A conference of the State and Provincial Boards of Health of North America will be held in Atlantic City, N. J., June 1st and 2d, being the fifteenth annual meeting.

RECENT DEATHS.

ALFRED H. LINDSTRÖM, M.D., died May 17th, at the Massachusetts General Hospital, of pneumonia. He was born in Kalmer, Sweden, March 21, 1869, came to America in 1888, entered the Harvard Medical School in 1891 and received his degree in medicine in 1894. Since then he has practised medicine in and about Boston.

CHARLES HERBERT VOORHEES, M.D., of New Brunswick, N. J., died on May 13th. He was born in New Brunswick, August 3, 1824, and was graduated from Jefferson Medical College, Philadelphia, in 1850. During the Civil War he was a surgeon in the army and was confined for a time in Libby Prison. He was the author of a number of scientific and historical papers.

BOOKS AND PAMPHLETS RECEIVED.

Fifth Annual Report of the Metropolitan Water Board, January 1, 1900. Boston: Wright & Potter Printing Co. 1900.

Non-Malignant Gastric and Duodenal Ulcers: With Illustrative Cases. By Thomas E. Satterthwaite, M.D., New York. Reprint. 1900.

Hand Atlas der Anatomie des Menschen, in 750 Theils, farbigen Abbildungen mit Text. Von Werner Spalteholz. Dritter Band, I Abtheilung. Leipzig: S. Hirzel. 1900.

Transactions of the Twenty-first Annual Meeting of the American Laryngological Association, held in Chicago, Ill., May 22, 23 and 24, 1899. New York: D. Appleton & Co. 1900.

Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Die angeborene Luxation des Hüftgelenkes. Von Geh. Med.-Rat Professor Dr. Max Schede. Hamburg: Gräfe & Sillem. 1900.

Remarks on Nephrectomy, with a Plea for the more Certain and Earlier Diagnosis of Conditions Requiring It. Remarks on Extra-uterine Pregnancy. By Charles P. Noble, M.D., Philadelphia. Reprints. 1899-1900.

Diseases of the Intestines: A Text-Book for Practitioners and Students of Medicine. By Max Einhorn, M.D., Professor of Medicine, New York Post-Graduate Medical School, etc. New York: William Wood & Co. 1900.

The Treatment of Fractures. By Charles Locke Scudder, M.D., Surgeon to the Massachusetts General Hospital, Out-Patient Department, etc. Assisted by Frederic J. Cotton, M.D. Philadelphia: W. B. Saunders. 1900.

Chemistry and Physics: A Manual for Students and Practitioners. By Walton Martin, Ph.B., M.D., and William H. Rockwell, Jr., M.D. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

A Treatise on Nasal Suppuration or Suppurative Diseases of the Nose and Its Accessory Sinuses. By Dr. Ludwig Grimwald, of Munich. Translated from second German edition, by Wm. Lamb, M.D., M.C., M.R.C.P. (Lond.). Illustrated. New York: William Wood & Co. 1900.

Microscopical Studies in Pelvic Peritonitis. Diagnosis and Some of the Clinical Aspects of Gyroma and Endothelioma of the Ovary. The Third Hitherto Undescribed Disease of the Ovary: Myxomatous Degeneration. The Fourth Hitherto Undescribed Disease of the Ovary: Colloid Degeneration. By Mary A. Dixon Jones, M.D., F.R.M.S., New York. Reprints. 1892-99.

International Clinics: A Quarterly of Clinical Lectures and Especially Prepared Articles on Medicine, Neurology, Surgery, Therapeutics, etc., and other Topics of Interest to Students and Practitioners. By leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., John Ashurst, Jr., M.D., LL.D., and Charles H. Reed, M.D., Philadelphia, and James T. Whitaker, M.D., LL.D., Cincinnati, etc. Vol. I, Tenth Series, 1900. Philadelphia: J. B. Lippincott Co. 1900.

Original Articles.

THE INDUCTIVE METHOD APPLIED TO MEDICINE.¹

BY C. W. KLOTZ, LL. D.,
President of Harvard University.

This discussion is one very interesting to me. In the first place, it carries me back about thirty years to the time when Professor Langdell first came to Cambridge to teach law. I had something to do with that myself; it was largely owing to the statements I had heard him make as to the proper method of teaching law. He described that method in a way which inevitably commended it strongly to a man who had been brought up as a chemist. Professor Ames spoke of it just now as the inductive method. That is exactly what it is. It is the method of inductive reasoning applied to law; and that is what Mr. Cannon's method is applied to medicine. It is simply the universal method of scientific induction. Professor Langdell got his facts from recorded cases, and then studied in those recorded cases the induced generalization or principle, which is precisely what a chemist does when he experiments in the laboratory—he gets his facts by accurate observation and record, and then endeavors to deduce the true principle therefrom. Now that method of teaching law has absolutely come to prevail in this country and is going to range wider and wider,—and we shall shortly get some rather conspicuous demonstrations of that fact,—it is going to prevail in the English speaking world. The reason is that the method is of universal application. Now Mr. Cannon advocates the use of cases in medicine in a strictly analogous manner. The method he has described seems to have a further recommendation. It enables a vast number of cases to be utilized for the instruction of students—not only those cases that are to-day visible in the Massachusetts Hospital and the City Hospital, but all recorded cases of value for teaching, just as the law reports enable a selection from all recorded cases to be used for instruction in the law. It is obvious, however, that in this multitude of recorded cases the skilful teacher is going to make a careful selection. That is exactly what Professor Langdell and Professor Ames have done for the teaching of law; they have selected the important cases and put them in a just sequence; and that, I think, will be necessary in order to introduce successfully the case method of teaching into medical teaching—otherwise the instruction will not be sufficiently systematic and comprehensive. The old-fashioned lecture system might claim this advantage, that in a defined course of lectures, a prescribed field could in some measure be covered. It might be covered in a condensed way, to be sure, but still something could be said about every important topic within the field. To be sure nobody may have listened to the lectures or remembered what was said; but the lecturer had at least endeavored to make his instruction systematic and comprehensive. That must be done in the case method, or it will fail. Of course it can be easily done; it requires nothing more than the same insight and good judgment which have been applied to the compiling of select cases in law.

The method of medical teaching which has been

¹ Remarks at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

talked about to-night is after all nothing peculiar to medicine. It is simply the universal effort in education rightly directed. So far as I have been able to see, education in general, beginning in the kindergarten and ending in the university, comprehends just three things. First, accurate observation. That is the foundation of everything, and not in medicine peculiarly, but in all training. All exact training must begin with exact observation. Now primary school education used to omit that altogether. There was no training in accurate seeing, hearing and handling. We get more and more of it of late, but not enough. The next thing is an exact record. That is absolutely essential in medicine. It should be considered absolutely essential all the way along, beginning in the kindergarten—to see straight and then to make an accurate record of what you see. Every child should be taught that from the first moment it is old enough to go to school. Next should come the exactly limited inference from recorded facts—the most important thing in medicine, and a thing which to most human beings is so unfamiliar as to be strange. Hardly any of us really draw in most cases of observation and record the really true limited inference. We generally draw a much wider inference than the observation and record justify. So this method in medical teaching is the universal, the true method in all teaching, which is a good reason for believing that it will succeed in medicine.

We did not use to have much of it in medical teaching. I think it was thirty-five years ago that I was a lecturer in the Harvard Medical School for one winter; at that time lectures began in the school on North Grove Street at eight o'clock in the morning and went on steadily till two o'clock—six mortal hours, one after the other, of lectures, without a question from the professor, without the possibility of an observation by the students, with no interchange of thought between teacher and student, none whatever, just the lecture to be listened to, and possibly to be taken notes of. Some of the students could hardly write, so that the taking of notes was difficult for them. Can you imagine such a misapplication of force as that? It seems as if it must have been contrived before the invention of printing; but it was still going on centuries after that invention. We have got a good way from that now; and I would not have you suppose that there were not some good doctors made in those days. There were, by a kind of miracle, and not in the lecture-room.

But lectures have some function still. They linger much more in the medical school than in any other department of the university. There is a great deal larger proportion of simple lecturing in the medical school than in any other branch of the university. You may say that there is no plain, unadulterated lecturing in the law school, or in the graduate school, and hardly any in the college; the lecture is mixed with question and answer, with what is called conference—that is, interchange of views between the instructor and the students in small groups, or between his assistants and the students—and with the writing of themes and theses. But still the lecture has a function. It may be useful in giving a preliminary sketch or outline of the subject, or information about a course which is to go on in quite another manner through a year or half-year. It is useful sometimes in summing up the impressions of fifty minutes in the last five

minutes; then, of course, it is but a short lecture. It is useful when accompanied by active demonstration, the teacher showing the class something which he describes. The lecture therefore will remain, but in much briefer forms and used to a much smaller degree.

As to the small-group or section instruction, that again is an immense improvement over any means of instruction at the bedside or the operating table which used to prevail in the school twenty and thirty years ago. It is simply a means of enabling the individual student to see and hear and touch for himself; and I do not know how the medical art can be acquired without abundant opportunities to see, hear and touch for one's self under the best possible scientific guidance.

And now that I have an opportunity of talking to a number of physicians and students I will avail myself of it to express the belief that another improvement should be made at once in preparatory medical education. I look over what have been the requirements for admission to the medical school, and I marvel to see that no previous study of any animal has ever been required. I look at the coming requirements, and see that degrees are required before admission to the medical school, and that care has been taken to prescribe that any degree which admits to the school without examination must cover chemistry. Now, is not it remarkable that no provision whatever is made for zoölogy, that no provision is made that the students shall have the least knowledge of any animal whatever? Is it not remarkable that medical students as a rule begin to use the scalpel on the human body? I do not know how any systematic arrangement could be less judicious than that, and yet it has been the universal practice all the world over so far as I know. Is it not strange that a man should be supposed to have been educated well in medicine, and to be actually ready to practise on the human being, who never has practised on an animal, and does not know anything about the diseases of animals, except what he may have picked up incidentally because he liked horses or dogs? I venture to say that this is the line of greatest possible improvement in medical education, the previous study and the simultaneous study of animals in health and disease. We have found out that diseases are pretty well mixed up between animals and man; we know that the sources of some diseases that afflict human beings are to be found in animals; and that some diseases are transmitted through animals to man; and also we know happily that we can get treatment for some human diseases out of animals. I cannot but think, therefore, that we should take immediate steps to improve the training preliminary to medicine in this respect, and that we should also do well to secure to the medical student a comparative study of medicine in other animals as well as in man.

I think the changes lately made in the medical school may be said to have already proved that it is best in medical study to treat the several subjects only two at a time, and to have the instruction in those two blocked, that is, concentrated into half a year, five or six times a week. A demonstration of the advantages of that method has already been given.

It is obvious that we need in medical education to make use of every possible means of improving our instruction and condensing it into as short a period as possible: for the number and variety of things to be

learned is always increasing, and it looks as if the four-year period for medical study would not long suffice, unless we succeed in improving our methods and condensing the instruction. Improved method, of course, means a shorter time required to accomplish the task before one, and condensation and improved method may enable us to avoid the evil of requiring more time for medical study. I am glad to believe that time is to be saved in the period which precedes medical education. We have already a promising outlook at Cambridge in that regard; but we cannot hope to reduce the time of medical study proper below four years, and if we do not succeed in improving our methods, four years will not long suffice. We need, therefore, to exert ourselves in every direction to make these improvements; and I am glad to think that our medical school is pointing out the way.

THE COURSE IN PATHOLOGY AT THE HARVARD MEDICAL SCHOOL.¹

BY WILLIAM T. COUNCILMAN, A.M., M.D., BOSTON,
Shattuck Professor of Pathological Anatomy.

At the beginning of the present school year certain important changes were made in the arrangement of studies in the Harvard Medical School. The entire curriculum of studies in the first and second years was rearranged and one of the large lecture-rooms on the third floor of the school building was converted into a laboratory. It was believed (1) that better results in teaching would be secured by concentrating the attention of the student on one subject until proficiency in that subject was attained; (2) that there was a natural sequence in the primary fundamental medical subjects which should be followed. It has been the general experience of men engaged in special study that the greatest progress is made by concentration. The knowledge gained in one day's work is still fresh when the work of the following day is taken up, and in every good system of education all new knowledge is made dependent on that which has preceded. Languages are acquired with much greater facility by the study of one language at a time. An object lesson, showing the value of concentration in the study of pathology was given in the success of the summer course on this subject given by Dr. Mallory. In this course the student gave his entire time to the subject for seven weeks, and in that time seemed to gain much more than the students in the ordinary course continued during the year. The experience in the summer schools in Cambridge has been the same. Such a system of concentration would probably not give the best results in very narrow subjects of study, but the fundamental medical subjects of anatomy, physiology and pathology are broad and diversified. In anatomy the student may divide his time between general anatomy, histology and embryology; in physiology, between general physiology and physiological chemistry; and in pathology, between bacteriology and general and special pathology.

The proper sequence of study necessarily follows the system of concentration. The student on first entering the school studies anatomy, which gives him the development, form and structure of the human body; the entire first term is devoted to this subject.

¹ Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

Physiology, or the study of function, follows and occupies the second term. In the first term of the second year the student studies pathology and bacteriology, which give him the alterations in form and structure; the agencies which produce these changes and the manner in which they act, and the effect of these changes or lesions on function. In the second term of the second year the student takes up those studies, such as physical diagnosis, medical laboratory work, etc., which have a direct bearing on the purely clinical studies to which the third and fourth year are devoted. The end attained by this system is that the student is not required to memorize a number of facts, or supposed facts, with little or no co-ordination between them, but every subject is made dependent on that which has preceded; this gives him as it were a series of pegs on which to arrange and co-ordinate any new knowledge. The study of the functions of organs is directly dependent on a knowledge of their form, structure and relations. It would be impossible to give any idea of the physiology of the brain without a knowledge of its anatomy. The study of the pathology of the circulation is impossible without a knowledge not only of the form and structure of the heart and blood vessels, but of the physiology of the circulation, including blood pressure, the conditions influencing it, etc. In the study of malformations and tumors we have constantly to refer to embryology.

At first sight it might seem possible to carry such a system of concentration and sequence to a still greater extent, that the form, structure and function, and the disorders of form, structure and function of a single organ might be studied. Further consideration would show that the anatomy of single organs cannot be understood without some general knowledge of the architecture of the body as a whole, nor can the function of an organ be understood without a knowledge of the laws governing secretion, nor can special pathology be taught without a preceding knowledge of pathological processes.

The adoption of this principle of concentration is one of the most important reforms attempted in education. It must be considered an experiment which can only be judged by its results, and which if successful will be widely adopted, not only in medical but in general education.

The manner in which anatomy, physiology and pathology are taught has been necessarily modified to a considerable degree. I shall speak only of the changes which have been instituted in teaching pathology and of the effect which these changes have had on the students. The course as given in the past has extended over the entire second year. It consisted of lectures, laboratory work, demonstrations, recitations and attendance at autopsies. Owing to the lack of space it was necessary to divide the class into two sections for the laboratory work, giving to each section thirty-one exercises of two hours each. Lectures were held twice during the week, and a demonstration and recitation each once. Every student was further obliged to present a card showing attendance at twelve autopsies. The entire time devoted to the subject was one hundred and eighty-six hours. It cannot be denied that the course was not satisfactory. There could be but little co-ordination in the teaching. The lectures could not follow the laboratory work, chiefly owing to the scant time devoted to the latter. In the lectures an attempt was made to appeal to the visual

sense by means of lantern slides and diagrams; but even by these means, coupled with the utmost efforts of the lecturer, the attention of the students was not fully held. Nodding heads and listless expressions of face met the vision of the lecturer before the traditional fifty-five minutes had expired. He had not reached that desirable condition of mind and conscience when such things were indifferent to him, and he frequently left the lecture-room in a condition of bodily, mental and spiritual depression. Occasionally when topics were reached in which the lecturer was acutely interested there was always the temptation to enlarge on the subject and get some satisfaction out of his own talk, the lecture being very similar to a game of solitaire. In spite of these drawbacks the lecturer was generally regarded by the students as a good lecturer and teacher. Weekly recitations were even more discouraging; the attendance was poor; there was difficulty in arriving at a cordial understanding with the students; they answered questions wearily and asked for no assistance out of their difficulties. The demonstrations were always a failure. They were held in a small room, and the attempt was made to show and explain objects simultaneously to one hundred and fifty men. In some years the class was divided into sections of twenty-five; the specimens were arranged in six groups, and demonstrated in turn to each group by six demonstrators. The students probably received more in this manner, but the effect on the demonstrators was deplorable. After repeating a rapid and superficial demonstration six times in the hour, each man felt, on leaving the room, that nervous prostration was staring him in the face. The distribution of the specimens among the demonstrators caused great dissatisfaction, and the unfortunate head of the department usually had to content himself with a myoma. The laboratory work was more satisfactory, but even in this a very limited course only could be given, and the impressions gained on Thursday seemed generally lost before the next Tuesday.

At the end of the course an examination of three hours' duration was given. Two hours were devoted to writing answers to a series of questions on general subjects in pathology, and one to the description and diagnosis of mounted histological preparations. The examination was never a difficult one, but it showed something of the results of the method of instruction. In the last five years 23 per cent., or nearly one-fourth of the entire class, yearly failed to pass the June examination. In the year 1895, 33 per cent. failed to pass. Such a large number of rejections can only point to insufficiency in the methods of instruction. The instructors in the department worked honestly and the intelligence of the classes was good. The men who passed the best examinations were not always those who had shown the greatest diligence during the year, although this was usually the case.

Under the new system, the forenoons of October, November and December, and the afternoons of December are devoted to pathology. The purely artificial division of the course into lectures, laboratory work and demonstrations was done away with. Each student was given a place in one of the two laboratories and provided with a microscope and other necessary tools and reagents. The laboratories are efficient, though in both artificial light is necessary for a part of the time. The class was divided alphabetically into groups of ten, which groups formed definite

units. The laboratory was the centre, the other parts of the course calling groups of ten temporarily from the laboratory work. The main work of the laboratory consisted in the study of histological specimens representing the various pathological processes, which were in part given out to the class as sections already cut and stained, and in part were prepared by the students themselves. A printed syllabus embracing all the work taken up was sold the student at a price to cover the cost of publication. In the syllabus only general descriptions of the various processes were given; the students were expected to work out the details from the specimens studied.

In addition to the material from autopsies and surgical operations, animal experiments were used to illustrate pathological processes. The work was begun by the study on the web and mesentery of the frog of the vascular changes produced by injury. Each man in the class studied the alterations in the circulation, and most of them were able to see and depict the emigration of leucocytes. This was followed by the study of the formation of the exudation in the ear of the rabbit. The various degenerations and the most important infectious diseases were studied in the same way, each group of ten having its own case.

From the very beginning of the course, single sections (ten men) were sent to every autopsy. They were made acquainted with the technique of the autopsy, and were required to examine the organs microscopically in fresh sections, and to make bacteriological examinations and cultures. About three hours were thus spent by a section at an autopsy. It is difficult for more than ten men to see an autopsy and have it properly explained to them. On the following day the organs from the autopsy were demonstrated at the school to single sections. Each demonstration lasted about thirty minutes, and the students in most cases made microscopic examinations of the tissues and stained slides for bacteria. The demonstrations were held in various rooms in the building, wherever space could be found. A section was sent from the laboratory to the demonstration, and when it returned the section next in order followed. Each student witnessed and assisted in four autopsies at the hospitals, but the material from a great many more was demonstrated to him in an effective manner.

After the men had become accustomed to the manner of work, and understood what was required of them, the greater portion of the time of the instructors was taken up by these demonstrations. Often three demonstrations were conducted simultaneously in different rooms, so that thirty students were in attendance.

Pathological material comes at random, and the character of it cannot be made to conform to the course of instruction. In most instances, however, some of the processes which are being studied, or have been studied, will be represented in the material, and particular attention can be bestowed upon them. All of the organs from an autopsy were demonstrated together, and the interdependence of the various lesions pointed out. In the absence of fresh material, the large supply of specimens in the Warren Museum, many of them preserved in such a manner that the color is retained, were used. This material was demonstrated to sections in the same manner as the fresh. It is practically impossible to demonstrate in an effective manner to more than ten men, and the small number has a further advantage in making the

demonstration less formal, so that men will ask questions. Such questions are of great assistance to the demonstrator and often show him the best manner of presentation. The demonstrations were varied by having the students examine the organs and point out the lesions in them. Such demonstrations are of utmost value in a course in pathology.

The demonstrator must be a good teacher, and give the students the fullest opportunity of learning by their senses. He is often tempted to take up the time with a discourse on the character of the lesions and their association, pointing out various things as he goes along. When he has repeated this to several sections, he finds he is very weary and that the men have learned nothing. The students must see, feel and compare things, and it takes a long time for them to appreciate what they see and feel. We often forget how familiar the objects are to us and how new to them. The instruction is often tiresome to the teacher, particularly at first, but now and then he is repaid by learning from the student a new point of view, or by being shown something he has entirely overlooked. In addition to these demonstrations, the sections made a visit to each of the pathological laboratories connected with our larger hospitals and were shown the general work of a pathological laboratory, in order that they might understand the close relation between such work and clinical medicine. On these visits, which lasted three hours, they spent part of their time in examining surgical specimens and culture tubes, which were sent to the laboratory for diagnosis.

The essential principle in teaching pursued in the laboratory work, consisted in reducing the instruction given to the smallest possible amount. It was considered a great mistake to show or tell a student anything which he could find out himself from the specimens before him. It always seems hard to allow a student to work for an hour over a matter which could be explained in a few minutes, but in the one case he acquires his knowledge by close observation and deduction, and in the other he has been told. Any one who has had much experience in teaching and in study knows the difference.

The students were required to draw the objects they were studying. Drawing has a number of advantages. It compels a man to observe more closely, for he can only draw what he has clearly seen. It compels him to study more slowly, and keeps his attention fixed on his work. No one without a long training can look into a microscope and comprehend the complicated picture presented there. But as the picture slowly grows under his hand and he puts down one detail after another, resolving it into its simpler components, he begins to understand it. The importance of this manner of work was soon realized by the students. Those who from supposed inability to draw, or from constitutional inertia, would not attempt it soon saw they were not advancing as rapidly as the others.

Informal explanations of specimens were given from time to time to the entire class, but never before they had themselves studied the specimens and found out the difficulties. The most interesting and satisfactory part of the course was the evident change in the men under this treatment. At first they seemed to grope around in an uncertain manner; they saw things with difficulty and did not understand the relations of what they saw. Then they gradually emerged into the

light and began to see and think for themselves. Their study had the stimulus and fascination of original research, for it was largely such. The teaching was no longer an attempt to pour information into passive minds, to pump into buckets unwillingly held at the spout of knowledge or presented with the cover still on, but it was helping men to learn. There is no weariness in teaching; the teacher receives as much stimulus and enthusiasm from the students as he gives out himself, and actually learns much from their observation. Repeatedly the attention of the teachers was called to conditions which had been entirely overlooked. Explanations had to be given very carefully and had to fit the conditions, or the inadequacy of commonly accepted views confessed.

In the course, lectures played a very minor part. At first it was thought necessary to lecture every day, the lecture lasting the traditional fifty-five minutes. Then they were held when it seemed necessary, and there was no fixed time for the duration of the lecture. Occasionally the entire class would adjourn to the lecture-room for a demonstration by means of lantern slides of some matter which was only imperfectly shown by the specimens at their command. Occasionally two or three lectures were given on topics which had a direct bearing on the processes they were studying but which could not be represented by specimens. It would seem possible in another year, when the syllabus can be sufficiently expanded, that the lectures might be omitted altogether. The students themselves do not sufficiently appreciate the inadequacy of the lecture system. It seems so much easier to be told things than to learn them. There is undoubtedly a place for the lecture, but it must have the idea not of imparting knowledge but of expanding knowledge already acquired. A man with a knowledge of the farm can listen with pleasure and profit to a lecture on other things pertaining thereto, but a lecture can give a man no idea of what the farm is.

On Saturday an oral recitation was held in each laboratory. The object of this was not so much to find out what the men knew as to explain the points on which they were ignorant. The students were encouraged to ask questions themselves.

The afternoons of December were given to pathological conferences. Each section was given the organs of an autopsy. These were divided among them, and they examined, weighed, measured and described them. They made the necessary microscopic, chemical and bacteriological examinations under some supervision, and were given certain articles to read in connection with the work. They looked up the clinical history and from all the data which they could obtain the case was written up. When they had gotten what they could in this way, the material which they had collected was presented to an instructor who went over it with them, cut out and expanded and made the whole homogeneous. The case was then rewritten by one man selected by the others in the section. The case was then presented to the class by the section, and the organs and microscopic sections demonstrated. The exercises were rendered more valuable by the kindness of some of the clinical men who came in and talked of the clinical aspects of the case. The course was not as valuable as it might have been, owing to lack of room in which the men could do this extra work.

Written recitations were held on an average once a week. In these the students were required to describe specimens, some of which they had seen and studied, but frequently the specimens were strange to them. A careful, full, objective description was demanded of them. The books were marked and returned to the students and at the same time the correct description of the specimen logically arranged was written on the board. Time was given them to compare their description with that on the board and to examine their specimens. The marks given them in these recitations counted one-quarter of their total mark for the course. Once a month or oftener there was a systematic visit from man to man and marks were given, based on the character of their work as shown by their laboratory books and by questioning them. Improvement or the lack of it was brought out in this way. The general character of their laboratory work counted another fourth of their total mark.

In such laboratory work there is no necessity for and a positive disadvantage in having a large number of instructors. We usually endeavored to keep one instructor in each laboratory, but frequently when there was plenty of material for demonstration, both laboratories were in charge of one man, who alternated between them. The presence of an instructor did not seem to make much difference in their work. There was never any confusion and but little evident loafing. Intellectual loafing could easily be detected by the examination of the laboratory book and a few sharp questions. The men are known individually and can be assisted as individuals.

As the work progressed, it was found that the students could not, with advantage to their work, remain in the laboratory for four hours. One advantage of the lecture was the break in the laboratory work. After the first month a recess of twenty minutes was given from 10.40 to 11; the men were all turned out of the laboratories and all the windows thrown open. There was at first some difficulty in getting the men away, but cold air finally accomplished it. They returned to work at 11, in rooms in which the air had been thoroughly renovated. The brief interval was found to be fully as necessary for the instructors as for the students.

Methods of examination are always a problem, and almost any form is open to objections. A correct system of marking should take into consideration the effort of the student and his improvement. That was possible by the system adopted. In addition to the examination which was continuous through the course, it seemed that some general examination was necessary, in order to ascertain something of the general knowledge of the candidate and what he had profited by the course. This was divided into two parts: A practical examination in gross and microscopical pathological anatomy, and a written examination covering ten questions, chiefly on pathological processes; the practical and written counted each 25 per cent. Such a written examination has one serious fault. It can be crammed for and is but little real test of a man's power, except his power of passing examinations. It is impossible to ask more than a certain number of questions which will be fair to all. The enterprising student collects the examination questions for a series of years and uses them as a basis for his cramming. I have repeatedly known men who never went

to a lecture, or gave any attention to a subject save a cram two weeks before examination, to receive a higher mark than one who had studied the subject conscientiously. Some time ago I saw a great deal of two men in the second class, both good students, though they rarely went to lectures. They were once discussing their marks in a certain subject; X had received an "A," Y only a "C." X explained the matter by saying that Y was foolishly interested in the subject, and had attended everything, while he, X, had used his time intelligently for ten days before the examination. A student once came to me very much distressed about his mark. I recognized him at once as one of the constant attendants at lectures. He explained that he had coached three men for the examination, and, as it proved, only too well. One of the men had received "B," the others "C," while he had received only "D." I was obliged to acknowledge that it was a very hard case.

The practical examination was partly oral and partly written. The oral examination has much in its favor, but it is open to the objection that it gives a quick-witted man a great advantage, and it takes a great deal of time to examine a large class. It is very difficult to examine men orally with perfect impartiality and mark them correctly. The written practical examination consisted in the description of microscopical specimens.

The most unsatisfactory part of the examination was the oral examination in gross pathology. The men were given a specimen, usually a fresh one; fifteen to thirty minutes were allowed for the examination of it, and then they were questioned about it. The whole plan of the examination was to ascertain if the men really could see things, and if they could draw the proper inferences from what they had seen. Some of the men, generally those who in other ways had shown themselves above the average, did extremely well. The larger number were vague. They did not seem to be sure of anything. A small number of men were grossly ignorant. The general average of the marks given was much below that in any other form of examination. It is probable that the fault was in our method of demonstration. There was too much instruction given, and the method used in the laboratory, that of making the men do their own thinking and reasoning, was not sufficiently carried out in the demonstrations.

The highest general average was obtained from the written examination. As a rule, the men who had done the best work in the laboratory and in the practical examination received the highest marks, but there were some notable exceptions. One man, whose laboratory work averaged 8.6 on a scale of ten, and whose practical examination gave 8.5, received only four on the written. Several men received full marks on the written whose laboratory and practical work was below the average. There is some disparity between the results of marking from laboratory work and examinations by written answers to questions, but it is not so great as one would think. There is some unfairness in marking in the written examinations, because chirography and expression will always count for something. One often overlooks inaccuracy of statement if the matter written is legible and well expressed. The written examination pulled over about ten men who would otherwise have been dropped. It is possible that in another year the writ-

ten examination will be dropped or the character of it greatly changed. At the end of the strictly pathological course there were sixteen men whose work had been unsatisfactory. They were not allowed to take the optional courses in January, but were advised to review their work under the direction of instructors who were assigned to them. A personal interview was held by the head of the department with each man and an attempt made to find out the reason for his shortage. Most of them had the usual excuses of dying relatives who required their care, or of general ill health on their own part. A few were honest and said they had loafed. Eleven out of the sixteen men worked hard during the month over their past work and passed the examination, some of them receiving good marks. Five failed, being the only ones out of a total class of 157. This represents about the proportion of men who are absolutely hopeless. They do not seem to be vicious, but are incapable of mental exertion. They take no interest, and will sit for hours with absolutely vacant minds. They are unfit for medicine, or for any pursuit which requires intelligent exertion.

During January there were a number of optional courses given, which were designed to cover thoroughly subjects which were only touched upon in the general course in pathology, and which had a more direct clinical bearing than the general work. These courses were on surgical pathology, neuropathology, and the infectious diseases due to the protozoa. In the course on surgical pathology, clinical cases were seen for the first time; the various processes of inflammation, infection and wound healing, which were studied in the laboratory by lesions produced experimentally, being illustrated by similar conditions in patients. A clinic was given each morning, followed in the afternoon by a laboratory exercise at which a variety of specimens were studied illustrative of the lesions seen at the clinic. In other words, the clinic each day set the problems and aroused the attention of the students; the laboratory exercise furnished the solution.

The course on neuropathology was a very thorough one, and embraced a study of the various pathological conditions of the brain and cord. The normal anatomy of the brain and cord was repeated with the pathological. The best way to understand the nerve tracts of the brain and cord is by the study of the degeneration following interruptions of them caused by pathological conditions. In the course on protozoal diseases the lesions produced by these organisms and their life history was given. In all of these courses the laboratory work was a prominent feature, written recitations were given at intervals and an examination held at the end. Although the men understood that the courses were purely optional and the work done in them would not count for their degree, they were attended by practically the entire class, some of the sixteen even disregarding the prohibition laid upon them, and the work was marked by the same zeal and enthusiasm which characterized the work in pathology.

There are certain things which seem evident, and which have been prominently brought out in this course:

(1) That the mind of the student must be active and not passive. That he can only acquire knowledge by his own powers of observation and deduction; he cannot acquire it by being told things.

(2) That teaching should be individual as far as

possible. That the central idea should be to give opportunities to the student, and to assist him in the effort which he himself makes.

(3) That medical education should not be directed solely to teaching the medical art, but education in its true sense, the development of the individual, must not be lost sight of.

THE CASE SYSTEM IN MEDICINE.¹

BY W. H. CANNON, A.M., BOSTON,
Student, Harvard Medical School.

I wish to speak briefly of three points concerned in the use of clinical records in teaching medicine: The practicability of the method; its value from the point of view of the medical student; and what seems to me its place in a medical curriculum.

First, as to *practicability*. One of the earliest objections made to the use of cases in teaching medicine was that the plan rested upon a false analogy between the nature of cases in law and the nature of cases in medicine. It was observed that historic cases in law have had a definite bearing on the development of legal doctrine. Certain decisions made centuries ago have fixed the law for all subsequent cases of like nature, and from the study of selected aspects of such cases the student can derive for himself the principles of legal practice. In medicine, however, there is not this clear relation of particular medical cases to the historical growth of medical art. We look rather to our fundamental sciences — anatomy, physiology, pathology and therapeutics — for our principles. This difference between the relation of cases to medical doctrine on the one hand and to legal doctrine on the other is at once admitted. But the contention may be strongly held that this relation is not pertinent to the argument in favor of the use of the case system in medical schools. For the only claim made in the argument is this, — that requiring the student to do, so far as possible, the practical work of the doctor while in the medical school is very much like requiring a student to do the practical work of a lawyer while in the law school. In both instances the students deal with the problems presented by actual cases, and in a most natural manner increase their power by their own activity. It was this analogy between the possibilities of individual effort on the part of the students that pointed to the applicability in medical instruction of a method which has proved of such great value in the teaching of law.

The idea of using printed records of cases as centres of interest in studying medicine occurred to me some two years ago. Since that time I have been watching carefully for every possible opportunity to apply the method, and have tried to see all the objections which might be raised against the plan. It was only when I was fully convinced that a study of real histories could be made feasible in teaching medicine that the scheme was brought forward. The first case studied under the system was given out by Dr. G. L. Walton to a small class in neurology last December, and it revealed at once the usefulness of the plan. In January Dr. J. J. Putnam gave out printed cases in his course in neurology, and since then Dr. Richard C. Cabot, Dr. J. William White, of Philadelphia, and

Dr. C. E. Riggs, of the University of Minnesota, have put the method to test. So far as I am able to learn, there has not been the slightest difficulty in applying the plan, and its practicability in the study of medicine can be stated, I believe, as fully and successfully demonstrated.

The *value* of the case system in medicine has also been remarkably demonstrated in these last few weeks. Many advantages over the didactic lecture and the recitation system were claimed for the case method, but the peculiar merits claimed for it were the arousal of student enthusiasm and interest, the easy possibility of correlating the scientific and clinical sides of medicine, and the drilling of the mind in judging medical data. Not only have these claims been verified, but new merits, unforeseen, have presented themselves. In speaking of these matters I shall restrict myself to statements of personal experience in the exercises conducted by Dr. Richard Cabot, and to student testimony regarding these exercises. The interest which the application of the method has aroused among the members of the present graduating class in the Harvard Medical School is especially gratifying. The exercises at which these cases are discussed have the largest regular attendance of all clinical exercises in this last half of the fourth year. Again and again I have heard students say, "Why could we not have had this way before?" They attend the conferences faithfully, they state to those who are engaged elsewhere that they are missing much by not coming, they dispute and question not only one another but their instructor, they are kept alert and keen-minded throughout the whole discussion. "Conference maketh the ready man," and this is one of the chief characteristics of a good physician — he is a ready man. Yet there is nothing in listening to lectures that tends in any way to develop this valuable trait in the medical student.

Another matter which the students are learning is the judgment of clinical data, the estimation of the value of evidence. In the text-books symptom after symptom is written down, without indication of importance or weight. In considering a particular case and discriminating between the various diseases it might represent the students first begin to see what may be called the perspective of symptoms, and learn to distinguish between the important and the unimportant, the common features and the more unique.

Among the new unforeseen merits characterizing the case method is the discovery that the particular instance may be stated so vividly that it will leave in the mind a picture quite as definite and lasting as the sight of a real patient. This virtue suggests the especial use of the method in teaching the management of acute, urgent conditions, — such as alarming hemorrhages, the agonizing distress of angina pectoris, and the cutting, stabbing pains of biliary colic, — conditions which we students never see in the hospitals, and which we may be called upon at any time to treat. A simple case given out for discussion during the last ten minutes of the hour, about a week ago, will illustrate the point.

A middle-aged man was seen writhing in intense pain referred to the epigastrium. Vomiting of greenish fluid took place; there were loose discharges from the bowels, small in amount. This state of things lasted, with only short remissions, for two days, until a small dose of morphia, which, for special reasons,

¹ Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

had been hitherto withheld though asked for, was administered, after which there was complete relief for many days. The pupils were dilated, the pulse regular and of normal character. Nothing special had been eaten or drunk to cause irritation of the stomach. The abdominal walls were neither distended nor retracted, no intra-abdominal tumor was to be detected, nor was there any excessive tenderness on pressure. It was afterwards learned that he had had several such attacks, that for many months or years his legs had been weak, that he had neuralgia and numbness in them, that he stumbled in walking and staggered with his eyes shut.

Here we have a real and vivid description of a gastric crisis in tabes, made so striking that it leaves a deep and permanent impression in the memory. This case also illustrated another of the unexpected features of the case method, that of showing to the students themselves and also to their instructor what they do not know and wherein their knowledge is inaccurate. At the end of this record of a gastric crisis the question was asked, "What further examination would you make?" This one question alone showed about one-half the students present that they were entirely wrong in their memory of the Argyll-Robertson pupil, and the question further showed that a large number of the graduating class believed that the knee-jerk was ordinarily increased in tabes. These are merely instances of the state of affairs among the students which the method is bringing to light. They are going through their last year in the school ignorant of their ignorance and complacent in their false knowledge until meeting the actual conditions of real cases shows them their deficiencies. It is not to be expected that the lecture system will reveal to the students their faults. How can it do so? The students sit passively listening to their instructor; the instructor does not know whether they have understood, or learned, or are remembering; his chief knowledge of the students is derived from what they write in a blue book after cramming their minds for a few weeks with what he has told them during a whole school year. In the complexity of medicine what can such a test show?

Another merit which the actual employment of the case system has developed is the training which students get in being required to adapt themselves to actual difficulties in practice. The first case presented under this method was at the time in the private practice of the instructor, Dr. G. L. Walton. The diagnosis of cerebral hemorrhage was made by the students and the probable site of the hemorrhage located. The instructor then put the practical questions which he had had to answer for the family: "Will you allow the patient to sit up in bed? Why will you forbid him to sit up? What will you give him to eat? Does he need drugs? What will you do for him? What is the prognosis with such a past history? His wife is a nervous, imaginative woman who will worry herself to a wreck if you are not careful. What will you tell her about her husband?" All of these questions the students were compelled to answer and to give reasons for answering as they did. Now, does it not seem reasonable to suppose that by requiring such exercise of thought, and discrimination and circumspection of all the data, students are trained to greater power in studying their authorities and in increasing and applying their knowledge and in using

their judgment than could possibly be the result of idly listening to lectures?

Finally, I wish to state from the student's point of view the apparently proper place for such a method in a medical curriculum. In the argument for the adoption of the study of case histories in medicine, a sharp distinction was drawn between the two attitudes of the physician. His first work is that of the observer; he must secure his data thoroughly and skilfully, and this work is fundamental. The only adequate training for such observation is actual contact with human beings—a training which Dr. Wentworth's plan of section teaching admirably provides. But there is the other attitude of the physician, that of the careful judge who regards his data on all sides, relates it to his previous knowledge, makes his differential diagnosis, has his reasons for his prognosis and applies his rational treatment. Now, it is just this central position between the scientific work of the first two years of medical training which provides principles and theories, and the practical work of dealing with actual problems that the study of data provided in printed cases will have its greatest value. At the clinics the students are drilled by their corrected efforts to be thorough, and discriminating in their observation, and thus to secure reliable clinical data—the emphasis here is on observation. At the clinics, however, the time is not sufficient to consider these cases in all their details. This defect the case method makes good; for with the printed records in their hands the students are drilled by their corrected efforts to judge with care exactly the same sort of reliable data which their own observation has secured. The cases can be so arranged as to develop naturally the relations of the group of diseases under consideration, and the similar diseases between which distinction must be made. To these cases the students can bring all their knowledge of anatomy, physiology, pathology and therapeutics, and these subjects, which are now more like separate packets in the mind than related parts of a single system, take on a new importance and interest. The students thus fix their knowledge by unifying it, by bringing the new information into relation to that already secured. They learn the use of their authorities as books of reference, and they must study their matter from day to day, for judgment and reasoning and skill in analysis cannot be crammed in the few weeks before an examination; and finally, all this discipline has a direct value for the bedside instruction, pointing out to the student what to watch for, showing him the importance of complete examination, and teaching him how to interpret observations as they are made.

It seems to me that such a plan presents conditions worthy of an instructor with the widest knowledge of both medical science and medical practice, one who is keen and ready and accurate. In his close relations with the students in the conferences he occupies a position of far greater importance than lectures can possibly give him in securing the knowledge and skill and in determining the ideals of young men who are looking forward to the work of the physician.

A NEW INVESTIGATION OF YELLOW FEVER.—It is reported in the *Philadelphia Medical Journal* that the Liverpool School of Tropical Medicine is soon to send a commission to Brazil for the purpose of studying yellow fever.

A PERSONAL EXPERIENCE IN THE TEACHING OF SURGERY.¹

BY HERBERT L. BURRELL, M.D., BOSTON.

WHEN I was in Philadelphia in February I found that Dr. J. William White, the professor of clinical surgery in the University of Pennsylvania, had already put into use Mr. Cannon's valuable suggestion of "the case method of teaching systematic medicine." Dr. White very kindly gave me a set of his hypothetical cases and on my return I asked a few of the students in the fourth-year class to try the method.

From even this short trial I am convinced of the value of the system to the best students in the class and am confident that it is a method that will be an advance in the teaching of surgery for the average student when it is adopted as a required part of the instruction. It is this average student that at present is dissatisfied with his instruction in surgery at the school and with whom I am not alone dissatisfied but disheartened as to his progress in education. He is intelligent, painstaking, zealous in his work, but after a short time is tired, receptive only to the unique or grotesque in surgery, and often regards the most extraordinary diseases or conditions as simply of momentary interest. As a student he is sure that he is not getting what he wants, and as a teacher I am sure that he is so tiresome that I am tempted to give him up.

For many years I have suspected that the method I pursued was wrong. It was clearly not the fault of the student, for when he first came to me he was thirsting for knowledge, but in a short time he stayed away or turned indifferently from what I hoped would be an inexhaustible well of information. My attitude was wrong. The idea that I could furnish information which would indefinitely supply a vigorous mind searching for truth is to me now absurd.

The true position of the teacher is first to guide the pupil in the rudiments of the art or science, and then to inspire him (largely by force of example) to do his own work.

Even in the limited number of reports in "case taking" that have come to me from the students it is a keen pleasure to see their mental growth. There are naturally some students who object to using their reason; they believe that they are at school to be taught, but if these students can once feel the pleasure of creative work they will quickly come into line, and if they cannot be made to do so they will fall into empiricism.

In the month of January of this year, Dr. E. H. Nichols and I gave a course in surgical pathology. The students of the second year had finished their course in general pathology and elected this optional course. I hoped to unite the clinic with the laboratory, and to make it obvious to the student that the knowledge obtained in the laboratory was abstract unless applied to the living patient, and that the knowledge obtained at a clinic was empirical unless the laboratory furnished an explanation of the principles of surgery. The course was arranged so that a clinic was held every other morning and a laboratory exercise was held every afternoon.

Incised wounds were shown in the morning at the clinics on January 3d and 5th, and laboratory demon-

strations of prepared specimens of incised wounds of the rabbit's ear, the rabbit's tongue, and human incised wounds, were shown on January 3d, 4th and 5th.

Dr. Nichols prepared a syllabus of surgical pathology which was bought by the students. At the clinics cases illustrating the different types of the disease or injury under consideration were carefully planned for weeks ahead. Dr. Nichols collected pathological material for "slides" for months ahead. We were thus able to show to the student the principal foundation subjects of surgical pathology on the living patient and in gross and microscopic pathology.

The schedule on next page gives the arrangement.

At both the laboratory and the clinic the students were, after a few words of explanation, given the problems to work out themselves. At the clinic this was often difficult, but usually, after explaining a series of cases for perhaps twenty-five minutes, the rest of the hour the students were allowed to examine the patients under the supervision of the house staff. And here, to me, was the interesting point; the keen interest, the searching questions, the self-reliant reasoning on the part of the students was something I had never seen before in the average student. In every class of students there are bright minds that work out problems themselves, but here even the average student was imbued with the principle that to learn one must actively acquire, not passively receive. To me this was very marked, and all of my house staff said they wished they were back in the school.

The total number that elected the course was 127; the highest attendance was 122; the lowest attendance was 101; the average attendance was 115. The number of men who presented themselves for examination was 108, and this was remarkable because the whole course was voluntary. The men seemed to wish to test themselves to know what progress they had made. Had the examination been compulsory I should have conditioned only four men.

Dr. Nichols conducted an examination on his laboratory work and it was very satisfactory. I regret that he is abroad and is not co-operating with me in this report of our course in surgical pathology.

The secret of progress in these students was their being given an opportunity to acquire, not alone receive, knowledge.

As a matter of interest, I have tried the same method of allowing students to acquire knowledge with some of the fourth-year class. I have had to give it up, as it was clear that they had been what I term "spoon fed." The average student in the present fourth year is not mentally as self-reliant as the average student in the present second year. This I believe is due to the principle of teaching that has been carried out in the course in pathology. It may be said that this is impractical to carry out in the teaching of surgery. It seems to me that, with certain minor modifications dependent upon using human beings instead of dead material, the general plan of making the student acquire knowledge instead of receiving information is the great step that can and should be taken in teaching surgery. This, however, is only a part of the advance that should be made; the required knowledge should be sharply defined and made obligatory. The elective part of surgery should be made very broad and elastic.

¹ Read at a meeting of the Boston Society of Medical Improvement, March 5, 1900.

If proper facilities are afforded students to acquire knowledge, as has been so suggestively planned by Dr. Wentworth, in sectional teaching they can be taught to observe accurately and reason clearly in actual contact with the patient. But to me the most suggestive advance will be the use of the "case method" of

section work to continually go back to the principles in interpreting clinical phenomena. So that when a practitioner treats a case of intestinal obstruction he will revert to the foundation principles of the anatomy, physiology and pathology of the intestinal tract. He will then be a practitioner whose knowledge

Date.	Day of Week.	Clinic.	Laboratory.	
January 3.	Wednesday.	Incised wound.	Rabbit's ear.	Healing of wounds, incised. Experiment: Ear of rabbit, 2 days, 6 days, 14 days, 22 days.
" 4.	Thursday.		Rabbit's tongue.	Healing of wounds, incised. Experiment: Tongue of rabbit, 24 hours, 3 days, 8 days, 10 days.
" 5.	Friday.	Incised wound.	Incised, human.	Healing of wounds, incised. Human, 12 days, 14 days, 14 days, 6 months.
" 8.	Monday.	Incised wound, internal.	Incised wound, internal.	Repair of wounds of intestine. Human, 48 hours, 4 days, 10 days.
" 9.	Tuesday.			
" 10.	Wednesday.	Granulated wound.	Granulated wound, rabbit's tongue.	Healing of wounds, granulating. Experiment: Tongue of rabbit, 48 hours, 6 days, 10 days.
" 11.	Thursday.		Granulated wound, human.	Healing of wounds, granulating. Human. (1) Infected muscle of rabbit, 14 days; (2) repair of muscle, 7 days; (3) human, 14 days; (4) chronic ulcer; (5) duplicate ulcer, 4 weeks.
" 12.	Friday.	Sutures.	Sutures, silk.	Sutures, silk. Experiment: In rabbit muscle, 48 hours, 6 days, 10 days.
" 15.	Monday.	Fractures.	Sutures, catgut.	Sutures, catgut. Experiment: In rabbit muscle, 48 hours, 6 days, 10 days.
" 16.	Tuesday.		Fractures.	Repair bone, compound drill hole, rabbit femur, 48 hours, 6 days, 8 days, 14 days, 22 days, 50 days.
" 17.	Wednesday.	Abscess and diffuse suppuration.	Abscess.	Abscess formation: Staphylococcus, furuncle, carbuncle, chronic abscess, catgut suture, abscess, 6 days.
" 18.	Thursday.		Erysipelas and lymphangitis.	Diffuse suppuration: Streptococcus, lymphangitis, erysipelas of scalp.
" 19.	Friday.	Appendix.	Appendix.	Appendix: Acute, subacute, chronic, tubercular.
" 22.	Monday.	Osteomyelitis.	Osteomyelitis.	Osteomyelitis: Acute, subacute, chronic.
" 23.	Tuesday.			
" 24.	Wednesday.	Tubes and ovaries.	Tubes.	Diseases of Fallopian tubes: Acute salpingitis, subacute salpingitis, chronic salpingitis, tubercular.
" 25.	Thursday.		Ovaries.	Diseases of the ovaries: Retention cyst, papillary adenocyst, malignant adenocyst, mixed tumor.
" 26.	Friday.	Lymph nodes.	Lymph nodes.	Diseases of the lymph nodes: Acute inflammation, sarcoma, cancer, tubercle.
" 29.	Monday.	Breast tumors.	Benign breast.	Diseases of the female breast: Benign, Acute mastitis, adenomyxofibroma, intracanalicular, papillary, adenomyxoma, chronic mastitis.
" 30.	Tuesday.		Malignant breast.	Diseases of the female breast: Malignant, medullary cancer, scirrhus cancer, malignant adenoma, invasion of pectoral muscle, small round-cell sarcoma.
" 31.	Wednesday.	Tubercular bones and joints.	Tubercular bones and joints.	Tubercular bones and joints: Primary, focus epiphysis, tuberculous synovial membrane.

teaching surgery, for it will oblige men to observe accurately, to record carefully, to continually go back to their foundation studies for the principles of surgery, and it will call forth all the student's power in an analysis of his case.

In surgery this is to me imperative. There is a great deal of glamor about operative work; the results are brilliant, and the student is apt to deem surgery simply a question of cleanliness and operating. In fact, surgeons of to-day do not hesitate to say that they do not make diagnoses; they simply operate. This tendency for surgeons "to work more with their hands than with their heads" is fraught with danger to the true advancement of surgery on a secure scientific basis. The "case method" system and sectional teaching will counteract this danger and will oblige students to use their brains, not alone their hands.

The advance of teaching in the first and second years has been along the lines of concentration and sequence. The advance of teaching in the third and fourth years should be along the same lines of concentration and sequence, plus electives and co-ordination of teaching subjects. The foundation principles of anatomy, physiology and pathology should be carried into the teaching of surgery in the third and fourth years, not by the foundation teachers but by the students being taught in their "case taking" and

is drawn from known scientific facts and not a mechanical operator or an "up-to-date," "last remedy" practitioner.

A CONSIDERATION OF THE PRINCIPAL OBJECTIONS TO "SECTION TEACHING," TOGETHER WITH SOME OF ITS ADVANTAGES.¹

BY A. H. WENTWORTH, M.D., BOSTON.

THE greater part of my recent article on "section teaching"² was devoted to the consideration of a method for teaching sections and to the description of a system of rotation. In the present paper I shall consider the chief objections to section teaching, together with some of its advantages.

OBJECTIONS.

(1) The most important objection is that a large number of additional instructors will be required. This applies especially, so far as the Harvard Medical School is concerned, to instruction in clinical medicine, because in this department the time of the present instructors is fully occupied. If the system which I have described were adopted without any al-

¹ Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

² Boston Medical and Surgical Journal, February 15, 1900.

teration in the apportionment of sections, it would necessitate the appointment of eight additional instructors in clinical medicine. It is necessary to hold an appointment in a hospital in order to utilize the patients for purposes of instruction and it would be difficult, or perhaps impossible, to find eight men with hospital appointments who were qualified to teach clinical medicine. In addition to this the question of expense to the department would have to be considered. These difficulties can be surmounted in a great measure by making alterations in the assignment of sections. In order to give a clear idea of the system of rotation, it was necessary to make a provisional apportionment of the sections, and it was anticipated that alterations would be made in this arrangement. One change which could be made would be to assign four of the eight sections in clinical medicine to neurology and dermatology. This would reduce the number of additional instructors in clinical medicine to four. It might be desirable or necessary to limit the number of exercises to two or three times a week for the first year or two. These changes would not affect the system of rotation in any way.

(2) It has been suggested that section teaching, supplemented by text-books, ought to be substituted for clinical lectures. If this suggestion were adopted, it would be a very important objection to section teaching. In a two-hour course in clinical medicine, or its branches, the student should be given three-quarters of an hour in which to examine the cases without any assistance from the instructors. Most of the remaining time should be spent in correcting observations; in permitting the students to examine abnormalities in the cases which they have not seen; and in discussing differential diagnosis. In the few minutes which are left the instructor can give but a brief description of the diseases which have been diagnosed. It is beyond the powers of an average third-year student to obtain the requisite information from text-books. It demands considerable practice and knowledge of medicine to enable one to pick out the essentials from a text-book. The students have but a limited amount of time in which to study several subjects and it requires a great deal of time *merely to read* a text-book. Instruction is given in so many subjects in the course of a year that it is only fair to the students to help them to economize their time. This cannot be accomplished by compelling them to acquire their knowledge from books that are intended for collateral reading. The professor should be qualified through his reading and experience to prepare a set of lectures that will supply the deficiencies of section teaching. These lectures should be clear and concise and should emphasize the essentials in a way to impress the students. This result cannot be obtained by lectures that resemble monographs in comprehensiveness. Still another reason for giving lectures is that a knowledge of diseases and of the results of treatment derived solely from the study of hospital patients is incomplete because of the variations which are met with among patients of better social condition. This knowledge can be supplied by the professor, together with many valuable suggestions about the treatment of patients in private practice. The lectures should be given in hospitals so that patients can be utilized for purposes of illustration. The students should take careful notes for future study.

(3) Another objection that has been suggested is

that such a system of teaching might prove injurious to the patients. In answer to this it may be said that examinations of patients by students are always made under the supervision of instructors; that *critical* cases are never assigned to students, but are shown by the instructors themselves; that discomfort to the patients can be avoided by a few words of warning; and that only a limited number of students examine each patient, whereas on ordinary ward visits as many as twenty or thirty students examine the same case, of course not so thoroughly.

(4) The suggestion that a lack of clinical material may interfere with such a course cannot be regarded as a serious objection when one considers the number of patients that are treated annually in the wards and out-patient departments of the various hospitals.

ADVANTAGES.

The chief aim in section teaching should be to oblige the students to do most of the work. They should learn systematic methods of physical examination and should be required to state the results of their examinations. They ought to be able to make provisional diagnoses from the results of these examinations and to give their reasons for the same. The instructors should correct errors in examination and should criticise the deductions which are made. The entire section should take part in the discussion.

The result of this method of teaching is that the students learn systematic methods of examination and acquire accuracy of observation. They are made to think for themselves and to express their opinions before other students. One of the best ways for gaining a clear idea of a subject is to try and explain it to some one else. It stimulates ideas and teaches accuracy and clearness in description. The students take the greatest interest in this sort of work and it is surprising to see how rapidly they improve. If the method of rotation which I have described were adopted without any alteration in the apportionment of sections, or in the number of exercises, each student would examine 192 medical patients, 96 surgical patients, and 48 children, and would visit the contagious wards eight times in an average school year of thirty-two weeks. It would be difficult to overestimate the value of such a course when combined with competent instruction.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, March 5, 1900, Dr. E. H. BRADFORD in the chair.

The general subject discussed at this meeting was

SOME ADVANCES IN MEDICAL INSTRUCTION.

Dr. WILLIAM T. COUNCILMAN described THE COURSE IN PATHOLOGY AT THE HARVARD MEDICAL SCHOOL.¹

PRESIDENT ELIOT, of Harvard University, spoke on

¹ See page 558 of the Journal.

THE INDUCTIVE METHOD APPLIED TO MEDICINE.²

DR. HERBERT L. BURRELL gave

A PERSONAL EXPERIENCE IN THE TEACHING OF SURGERY.³

DR. ARTHUR H. WENTWORTH read a paper entitled

A CONSIDERATION OF THE PRINCIPAL OBJECTIONS TO "SECTION TEACHING," TOGETHER WITH SOME OF ITS ADVANTAGES.⁴

MR. W. B. CANNON read a paper on

THE CASE SYSTEM IN MEDICINE.⁵

PROF. JAMES B. AMES: When your President asked me to say something about our method of legal education at Cambridge I thought I could not do better than read a few pages of a paper I prepared recently on the subject of legal education and then add a few words as to the history of the new method, as it is called, at Cambridge.

The gist of the whole matter, as we look at it at Cambridge, is that the student should be made to do his own thinking at the very outset. The first three or four weeks with most students is pretty blind work and very often the student gets a little discouraged, but I think it is always very encouraging when he is a little discouraged. It is very much like the conviction of sin that precedes righteousness and almost always the man who has any real stuff in him gets over his discouragement in the second or third month. He is taught from the first to think for himself, to accept nothing from the professor on his *ipse dixit*, but to subject the professor's opinion to the test of his own criticism. The student is encouraged to express his views and I always consider those the most successful hours in my classes in which I say the least. It is my object to make the men talk, to discuss with each other, to discuss with me.

Just a word as to our experience in the introduction of the system. It was wholly original with Professor Langdell. In one sense there is nothing new; in another sense it is very decidedly new. It is simply the application in a systematic way of the method which a successful lawyer employs in dealing with his actual cases in litigation. When he has a case he goes to the original sources, the reports of previous cases and studies those cases until he is satisfied he has the principle. His work is necessarily sporadic, being determined by the cases that his clients happen to bring to him.

In the Law School we endeavor to deal with the branches of law systematically. When the inductive method, as applied to law, was first introduced by Professor Langdell very few lawyers in Boston had any confidence in its success. Very many were outspoken in opposition to it. I remember very well the first hour of Professor Langdell's course. The whole school was assembled. At the second lecture I think there were not over a dozen; the rest had seen all they wanted of the case method; the number dropped to seven and we seven were opprobriously styled "Langdell's freshmen." The class increased during the year. Towards the end we had twenty-five to thirty.

² See page 557 of the Journal.

³ See page 565 of the Journal.

⁴ See page 568 of the Journal.

⁵ See page 563 of the Journal.

The next year the proportion increased and at the end of the third year the school was about equally divided and there was a good deal of feeling among the students. In 1873 Professor Langdell was reinforced by another instructor who adopted his method and for several years there were two professors teaching his method and two teaching in the lecture way, and on the whole during the next four or five years there was a considerable gain among the students in favor of the new method. And, finally, about twelve years after Professor Langdell came, another one of his pupils was appointed who taught in his method and from that time on the great majority of the students had confidence in that method and not so much in the other, and gradually the two professors who had formerly taught in the old manner without any pressure adopted the methods of Professor Langdell, and to-day every one teaches in that way. I think it may be said that in this community at least the lawyers have come to believe also that that is the wisest way to proceed. Most of the objections to-day spring, I think, from misconception. Some persons still suppose the case method to mean simply familiarizing one's self with a certain number of adjudicated cases so that one would be a case lawyer. But it is now generally understood that the object of the inductive method is to develop intellectual self-reliance by showing the genesis and growth of the legal doctrines.

I was much interested in Mr. Cannon's paper. You have, in the hospital records, reported cases which correspond very much to legal cases. As I understand those reported medical records you have all the facts of the case and, what corresponds to our adjudication, the treatment of the case by the physician. I do not see, therefore, why the study and discussion of a wisely chosen collection of these medical cases should not be followed by the eminently satisfactory results which the study of law cases has accomplished for the law students.

DR. F. C. SHATTUCK: The proverb says, "Blessed is he who expects nothing, for he shall not be disappointed." I think I must be twice blessed, for I came to this meeting expecting *something* and have not been disappointed. I have been greatly interested and instructed. The fermentation now going on in medical education and its methods cannot fail to do much good.

Dr. Wentworth and Mr. Cannon have so clearly and frankly stated alike the advantages of and objections to section work and the case method that little remains for me to say. The fact that the Harvard Medical School has no hospital of its own, not even an out-patient clinic, is an obtrusive fact. However welcome, the school is still a guest of the hospitals and must adapt itself to rules and regulations which are not necessarily uniform. How much can be put into four years of undergraduate study? What are the limits in each branch of study of the essential and non-essential? What is the relative value of each branch and how should the time be most wisely apportioned between them? These are all questions which are worthy of much careful study.

The case method is now in use in clinical medicine. If it does nothing else it ought to prepare men to better pass their examination in clinical medicine, the paper consisting in the statement of three actual cases precisely like those proposed by Mr. Cannon for teaching purposes.

DR. MORRILL WYMAN, of Cambridge: Some of the things brought out in this discussion are very interesting to me. With regard to medical education in the past, my instructor in medicine (Dr. William Johnson Walker) was a graduate of Harvard in 1810; a student in the Massachusetts Medical School, as it was then called, and received the degree of M.D. from Harvard College in 1813; while yet a medical student his "Dissertation on Epilepsy" won the Boylston Medical Prize. His post-graduate course was pursued in Paris at La Charité, in the clinical ward of Corvisart, Napoleon's physician, who had then recently translated and commentated Anenbrugger's work, "The new method of recognizing the internal diseases of the chest by percussion of that cavity." Corvisart taught percussion and extended it to the abdomen; he went still further, he urged with great earnestness what he called "the medical education of the senses" as a necessity for success; he illustrated its importance in many practical ways. Laennec was then lecturing at La Charité on pathological anatomy, in noble rivalry with Dupuytren, then lecturer on the same subject at PHôtel-Dieu, and collecting specimens for his great museum of osteology. Laennec was meanwhile listening at the chest and collating what he heard with what he saw at the autopsy; six years later at the Necker Hospital he invented auscultation; it is hard to see how it could have been done in any other way. My instructor came home, his mind filled with the idea of this new method of education so constantly urged upon him and which, as I understand it, was what is now going on here, with far better means and opportunities, and from which much may be reasonably expected. He settled in Charlestown, and offered himself as a physician and surgeon, and also as a teacher. He became eminent in all three departments; as a teacher he probably had more pupils than any other physician in New England, not connected with a hospital. After acquiring a high reputation, and after thirty years of laborious service in his profession, he withdrew — as the Norse sagas say, "he went out of the story." When he next appeared it was in "political economy," which, like medicine, may be viewed as a science and as an art. "It teaches the production and accumulation of wealth and also the distribution of it most favorable to the happiness of mankind." Dr. Walker proved eminent in both. What he acquired he was very anxious to use for the purpose of increasing the proportion of medical education of this particular kind, that is, "the medical education of the senses," in the medical curriculum. He applied to Harvard College to allow of its introduction into the Medical School. This was about 1860. Harvard College did not see the way to grant the application. Dr. Walker said, "I will make over to you \$135,000, which is what remains of my professional earnings, if you can adopt this new system." The school was then giving six lectures daily to their students, who were worn out with words without receiving the instruction they most needed. The college saw no way of altering this state of things. Dr. Walker said he did not think that of the gentlemen then in office all would find it agreeable to them to carry out the change he wanted to make. The College did not see how anything could be done then, but in ten years could bring this change about. Dr. Walker said: "Very well, the offer shall stand open for ten years." But the President said, rather tenta-

tively, "Would it not be well to make this arrangement now, and let us carry it out ten years hence?" The answer was characteristic: "You come where I am. I shall be very glad to see you then." In the meantime Dr. Walker passed away and the money went elsewhere.

DR. RICHARD CABOT: There is one point not yet emphasized as much as it should be in regard to this case system and that is the *pleasure* of it. The touch with the men is delightful. They answer up in a way I never heard them in any other course, because questions are thrown at them so constantly that they must be wide awake and because they are vitally interested in the story of the case. They want to know how it is coming out. It is the easiest and pleasantest method of teaching I have known anything about.

DR. J. J. PUTNAM: The changes that have been made and those suggested in the work of the Medical School have been exceedingly fruitful, and this evening is a very proper commemoration of them. I was very glad to adopt as soon as I could the method suggested by Mr. Cannon, and I should like to say a single word about a modification of the recitation system which I had adopted the previous term, and which I think contains some of the merits of the case system. This consists in the giving out of printed questions which are afterward discussed. The design in the beginning was to cover a definite course as rapidly as possible, in order that the student should have a bird's-eye view in a systematic way, and I therefore began by making the questions correspond closely to the text of Osler's "Practice of Medicine." More recently, however, I have begun to arrange them so that they call attention to particular points or groups of difficulties, and I believe that in this way it is possible to accomplish a great deal which one cannot accomplish by simple recitations following strictly the pages of the text-book. It is true that the printed questions have not the living interest that attaches to the descriptions of actual cases, but in some respects they are better. I do not believe that the students appreciate the value of these important changes nearly so much as those of us who have striven conscientiously and at the expenditure of much time to bring the rich and varied material of our hospital services before the students, and have now to look back on much of our labor as having been expended in vain. We have brought much water to the students, but have often failed to make them drink.

DR. H. P. BOWDITCH: I should like to bespeak the help of the gentlemen who believe in this new method in doing missionary work amongst those who do not. I think we have a little uphill work ahead of us. It is not always as easy as might be imagined from what we have heard this evening. Professor Ames has told us what difficulties beset the introduction of the new system in the Law School. That there is difficulty ahead of us, I think a letter I received to-day will indicate. The writer has failed to comprehend what we are trying to do, and I have no doubt other men are in the same situation. It is therefore necessary, I think, for us all to see what we can do to remove such misapprehension.

I wish I could speak of physiology as Dr. Councilman has of pathology, but we have not got far enough. The first trial has lasted only about four weeks, but so far everything has gone well. The men seem to be very much interested in their work, and I have no

doubt the system will work as well in physiology as in pathology and anatomy. The main advantage of the system is that it teaches men to think for themselves. I want to say one word about the possibility of teaching men to think for themselves by other methods as well as by case teaching. Dr. Weir Mitchell says the true lecture is one which teaches men to think along correct lines. A lecture is not simply a storehouse of information to be imparted to students. In a recitation, too, the pupils may be taught to think for themselves. I shall never forget the look of astonishment that came over one of my students many years ago, when, in the course of a recitation, he asked me some questions, and I put the evidence before him as well as I could and told him the pros and cons of the case. I then said: "On the whole, I think the weight of evidence is in favor of this view; don't you think so?" The idea that I, a professor, should ask him what he thought about the question was a very salutary mental shock to him. That sort of instruction is a very useful thing for anybody. I am inclined to think that teaching men to think is not an advantage exclusively of the case method or any other method of instruction. It is the object aimed at by all good teachers, whatever methods they employ, and men are more important than methods.

DR. C. M. GREEN: It is a considerable satisfaction to me to see the present interest in the case method of teaching, because I have been using this method for a number of years. In the year 1890 I obtained permission of the Faculty to give, once a week, a voluntary exercise in the Medical School, to be known as an obstetrical conference, to enable me to test and develop the methods I had gradually adopted in the course of my private summer teaching. The following year the Faculty made this exercise a part of the regular instruction in obstetrics; and for the last five years I have used the case method also in my gynecological teaching. This method is very properly employed in a variety of ways according to the object in view, and with reference to the other forms of instruction in the same department. In the obstetrical teaching at the Harvard School the case method is used in three ways: (a) Each student is required to attend at least six cases in labor and convalescence, and to make a full report of his cases; (b) he is given clinical instruction on at least one of his cases, and generally he receives advice, assistance, or clinical teaching on several of them; (c) he has an opportunity of attending once a week a conference at which reports of cases that have been attended by himself or by his classmates are read, discussed and criticised.

The cases read at the conferences are selected with a view to illustrating the principles previously taught in the didactic lectures and recitations; so that all the students are presumably competent to understand and discuss the cases, and some members of the class have had similar cases and are able to contribute their experiences. The reader is freely questioned, made to defend his statements of fact and opinion, when they meet with criticism, and asked to give his reasons for the course pursued. The instructor presides as a moderator, guides the discussion into useful channels, questions the reader on points not drawn out by the class, answers questions inadequately answered by the reader, elucidates matters imperfectly understood by the class, and finally gives a synopsis of the most important teachings of the cases presented. Effort is

constantly made by the instructor to avoid giving a direct answer to questions asked him by the class, and to elicit the desired answer from the reader or from some other member of the class by the Socratic method of asking questions that will ultimately bring out the wished-for information. This method keeps a class alert and interested, and makes the student think. A conference thus conducted is both a lecture and a recitation, with an actual case or cases for a text, with this difference, however, that the leader and the class chiefly do the talking, while the instructor guides, controls, assists. In my experience this method of case teaching has proved very profitable. It does not seem to me that it should take the place of the didactic lecture and the recitation; but I believe it to be a valuable adjuvant to the older methods of teaching.

DR. C. B. PORTER: I have had no experience in this case teaching as represented to-night, but President Eliot spoke of the subject of section teaching. In that, I have had experience some years. It has seemed to me most valuable, and one I hope will be introduced more fully in the future study of clinical surgery. There is another exercise I have conducted a number of years, which, it seems to me, is bringing the students in direct contact with the patient; that is what is called in the catalogue the diagnosis clinic. A certain number of cases are selected and brought into the amphitheatre and two or three or four students are assigned to examine those cases with great care, have nearly three-quarters of an hour to do it, and the other students can see the cases. Then the students to whom they have been assigned are asked to give the history, diagnosis and treatment, and the class are invited to criticise or ask questions, and I finally tried to clear up any of the doubtful points in connection with the diagnosis. The one thing that has been gratifying to me is that whereas in the spring my conference dwindles somewhat in numbers, this class always increases. Year after year when the men are "cramming" for examinations, I say: "Do you want another week?" And they raise their hands and say they will come, and that to my mind has been the most satisfactory part of my teaching for a number of years.

DR. P. C. KNAPP: I have a little fear that, in the enthusiasm which this form of the method is exciting, we may lose sight of the other most important factor. As yet I have not adopted this form of the case system, so that I cannot speak from experience of its merits or demerits; but we must first teach the student how to observe, so that, by this method, there is considerable danger of slighting the instruction in the observation and the actual examination of the living patient, in which, in my experience, I have found the students of the fourth year, as they came to me, sadly deficient. Men come with quick, correct knowledge, which they may derive from this case system, in just what diseases we find the knee-jerk is present or absent, or in just what diseases there is reaction of degeneration, and yet these same men are quite incapable of making any accurate observation of the knee-jerk or the electrical reactions. That is an element in our teaching which must be accomplished before the case teaching can be brought fully into play.

DR. G. L. WALTON: The special form of conference suggested by Mr. Cannon appeals to me strongly.

I allude to the distribution among the students of sheets containing the history of an actual case, with unrestricted opportunity to study the case for perhaps a week, followed by a general debate. This exercise should supplement, not supplant, the clinical lecture, and the practical instruction in physical diagnosis and history taking. Its use is best adapted, perhaps, to an advanced period in the course, its object being to crystallize the knowledge obtained through other sources. The clinical conference, as ordinarily practised, is a step in the same direction, and serves to make the student conducting it thoroughly familiar with his subject, but in this form of conference there is a certain lack of interest and of stimulus to original thought for the other students. The exercises of Dr. Green have the decided advantage over the usual variety of conference that the case presented by the student is selected with special reference to the familiarity of the other students with the subject. The peculiar advantage of the special method advocated by Mr. Cannon is that the students have all become familiar with the details of the same case, and have the attitude rather of consulting physicians than that of the physician whose opinion is asked upon a case in the practice of another physician, a case which he has neither seen nor had opportunity to study. Again, the student learns by this method to use text-books as they are really used in practice. The student has learned, for example, that tumor of the brain is accompanied by headache, vomiting, and a long list of other symptoms, including optic neuritis; he has learned similarly the symptoms of abscess of the brain, with the statement that optic neuritis is rarely present; this knowledge first becomes fixed in his mind by the study of an actual case which suggests both tumor and abscess, the symptom optic neuritis being perhaps absent; the text-book is now consulted with a new interest regarding the frequency of optic neuritis in each of the diseases suspected.

It has been objected to this plan that the student must depend upon another's physical examination and history. This objection implies that such a conference is expected to replace instead of to supplement other modes of instruction. President Eliot has referred to the three main aims of education: (1) Training the observation; (2) teaching how to record observations, and (3) practice in drawing logical inferences. It is to the third of these functions that this method is especially adapted; it assists perhaps also in the second, and it is fair to add that the interest stimulated leads to more careful observation in the next analogous case, thus indirectly strengthening the first. In the single experience which I have had with this method the interest in the subject was lively, and the case was sifted more thoroughly than any other in the course.

DR. A. H. WENTWORTH: From the remarks which have been made this evening there seems to me to be a tendency to regard the case method as a substitute for section teaching. As Mr. Cannon has said, the case method of teaching can never replace the actual examination of patients. It is simply intended to supplement section teaching. The ability to make an accurate physical examination can be obtained only by long practice. The knowledge thus gained is essential in order to make correct deductions. It is necessary, therefore, that each student should have a great many opportunities to examine patients. This can be

accomplished only by means of section teaching. There can be no doubt that the case method of teaching will prove to be of the greatest value, but in my opinion it should be taught in the fourth year and not in the third.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

SEVENTEENTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 1, 2 AND 3, 1909.

FIRST DAY.

The meetings of the Association were held in the banquet room of the Arlington Hotel. The first session was called to order by the President of the Association, DR. ABRAHAM JACOBI, of New York, on Tuesday, May 1st, at 10 A. M., who delivered the opening address on

HEART LESIONS IN INFANCY.

He cited cases which had come under his observation showing that functional heart murmurs do occur in infants under two years, some noted authorities to the contrary. Extracardial murmurs are very infrequent under two years. When deposits are near insertions of the valves, no murmur may be heard at all. Endocarditis is frequent at an early age, but compensation is quite readily established.

The following papers were read by title:

"The Modern Physician's Duty to his Tuberculous Patients," DR. FREDERICK I. KNIGHT, of Boston.

"The Construction and Management of Small Cottage Sanatoria for Consumptives," DR. ARNOLD C. KLEBS, Chicago.

DR. R. C. NEWTON, of Montclair, N. J., gave a

REPORT OF CERTAIN CASES OF TUBERCULOSIS WHICH WERE APPARENTLY DUE TO THE NATURE OF THE SOIL.

He gave a history of four families whose family history showed no tuberculous taint, but who had several cases of it in the family after living in damp houses, or houses with damp cellars. The tubercle bacillus may be found in healthy organisms, which can resist it. Let the subject's vitality be lowered and his resistance decreased, and he is much more susceptible to infection; damp places tend to do this, hence the danger. It is far easier to remove the conditions causing the disease than to cure it when it has a start. The problem is that of improving surroundings and sanitation. Good drainage has been shown by statistics to decrease tuberculosis; no climate, however good, is proof against filthy soil. Houses should have dry cellars and sandy subsoil, and be away from swamps.

DR. LEONARD WEBER: In New York we find it is not so much the soil as the crowded condition of the people and their unsanitary ways of living that cause the spread of the disease by rendering the soil of the body good for the attack of the bacilli. Dampness does not increase danger of infection, but decreases powers of resistance. The paper showed the necessity of getting rid of the overcrowded tenements.

DR. N. S. DAVIS said that acquired tuberculosis is most favored by poorly ventilated rooms and imper-

fect exercise, and badly ventilated lungs, which need ventilation as well as rooms.

DR. C. L. TURNER spoke of the great neglect of proper hygienic and prophylactic measures among all classes in this country, and urged that it was the duty of the physician to look after his patients in these respects while they were well, as much as to attend them when actually sick.

DR. E. R. BALDWIN: Moisture keeps the tubercle bacillus alive, and drying kills it; this may also enter into the cause of tuberculosis among those living in damp houses.

DR. JUDSON DALAND spoke of the recent appearance and rapid spread of consumption in Iceland, attributing this to the dampness, fog and winds.

DR. NEWTON ended the discussion by illustrating from his own experience how moisture could collect under the floor of a tent close to the ground, even in a very dry locality.

DR. CHARLES DENISON, of Denver, read a paper entitled

EDUCATIONAL AND LEGISLATIVE CONTROL OF TUBERCULOSIS.

He discussed at some length the degenerative effects of deficient ventilation and defective heredity, and showed how this condition, by inducing deficient pulmonary air and blood circulation, leads to auto-infection. He took a sample room, such as most persons occupy, and pointed out the usual defects in ventilation, then passed on to a discussion of what he termed the "life of the air," which he said exists chiefly in its motion, which, with its light, heat and electrical power, comes from the sun, and the force of which is annulled by the imprisonment of the air through defective ventilation. Thus a gradual loss of vitality is brought about. This is the unified predisposing cause, anterior to the bacillus of tubercle, which will explain alike the origination of tuberculosis in animals, fowls and men. Dr. Denison closed by urging legislation requiring proper ventilation, courses for the study of methods of ventilation in all advanced schools and colleges, and governmental investigations as to the best ways and proper and necessary limits to ventilation.

DR. B. ROBINSON spoke of women's long skirts being an important factor in the spread of the tubercle germs.

DR. C. E. EDSON said that the bacillus alone, dampness alone, or bad ventilation alone, would not produce the disease.

DR. W. F. R. PHILLIPS said that the changes in the life of the air were attributed by some to increased temperature and humidity and presence of CO_2 .

DR. S. G. BONNEY, of Denver, read a paper on

SOME PHASES OF THE TUBERCULOSIS PROBLEM IN COLORADO.

In this paper the author pointed out the injustice done to Colorado by statistics which apparently showed an increase in the number of those becoming consumptive in that State, and showed that the actual increase was very slight. He noted the number of tuberculous children, and the comparative frequency of tuberculous meningitis. The influx of consumptives from other States complicates the problem.

DR. J. C. WILSON said that often climatic treatment was available in the region where the individual lived, without the risk and expense of a long trip.

SECOND DAY.

In the absence of DR. JACOBI, DR. BABCOCK, of Chicago, opened the meeting.

DR. ARNOLD C. KLEBS, of Chicago, who was not present at the first session, when his paper was due, read a paper on

THE CONSTRUCTION AND MANAGEMENT OF SMALL COTTAGE SANATORIA FOR CONSUMPTIVES.

He said that the chief purpose of small sanatoria was to scatter institutions for consumptives throughout the country, and their chief advantages the wholesome, regulated diet, arrangements for an abundance of fresh air, cheerful surroundings and proper exercise. He advocated making the exercise of a useful but mild character, like gardening. The sanatorium should be located in the best possible spot, and near a large city, where good markets are available. The speaker then gave a sketch of how such cottage sanatoria should be built, and showed diagrams of some already in operation. The usual plan is to have a long building forming an obtuse angle, the part within the angle forming a sheltered court with porches, and suitable as a place for outdoor exercise for the patients, or two or three cottages connected by galleries adapted to our double season, enclosed and sunny in winter, and with removable sides and roof for summer. The management should be under one skilled head, with authority over the patients, and the patients should have practical hygienic instruction.

DR. H. P. LOOMIS called attention to the immense expense of the plan suggested, which was all right for people of means, but impracticable for the majority. He further said there was no doubt as to the advantages of the sanitarium treatment, and deplored the fact that we in this country were so far behind other countries in this respect.

DR. C. F. MCGAHAN advocated very small sanatoria, where the doctor in charge can see each patient at least twice a day, and personally supervise their habits and exercise. He said it could be done for eight to nine dollars a week per capita.

DR. E. O. OTIS believed that the future treatment of tuberculosis would be by sanatoria, and stated that a year ago Massachusetts voted \$175,000 for a sanatorium, and had just recently voted \$150,000 more to build another.

DR. EDSON also objected to the plan proposed by Dr. Klebs, on the ground of expense, and suggested that every doctor could carry out the sanitarium principle, by a one or two patient sanitarium, located in a carefully selected house under proper management.

DR. BALDWIN stated that at Saranac the expense per capita was from seven to eight dollars a week, but that Dr. Trudeau did not receive any compensation out of this.

DR. NEWTON thought that it would be a good thing for those of little means with incipient tuberculosis to go on four or six weeks' tramping tours under a competent head, as this sort of outdoor life would stimulate the vital functions.

In rebuttal to the objections to his plan on the ground of expense, DR. KLEBS said the project he proposed was merely a cheap boarding-house, three cottages connected by galleries and built with a special view to their use.

Dr. H. P. LOOMIS, of New York, gave

SOME PERSONAL OBSERVATIONS ON THE EFFECT OF INTRAPLEURAL INJECTION OF NITROGEN GAS IN TUBERCULOSIS.

He described how, after numerous experiments on animals with all sorts of materials, fluids and gases, he at last found nitrogen to be the only one that did not rapidly absorb, or cause some other trouble. Dr. Loomis claims for the method that the injection of from 50 to 200 cubic inches of absolutely pure gas will not be absorbed for from three to six months, will rapidly diminish expectoration, improve appetite, increase weight, and above all stop hemorrhage, where all other methods fail, but it seems to have no marked beneficial effect on the affected lung substance. It arrests the further progress of the disease.

Dr. H. L. TAYLOR said that he had tried the method in over a dozen cases, and had obtained exactly opposite results from those given by Dr. Loomis.

Dr. R. H. BARCOCK expressed his surprise at Dr. Taylor's results, and said that the results in the majority of cases treated in Chicago were good. He believed the treatment was of value in giving the patient an upward start to health.

Dr. DENISON asked if the same results could not be attained by some other method, unattended by such a shock, and referred to the successful use of strapping plaster to stop hemorrhage.

Dr. STUBBERT said the nitrogen treatment was only effective when the lung was absolutely compressed, and stated that he also had used it with advantage to stop hemorrhage.

Dr. BOARDMAN REED, of Philadelphia, read a paper on

STOMACH CONDITIONS IN EARLY TUBERCULOSIS.

He summarized his paper as follows: (1) In early tuberculosis the secretion of HCl is very frequently excessive, the peptic glands being in a condition of irritability which causes stimulating remedies of the creosote class to disagree and act injuriously; (2) oils tend to depress the secretory function of the stomach and in consequence cod-liver oil is likely to help the cases which the creosote class of drugs hurt, but, on the other hand, hurts the cases in which the gastric secretion is inactive, and the other ones in which creosote and its congeners often do good; (3) therefore it ought to be the rule to ascertain the condition of the secretory function of the stomach before pushing either class of drug; (4) when analysis of the gastric contents cannot be made, it is safer to combine creosote with cod-liver oil, so as to let one neutralize the other in its effect on the stomach; (5) the motor function is very generally depressed in tuberculosis, and must be restored before a cure can be effected. Drugs avail little in this direction, but diet, exercise, especially in the open air, faradism and abdominal massage, except where hyperchlorhydria complicates it, are the most valuable means of effecting the result.

Dr. ANDERS called attention to the variability of HCl in this disease, and said that gastric symptoms depended on functional disturbances.

Dr. J. EDWARD STUBBERT, of New York, gave the SUBSEQUENT HISTORY OF PATIENTS APPARENTLY CURED BY ANTITUBERCLE SERUM.

He took up the cases he reported two years ago, and said there had been no relapses, and marked improve-

ment in 78 per cent. of the cases. He then took each case in detail and gave the history up to date. Dr. Stubbart spoke of the difficulty of treating patients climatically, on account of the varying effect of the serum in varied localities.

Dr. R. C. CURTIS, of Philadelphia, read a paper entitled

THE PHLEBITIS OF ADVANCED PHTHISIS, WITH REPORT OF CASES OF PHTHISIS FOLLOWING ABSCESSSES OF THE HAND.

He gave several instances of phlebitis following tuberculosis, and quoted numerous cases where tuberculosis followed blows and falls, noting especially the prevalence of the disease among prize fighters.

Dr. NEWTON asked for statistics as to phthisis, and denied that the percentage was at all large.

Dr. CURTIS, Dr. BARCOCK, Dr. ANDERS and Dr. BRIDGE all instanced cases of the same and similar conditions that had come under their notice.

Dr. J. M. ANDERS, of Philadelphia, read a paper on

THE DIAGNOSTIC VALUE OF TUBERCULIN IN TUBERCULOSIS.

He said that the value of the tuberculin test depended on the fact that it permits the recognition of the disease in its latent as well as incipient forms, and if it were used, more tuberculosis would not so often go unrecognized. Of over 2,000 suspected cases, 71.8 per cent. gave positive reaction, and of the undoubted cases the percentage was even higher. The two points in its use are moderate doses and its use in incipient stages of the disease. If this were done its use would become more popular and satisfactory.

SPLENOMYELOGENOUS LEUKEMIA WITH PULMONARY TUBERCULOSIS; REPORT OF A CASE.

This paper, by Drs. H. L. ELSNER and Wm. A. Groat, of New York, was read by title. Dr. Elsner stated that the condition was very rare, and showed charts illustrating the case.

At the business meeting which followed, the following officers were elected for the ensuing year: President, Dr. R. H. Barcock, of Chicago; First Vice-President, Dr. A. C. Peale, of Washington, D. C.; Second Vice-President, Dr. S. W. Langmaid, of Boston; Secretary and Treasurer, Dr. Guy Hinsdale, of Philadelphia. Dr. Abraham Jacobi was elected a member of the Council.

THIRD DAY.

On account of the number of papers still to be read, the meeting was called for at nine o'clock. The session opened with a discussion of Dr. Anders's paper on the diagnostic value of tuberculin, which closed Wednesday's session.

Dr. BRANNAN opened the discussion by asking what the exact reaction of tuberculin was, beside the "grippy" symptoms it produced.

Dr. CHARLES DENISON objected to the use of tuberculin in large doses in advanced phthisis, on account of its disintegrating influence on the affected lung area, and said that the starting dose in the Berlin Hospital was one-half milligramme. Tuberculin might produce local reaction even when there was no rise in temperature, and in small doses it sometimes increases the number of râles.

Dr. H. L. TAYLOR objected to the statement that we should not use tuberculin as a therapeutic measure, saying that it often had some therapeutic value.

Dr. A. C. KLEBS emphasized the importance of a uniform preparation of tuberculin, in order that the results of different observers might be compared with some advantage. He said there was no danger to the patient in cautious use of tuberculin, and that a beginning dose could be as low as one-tenth milligramme.

Dr. E. O. OTIS brought up the fact that syphilis often gave the reaction when advanced tuberculosis would not.

Dr. BABCOCK asked why he could not always suspect syphilis if that disease gave the reaction. He said that dose might be from one-half to twelve milligrammes, and in the average case should be large.

Dr. BALDWIN said that tuberculin was rarely necessary for diagnostic purposes. Larger doses are necessary for local tuberculosis in joints and other parts of the body than in pulmonary cases. He called attention to the tuberculin reaction in syphilis as a fruitful field for investigation.

Dr. J. H. KELLOGG, of Michigan, read a paper on

THE HYDRATIC TREATMENT OF TUBERCULOSIS.

He urged the value of cold-water treatment, saying that he had used it for over twenty-five years, with good results and many recoveries. Out of 151 cases noted more than 60 per cent. were permanently benefited, and a good percentage cured. The tonic effect of cold water is due to the action of the cold on the sympathetic nerves in the skin, and increased cerebral activity. The method of its use is very simple: first, friction with hand or dry towel; then sponge or mohair glove wet with ice water and rubbed briskly on neck, chest and arms, one part at a time, and quickly dried, and patient bandaged with wide three-yard strip of cheese cloth, and over this same-sized flannel. In full bath start with moderate temperature and gradually reduce to 55° or 45°. Dr. Kellogg then gave a demonstration of his method on a subject.

Dr. C. L. MINOR urged necessity of simplification of methods, such that the patient could apply them himself.

Dr. R. H. BABCOCK protested against the use of the term "cured" as a result of the cold-water treatment, and Dr. KELLOGG replied that water was not claimed to be a panacea, but merely a valuable adjunct to other methods.

Dr. W. D. ROBINSON, of Philadelphia, read a paper entitled

PETROLEUM OIL IN THE TREATMENT OF PHTHISIS.

He said that the best preparation was a repurified oleum petrolatum of the United States Pharmacopeia, which is absolutely odorless, colorless and tasteless. The oil passes through the intestine unchanged, but has beneficial effects on nutrition. It has also the effect of rendering the intestine unfavorable to life of micro-organisms by starving and suffocating them, by cutting off the avenues through which they have their nourishment. The oil has beneficial effects in chronic bronchitis and in phthisis, and there is more gain from its use than from cod-liver oil, without any tax on digestion, appetite or food assimilation. It is valuable as a solvent for many drugs and as a means of conveying intestinal germicides.

Dr. A. N. BELL, of Brooklyn, read a paper entitled

STAMINA: THE SPECIAL BENEFIT OF FATS OF ONE KIND OR ANOTHER AS A NECESSARY ARTICLE OF DIET TO FORTIFY THE SYSTEM AGAINST TUBERCLE BACILLI.

The speaker endeavored to show that, other conditions being equal, tuberculous diseases are prevalent in an inverse ratio to the use of fat of some kind as an article of diet. It must, however, be remembered that in persons on the verge of pulmonary consumption inability to digest fatty food is one of the most prominent symptoms. The freedom of Iceland and other cold countries from consumption he attributed to the abundance of fat in one form or another that the inhabitants consume, and the recent increase of the disease in Norway he thought probably due to the increased consumption of farinaceous food. Fat is needful, and that kind most easily digested is best.

Dr. S. E. SOLLY said he thought tuberculosis in Iceland was due to its importation from Norway. He agreed with the speaker that fat was a very desirable article of food.

Dr. S. E. SOLLY, of Colorado Springs, read a paper on

THE BLOOD CHANGES IN HIGH ALTITUDES.

He took statistics of blood counts from twenty-five students as a basis, and showed that in people going to Colorado the red cells and hemoglobin at once increases quite above that of the natives, but that in those who have been there for two years or more the blood count shows an intermediate position, which would seem to indicate that the climate soon loses its marked beneficial effects on the blood.

Dr. R. C. NEWTON thought that the effect of tuberculosis on the blood was a good field for investigation.

Dr. HAROLD WILLIAMS, of Boston, reported

A CASE OF MURAL ENDOCARDITIS

in which the remarkable features were the absence of pain, absence of murmur, and peculiar grouping of pathological lesions found at the autopsy held by Dr. Leary.

Dr. BABCOCK said that a murmur was only a guide post to point the way to the trouble, and is of comparative unimportance in functional disease, where we must rely on the secondary symptoms. The presence or absence of murmurs in any given case will depend on the size of the orifice.

Dr. J. MADISON TAYLOR, of Philadelphia, read a paper entitled

EXERCISES SUITABLE FOR CHILDREN SUFFERING FROM HEART DISEASE.

He said the embargo so often laid by the physician on all kinds of exercise in cases of this sort was often actually injurious, and showed how frequently when these children have been allowed increasing amounts of activity an actual benefit results. Carefully selected exercises can be made to afford a large amount of relief to many of the distressing symptoms which accompany and follow upon disordered states of the heart. The writer defines exercise as "the normal use of the bodily parts, not merely of the muscular system, but particularly the interrelation of the

viscera, abdominal and thoracic, and their mutual co-operation." Dr. Taylor then emphasized the necessity of standing erect, and of proper attitudes, and the value of enforced breathing after a definite system, the rules of which he gave. His experience with children has convinced him that the most remarkable results may sometimes be obtained by the simplest forms of exercise.

Dr. A. JACOBI said that in both acute and chronic cases of heart disease rest in bed was good, but that a watch must be kept that the rest was not prolonged too long. He agreed with the speaker as to the value of passive movements, and that the peripheral circulation can be fortified by some form of exercise. We must remember that in each individual there are from thirteen to fifteen square feet of skin, and if the circulation here is not attended to the heart has to suffer. Massage is a good treatment, but should only be done by a doctor or one who knows the courses of the blood and lymph channels.

Dr. JUDSON DALAND, of Philadelphia, read a paper on

ANEURISM OF HEART; THROMBOSIS OF LEFT CORONARY ARTERY.

The speaker described a case of aneurism of the heart, characterized by absence of angina pectoris, and marked fibroid changes of septum of heart, with endarteritis of coronary arteries. The patient was a man over fifty, and with a four-year history of heart disease, though quite well at the time of his fatal attack, which lasted twenty hours.

Dr. R. G. CURTIN said cases of aneurism of the heart die quite slowly. He had seen a case where the sac would contain a pint of fluid.

Dr. J. M. TAYLOR spoke of a case where there was a large sac, the treatment being gold wire and electricity, which did some good, the patient finally dying slowly from exhaustion.

Dr. R. H. BABCOCK said that sudden death in the cases where fibroid changes of the heart septum were present was frequent.

The following papers were read by title:

"The Inadequacy of the Physical Signs as Indicating the Gravity of Pneumonia," Dr. ANDREW H. SMITH, of New York.

"The Bath in Gout," Dr. CHARLES C. RANSOM, of New York.

"Prognosis in Disease of the Heart," Dr. JAMES B. WALKER, of Philadelphia.

"Some Thoughts on the Nervous System in Phthisis as a Basis for Treatment," Dr. THOMAS J. MAVS, of Philadelphia.

Recent Literature.

A Hand-Book for Nurses. By J. K. WATSON, M.D., (Edin.), Late House Surgeon, Essex and Colchester Hospital, etc. American edition under the supervision of A. A. STEVENS, A.M., M.D. Philadelphia: W. B. Saunders. 1900.

This is a compact, well-bound volume of 413 pages on a familiar subject. The book is eminently practical and should certainly prove of use to the class of readers for whom it is primarily intended. The problem of how much a nurse should be taught seems to have been fairly met by the author.

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COMPULSORY NOTIFICATION OF TUBERCULOSIS.

THE recent action of the Boston Board of Health, that hereafter pulmonary and laryngeal tuberculosis shall be included in the list of diseases of which compulsory notification is required, is a measure which demands more than a passing notice. The tendency of the past few years with regard to the whole matter of tuberculosis, and in accordance with scientific investigation, has been to mark it out more and more as a disease demanding the same rigid vigilance as other infectious or contagious diseases, to prevent its transmission to others not previously affected. This has led to isolation hospitals, to scrupulous care regarding sputum, excreta and personal hygiene, and in a few instances to even more radical measures, as, for example, the attempted exclusion of tuberculous persons from certain States and cities. Much of this precaution is absolutely demanded by the knowledge which the last few years has given us, and it is most earnestly to be hoped that the dissemination of information regarding the nature of the disease will in time tend to render its victims in all walks of life conscious of the menace they may be to their neighbors. This has already in a certain measure been accomplished, and anything tending to bring about a deeper realization of the lesson is to be regarded with favor. It is a matter of education, which each physician who is brought into contact with tuberculosis among the ignorant can do his share in developing.

On the other hand, it must be borne in mind that over-enthusiasm in the prosecution of a plan for the improvement of the public health may be misinterpreted and thereby defeat the end to be attained. The somewhat recent attempt to institute a quarantine against tuberculous patients in some of the Western States met with the condemnation which it was the general opinion of the medical press it deserved. In theory, it is no doubt highly desirable that tuberculosis should be blotted off the face of the earth; in practice, it at once appears that the rights of the individual cannot be infringed because he happens to

be suffering from a disease which under proper precautions is not a real menace to his fellow-men. This attempt at legislation marks the extreme of radicalism, and undoubtedly, in the nature of the case, will never meet with popular favor. Nor has such attempted action been conducive to a more reasonable attitude on the part of the laity, and one calculated to lead to the ultimate extermination of the disease. An undue fear of contagion is no doubt as deleterious as an undue carelessness, and baseless fears are easily excited by the promulgation of general edicts, not carefully guarded by critical explanatory details. We quote, for example, part of an editorial comment which has recently appeared in one of the daily papers:

"A few towns, within twenty-five miles of Boston, could be named which have become resorts for the victims of this disease (tuberculosis) in its earlier stages, so that a fairly large proportion of the residents of these towns should be subject to rule of sanitary precaution. Yet the boards of health in these towns have done little, if anything, to protect the rest of the population. If a batch of scarlet-fever patients should invade the same towns, probably something like a panic would follow. Yet the chances are that the danger of contagion to the general public would be less, as scarlet-fever patients are not usually allowed to go wherever they please."

This is clearly an exaggerated statement of alarm, based on insufficient knowledge of the nature of tuberculosis and the laws governing its contagiousness. It is wholly misleading to compare tuberculosis with scarlet fever, and surely the "danger of contagion to the general public" is infinitely small in a healthy country town.

This leads us to the recent action of the Boston Board of Health with regard to the compulsory notification of tuberculosis. In the first place, the general agitation which has finally led in Boston to this result has been going on for some years. As long ago as 1894 an editorial appeared in these columns in the issue of March 24th, under the title, "The Registration of and Preventive Measures against Tuberculosis," apropos of similar contemplated action in Philadelphia. The lapse of six years has not materially changed the situation with regard to the general question, and we are inclined to reiterate what we then said of a law demanding compulsory notification. Our point of view at that time we stated in the following words: "A law may be good in the abstract, but it is practical only in so far as it secures the co-operation of the community which it affects to such an extent as to permit its enforcement without excessive annoyance and expense; moreover, no law is good which causes more harm to society than it cures. The same may be said of the registration or notification of such a disease as tuberculosis, and of the adoption of general preventive measures against it. Nobody would advocate dealing with tuberculosis as with leprosy."

It goes without saying that we are in complete sym-

pathy with any action of our health boards which will effectually lessen the mortality from any disease whatever, provided only that too great injustice be not done to individuals. It is, however, clearly necessary to recognize the difference in diseases, as regards course, whether chronic or acute, whether extremely or only very slightly contagious, and whether avoidable only by rigid quarantine or by less extreme measures. As regards tuberculosis, it must be remembered that it is a disease usually of extremely slow course, liable to remissions and to cure in many cases, and also one about which families and individuals are sensitive. It is likely therefore, on the one hand, that a somewhat undue importance will be attached to the danger of contagion, and, on the other, that concealment and evasion of the regulation of notification will be practised to a much greater extent than in other diseases. We shall look forward with interest to the results of the new regulation, and trust it may prove as efficacious as its promoters hope; at the same time we think there are certain contingencies to be met which do not exist in a similar regulation applied to other diseases.

PROPRIETARY MEDICINES AND THE PHARMACOPEIA.

A PAPER of much general interest was read at a recent meeting of the University of Pennsylvania Medical Society by Dr. A. W. Miller on the subject of "Proprietary Chemicals," and reported in abstract in the *University Medical Magazine*.

In 1890 the pharmacopoeial convention resolved that "no substance which cannot be produced otherwise than under a patented process, or which is protected by proprietary rights, shall be introduced into the Pharmacopoeia." This statement represented the consensus of opinion of the pharmacists and physicians present with regard to the use of patented preparations. In spite of this fact the sale of such patented articles continues, with small evidence of abatement. No one questions that many of these preparations are excellent, and are put out by highly reliable and trustworthy firms; it is perhaps not so generally known that many of the drugs and compounds which have had and are having an extensive sale may be found in the Pharmacopoeia, under somewhat different names, but still corresponding entirely to proprietary drugs or mixtures of drugs. The further point should also be borne in mind that these same drugs, as found in the Pharmacopoeia, are, as a rule, very decidedly cheaper than when put out under some proprietary name, a matter which the practitioner is bound to consider. Cases of interest in this connection are: Antipyrin, which was originally made under a patented process, and hence was excluded from the Pharmacopoeia of 1890. Later, when it was generally manufactured, the price at once fell, and with it, curiously enough, the consumption, owing to lessened advertisement. Antifebrin, which is identical with the official acetanilid, al-

though ten times as expensive, continued to be sold extensively as long as advertised. "Dermatol" is bismuth subgallate, but as "dermatol" the price has been kept high, and the drug sold in large amounts. Bristol has had a like experience.

These are some of the examples brought to our notice by Dr. Miller. The makers of these so-called proprietary preparations are honest; they depend upon physicians in good standing for the ultimate sale of their products, and their preparations, many of them, are good. They are, however, usually expensive, a fact which the physician often overlooks, or is ignorant of. As a matter of fact it too often happens that physicians do not know in detail what they are prescribing, and are often too busy, or too willing to take the testimony of others, to find out. Pharmacology is a science of which the specialist is alone a master; the preparation of drugs for the market is an art to which the physician has neither the time nor the desire to devote himself. The natural result is that in his relative ignorance he uses the products of others who claim special skill, without further enquiry. Hence the general acceptance and wide employment of proprietary preparations coming from reputable manufacturers. So far as we can see into the future it appears that this situation will not be materially changed, however much it may be deplored, until the rank and file of physicians the country over take it upon themselves to cultivate a knowledge of pharmacology, which is now conspicuously lacking. How far this is possible is an open question, upon which we do not venture an opinion.

MEDICAL NOTES.

PLAGUE.—There have recently been reported several cases of suspected plague in Manila, occurring among persons living in unhygienic buildings, which will probably be burned. The feared outbreak of plague at Durban has subsided, and danger of an epidemic is past. From Rio Janeiro reports come of many cases. In one day there were 13.

JAPANESE PROTEST ON COMPULSORY INOCULATION AGAINST PLAGUE.—Through its chargé in Washington, the Japanese Government has joined the Chinese Government in a protest against the compulsory inoculation of Japanese and Chinese in San Francisco with antiplague serum, on the ground that if such inoculation were necessary to prevent the extension of the plague, it cannot be contemplated that any discrimination should be practised against the Japanese and Chinese; the rule must be general, and include Caucasians as well as yellow men.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the six days ending at noon, May 29, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 69, scarlatina 37, measles 91, typhoid fever 8.

DEATH STATISTICS OF BOSTON.—The total number of deaths reported to the Board of Health for the week ending May 26th was 200, against 203 the corresponding week last year, making the death-rate for the week 18.8. The deaths from consumption were 21, pneumonia, 31, heart disease, 20, bronchitis, 2, and marasmus, 6. There were 11 deaths from violent causes. The number of children who died under one year was 37, the number under five years, 59. The number of persons who died over sixty years of age was 49. There were 61 deaths in public institutions.

A NEW STRENGTH RECORD.—Charles A. Carver, a Yale student of the Class of 1900, has recently surpassed the strength record of his rival, Cochems, of Harvard, by making a total record of 2,073.2 points, an increase of 263.3 points over his own previous record.

NEW YORK.

A MEANS OF REDUCING MORTALITY STATISTICS.—It is well known that the various private hospitals, in order to keep their death-rate at as low a figure as possible, are in the habit of sending their ambulance cases in which the patient is likely to die to Bellevue Hospital. An especially flagrant instance of this occurred one day last week. An ambulance was summoned from Roosevelt Hospital to the case of an old woman who was in a dying condition from combined renal and cardiac disease. The surgeon in attendance, instead of taking her to his own hospital, which was about half a mile distant, ordered the ambulance driven to Bellevue Hospital, more than two and a half miles away, and before the hospital was reached the patient was dead.

CORNERSTONE OF BETH ISRAEL HOSPITAL LAID.—The cornerstone of the new Beth Israel Hospital was laid on May 27th, and among those who made addresses on the occasion were Drs. A. Jacobi and Zinsler and Charities Commissioner Keller. This institution, which was founded in 1890, is at present located on East Broadway. The new situation, at the corner of Cherry and Jefferson Streets, is in the heart of the East-Side tenement district, the most densely populated locality in America. The building will be five stories high and will have accommodations for over 100 patients, in addition to ample dispensary facilities.

CONFESSIONS OF PERSONS CHARGED WITH CAPITAL CRIMES.—The Medico Legal Society, on behalf of its Psychological Section, recently gave a dinner to Dr. Thomas Jay Hudson, of Washington, D. C., who made an address in which he deprecated the admission by the courts of confessions of guilt on the part of persons charged with capital crimes. By the process of suggestion, made with sufficient vigor and persistency, he said, it was just as easy to get a confession from an innocent person as by the medieval system of torture.

DEATH OF THE DWARF, McTAGUE.—John McTague, a dwarf fifty-one years old, recently died at

the almshouse on Blackwell's Island, of which he had been an inmate since 1867. He was only three feet tall and weighed forty-five pounds. He had been accustomed to do various little tricks for the amusement of visitors to the institution, and the autopsy showed that death was due to the lodgment in the intestine of a penny which he had swallowed.

SUB-COMMITTEES OF THE TENEMENT HOUSE COMMISSION.—At a recent meeting of the Tenement House Commission the following sub-committees were appointed: (1) An executive committee; (2) on tenement house construction; (3) on the moral and social relations of tenement house life; (4) on tenement house labor; (5) on the tenement house problem in Buffalo.

ANNUAL REPORT OF ROOSEVELT HOSPITAL.—The twenty-eighth annual report of the Roosevelt Hospital has just been published. Of 2,752 patients treated during the year only 411 were paying patients. During the past twenty years five different departments have been added, and it has been necessary to increase the number of employes from 59 to 200.

BEQUESTS FOR MEDICAL CHARITY.—By the will of the late Myrick Plummer, \$5,000 is left to the Presbyterian Hospital for the endowment of a memorial bed, and \$10,000 to the New York Diet Kitchen Association.

DEATH OF A CENTENARIAN.—Miss Sarah Pettit died at Flemington, N. J., on May 21st, at the age of one hundred years. She was born near the village of Flemington on March 5, 1800.

Miscellany.

BACTERIA AND THE BURIED ANIMAL BODY.

THE German Government has conducted experiments with reference to the behavior of bacteria in buried animal bodies, which are reported upon by Professor Petri, and by Staff Surgeon Löseners in the reports of the Imperial Board of Health, and are referred to in the *JOURNAL* of February 27, 1896, under the title of the "Effect of Cemeteries on Health." Dr. Klein has conducted a series of experiments in England with a similar end in view, upon which the chief medical officer comments as follows:¹

"The extent to which graveyards and cemeteries may, through the medium of the underground water yielded by wells and springs in their neighborhood, contribute dangerous contamination to water supplies, has been an ever recurring subject of dispute. On the one hand chemistry has found that the water draining below ground from graveyards is apt to contain abundantly in solution dead organic matter derived from the corpses undergoing dissolution in the superincumbent soil; and as a consequence the chemist has been prone to condemn such water as a source of domestic supply. On the other hand bacteriology, while showing abundance of bacteria in drainage water from graveyards, has failed to afford evidence

that the micro-organisms derived from the graveyard are at all commonly identifiable with microbes capable of inducing in the human subject specific disease. In the circumstances it has been judged profitable to subject to bacterial test actually buried bodies, in order, in the first place, to ascertain the nature (whether or not harmful) of the bacteria proper to graveyards, those, for instance, which prey, so to speak, on corpses, and further, to ascertain the fate in graveyards of pathogenic microbes which, having multiplied in the animal body during life, are, after death of that body, buried along with it in soils of different sorts."

Dr. Klein gives an account in regard to rodents buried by him in diverse ways in different soils, of the bacteria, adventitious or other, which are chiefly concerned in the disintegration and dissolution of the dead animal body. Also he records, in reference to similar experimentally buried animals, the ultimate fate of certain pathogenic bacteria, which, previous to death, had been made to multiply in the animal bodies in question.

Dr. Klein's observations in both subject matters are thus far reassuring. He does not find that disintegration and dissolution of the animal body after burial is brought about by microbes harmful to man, by aerobic microbes, for instance, such as bacteria of the coli and proteus groups, which are, on occasion, pathogenic to the human subject, and which heretofore have been regarded as the main agents in the putrefaction of dead animal matter. As result of his experiments, dissolution of corpses would seem to be almost wholly an affair of anaërobiosis, and indeed practically the work of a particular anaërobic bacterium that is, in his view, inherent in all buried bodies and which Dr. Klein proposes to term *bacillus cadaveris sporogenes*. Similarly, Dr. Klein finds that under his conditions of burial, and in the presence within the buried bodies of the rapidly multiplying *bacillus cadaveris*, no single one of a great variety of pathogenic microbes, which during life had been made to proliferate in experimental guinea-pigs, is capable of maintaining its vitality in the decomposing of these animals for a period measured by more than a very few weeks."

In summing up the results of his experiments Dr. Klein makes the following statements:

"Direct experiment lends no confirmation to the general and popular belief that the microbes of infectious disease retain their vitality and power of mischief within dead and buried bodies for indefinite periods. On the contrary, these researches show that, as far as the bodies of the guinea-pig are concerned, the vitality and infective power of these microbes that have been made the subject of experiment passes away in a comparatively short time; that in most cases a month is sufficient for this result, that is to say, long before the coffins containing the buried bodies have shown any indications of leakage. A like result is, however, observed in the case of bodies buried directly (wrapped in a piece of fabric) in earth or in sand. In this case it may be inferred that the vitality and infectiveness of the pathogenic microbes contained in the viscera has passed away long before the outer skin has become permeable by them, and further, the operations of putrefactive microbes effecting their destructive processes without would be likely to prove a powerful and per-

¹ Twenty-eighth Annual Report of the Local Government Board of England. Supplements. Report of Medical Officer for 1898-99.

haps efficient barrier for such passage outward of pathogenic microbes.

A question of importance which is directly suggested by the results of this inquiry is this: "What is the essential cause or causes of this process of rapid destruction of the vitality and infectiveness of pathogenic microbes in the interior of the dead body? Is it that in the struggle the more favored bacillus cadaveris soon becomes ubiquitous and ousts the others; or is it that some chemical metabolic products elaborated by other more favored microbes, in the course of their growth and multiplication, operate as a poison on the pathogenic microbes? These questions can only be answered, or be attempted to be answered, by further and properly devised experiments."

REPORTS OF PLAGUE IN CALIFORNIA EXAGGERATED.

THE following statement, under date of May 22d, from the Secretary of the California State Board of Health to the Secretary of the Massachusetts State Board of Health has been given to the JOURNAL for publication:

"Reports outside of this State of the existence of bubonic plague here have been greatly exaggerated. The State Board of Health of California has carefully inquired into the facts, and officially reports them to you as follows: There have been nine deaths at San Francisco on the following dates: First case, March 6th; second case, March 15th; third case, March 17th; fourth case, March 10th; fifth case, April 24th; sixth case, May 11th; seventh case, May 11th; eighth case, May 14th; ninth case, May 15th. All the cases were Chinese, found dead in their unsanitary quarters known as Chinatown. That they died of bubonic plague was established by bacteriological investigation by the City Board of Health, and confirmed by Dr. Kinyoun, the United States quarantine officer of the port of San Francisco.

"At this time there are no known cases of bubonic plague in California. The Board of Health of the city of San Francisco is taking every precaution to prevent the recurrence of the disease, with every hope of success. No other part of the State has been nor is now affected. Should any further danger arise we obligate ourselves to immediately notify you of it."

Obituary.

F. N. OTIS, M.D.

DR. FESSENDEN NOTT OTIS, of New York, who was for many years one of the best known syphilographers and authorities on genito-urinary surgery in this country, died in New Orleans on May 24th, in his seventy-sixth year. He was born at Ballston, N. Y., and was graduated from the New York Medical College in 1852. From 1853 to 1861 he was a surgeon on the United States Mail and Pacific Mail steamers. In 1862 he was appointed a police surgeon in New York City and from 1870 to 1872 was President of the Board of Police Surgeons. For many years he was connected with the College of Physicians and Surgeons, the Medical Department of Columbia University, first as clinical lecturer, then as professor, and finally as emeritus professor, of genito-urinary diseases. From 1871

to 1873 he was President of the Medical Board of the Strangers' Hospital, and among the other hospitals at which he served either as attending or consulting surgeon were St. Elizabeth's, Skin and Cancer, Manhattan Eye and Ear, and Charity Hospital on Blackwell's Island.

Dr. Otis invented a number of instruments and appliances in the line of his special work and was also a prolific writer on subjects connected with genito-urinary diseases. In the treatment of stricture he was a strenuous advocate of the enlargement of the meatus by free incision, a point on which his views were regarded as somewhat extreme by many of his colleagues. In 1880 he delivered at the College of Physicians and Surgeons a course of clinical lectures on the physiological pathology and treatment of syphilis, which were specially reported for the JOURNAL, and which were afterward brought out, together with his fasciculus of class-room lessons covering the initiatory period, in a handsome volume by Messrs. G. P. Putnam's Sons. He held that the underlying conditions of syphilitic manifestations are attributable only to excessive localized cell proliferation and accumulation, and that the lesions of the so called tertiary period of syphilis are not the results of the local action of a virus, but are caused through damage to lymph channels in the active period of syphilis (the period of lymphatic obstruction), which finally results in their contraction, producing disturbance of function and nutrition which will account philosophically for all the losses of tissue by necrosis and fatty degeneration which are known to occur in late syphilis.

In addition to his medical writings he published "Lessons in Drawing, Studies of Animals and Landscapes," two volumes (1849-50), "Tropical Journeys" (1856), and "History of the Panama Railroad and its Commercial Connections" (1860). He always retained a warm love of art, and he had an admirable collection of American pictures, many of which were the personal gifts of their painters.

A few years ago Dr. Otis retired from practice, and since then has spent his time either at his country home at Catskill or in extensive travelling. He is succeeded in his special work by his son, Dr. William K. Otis.

Correspondence.

SWEDISH GYMNASTICS.

BOSTON, May 24, 1900.

MR. EDITOR:—Your editorial notice (April 12th) of Dr. Hough's brochure "A Review of Swedish Gymnastics" overlooked one significant aspect of Dr. Hough's treatment of the subject. To those who have watched the progress of Swedish gymnastics since its somewhat dramatic entrance into Boston, about twelve years ago, and who have noted the claims made by its exponents, it is of the utmost interest to recognize that Dr. Hough bases its special claim to recognition upon the superiority of its corrective work rather than upon its hygienic or educational values. He says, "The most distinctive feature of Swedish work is the fact that it never loses sight of the corrective element. This is its primary purpose," etc.

Dr. Hough's caution to advocates of the Swedish system not to put too much stress upon the so called Swedish physiology as a basis for the Swedish system is a frank confession, which is as gratifying as it is unexpected. The admissions of incompleteness in the Swedish system, of the unscientific character of some of the most important of its doctrines, and the essential limitation of its usefulness to corrective work, are so sweeping and iconoclastic that I am curious to learn whether they are endorsed by the Swedes themselves. So far as I know they still remain unchallenged. Do the advocates of the Swedish system accept Dr. Hough's statements?

Very sincerely yours,
G. W. FITZ, M.D.

METEOROLOGICAL RECORD

For the week ending May 19th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...13	29.85	64	77	50	77	67	72	S.W.	E.	12	2	C.	F.	
M...14	29.95	54	63	45	89	96	92	S.W.	N.E.	10	6	O.	O.	.14
T...15	29.83	70	93	46	85	98	92	S.W.	N.	7	20	F.	R.	
W...16	30.10	62	71	52	97	65	81	N.E.	S.W.	10	10	O.	C.	.05
T...17	30.10	56	62	50	93	89	91	E.	E.	9	6	O.	O.	.01
F...18	29.83	50	53	46	96	96	96	N.E.	E.	5	14	R.	R.	.40
S...19	29.60	46	48	45	96	91	94	N.E.	N.E.	10	18	R.	O.	1.55

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 19, 1900

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					Measles.
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.	
New York	3,651,574	1469	537	21.91	21.91	1.33	3.78	1.61	
Chicago	1,619,226	—	—	—	—	—	—	—	
Philadelphia	1,266,832	—	—	—	—	—	—	—	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	245	72	—	12.30	2.46	.82	2.46	
Baltimore	506,389	192	53	18.20	13.00	5.20	1.54	.52	
Cincinnati	405,000	—	—	—	—	—	—	—	
Cleveland	350,000	132	41	22.80	12.16	4.56	1.52	4.56	
Pittsburg	305,000	106	27	16.92	15.98	—	—	2.82	
Washington	277,000	80	21	21.25	21.25	1.25	—	2.50	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	37	9	13.50	16.20	—	—	—	
Nashville	87,754	33	10	21.21	12.12	—	3.03	—	
Charleston	65,165	47	24	48.99	6.39	—	2.13	—	
Worcester	111,732	32	11	21.91	6.26	3.13	6.26	—	
Fall River	103,142	43	14	11.65	12.98	—	2.33	—	
Cambridge	92,520	29	8	17.25	20.70	—	—	—	
Lowell	90,114	—	—	—	—	—	—	—	
New Bedford	70,511	24	11	24.96	20.80	—	8.32	—	
Lynn	68,218	25	14	20.00	24.00	—	—	—	
Somerville	64,394	15	5	6.66	33.33	—	—	—	
Lawrence	59,072	18	6	38.88	16.66	11.11	5.55	—	
Springfield	58,266	—	—	—	—	—	—	—	
Holyoke	44,510	9	—	—	22.22	—	—	—	
Brockton	38,759	8	—	—	—	—	—	—	
Salem	37,723	5	—	—	—	—	—	—	
Malden	36,421	9	—	22.22	22.22	—	11.11	—	
Chelsea	34,235	12	1	16.66	—	—	—	—	
Haverhill	32,651	15	7	20.00	13.33	—	6.66	—	
Gloucester	31,426	5	2	60.00	20.00	—	20.00	20.00	
Fitchburg	30,523	12	3	16.66	16.66	—	—	8.33	
Newton	30,461	8	3	—	25.00	—	—	—	
Taunton	28,527	6	3	16.66	—	—	16.66	—	
Everett	28,102	—	—	—	—	—	—	—	
Quincy	24,578	—	—	—	—	—	—	—	
Pittsfield	23,421	—	—	—	—	—	—	—	
Waltham	22,791	—	—	—	—	—	—	—	
North Adams	21,583	7	4	—	—	—	—	—	
Chicopee	18,316	5	2	—	—	—	—	—	
Medford	17,190	2	—	—	—	—	—	—	
Newburyport	15,036	2	—	—	—	—	—	—	
Melrose	14,721	3	—	33.33	33.33	—	—	—	

Deaths reported 2,652; under five years of age 892; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 583, acute lung diseases 458, consumption 302, diphtheria and croup 82, diarrheal diseases 53, measles 40, scarlet fever 29, whooping-cough 27, typhoid fever 21, erysipelas 17, cerebrospinal meningitis 12.

From scarlet fever New York 16, Boston 8, Worcester 2, Pittsburg, Providence, and Fitchburg 1 each. From whooping-cough New York 14, Baltimore and Washington 3 each, Boston, Pittsburg, Worcester, Fall River, Cambridge and North Adams 1

each. From typhoid fever Pittsburg 6, Boston 5, Washington 2, Cambridge, Somerville and Newton 1 each. In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending May 5th, the death-rate was 19.6. Deaths reported 4,362; acute diseases of the respiratory organs (London) 417, measles 167, whooping-cough 126, diphtheria 58, scarlet fever 32, diarrheal diseases 28, fever 18.

The death-rates ranged from 13.3 in Gateshead to 28.1 in Blackburn; Bradford 17.7, Bristol 21.8, Croydon 14.7, Huddersfield 17.0, Hull 14.0, Leeds 22.5, Liverpool 23.2, London 19.0, Manchester 27.2, Nottingham 17.6, Salford 19.8, Sheffield 21.4, Swansea 16.3, West Ham 14.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending May 12th, the death-rate was 17.8. Deaths reported 3,968; acute diseases of the respiratory organs (London) 300, measles 166, whooping-cough 116, diphtheria 61, diarrhea 40, scarlet fever 28, fever 28, small-pox (London and Liverpool 1 each) 2.

The death-rates ranged from 11.5 in Cardiff to 29.1 in Plymouth; Birkenhead 11.6, Bradford 17.3, Brighton 18.5, Derby 18.3, Gateshead 17.6, Huddersfield 19.5, Leeds 17.9, Liverpool 23.9, London 16.4, Manchester 21.7, Newcastle-on-Tyne 17.6, Nottingham 16.8, Sheffield 19.5, Sunderland 19.8, West Ham 12.8.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 19, 1900.

T. C. WALTON, medical director, detached from duty at the Naval Laboratory, Brooklyn, N. Y., and from other duty May 20th, and ordered home to await orders and retirement May 31st, at sixty-two years of age.

W. C. BRAISTED, passed assistant surgeon, orders to the "Mayflower" revoked. When the "Detroit" is placed out of commission detached and ordered home and directed to hold himself in readiness for orders to sea.

G. T. SMITH, passed assistant surgeon, detached from the Naval Laboratory and Department of Instruction, Brooklyn, N. Y., June 14th and ordered to the "Mayflower," June 15th.

G. D. COSTIGAN, passed assistant surgeon, detached from the Boston Navy Yard, May 29th and ordered to temporary duty on the "Pensacola" and then to the Asiatic Station via the "Gaelic."

E. DAVIS, assistant surgeon, detached from the Naval Hospital, Brooklyn, N. Y., May 29th, and ordered to temporary duty on the "Pensacola" and then to the Asiatic Station via the "Gaelic."

J. T. KENNEDY, assistant surgeon, detached from the "Independence," June 4th, and ordered to the Asiatic Station via the "Gaelic."

T. M. LIPPETT, assistant surgeon, detached from the "Oregon" and ordered to the "Newark."

S. W. DOUGLAS, pharmacist, detached from the "Wabash" and ordered to the Key West Naval Station for such duty as may be assigned as relief of Pharmacist I. N. HURD.

I. N. HURD, pharmacist, upon reporting of relief, detached from the Key West Naval Station and ordered to the "Wabash."

SOCIETY NOTICES.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. — The forty-ninth annual meeting of the Association will be held at Columbia University, New York City, June 23 to 30, 1900.

AMERICAN ACADEMY OF MEDICINE. — The twenty-fifth annual meeting of the Academy will be held at "The Shelburne," Atlantic City, N. J., on Saturday, June 2 and Monday, June 4, 1900.

RECENT DEATHS.

LUTHER BLODGETT MORSE, M.D., M.M.S.S., died in Watertown, May 26, 1900, aged seventy-nine years.

GARDNER CARPENTER PIERCE, M.D., M.M.S.S., of Ashland, died May 18, 1900, aged sixty-two years.

CHARLES SMITH COLLINS, M.D., of New York, a graduate of the College of Physicians and Surgeons in 1884, died from the effects of an overdose of chloral on May 20th.

JOHN MACDONALD, of New York, surgeon of the Red Star Line Steamship *Waesland*, died from pneumonia in St. Agnes' Hospital, Philadelphia, on May 21st.

BOOKS AND PAMPHLETS RECEIVED.

A Practical Treatise on Sexual Disorders of the Male and Female. By Robert W. Taylor, A.M., M.D. Second edition, thoroughly revised, with 91 illustrations and 13 plates in color and monochrome. New York and Philadelphia: Lea Brothers & Co. 1900.

Addresses.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON PRACTICE OF MEDICINE.¹

BY GEORGE DOCK, M.D., ANN ARBOR, MICH.

WE meet again for the consideration of a well-filled programme. The number of papers is considerably less than last year, but it is still so large that, allowing for the usual proportion of authors unavoidably prevented from appearing, our time must be economically used in order to get through. An effort has been made to group papers on allied topics so that the discussion may be directed to the series, and repetition avoided in that way. In most cases the topics for the groups were arranged by the officers of the Section. Other set discussions on chosen topics were projected, but for various reasons could not be carried out as planned. The officers of the Section take not a little pride in the large number of abstracts and synopses published in the programme. The utility of these in preparing members of the Section for the best appreciation of papers, in bringing out pertinent comments and criticisms, seems obvious. For the benefit of future programmes, attention may be called to the advantage of making the abstracts as short as possible. This can be done better by the author than the Section officers or the editor. It would seem that about one hundred words should be the limit.

The number of papers on our programme leads to the question whether it is not advisable to form a new section in order to take up part of the work, and interest will naturally be directed to the unofficial Section on Pathology, the existence of which you already know. There are a number of thoughts in this connection that may be expressed. In general it seems better to have as few sections as possible in an association made up, as this one is, largely of general practitioners. Yet such is the amount of material that specialization is certain to press its claims in various directions. So far as the proposed section is concerned, there is a doubt in the minds of some as to the scope intended, due to the various meanings given to the term pathology, and also to the activity of the section officers. If we take away from the existing sections on special pathology and therapeutics all their papers devoted to pathological topics, and place these in a group by themselves, we emasculate the former. Perhaps there is no greater need, not only in medicine, but also in surgery, gynecology and various other branches, than the constant repetition of the principles of pathology, the assertion of the anatomic, physiologic and chemic bases of diseases and the cultivation of positive standpoints in these branches. For the specialist in pathology such a section might doubtless be a source of much interest, but even he might gain something by annual contact with the clinical workers in hospital and general practice that he would not find in a special section.

On the other hand, a section devoted to experimental pathology might be useful, still more to a section in which general pathologic problems might be considered and where, in addition, specimens might be exhibited, methods demonstrated, and apparatus shown. So far as the exhibition of anatomic specimens is concerned, it seems to the speaker that these

should be selected with special reference to their importance in pathology or to method of preparation or preservation. With energetic section officers, such as were wisely selected for this year, the results would be of great value. It might also be useful to limit the source of such specimens each year to the section of country in which the meeting is held. In this way not only would the labor, expense and risk of distant transportation be avoided, but a general cultivation of anatomic work excited, and combined with a practical exhibition of apparatus, a more rapid diffusion of methods of all kinds set up.

The chairman of a section in the year completing a century should be pardoned if he falls into the mood natural to such an epoch. At the end of this century, nothing could be more agreeable than to recount the great discoveries that have made it, in medicine, more interesting than any that have gone before. But all these things have been told and retold by more eloquent tongues, and there is another operation that is often more useful though not so pleasant—the examination of the past with a view to facing the future with more certain glance. Socrates held that an unexamined life was not worth living. The same thought might be applied to a profession, and although I would not give the impression that, like Socrates, I have a divine command to examine medicine, the chair in which your favor has placed me may be held responsible for any seeming impiety on my part for attempting it.

Not long ago, in talking with a master of one of its most successful technical subdivisions, my friend remarked that medicine was becoming daily more easy. Against the word "easy" I had to protest, though realizing what was meant. So far from growing easier, the art as well as the science of medicine grows daily more difficult. It is more certain, more thorough, more far-seeing and more far-reaching than ever before, but it requires of its votaries more knowledge, more technical dexterity, greater expenditure of time and greater lucidity of judgment than ever before. We have only to point to any one of the commonest diseases to make this clear. Take a case of typhoid or malarial fever, or of pulmonary tuberculosis, and consider the numerous things to be done and to be thought about that twenty years ago were as far from our minds as was Aristotle's treatise on the constitution of Athens.

It is an interesting and to some a discouraging fact that, although medicine has made most remarkable improvements in this century, its influence over the layman seems less than before and waning rapidly. While it is becoming more positive, more candid, more accurate, the grossest delusions flourish. Not only the plausible nostrum maker, but the palmist, the astrologer and the ridiculous therapeutic claims of a dozen half-crazed brains have their believers by the thousand. Not many years ago a favorite theme of semi-scientific poets was the prediction of a rapidly approaching golden age, when the physician, trained in biologic laws, should occupy the place once held by priests and augurs, but wield his authority only for good ends. Failure in the consummation of this ideal need not make us despair of human nature. In a time of rapid advance it must happen that great differences exist between the trained and the untrained. Moreover, this is an age with little respect for authority. Not only now as before "*irrt der Mensch so*

¹ Delivered at the Meeting of the American Medical Association, Atlantic City, N. J., June 5, 1900.

lang er strebt," but it is perhaps well for medicine that people no longer look on its real proficient with the faith of the savage in his medicine-man. Healthy skepticism can do us no harm, and we must remember that with all our advances we still have about us some relics of medievalism. The subject, however, is rather one for the psychologist than the physician, and at this time may be passed over for the consideration of one that affects us more directly, and we may venture to raise the question whether we have used to the best advantage the talents given us by this century, and whether we are likely to be prepared as well as possible for the revelation of the next. A few examples may be considered.

In the first decade of our century Corvisart gave to the world again what the preceding century had rejected. His translation of Auenbrugger's invention of percussion, enriched by his own brilliant commentaries, was soon enlarged and controlled by master minds in every country. For half a century this has been a method of undisputed value in the determination of the existence and extent of a large number of important diseases.

In the second decade Laennec opened up a new world with the stethoscope. This has been explored by all the great physicians of the last seventy-five years, in the face of argument and ridicule, and with percussion has helped to call attention to the value of inspection and other so-called physical methods of diagnosis, but how often do we see them all entirely neglected or carelessly used! Not only is the routine examination of the body frequently left undone, but even with marked symptoms on the part of the various organs accessible by these methods, either no examination is made or it is made in a manner that would be ludicrous if the results were not often most serious. A striking example of neglect of physical examination recently came to my notice. One of my assistants found that a man who consulted him had a complete transposition of the viscera. The manipulations excited the patient's interest, and when he was told the state of affairs, said he had been examined seven times for life insurance and been treated once for pleurisy in a large city hospital, without having the condition discovered.

In the third decade Bright showed the relation of albuminuria to kidney disease, and in the fifth, Hense and others made clear the diagnostic importance of tube casts. Though the actual value of these two discoveries has often been exaggerated, they are still essential in diagnosis, but how often are they neglected! Perhaps few fail to make use of tests for albumin in cases in which certain diseases are suspected, yet, as a routine measure, they are often omitted. As to casts and also other substances in the urine, such as blood, pus and pathogenic bacteria, many physicians are as if these things had never been.

It is not difficult to explain the reasons for this state of affairs. One is indolence, but the most important is that the methods have not been acquired at the medical school; perhaps some of them have not even been seen by the helpless student. Even if the methods have been learned, the student often has not the fundamental knowledge that diagnosis means more than the naming of a disease. Satisfied if he recognizes, even vaguely, one clinical picture in a sick man, he fails to retain or acquire a mastery of diagnostic measures. The condition depends in turn partly on

the absurdly large number of medical schools in the country. With from six to seven score of these the obtaining of students must be a more important matter than their training. One of the most certain hopes of the new century is that, comparatively early, many of the superfluous schools will become extinct. Along with concentration of labor in the schools and improvement in the previous preparation of students, we can confidently expect a notable change for the better in methods of teaching, for there has probably never been a time when teachers of medicine, as well as undergraduate students, were so critical in regard to methods as now.

Another topic worthy of examination is that relating to the more instrumental part of diagnosis—a thing that has within a short time assumed important proportions, but the various relations of which are often neglected. It is here especially that apparent ease tempts to superficial examination of the sick.

The many manipulations included under the general head of laboratory examinations vary so much in difficulty, in certainty and in weight as evidence that it is only natural mistakes occur, yet these mistakes are so vital that those concerned should be constantly on the alert to guard against them. How difficult to measure the importance of each laboratory fact in itself is often illustrated in practice. Thus I have known of a surgeon being told that in a certain case an enlarged spleen was part of a leukemic process. With the remark that he believed "clinical observation more trustworthy than instrumental diagnosis," he proceeded to open the abdomen. Another time the report on a sputum examination for tubercle bacilli is negative; but now, instead of relying on the clinical examination, too often sufficient, the patient is allowed to go on as if the negative examination had the same value in one case as a positive one in another. How often is it forgotten that laboratory methods must be learned as separately as any other specialty. No one would think that ability to feel alterations in the pelvic organs gives facility in the interpretation of ophthalmoscopic pictures, yet how often is it taken for granted that one who can cultivate tubercle bacilli can, without practice, detect malarial parasites, or that one who can see tube casts can also be infallible in the microscopic distinction of primary and secondary anemias.

No doubt, the unprepared but ambitious laboratory expert is partly responsible for the present state of affairs, but it would seem that the physician who calls on such an expert should select him with as much thought as he would an operating specialist. Often, too, the physician could control the work of the expert either by asking for the proof, or an explanation of the steps followed. Some time ago a bottle of specimens came to me, after making the rounds of half a dozen microscopists. All the previous examiners asserted the specimens were animal parasites, and their appearance to the naked eye—small, black, threadlike bodies as they were—made this seem probable. A glance was enough to show that in fact they were the well-known vegetable spirals, the cause of error to so many microscopists in the last fifty years. Some comparisons made it practically certain the tissue came from bananas. Yet this discovery, so easy to control, was ignored by those in charge. By a curious coincidence, the patient herself came under my observation many months later, and on hearing my state-

ment about the specimen, admitted an excessive consumption of bananas, the cause of so much trouble.

When the position and limitations of the laboratory workers are more clearly understood, his remuneration will be better regulated than now. In many places he will be part of a hospital staff, in a laboratory equipped for all kinds of work. In others, he will have his private laboratory, and in still others, where the field is not so large, he will have the less brilliant, but not less useful and perhaps more interesting, position of assistant to a busy practitioner of broad views. Into the details of the subject it is not my intention to go.

An examination of the status of another great division of our art, that of therapeutics, is also well worth while in the last days of the century. In materia medica this century, especially in the latter part, has been prodigal if not discerning. The extraordinary activity in the production of new drugs, though it may give us some that far outrank poppy and mandragora, also makes more dillicult the judgment so essential to rational practice. So confused are our standards that it is often impossible to distinguish the wares of the professor of chemistry or pharmacology from those of the modern seekers after the philosopher's stone. In addition to the products of synthetic chemistry we have a new field in the long unused animal kingdom. Here constant examination is necessary. It is not easy for the busy man to see how the so-called lymph of an alleged goat should not be as potent as thyroid extract. Serum, too, is a word that suggests potentialities of many kinds, though so widely applied that Virchow's jocular definition, "Serum is any fluid that is not precisely urine," seems peculiarly apt. One hopes that the end is near when discoverers are driven to such names as "hydrogogin" and "anusol," but the possibilities of the prefix "eu" temper the hope considerably.

No doubt the commercialism of the day is partly responsible for the present state of this branch of medicine, but the medical profession has a heavy load of guilt. I am credibly informed that in a large factory of preparations used only by the profession thirty clerks are kept busy answering letters from doctors in regard to the treatment of particular cases in practice. These clerks make no pretense to knowledge of medicine or even of drugs. They have their trade catalogues, from which they readily secure the desired information. But will this tendency stop with therapeutic problems? Will not diagnostic and pathologic questions also be given the manufacturing pharmacist for solution, and will he be so blind to his own interest as to remain silent? We can gather some idea of this in some recent literature on the important subject of vaccination, a subject strangely neglected in medical schools and scientific laboratories. In this we learn of "*vaccinia sine eruptione*" as a satisfactory explanation of what would strike a critical observer as a complete failure of the virus. No wonder that "a boy living in the infected district" who performs the operation is put forth as a witness concerning a matter on which Jenner himself might not be competent to judge.

Therapeutic false prophets will last long into the twentieth century, but the examined, criticised life then, as ever since the days of Hippocrates, will be but little influenced by them. To it "they come like water and like wind they go."

THE ENDOWMENT OF MEDICAL COLLEGES.¹

BY W. W. KEEN, M.D., LL.D.,
President of the American Medical Association.

ENDOWMENT OF MEDICAL SCHOOLS.

TURNING, now, from the affairs of the Association, I wish to say a few words in reference to a subject of paramount importance which I am sure will appeal to the sympathies of all present; namely, the need for endowments for medical schools.

The tide of charity in the United States has reached a remarkable height. The *Chicago Tribune* publishes an annual list showing that in 1894 the charitable gifts and bequests in the United States amounted in round numbers to \$20,000,000; in 1895, to \$29,000,000; in 1896, to \$34,000,000; in 1897, to \$34,000,000; in 1898, to \$24,000,000; and in 1899, to the enormous sum of nearly \$80,000,000.

But a small portion of this charity, however, has been bestowed upon medical schools. It is mostly to colleges, theological schools, hospitals, museums and libraries that the principal amount has been given. The cause for this, I think, has been chiefly the vicious method in which all our medical schools were formerly conducted. They were practically joint-stock companies organized for the benefit of the faculties. As Professor Bowditch has said, one might as well expect the public to endow a cotton-mill as to endow such a school. The day of these private enterprises is now, happily, nearly past. The respectable schools of medicine are now conducted by trustees, a body of men wholly apart from the faculties, who manage the affairs of the medical school just as they would those of a university, taking control of the income and expenditures of the school, placing the professors and other teachers upon salaries and conducting the affairs of the institution on broad lines of educational progress. Partly as a result of this change, chiefly through the medical faculties, and largely, I am glad to say, as a result of the influence of the profession exerted through this Association, the courses of study at the medical schools of to-day, and, therefore, the necessities of the student are so wholly different from those of twenty-five years ago, that it may be well termed a new era in medical education. As a consequence of the broadening and lengthening of the medical course of study, the cost of medical education has enormously increased. The public at large do not at all appreciate this changed condition and even you, members of the profession itself who may have graduated many years since, scarcely appreciate to its full value the difference. As a consequence, the fees of the students, which can scarcely be raised beyond the present amount, are wholly inadequate for providing a proper medical education, and the medical school appeals, as does the college and the theological school and the technical school, for wise and liberal endowments in order to provide this suitable education. "There is no branch of education," says President Eliot of Harvard, "which more needs endowment. Medical education is very expensive, because it has become, in the main, individual instruction. Large lectures and crowded clinics are seen to be of really very limited application, so that year by year the medical teaching becomes more and more costly."

¹ Abstract of the President's Address before the American Medical Association in Atlantic City, N. J., June 5, 1900.

What were the necessities of a medical school twenty-five years ago? Two lecture-rooms, in which seven professors talked, a dissecting-room, and, if possible, a clinic, which was occasionally but rarely in a college hospital. Practically the instruction which the student obtained, with the exception of dissecting, was limited to "book-knowledge" and "ear-knowledge." The student was not brought into contact with any patients or any concrete facts, observations or experiments. He only listened to what his teachers said about them. Millions were given to hospitals in which the sick were treated, but only sixpences to medical schools, in which the men who are to care for their future patients were trained. "Spain," says Lyman Abbott, "in the late war had nineteenth-century guns and sixteenth-century men behind them. We know what came." Our splendidly equipped hospitals are the nineteenth-century guns. Insufficiently trained doctors are the sixteenth-century men. The time has eminently come when the "men behind the guns" must equal in efficiency the weapons with which they do the fighting.

To perform a tracheotomy and rescue a child suffering from diphtheria is a dramatic occurrence which appeals to every one. To conduct a long series of experiments in the laboratory by means of which the cause of diphtheria shall be found and the necessity for a tracheotomy avoided appeals only to the educated few; yet the service done by the operation is a service only to the one patient who may be rescued by the knife, while the other is a service to hundreds and thousands of patients for all time who will escape both the knife and the disease. Yet, such a series of experiments in preventive medicine brings no reward in money, a limited reward in fame, and only its largest reward in the consciousness of giving a great boon to humanity, for which it never can pay.

The era of the man who simply listened to what his teachers had to tell him and then went on his way, as a "rule of thumb" man, is happily past. This is the era of the trained man and the trained woman, and training means opportunity provided by the community, and time, labor and money given by the man.

Let us look for a moment at what a medical school now needs. It stands for two things: First, "thing-knowledge," instead of "book-knowledge" and "ear-knowledge," teaching the facts of modern science by scientific methods; that is to say, methods of precision. But secondly, no medical school should be content simply with imparting the knowledge that exists. It should push back the boundaries of ignorance and by research add to existing knowledge.

In the accomplishment of the first duty of the medical school, there are required, first, didactic lectures. I am not one of those who believe that the day of the didactic lecture is past. "Never," said President Faunce, of Brown University, in his notable inaugural, "never shall we be able to do without the personality of the teacher flaming with enthusiasm for knowledge, pressing up the heights himself and helping the student on."

In the 156 medical schools in this country there are, perhaps, over 1,500 members in their faculties. In all of them are inspiring teachers flaming with enthusiasm, for a not inconsiderable proportion may properly be so described, and the influence of such enthusiastic teachers is felt by the entire class. One or two such men in every school make a good faculty. Beside the

didactic lectures, a good working library and a reading or study room is a requisite. And it is a matter of no little encouragement that in the reports of the Commissioner of Education for 1898, 72 medical schools reported 151,433 volumes in their libraries.

Secondly. — The great difference between the modern method of teaching medicine and the older method consists in *laboratory instruction* and *clinical instruction*, both of which must be *individual*. Laboratories are very costly. They require buildings, equipment and assistants. The number of laboratories required in the present day in a fully equipped medical school is astonishing. First, the dissecting-room, the anatomical laboratory, and along with this a laboratory of histology, and another which may be combined with it, a laboratory of embryology. Next, a physiological laboratory, in which each student will not become an accomplished physiologist, but will become familiar with physiological methods and be trained in exact and careful observation; a laboratory of chemistry and, combined with it, especially a laboratory of physiological chemistry; in the department of materia medica, a laboratory of pharmacy, in which the student will not become a good pharmacist, but will learn the essentials of pharmacy, so that he will not make, at least, gross mistakes, which otherwise would constantly occur. Still more important is a laboratory of pharmacology in which he will learn the action of drugs and be prepared rightly to use them. In obstetrics, a laboratory of practical obstetrics and obstetrical operations is essential. In surgery, he needs a laboratory in which he shall be taught all the ordinary surgical operations. In pathology, he needs a laboratory of morbid anatomy, a laboratory of bacteriology and a laboratory of hygiene. The mere statement of this catalogue of thirteen laboratories will enforce the fact that an enormous expense not only for the installation, but also for the running expenses will be required. To show what one university abroad does, Professor Welch has stated² that the Prussian Government expends outside of the salaries of professors in the University of Berlin alone over \$50,000 annually! What American medical school can show anything approaching an endowment which will provide such a sum?

And what has not the laboratory done for us within the last few years? It has discovered the cause of tuberculosis, tetanus, suppuration, cholera, diphtheria, bubonic plague, typhoid fever, erysipelas, pneumonia, glanders and a host of other diseases; it has shown us how to avoid all danger from trichina, so that our entire commerce in hog-products is conditioned upon the laboratory; it has shown us how to banish suppuration, erysipelas, tetanus and pyemia from our hospitals and reduce our death-rates after operations from 50 per cent. or 33 per cent., to 10 per cent., five per cent., one per cent., and often even fractions of one per cent.; it has given us a really scientific hygiene in which we no longer guess but know; it has shown us the rôle of the mosquito in malaria, of the rat in bubonic plague, of the fly in typhoid fever; it has given us the power to say to diphtheria, "Thus far shalt thou go and no farther"; it will give us the power to utter a paean of victory over typhoid, cholera, bubonic plague, tuberculosis, yellow fever, cancer, and other such implacable enemies of the human race;

² Higher Medical Education and the Need for its Endowment, Medical News, July 21, 1894.

—and yet there are those who would stay this God-given hand of help!

And the laboratory has had not only its devotees but its heroes. Listen to the story of but one. Dr. Franz Müller, of Vienna, was one of those who in his investigations of the bubonic plague in 1897 contracted the dreaded disease from the bacilli in his culture tubes. When he became certain that he was infected he immediately locked himself in an isolated room and posted a message on the window pane, reading thus:

"I am suffering from plague. Please do not send a doctor to me, as, in any event, my end will come in four or five days."

A number of his associates were anxious to attend him, but he refused to admit them and died alone, within the time he predicted. He wrote a farewell letter to his parents, placed it against the window, so it could be copied from the outside, and then burned the original with his own hands, fearful lest it might be preserved and carry the mysterious germ. Can you find me a finer example of self-sacrificing altruism? Was ever a Victoria Cross more bravely won?

But the establishment of laboratories with their attendant expenses is not the only improvement in our medical curriculum. Every well-conducted medical school requires a large hospital in connection with it. Here must be installed again a fourteenth laboratory of clinical medicine, in which all the excretions of the body will be examined, tumors studied, cultures and blood counts made, or else the patients in the hospital, from the modern point of view, are neglected. It is not too much to say that a patient requiring such examinations, be he the poorest of the poor, has his case more scientifically studied, more exactly measured, more precisely treated than most rich patients in sumptuous homes.

Again, the individual instruction to which President Eliot referred is now carried out in all our best medical school hospitals by the establishment of small ward classes, by whom or before whom the patients are examined, prescribed for and operated upon by a professor or instructor, each student bearing a part; and so, by having his investigations directed, his powers of observation cultivated, his mistakes pointed out, his merits applauded, the student graduates from the medical school equipped as none of us, alas, ever had the opportunity for. All of these laboratory and ward classes imply an enormous increase in the number of assistants, young men striving not only to perfect themselves, but by teaching, to forge to the front so that the best men will win in the struggle for preferment.

Again, the course of study has been prolonged from two years, as it was until twenty or twenty-five years ago, to four years, and in addition the terms have also been lengthened. When I was a student the course of study consisted of two sessions of about nineteen weeks each, or thirty-eight weeks in all. Now the course consists, as a rule, of four sessions of thirty-two weeks each, or a total of one hundred and twenty-eight weeks, an increase of ninety weeks, nearly three and one-half times as much as twenty-five years ago. In 1885, 103 schools had courses of two years, and five schools courses of three years. In 1800, two schools had courses of two years, 10 of three years, and 141 of four years. (Monographs on Education in the United States, No. 10, Professional Education, James Russell Parsons, Jr., Department

of Education for the United States Commission to the Paris Exposition of 1900, page 11).

It can be easily seen that from this additional time required another source of expense has arisen in addition to the increased number of assistants. The time given to teaching by members of the faculty, as a rule, has been more than tripled, as compared with twenty-five years ago. In addition to this, professors in charge of laboratories must practically give their whole time to the work, and are precluded, therefore, from any income from practice. These men must receive salaries sufficient for them to live upon.

Surely this statement of the difference between the education given twenty-five years ago, which required but little expenditure of money and resulted in considerable incomes, and the modern methods of education in the laboratory and the hospital, as well as the lecture-room, which require enormous expenses, is an ample reason for large endowments.

But the function of the medical school, as I have said, should not be limited merely to the imparting of existing knowledge. No school is worthy of the name that does not provide for greater or less research work, by which substantial additions to our knowledge may be made and the facilities and the results of the healing art made more efficient for the welfare of mankind. Twenty-five years ago there were practically few young men who were fitted for research work, especially laboratory work. Now every well-equipped school has attached to it one way or another a score or more of young men who are eager for work, longing for the opportunity for usefulness and distinction if they can only obtain a bare living. When in my own school I look around me and see these young men thirsting for opportunities for usefulness and distinction, I am often heartsick at our want of facilities for this purpose, and I long with an intense longing for some wise and munificent friend of humanity who will endow post-graduate scholarships, fellowships and laboratories for just such an end. Our hospitals do a magnificent work in charity, helping the sick and the forlorn, the weak and the suffering in a way which appeals to the charitable instincts of our fellow countrymen, and to this appeal they have responded most generously. *But I venture to say that the medical school which trained a Lister, a Pasteur, a Koch, has done more for humanity than all the hospitals of this country combined.* The modest laboratory at Wirtzburg consisted chiefly of a Rhumkorff coil, and a Crooke's tube—and Röntgen. Other Röntgens and Listers we have among us if we but knew it. These are the men who are the world's real illustrious heroes.

It is especially in these days that in America we need such researches, for our tropical possessions have brought us face to face with new problems which we can only justly meet by the most careful investigations. It is to our credit that several of our medical colleges have already established schools of tropical medicine, which show that the profession, as well as the public, are rising to the level of our responsibilities and duties.

It is also a cheerful sign of the times that at Harvard a School of Comparative Medicine has been established, which will lead to other similar schools in connection with our medical colleges for the broad study of disease both in man and in the lower animals. All such knowledge should be correlated, and we may well learn from the diseases of animals how to care

for man, as thus far we have learned chiefly from the diseases of man how to care for animals. The endowment of this school with the modest sum of \$100,000 is an omen of future good. So, too, the somewhat similar school at Buffalo bids fair to add immensely to our knowledge and therefore to our ability to heal.

What now has the American public done for the medical school? Let us contrast it with the endowments in theology. Our academic institutions have such an enormous sum total of endowments that I do not even consider these. Let us, however, compare theology and medicine, remembering that theology is almost wholly a literary study, dealing not with the facts of nature, requiring no laboratories and no large corps of assistants and therefore conducted at a minimum of cost. In 1898 (United States Education Report) 84 theological schools reported endowments of \$18,000,000, and 71 schools do not report this item: 19 out of 151 medical schools report endowments of \$1,906,072. Five theological schools have endowments of from \$850,000 to \$1,369,000 each. Yet in 1899 there were only 8,000 students of theology for whom this enormous endowment was provided as against 24,000 students of medicine. Each theological student had the income of an endowment of \$2,250 provided for his aid, each medical student the income from \$83. As against 171 endowed chairs of theology, there are only five in medicine.

I do not grudge a dollar to the theologian, but I plead for his medical brother, that, with a vastly more expensive education, he shall have a reasonable provision made for his training. I have already indicated to some extent the direction which these endowments of medical schools should take. They may be classed in three categories:

(1) The endowment of professorships. By doing this the salary of the professor would be made available for the other wants of the school. The endowment may well take the form of a memorial, either of the generous donor, or, still better, of some distinguished former occupant of such a chair whose name would always add luster to it.

(2) The endowment of the laboratories, which, as I have indicated, are so costly, both in their installation and in their yearly expenses.

(3) The endowment of post-graduate scholarships and research fellowships, these being intended especially for those who will devote their time to original research. Students cannot take much time for original research; their regular studies will absorb all their energies. Research must be done chiefly by young graduates under the direction of stimulating and energetic members of the faculty.

It is not, I trust, too much to hope, if not now, that in the near future the American Medical Association will set a fruitful example by giving each year "scientific grants in aid of research." The first object of the Association must be, necessarily, to place itself on a strong financial basis. It should own its own building, its printing and publishing plant, and, as soon as possible, should have a reserve fund of considerable proportions. Nothing conduces to the stability and conservativeness of any institution like a good bank balance. The British Medical Association has to-day an excess of assets over liabilities of nearly \$380,000, chiefly invested in its building at 429 Strand, London. The American Medical Association has made a fair start with a surplus of over

\$27,000 last January, and, with its large and, let us hope, rapidly increasing membership, it will before long assume a rank second only to the British Medical Association. Last year⁸ the Scientific Grants Committee allotted £741, or somewhat more than \$3,500, for research work, distributed to three research scholarships, the holders of which were paid \$750 each a year, and 33 grants in aid of research work, varying in amounts from \$25 to \$100. Among those to whom grants were made occur the well-known names of Beevor, Vaughan Harley, Kanthack, Luff, Manson, Noel Payton and Risien Russell. I should hope that the American Medical Association might even now begin by a modest appropriation, say of \$500 a year, which should be allotted by the trustees, or by a special committee on scientific grants, after a careful investigation of the merits and the character of the person to whom such grants were made. No grant should exceed \$100, or possibly even, at first, \$50 in amount. The results of such grants would be not only absolute additions to our knowledge, but the cultivation of a scientific spirit which would permeate the whole profession and elevate its objects and aims.

In pleading for these endowments of medical schools, it is but a plea for a return to the profession of a title of what they have given. Two years ago I carefully investigated the value of the services rendered to the poor in the city of Philadelphia by the medical staff of the Jefferson Medical College Hospital alone, and I found that 129 medical men were then attached to the hospital, and their services, calculated on a very moderate basis of the ordinary fees, I valued at over \$500,000. To a profession which gives so freely of that which is most difficult to give, its own life-blood, surely the public for its own protection may give reasonable endowments to its medical schools. It will be returned to the community tenfold in better educated, better trained and more successful doctors. More devoted, self-sacrificing men and women they never can have.

GASTRIC HEMORRHAGE.¹

BY W. L. RODMAN, M.D., PHILADELPHIA,
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PERMIT me in the first place to express my profoundest gratitude to the Association for the distinguished honor conferred in placing the surgical oration for 1900 in my hands. It is with more than diffidence that I approach so great a responsibility, being keenly alive to my own shortcomings, and having for the nonce a quickened memory of the brilliant addresses made upon former occasions by many of my illustrious predecessors.

Instead of reviewing the advances made in the entire field of surgery during the past year—a task which could, at best, be only cursorily done in the time that I feel warranted in occupying—I have chosen to consider the subject of hemorrhage from the stomach in its several phases as being more likely to interest a mixed audience, such as we have, com-

¹ Address in Surgery before the American Medical Association, Atlantic City, N. J., June 5-8, 1900.

⁸ British Medical Journal, 1899, ii, p. 219.

prising specialists, general practitioners and surgeons. Furthermore, the lack of attention given the subject justifies the selection.

Gastric hemorrhage of whatever nature was, until recently, looked upon as strictly a medical affection, and was treated upon the same general principles underlying the treatment of many other internal hemorrhages. This is still true of many — indeed most — cases of gastrorrhagia, but, as we shall endeavor to show, is not the case with others which are treated by a combination of medical and surgical means, and others still which should be met by prompt operative procedure.

Our purpose will be best subserved by enumerating the different varieties of gastrorrhagias, showing how they are to be diagnosticated, and giving the treatment to be pursued in the more important varieties.

Hemorrhage from the stomach may result from ulcer of the stomach, duodenal ulcer, gastric carcinoma, cirrhosis of the liver, vicarious menstruation, post-operative hematemesis, purpura hemorrhagica, miliary aneurisms, aneurisms of the aorta and other vessels, leukemia, typhoid, yellow, and other infectious fevers, valvular disease of the heart, and various kinds of traumatism.

It will only be practicable to consider the most important and frequent causes of gastric hemorrhage.

Gastric ulcer is the most common disease of the stomach producing hemorrhage — occurring in five per cent. of the entire population, according to Ewald² and others high in authority.

Hematemesis occurs in at least 50 per cent. of all cases of gastric ulcer, and many authorities estimate it as present in 80 per cent. It is, too, fatal in eight per cent. of the cases in which it occurs, according to the conservative estimate of Leube,³ and we cannot question that it is indirectly fatal in a much greater number of cases by anemia and its remote consequences.

Many authorities who may be quoted place both the frequency and mortality of hemorrhage higher than Leube does, and very few as low. Therefore, its prompt detection and proper treatment are of the greatest importance. The recognition of gastric hemorrhage resulting from ulcer is usually readily made on account of the previous diagnosis in the case; but if the patient is seen at or subsequent to the hemorrhage for the first time its association with the other classical symptoms of ulcer, particularly pain and vomiting after eating, leave little room for doubt. While there will be pain, vomiting and gastrorrhagia in carcinoma of the stomach, the differences furnished by the two diseases are so marked that doubtful or border-line cases will be rare.

Pain, which is common to both, is more influenced by the taking of food in ulcer, and the local tenderness upon pressure is decidedly more circumscribed, so much so that the patient will point at it with the tip of his finger, rather than with the entire hand. This is a valuable sign, and is insisted upon by J. M. Da Costa.⁴ It is usually felt with the greatest intensity from one to two inches below the xiphoid cartilage, and directly opposite, near the heads of the two last ribs, will be found a second painful spot. The pain of ulcer is often relieved at once by emesis if it emp-

ties the stomach. This is not the case with the pain and vomiting of carcinoma.

The character and amount of the ejected blood, however, will usually give prompt and positive evidence of its source and the cause underlying it, making it needless to question and physically examine a patient who should be kept quiet during, and for some time after, a hemorrhage. Bleeding in carcinoma is rarely so free as in ulcer; the amount of blood lost being more frequent, in small quantities, and of the characteristic coffee-grounds appearance. It does not resemble pure blood as it does in ulcer, even though mixed with food. The presence of hydrochloric acid — perhaps an excess of it, or hyperchlorhydria — in the ejected matter is as characteristic of ulcer as its absence and the presence of lactic acid are of carcinoma. Ulcer is more frequent in females under forty, whereas carcinoma occurs more commonly in men past middle life.

If an examination of the case is allowable, the presence of a palpable tumor will be more often encountered in carcinoma than in benign ulcer, but I would emphasize the fact that a decided tumor may and did exist in quite a number of the forty benign ulcers thus far excised. On account of the tumor all of the operators thought that they were operating for malignant disease, until the microscope showed differently, and in every instance the subsequent clinical history has confirmed the verdict of the microscopist. Our distinguished President, Dr. Keen,⁵ was one of the first to do partial gastrectomy for a benign ulcer which caused quite a marked tumor through the abdominal wall. The patient recovered promptly and is still — ten years after the operation — in perfect health. Others have had the same experience, as will be seen by reference to my paper read before the American Surgical Association, May 1st, reporting all operated cases up to date.

Treatment. — Formerly the treatment of hemorrhage from gastric ulcer was uniformly by ice, astringents and opium, combined, of course, with rest. This should properly be the treatment still for the first hemorrhage in all cases; for the second, possibly; but not for subsequent ones, for recurring hemorrhage, like appendicitis, will sooner or later prove fatal, and should, like that affection, be treated radically; and to carry the parallelism further, the best time to operate is between attacks. With two hemorrhages coming close together we may assume that, as in appendicitis, there will be a third attack, and if anything is to be attempted surgically it should be done when the patient is in fairly good condition, and not in the collapse of hemorrhage.

Before taking up operative procedures it might be well to refer to the treatment of gastrorrhagia by copious enemata of hot water, as advised and practised with such happy effect seemingly by Tripier.⁶

In several cases which had resisted all the usual medicinal and dietetic treatment, Tripier secured prompt and abiding results by hot enemata repeated twice and thrice daily. The water should be injected at a temperature of 112° F. to 120° F. There can be no doubt, he says, that the hemorrhage came from the stomach, duodenum, and points high up in the alimentary tract. Hot water acts reflexly.

Tripier has also found that hot enemata promptly

² Ewald: *Diseases of Stomach*.

³ *Archives f. klin. Chir.*, 1897.

⁴ Da Costa: *Medical Diagnosis*.

⁵ Cartwright Lectures, p. 82.

⁶ *Semaine Médicale*, Paris, 1898, vol. xviii, pp. 241-245.

check intestinal hemorrhage in typhoid fever, as it will bleed from the rectum, sigmoid and large bowel. We use hot water to check external, uterine and other hemorrhages; and so superior is it to ice that one rarely sees the latter used. It certainly should be preferred in rectal and other intestinal hemorrhages where the water can come promptly in contact with the bleeding points. We also know that, with the patient in proper position, points higher up in the alimentary canal may thus be reached, and the bleeding capillaries or arterioles influenced directly by the best of hemostatics—heat. There is also evidence to show that it acts reflexly, and may in this way control duodenal, even gastric hemorrhage. Plunging the hands in hot water will at times quickly arrest bleeding at the nose, as will ice applied to the head. This surely must be reflex. Another and good reason for using hot water per rectum in the manner advised by Tripier is, that if nothing more is done, shock is combated in the best possible way, as it is easy to add salt to the water in proper proportion to make normal salt solution. Hot water should also be taken in small quantities by the stomach. It is my belief that it will be both less likely to excite vomiting and more certain in its hemostatic effects than ice.

Favorably as I look upon the proposal to use hot water in the ways indicated in both gastric and intestinal hemorrhage, anatomy and pathology must not be forgotten, and it should be clearly understood that hot water can do no more in internal hemorrhages than is to be expected in external ones. If the bleeding is capillary or the open arterioles of very small size, prompt hemostasis may result; whereas if an artery or vein of any size has been opened, we may expect much less from any treatment which depends for its success upon the formation of a firm clot in the mouth of the bleeding vessel than we usually can in external hemorrhage. In the latter we usually have complete section of a blood-vessel which favors retraction and contraction of its coats—nature's best means of arresting hemorrhage, favoring as they do the formation of a clot.

In hemorrhage the result of disease, however, we have very generally a lateral opening made into the calibre of the blood-vessel, and the ability of the latter to contract and retract within its sheath is no greater, but actually less, than that of a vessel incompletely cut across. Occasionally, it is true, ulcerative action will as completely divide a blood-vessel as if it were done by a knife, but such cases are exceptional, as will be shown by a careful study of 55 fatal cases of gastric and duodenal hemorrhage collected and reported by M. Savariaud⁷ in his very complete thesis.

Of 55 autopsies collected from various sources, and reported by Savariaud (none were operated upon), there were:

Ulcerations of the splenic artery	17 cases.
" " coronary artery	6 "
" " pancreaticoduodenal artery	7 "
" " gastric arterioles	10 "
Branches of the coronary vein	2 "
Other veins	2 "
Vessel not determined	2 "
No vascular orifice visible	4 "
Vessel not mentioned	4 "

Hematemesis frequently occurs as the result of duodenal ulcerations, and as it is at times impossible to

differentiate between gastric and duodenal hemorrhage, we have included the seven cases of duodenal ulcer. Furthermore, gastric and duodenal ulcerations frequently coexist and the treatment of both is essentially the same.

The splenic artery and vein have been opened by the same ulcer as occurred in the case of Gaillard.⁸

Contrary to what might with reason be expected, there is no constant relation between the size of the vessel and the amount of or rapidly with which the blood is lost. It is impossible, therefore, to diagnose with any degree of certainty the source of the hemorrhage, and an opinion at best is only a guess based upon probabilities anatomic and pathologic. He who said "the end of all philosophy is a learned doubt" must have been a medical man thinking of gastric hemorrhage.

The subjoined table is also from Savariaud:

Vessel.	No. of cases.	Sudden death.	Rapid death.	Survived considerable time.
Heart	4	1	1	2 (3 days).
Aorta	2	1	1	1 (10 days).
Hepatic	2	1	1	1 (10 days).
Splenic	17	3	7	7 (2 to 8 days).
Coronary	6	1	3	2
Pancreaticoduodenal	6	1	3	2 (8 to 15 days).
Arterioles	10	1	1	8 (4 to 15 days).
Small veins	4	1	1	2 (7 to 11 days).
Invisible veins	3	2	1	1 (21 days).

It will also be seen from this table, based upon autopsies where careful examinations are made, that death may be sudden in capillary hemorrhage, or delayed ten days when there is an opening as large as a haricot bean into the aorta (Grumfeld's case). This uncertainty of diagnosis is a strong argument in favor of surgical intervention before it is too late to be of use.

I would emphasize the fact shown by the above table, which is based upon accurate post-mortem examinations, that large and rapidly fatal hemorrhages may occur from capillaries. These observations have also been borne out in many of the operative cases herewith reported, for in at least seven, while the bleeding was free, it could not be located. So then, having in mind the usual source of hemorrhage in gastric ulcer, and that it is from vessels of rather large size in nearly four-fifths of all fatal cases, the uncertainty and utter unreliability of the ordinary medical means employed will be apparent.

Measures adapted to the treatment of capillary hemorrhage may often succeed, and of these we believe hot water to promise the most; but as one would not think of treating hemorrhage from the radial artery or vein by such means, one should think less of doing so here with vessels of equal and even greater size involved, with nature's best means of checking hemorrhage made impossible for the reasons already given.

It is therefore manifest that hemorrhages following the superficial erosions of the gastric mucous membrane—the "exulceratio simplex" of Dieulafoy—rather than the gastrorrhagias following the "ulcus simplex" of Cruveilhier, which is essentially a perforating process, stand the best chance to be arrested spontaneously by nature, or to be cured by the routine medicinal and dietetic treatment.

The hemorrhage may undoubtedly be just as free in the superficial as the deep ulcers, but the difference is in the size of the bleeding vessels. As there are only

⁷ Thèse de Paris, 1898.

⁸ Savariaud's Thesis.

capillaries and arterioles in the gastric mucous membrane, hemorrhage from such vessels could be reasonably expected to yield to measures impotent in the presence of bleeding from a coronary or splenic artery. Representing, as they do, less than 20 per cent. of the fatal hemorrhages, there is every reason to believe that bleeding from capillaries and arterioles will constitute a very much larger per cent., possibly a majority of non-fatal gastrorrhagias. I have collected, so far as I know, every published case of operation for bleeding ulcer, and to them added many reported to me in personal communications for the first time. A careful study of my tables does not enable me to say definitely the number of cases in which the bleeding came from arterioles. It does, however, justify the statement that it is a large per cent.

Having exhausted all of the ordinary medical means for arresting hemorrhage, should such cases be treated as external hemorrhage, namely, the bleeding vessels cut down upon and ligated?

There are now a sufficient number of cases upon record to justify the statement that better results will be secured by judicious interference than by a policy of inaction hitherto invariably followed. By this I would not be understood as advocating the opposite plan of interference in every case—far from it.

Up to a certain point there is substantial agreement between physicians and surgeons, and I may say here that the idea of arresting hemorrhage from gastric ulcer by surgical means occurred to a physician and surgeon at the same time.

In all cases of small but frequent hemorrhages, which slowly but almost surely destroy the patient, recourse should be had to timely operation. If there is at the same time gastrectasis, the indication for operation is absolute, as dilatation stretches the ulcer, prevents healing and favors bleeding. The results, too, of operations for chronic hemorrhage have been more than encouraging, and should, without question, lead to earlier and more frequent surgical intervention.

There have been 31 operations for frequently recurring, or what might be called chronic hemorrhages, with six deaths, or a mortality of 19.3 per cent. This is, under the circumstances, an excellent showing when it is remembered that it represents but little more than the average mortality given in a large number of operations upon the stomach for non-hemorrhagic ulcers.

Mr. Robson⁹ reports 188 operations for gastric ulcer (non-hemorrhagic and non-perforating) with a mortality of 16.4 per cent., which is about the same conclusion reached by Heydenreich,¹⁰ Tricomi¹¹ and others who have written upon the subject. He later on gives the mortality of operations for chronic hemorrhage as 10.5 per cent. Manifestly gastro-enterostomy, pyloroplasty, or other operations upon the stomach should not give a better prognosis on account of the presence of hemorrhage as a symptom. The good showing now made for recurring hemorrhage will be still better when physicians generally recognize that if delayed operations are justifiable, early ones are better, and should, therefore, be en-

couraged at a time when the chances of success are correspondingly brighter.

Operations for acute hemorrhage in general do not so imperatively call for surgical intervention, but when this is said, it is saying nothing more than is true of external hemorrhage. In our present state of knowledge, we cannot say that operation should ever be done during the first hemorrhage or the ensuing shock. Likewise, if seen after the hemorrhage, when the patient is successfully rallying from shock, a policy of non-intervention is not only permissible, but best.

Diculafoy¹² advises surgical intervention after the first hemorrhage if as much as half a litre of blood is lost, and insists upon operation if the bleeding is repeated within twenty-four hours. One of Diculafoy's cases was successfully operated upon by Cazin after the first hemorrhage. There has been, however, a rather general condemnation of too early operation by surgeons, from Mikulicz, the first to operate for hemorrhage, in 1887, to Keen, Hartman, Heydenreich and Robson, none of whom have advised operations in acute hemorrhage. Certainly surgeons cannot be accused of too great alacrity in operating for gastric hemorrhage when none have been so radical as a physician.

If the hemorrhage is repeated within a short time the burning question will present itself to the physician first, to the surgeon next—shall a policy of "masterly inactivity" be longer pursued? To this question a majority would still answer "yes," believing that the chances offered by nature are better than those given by surgery. I am satisfied that during a second serious hemorrhage inaction should govern, or that only medical means be used; but as soon as bleeding ceases, the patient has rallied from shock and is in good condition, something should be done to prevent what are reasonably certain—other hemorrhages. This is even less radical than what we should do in external hemorrhage, and, as has been said, nature has less chance to arrest spontaneously bleeding from vessels opened by ulcerative action. I am thoroughly convinced from a careful study of all reported operative cases up to date that none were operated too early, but many too late.

It is certainly the duty of the physician to summon surgical aid as soon as the second hemorrhage begins if he has not already done so, that everything may be in readiness to seize upon a propitious time for interference before a third attack. It is easy to believe that several cases in my tables were lost by delaying operation until after the third and fourth hemorrhage. *Per contra*, there have been quite a number of successful operations after the second and third hemorrhage, operation having been done in a condition of extreme anemia in all of them, as the cases of Roux, Robson, Cazin, Andrews, and two of Armstrong's cases.

There have been 32 operations for acute hemorrhage, with 13 deaths, or 40.6 per cent. mortality; a much better showing than was made by Mr. Robson, who reported a smaller number of cases, and included also among them cases of vicarious menstruation and post-operative hematemeses, neither of which has any direct etiologic or other connection with gastric ulcer.

It will be seen from a glance at the tables¹³ herewith appended, that many operative procedures have been

⁹ Hunterian Lectures, Lancet, March 10, 1900, p. 678.

¹⁰ Semaine Médicale, Paris, 1898, vol. xviii, p. 49.

¹¹ Riforma Medica, Palermo, 1899, xv, pages 326, 339, 350.

¹² Presse Médicale, 1898, p. 31.

¹³ Tables omitted.

carried out in the treatment of gastrorrhagia, and to those sufficiently interested to study them, the symptoms, condition found at operation, method of operation and result of each case are given.

I wish here to give full credit to my assistants, Drs. W. Hersey Thomas and Stillwell C. Burns, for most valuable assistance rendered in the collection of data and preparation of tables.

It will not be my purpose here to review the merits of all of the many operative procedures that have been undertaken for the arrest of gastric hemorrhage. This would interest surgeons chiefly and they will find all information desired in the tables herewith presented, or in an analysis of them by the author in a paper read before the American Surgical Association on May 1st last. Of the dozen methods practised the three best are pylorotomy, or partial gastrectomy, according to site of ulcer, gastro-enterostomy, and ligature *en masse* of the gastric mucosa. The first is ideal surgery, preventing possible perforation and malignant degeneration; the second is practical and is oftentimes the best surgery, stopping hemorrhage and favoring cicatrization of the ulcer by putting the stomach at rest; while the third is frequently the most desirable way to end an exploratory gastrostomy when the site of the bleeding vessel is unknown until the stomach is opened. Each method has given good results, but for many reasons the second has been preferred in a majority of instances, and of the many ways of performing gastro-enterostomy the posterior or von Haacker's method with the Murphy button has been and should be generally chosen.

Carcinoma. — While hemorrhage *per se* as a symptom of gastric carcinoma has not, so far as I know, led to an operation, there can be no doubt that in certain cases it will be either so free or of such frequent recurrence as to make one desirable. Resection, if practicable, is best, but gastro-enterostomy would not only arrest the bleeding, but usually delay the inevitable end, and bring about a decided amelioration of all the distressing symptoms. Indicated as it often is in advanced carcinoma without hemorrhage, the presence of the latter as a symptom should be an additional reason for surgical intervention.

Cirrhosis. — Hemorrhage into the stomach is a frequent symptom in cirrhosis of the liver, and death resulting therefrom cannot be considered as rare. Preble,¹⁴ of Chicago, has recently reported 60 cases of fatal hemorrhage, three in his own practice, one in that of a colleague, and 56 collected from literature. The diagnosis in all was verified by autopsy. After a careful analysis of these cases, a full history of each being given, he draws some interesting and striking conclusions:

(1) Fatal gastro-intestinal hemorrhage is an infrequent but not rare complication of cirrhosis of the liver.

(2) In a great majority of the cases the cirrhosis is atrophic, but it may be hypertrophic.

(3) In one-third of the cases the first hemorrhage is fatal; in the other two-thirds the hemorrhages continue at intervals of over a period varying from a few months to several years, the maximum given being eleven years.

(4) In one-third of the cases the diagnosis can be made at or before the time of the first hemorrhage. In the other cases the diagnosis cannot be made at all

or only after a few months or years, during which time other symptoms of cirrhosis have developed.

(5) Esophageal varices are present in 80 per cent. of the cases, and in more than one-half of the 80 per cent. the varices show macroscopical ruptures, and it is probable that many other ruptures would be found if the varices were tested by injection of air or fluid.

(6) Fatal hemorrhages occur in cases which show no esophageal varices, and they are probably due to the simultaneous rupture of many capillaries of the gastro-intestinal mucous membrane.

(7) The hemorrhages in this class of cases are usually preceded by other symptoms of cirrhosis, but the first symptom may be a fatal hemorrhage.

(8) In six per cent. of the cases which show esophageal varices was the cirrhosis typical, that is, showed ascites, enlarged spleen and subcutaneous abdominal varices.

It is certainly interesting to learn that the diagnosis of cirrhosis can be made in only one-third of the cases at the time of the first hemorrhage. A study of Preble's cases, along with those collected by Savariaud, impress¹⁵ one with the possibility of an unexpected and fatal gastric hemorrhage in the course of either a latent gastric ulcer or cirrhosis.

I am also impressed with the belief that several of the cases reported as having been operated upon for diffused or capillary hemorrhage complicating ulcer were really instances of venous hemorrhage into the stomach on account of an obstructed portal circulation due to cirrhosis. Such cases do not and cannot give as good operative results as in ulcer.

Treatment. — It has been suggested that as esophageal varices are the cause of a large per cent. of the gastrorrhagias complicating cirrhosis, pressure should be made upon the ruptured varix or varices by introducing a rubber bag into the esophagus and distending it with water or air. This suggestion, so far as I know, has not been carried out. The objections that one can urge against it are manifold:

(1) It is questionable if pressure can be sufficiently protracted in this way to be of benefit.

(2) In only six per cent. of the cases showing esophageal varices was the cirrhosis typical, and therefore easily diagnosticated. It is certainly unsafe to formulate a treatment which at best has only a chance to reach a comparatively small number of cases.

(3) The esophageal veins are part of the systemic, while those returning blood from the gastric mucous membrane are of the portal circulation. Therefore it would seem *a priori* that dilatation of the esophageal veins could not occur until there was primarily marked dilatation of the venules of the gastric mucosa, and secondarily enlargement of the connecting veins between the two systems.

(4) Hemorrhage from the stomach may result from so many causes that nothing in the way of surgery short of gastrostomy, which discloses the source of the hemorrhage, or gastro-enterostomy, which, by draining the stomach and placing it at rest, may stop the bleeding, would seem to be indicated.

There can be no reasonable doubt, however, that operations for gastric hemorrhage in cirrhosis have a less promising future than the same procedures in bleeding ulcer; for in the former there is, in addition, that general hemorrhagic tendency that makes bleeding from any situation most difficult to arrest.

¹⁴ American Journal of Medical Sciences, March, 1900, p. 263.

¹⁵ Thèse de Paris.

We have all realized this, and know how hard it is to permanently control the epistaxis of a cirrhotic patient. Still, while mindful of the difficulties in the way of success, I believe that with limitations surgical intervention may properly be considered. No operation has as yet, so far as I know, been deliberately performed where the diagnosis of cirrhosis has been made. Several of the cases reported and operated as hemorrhagic ulcers may have been — probably were — instances of cirrhosis.

A study of Preble's cases makes it sufficiently clear that in many instances it is simply impossible to diagnosticate between the hematemesis of ulcer and cirrhosis. One of them, Case XXXVI, a young woman in her usual health, suddenly vomits a large amount of blood. A diagnosis of *ulcus ventriculi* was made without reservation. At autopsy it was found to be a marked case of cirrhosis, and no evidence whatsoever of ulcer could be discovered. The opposite error can as easily be made, as evidenced by Preble's report of two cases seen at the Cook County Hospital with Drs. Walker and Ochsner. "Both were men between forty and fifty years, hard drinkers for many years. Both vomited a large amount of blood while at their usual work and in their usual health. Neither had any gastric disturbances other than could be referred to the chronic alcoholism. In both the physical examination was negative. There was no change in the hepatic dulness, no splenic tumor, no ascites, no superficial varices, no localized or diffused epigastric tenderness. The hematemesis continued over a few days to death. Were they cases of gastric ulcer or obscured cirrhosis of the liver? The general condition of the patients was so good as almost to exclude any thought of carcinoma. The age, sex and lack of gastric symptoms spoke against ulcer. The negative physical examination spoke against cirrhosis. Fatal hemorrhage from either cause is rare. The post-mortem examination showed that both were cases of gastric ulcer, and the eroded vessel could be seen on the base of the ulcer. There was no suggestion of any change in the liver."

Vicarious menstruation.— There has been a more or less general sentiment, if not positive conviction, on the part of a majority of the profession, that vicarious menstruation may manifest itself in the way of hematemesis. Such was, too, until recently, the general teaching, and there are not wanting those who still believe in the possibility of such an occurrence. If it does happen one would naturally think that it should do so in young women whose ovaries and tubes have been removed, or in women submitted to hysterectomy, the appendages being left, and who cannot therefore menstruate in the natural way. I have written to fifty prominent gynecologists and surgeons to learn if they had seen, and if so how frequently, instances of vicarious menstruation showing itself by hematemesis following removal of the appendages, uterus, or both.

Nearly all have answered, and it is a significant fact that only two have reported (each a single case) affirmatively. Yet these operations are very common, one of them having been for many years probably the most frequently practised surgical procedure. Many of the writers have expressed a positive conviction that vicarious menstruation does not occur.

It would seem, therefore, that what has hitherto been a vague impression with most of us is not corro-

borated by a careful examination of a large number of cases where it should if it ever occurs.

Post-operative hematemesis.— I cannot find in any of the text-books on surgery at my command reference to post-operative hematemesis. It must, therefore, be rare.

Mayo Robson,¹⁶ in his Hunterian Lectures, states that he has encountered it in seven cases of his own, two being fatal, and refers to a similar experience of Eiselberg, who reported to the Surgical Society in Berlin the details of six cases. It is significant that nearly all of the cases reported by Robson and Eiselberg were instances of operations upon the intestines, omentum and structures adjacent to the stomach. The anesthetic could not have been responsible for the vomiting of blood, for in one of Mr. Robson's cases cocaine was used, and a cholecystotomy for carcinoma of the bile-ducts completed in fifteen minutes. In several other cases there was no vomiting after the operation. Robson states that in six of the cases the omentum was ligated, and in another it was probably contused. He also says that "in an experiment on an animal multiple hemorrhages into the stomach followed twisting of the omentum."

Mr. Robson has also kindly given me, in a letter, details of a case of stab-wound of the abdomen. He says: "I explored the abdomen for a stab-wound, and as the patient was vomiting blood, I expected to find a wound of the stomach, but discovered no perforation of the stomach walls, though I had to ligate the superior mesenteric vein, the patient making a satisfactory recovery. The hemorrhage was doubtless due to bruising of the mucous membrane without rupture of the peritoneal coat." The explanation given of the hematemesis in this patient is satisfactory and rational, and could not well have resulted in any other way. I do not, however, understand why operations upon the omentum should cause post-operative hematemesis, as I can see no anatomical explanation for it. At first it would seem theoretically that twisting the omentum might force into the venules of the mucous membrane an amount of blood which they could not accommodate, and some weak vessel give way, causing hemorrhage into the stomach, notwithstanding the great capacity of veins to undergo enormous dilatation without rupture.

I have, with the assistance of Drs. Burns and Woody, experimented upon four dogs, endeavoring to, if possible, cause hemorrhage into the stomach by rapid and severe traumatism not applied to the stomach itself. In the first experiment a large dog was chloroformed, the omentum twisted into a rope, ligated high up and then resected. The stomach was at once cut into, and there was no suggestion of even hypermia from cardia to pylorus. The stomach was then removed, tacked upon a board, and photographed at once by Dr. Kassabian, who was present for that purpose. In experiment No. 2 a medium-sized young dog was chloroformed, the omentum twisted rapidly into a rope, and ligated high up. In addition I squeezed the spleen and pancreas so forcibly that I ruptured the former to a slight extent, hoping by the compression to force enough blood from these organs, whose blood supply is so intimately connected with that of the stomach, into the gastric mucosa to cause rupture of some of its vessels. The stomach was immediately opened and found to be perfectly normal

¹⁶ *Lancet*, March 10, 1900, p. 679.

in every respect, quite as much so as in case No. 1. In experiment No. 3 the dog was chloroformed, the omentum twisted into a rope, and the small intestines were compressed and squeezed for more than would or could be done in any operative procedure, Dr. Burns at the same time compressing the liver so as to interfere with the portal circulation. The stomach was then rapidly opened and found perfectly normal. The dogs were not allowed to come from under the anesthetic, and in all the stomach was quite empty, food having been withheld for some hours. In experiment No. 4 a medium-sized dog (female) was chloroformed, the omentum twisted into a rope, ligated high up and resected. The wound was then closed with ordinary aseptic precautions, and the animal made a rapid and painless recovery. There was no vomiting of blood or blood in the feces at any time during the three weeks that the dog was kept under close observation in the laboratory. It ate well soon after coming from under the chloroform, and never had a bad symptom.

Of the fifty surgeons written to only nine have seen post-operative hematemesis. Three operators, Johnston, of Richmond, Parrish, of Philadelphia, and Wathen, of Louisville, have each had one case of gastrorrhagia following hysterectomy. All occurred within a week after operation, one being fatal. Clarke and Noble, of Philadelphia, have each seen fatal hemorrhage from duodenal ulcers after operation. The former does not give the exact nature of the operation, but it was intrapelvic. Noble states that his patient was a woman, about sixty, operated on for ventral hernia. Hemorrhage that was quickly fatal occurred on the tenth day after operation. Autopsy showed a marked duodenal ulceration. Noble and Wathen have each had a fatal case of hemorrhage after nephrorraphy. Noble operated upon both kidneys in a young woman. Death occurred on the twelfth day as a result of hemorrhage from the stomach and bowels. No autopsy was allowed. Wathen's patient was a highly neurotic young woman. She began vomiting blood more than a week after operation, and died two or three days later. No autopsy. Johnston has also reported cases of hematemesis following operations for ovarian tumor with a twisted pedicle, suppurating ovarian cyst, strangulated hernia, and extra-uterine pregnancy. The first three were fatal and accompanied with general peritonitis; the last recovered. Three others have seen post-operative hematemesis, but it followed operations upon the stomach itself; these were apparently cases of secondary hemorrhage and are, therefore, excluded.

I have been particular to make inquiries as to the frequency of hematemesis after hernia operations, as Robson and Eiselberg have both seen it. Of the fifty surgeons written to only two have encountered it and one of the cases was a strangulated hernia with general peritonitis. The other was the case operated for ventral hernia, and who died from a demonstrated duodenal ulcer. In more than 100 herniotomies—strangulated and non-strangulated cases—I have never encountered it. It is possible to quote from only a few of the many surgeons communicated with.

W. T. Bull, of New York, writes: "I have never seen hematemesis after any operation. I fancy I have had 650 herniotomies."

W. B. de Garmo, of New York, writes: "I have never seen in any of my own cases one of hemateme-

sis following operation. In replying to your second question I would say, I have done 653 herniotomies; of these 573 have been by the Bassini method for the cure of inguinal hernia."

W. B. Coley, of New York, says: "I have never seen a case of post-operative hematemesis. I cannot tell in how many cases I have removed omentum, but in a large number. You could say that in over 700 cases of hernia operations I have never seen it."

J. M. T. Finney, of Baltimore, writes: "In my own personal experience, I cannot recall an instance of post-operative hematemesis following hernia, or any other operation in which the omentum was involved, nor have I known of any taking place in the Hopkins Hospital."

The sum total of all the hernia operations done by the fifty surgeons to whom I have written must be many thousands, and yet but two cases of post-operative hematemesis are reported, and each has been satisfactorily explained, one dying of general peritonitis, following strangulated hernia, the other from a duodenal ulcer demonstrated at autopsy. All of the cases seen by Robson and Eiselberg followed intra-abdominal operations, such being also the case with all post-operative hematemeses reported by American surgeons, excepting two cases, where nephrorraphy had been done. In doing nephrorraphy, the peritoneum may, in the first place, be incautiously opened by the most careful operator, and secondly, there is always a considerable amount of traumatism necessary to force the kidney into the lumbar incision. It is not, therefore, difficult to understand how a hematoma may easily be produced by the great abdominal pressure oftentimes necessary to bring the kidney into view, and how, furthermore, this extravasation may occasionally cause sapremia, septicemia, or peritonitis, according to circumstances. All septic conditions favor disintegration of the blood corpuscles, and predispose to hemorrhage from mucous surfaces. The gastric mucosa is particularly liable to congestion in conditions of sepsis, both on account of the marked tendency of the thin and more or less disintegrated blood to settle in the internal organs, and the vomiting and retching so frequently present. We have, I think, in this a satisfactory explanation of the rare hematemeses following abdominal operations, and have shown that even violent traumatism to the omentum, intestines, spleen, pancreas and liver did not produce immediate hemorrhage into the stomach in any of the dogs experimented upon, and it does not seem unreasonable to suppose that delayed hematemesis will usually depend upon disintegration of the blood due to sepsis.

Original Articles.

CLINICAL REPORT OF CASES OF INFECTION DUE TO THE BACILLUS AÉROGENES CAPSULATUS OF WELCH.

BY PAUL THORNDIKE, M.D.,
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With Pathological Reports by MR. PRESTON KYES, of the Johns Hopkins Medical School; DR. H. C. LOW, Assistant in Pathology, Boston City Hospital, and DR. F. T. FULTON, Pathological House Officer, Boston City Hospital.

EVERY surgeon is familiar with the severer forms of septic infection which take possession of the individual, completely conquer his powers of resistance

and reach a fatal termination in a few hours or days. Some of these infections in which edema of the infected tissues and the formation of gas in them prior to death have been noticeably prominent have presented clinical pictures definite enough in character to merit special description. Such cases have been described by various writers under the titles of "phlegmonous gangrene," "malignant edema," "gangrenous emphysema," and "emphysematous gangrene," the confusion of names being due to the fact that the organisms which caused these infections had been imperfectly isolated and identified. Then came Koch's discovery of the so-called "bacillus edematis maligni" and its gas producing capacity. This organism was considered to be the cause of all emphysemas due to infection, and the term "malignant edema" was thus made a general term embracing all cases of this virulent infection associated with emphysema. Later it was realized that all such emphysematous infections were not due to this bacillus, so that the term "malignant edema" was restricted and came to be used only for those cases in which this bacillus was demonstrated. So the matter stands at present, and the term "malignant edema" is associated with the Koch bacillus only.

Malignant edema is described by Roswell Park as follows:

The characteristic feature of the disease is the rapidity of its spread, the septic character of the inflammatory product, and the speedy formation of gas. A dirty, brownish-reddish skin, mottled with blue, whose veins are filled with stagnant blood, covers the affected areas. The underlying tissues are sodden with fluid and distended with gaseous products of decomposition, so that the finger feels a fine crepitus, as is common in subcutaneous emphysema. From the wound, if there be one, flows a thin, foul-smelling secretion, which may also be expressed from the deeper layers. That the neighboring lymph spaces, vessels and glands are actively participating in the transmission of septic products is evident from the enormous swelling which the latter present and from the general condition of the patient. The rapid elevation of temperature, with but trifling remission, remains constant until shortly before death. The tongue early becomes dry, cleaves to the palate, its surface covered with thick, foul fur. Consciousness is early lost, and patients become peculiarly apathetic, complaining only of pain and burning thirst. Sometimes they are delirious instead of apathetic. Coma, incontinence, frequent and superficial breathing, and dilatation of the pupil are the precursors of death, which may occur in from fifteen to thirty hours.

After death the cadaver bloats quickly and putrefaction goes on with singular rapidity. At the seat of the lesion muscles and tendons will be found macerated, the bone denuded, surrounded by a putrid fluid, and the entire region presenting a notable swelling and infiltration of the soft parts, with a reddish fluid and stinking gases.

Several other organisms, however, produce gas and necrosis in the human tissues during life, and chief among these is the bacillus *aërogenes capsulatus*, described by Welch in 1891 and described independently by E. Fraenkel in 1893. Since that time the reports of cases by Welch, Nuttall, Fraenkel, Flexner, P. Ernst, Levy, Bloodgood and others indicate its wide distribution and its prominence in the list of gas-producing organisms.

The following is the report of two cases of infection by this organism. The cases are reported because of the rarity of reported cases where the Welch bacillus has been demonstrated before death, and because there are one or two points in connection

with the surgical treatment of these cases which the writers consider important and worthy of mention.

CASE I. Man, age forty-five, carpenter, fell from a staging to the ground, a distance of ten feet, striking his arm; walked to the hospital, where it was found his injury was a compound fracture of both bones of the right forearm, two and one-half inches above the wrist. The wound was on the palmar surface directly over the seat of fracture. Operation under ether consisted of a most thorough cleaning of the seat of injury with corrosive sublimate, sterile dressing and plaster of Paris. At the end of the first day plaster was split on account of pain; there was semi-delirium, and the temperature was 102°. Second day there was much pain, cyanosis of the fingers, great swelling of the forearm. The plaster was removed, and emphysema was quite noticeable. Third day he failed markedly and the emphysema extended beyond the shoulder well on to the chest and even to the clavicle. He was seen by many surgeons in consultation; amputation was advised and rapidly performed, the arm being removed at the shoulder joint. Both flaps were emphysematous. Rallied well during the following twenty-four hours; his mind was clear, and his pulse dropped to 90 and was regular; no pain. Thirty-six hours after operation septic symptoms returned; man gradually sank and died two days after operation.

Mr. Preston Kyes, at that time a surgical dresser at the hospital, reports on the specimen as follows:

The pathological findings in the case reported above were definite in confirming the provisional clinical diagnosis of emphysematous gangrene due to the bacillus *aërogenes capsulatus*. They were based upon a study of the amputated limb, the internal organs, and the causal bacillus. They are here reported in that order.

The affected arm was examined immediately following its amputation. It was much swollen, the normal outlines being lost at the wrist and elbow joints, and the overlying skin everywhere tense and glistening. The color of the upper arm was little changed, but the entire forearm was of a deep plum color, and the hand and fingers a dusky red. Bullæ, varying from 5 to 25 millimetres in diameter and filled with a clear serum, were irregularly distributed over the forearm. Emphysema was extreme. Everywhere below the elbow the tissues were "cushiony" to the touch and slightest pressure produced audible crackling. This crackling was also present in the upper arm along the course of the brachial trunks.

From a puncture into the forearm there escaped much frothy serum, and on laying open the tissues there was a general outpouring of serum and gas. This exudate came from all interstices of the tissue, and there were no definite cavity formations. The cut surfaces were gelatinous, soft to the touch, and in areas semi-diffuent. There was, however, no offensive odor, and the several structures were easily differentiated. Incision into the upper arm liberated much gas from the tissue immediately surrounding the great vessels, and exposed a single focus of pus about the ulnar nerve in the course posterior to the internal condyle of the humerus. Dissection excluded thrombosis or constriction of the larger vessels, and the removal of the soft parts showed comminuted fracture of both bones of the forearm within five centimetres of their distal extremities.

Cover-slip smears and frozen sections from several areas in the forearm showed its invasion by a long bacillus with rounded ends, a capsule, and staining by Gram. The completeness of this invasion was most marked. Lymph channels and intercellular spaces were choked with masses of the organism in pure growth. This rapid multiplication, extension and gas production of the organism in living tissues was the feature of the infection, as shown in the arm. (Fig. 1.)

Of the organs obtained at autopsy the heart and kidneys were negative, both to gross and microscopic examination. The spleen was dark in color, somewhat enlarged, but of normal consistency. On microscopic examination there were seen several minute and widely separated foci of the

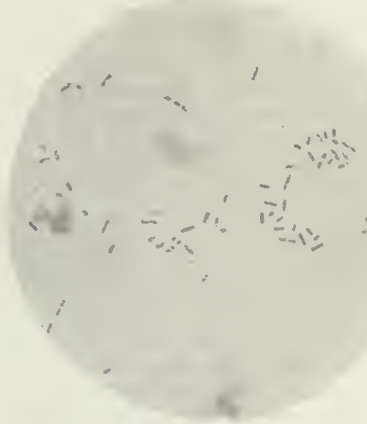


FIG. 1.

bacilli above mentioned. Surrounding each focus was a considerable zone of necrotic cells, deeply staining with eosin, and lacking demonstrable nuclei. The organ was much congested and showed a moderate grade of chronic interstitial splenitis.

The liver presented striking gross and microscopic lesions. (Fig. 2.) The entire organ was honeycombed with countless small cavities varying in diameter from .3 to two millimetres, and filled with gas and serum. These cavities were uniformly distributed throughout the liver, but showed no constant relation to a unit of liver structure. The lobules were ill-defined and the entire organ dark in color and somewhat flabby. Its cut surfaces were moist with frothy serum, and from them gas was expressed in great quantity. Microscopically the lesions were equally definite. The above-described cavities appeared in section as sharply defined circular vacuoles, lined by a ring of closely packed bacilli. The centre of many of these vacuoles was filled with a small amount of coagulated albumin containing a few bacilli, but the chief distribution of the organism was in the lining lamella above described. Surrounding each vacuole was a concentric area of necrotic tissue. The liver cells within this area were compressed, granular and stained deeply with eosin. Bacilli were seen within the capillaries separating these necrotic liver cells. Many veins both inter- and intra-lobular contained the bacilli in great numbers, the lumen often being occluded. The condition was typically that first described by Ernst¹ as "Schaumleber," and now recognized as characteristic of the action of the bacillus *aërogenes capsulatus*.

Previous to its mutilation, cultures were made from several areas of the affected arm. Inoculations of blood serum, litmus milk, bouillon, potato and glucose agar were incubated aerobically and anaerobically. No growth was obtained on the media exposed to oxygen, whereas those within Buchner jars were in all cases positive. On blood serum at twenty-four hours there was a diffuse moist growth, ill-defined and grayish-white in color. At forty-eight hours there was the same growth somewhat increased in amount. Litmus milk at twenty-four hours showed a decrease in the intensity of the blue, and at forty-eight hours a pink tint with a white coagulum below. At ninety-six hours the median was nearly colorless, with the much shrunken coagulum below. Bouillon at twenty-four hours showed no change, but at forty-eight hours a diffuse cloudiness. At ninety-six hours this cloudiness had cleared and there was at the bottom of the tube a fairly abundant grayish-white precipitate. On potato there was no visible

growth. Cover-slips, however, showed the presence of the organism. On glucose agar slant at twenty-four hours there appeared a scant white line bordered by pin point colonies. At forty-eight hours this growth was more abundant, with the discrete marginal colonies increased in number and averaging .5 millimetre in diameter. These colonies were raised, sharply outlined, and centred with a minute brown dot. In glucose agar stab at twenty-four hours a few bubbles of gas were present. These were increased at forty-eight hours, and the medium somewhat riddled at ninety-six hours.

The clouding of bouillon, the coagulation of milk, and production of gas in glucose agar, were sufficient, together with the morphology and staining reaction of the organism, to reasonably identify it as the bacillus *aërogenes capsulatus*. The amount of the gas formation was not, however, so marked as usually seen with that bacillus and growth on all media was meagre, a second transplantation being unsuccessful. To recover the organism in characteristic growth and to further determine its gas production, animal experimentation as indicated by Welch and Nuttall,² was employed.

One-half of one cubic centimetre of the ten-day bouillon culture was inoculated into the ear vein of a rabbit, and the animal killed. The cadaver was placed at 34° C. for ten hours and then exposed to room temperature for twelve hours. At autopsy, inspection showed but slight abdominal distention. The general inflation of the cadaver usually obtained by such experimentation was lacking. Incision, however, showed a definite subcutaneous collection of gas in the right groin. Cover-slip smears from this area showed the bacillus *aërogenes capsulatus* in great numbers. Puncture into the peritoneal cavity liberated sufficient gas to ignite with a report but not to continue a flame. Within the peritoneal cavity was a small amount of chocolate-brown fluid containing the bacillus in pure culture. The liver was riddled with minute cavities filled with gas and serum, and from cut surfaces much frothy exudate was expressed. The stomach and intestines were normal except for slight digestion of the stomach wall. There was no putrefactive odor. The kidneys were normal in gross appearance and from their cut surfaces no gas could be expressed. Much gas was present within the pericardium, the heart cavities, the jugular, portal and renal veins, and the venæ cavæ. Cultures from the liver, kidneys, pericardium, heart's blood and peritoneal fluid gave the bacillus in

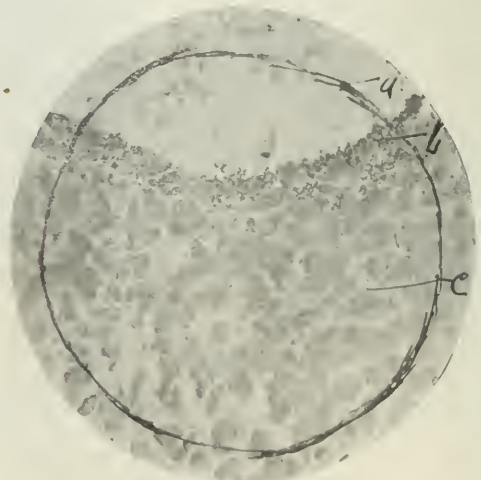


FIG. 2.

pure growth. Similar inoculation of a second rabbit duplicated these findings.

The organism as recovered by animal inoculation grew typically on all media, the gas production being marked.

² Welch and Nuttall: Johns Hopkins Hospital Bulletin, July-August, 1892.

¹ Virchow's Arch., cxxxiii.

Bouillon was quickly clouded and later cleared, leaving a heavy sediment at the bottom of the tube. Here, as in the other liquid media, bubbles of gas were constantly rising to the surface. Milk was acidified and coagulated. On potato there was a visible growth with gas blebs about the sides of the tube, while glucose agar was shattered by the abundant gas formed. These characteristic growths completed the identification of the bacillus.

From a bacteriological standpoint the chief interest in this case is the scarcity of the growth of the organism as first recovered on artificial media. Although obtained in abundant and pure culture from the tissues of a rapidly fatal case, the organism grew but feebly under conditions usually producing its rapid multiplication. Attempts at second transplantation failed in all media except bouillon, and in this the organism showed distinct variation in size and staining properties. In addition to the bacilli staining intensely by Gram were many unevenly stained and still others evenly but feebly stained. Inoculation of these atypical forms produced the characteristic condition in rabbits and from these animals the bacillus was recovered in typical form with its normal staining reaction. A second point of interest is the fact that no spores were produced on blood serum. The phenomenon of spore formation has been described as a cultural characteristic,³ but repeated failures to produce it in the above cultivation lead us to agree with Fraenkel⁴ in his statement that the spore formation is inconstant and determined by influences at present unknown.

From a surgical standpoint the feature of the case is the emphasis it adds to the necessity of early diagnosis and immediate treatment. The rapid multiplication and extension of the gas bacillus as shown in the tissues of the arm, its final distribution to the internal organs, and the rapidly fatal termination, indicate the necessity of early surgical interference in infections with this organism. From this and previously reported cases we are led to believe that the isolation from an emphysematous wound of a large anaerobic, gas-producing bacillus with rounded ends, a capsule, and staining by Gram, is an indication for immediate multiple incision or amputation, depending upon the location and extent of the process.

CASE II. This case was admitted to the Boston City Hospital in the service of Dr. W. P. Bolles and was operated upon by Dr. J. T. Bottomley. Through the kindness of these gentlemen I am enabled to report the case. Man, thirty-three years old, injured by the fall of a heavy truss upon his leg. A compound fracture of both bones of the right leg below the knee resulted. Shock was so extreme that operation was delayed six hours. Then ether was given, the wound thoroughly cleaned with corrosive sublimate, a sterile dressing was applied, with a posterior wire splint. At the end of the operation there was great shock, and much stimulation was necessary. On the next day there was much pain, some vomiting, no chill. On the third day toes and foot cyanotic, much pain, still no chill. Bluish, mottled spots on the leg were beginning to appear. On the fourth day leg was covered with blebs and there was a foul discharge from the wound. Emphysema of the tissues had appeared and had extended above the middle of the thigh. Amputation performed at once at the middle of the thigh through diseased tissue, and free drainage was left for the stump. The next day, the fifth after the injury, emphysema was still extending. On the seventh day emphysema had reached Poupert's ligament. Ether was given and five long incisions were made in the crepitating area. From that time the disease stopped extending, the patient made

an uninterrupted recovery and was discharged in excellent condition at the end of the third week after his injury.

The pathologist's report on the amputated leg was made by Dr. H. C. Low, and is as follows:

Specimen consists of right lower extremity amputated 26 centimetres above external condyle of femur. Anterior skin flap taken four centimetres above upper border of patella, posterior flap 12 centimetres above. Sawed end of femur extends two centimetres above the circular incision of the muscle.

External wound due to injury. On posterior surface of calf of leg is an open wound 12 centimetres in length, five centimetres in breadth; lance-shaped with point downward, long diameter almost coinciding with the long axis of leg. Edges of wound are clean cut throughout, most of its border sharply defined and slightly everted. The entire wound is filled with projecting muscle tissue; that at upper end is brownish red, firm and fairly normal in appearance. In the centre of the wound it is dirty brown, soft, easily torn; can be drawn out in short small filaments, which are easily broken. At the lower end of the wound the muscle is better preserved than in the middle but not as well as that at the upper end. A thin brownish-red fluid containing oil droplets escapes from the central portion of the wound. Near the middle point is a sinus extending seven centimetres into the leg, about one centimetre in diameter at the beginning, gradually disappearing in the lacerated tissues. Walls appear to have a yellowish-red deposit on the surface. Fat tissue at edge of wound one centimetre in thickness, firm, slightly discolored, greenish yellow. The entire limb is considerably swollen. The swelling is diffuse, but most marked below the knee, especially over the dorsum of foot. Circumference of calf, 40 centimetres.

Sole of foot, ends of toes and heel are purplish in color. Dorsum of foot light blue with irregular purplish markings. The entire inner aspect of the leg below the knee shows various shades of purple extending around posteriorly and gradually fading on the external surface. Anteriorly the purple has a greenish tinge over the lower portion of the leg, while just below the knee anteriorly the skin is a light brown, presenting the appearance of having been slightly scorched. The same appearance is seen above the knee on the inner, outer, and posterior surfaces. This brownish discoloration appears superficial, while subcutaneously, irregular purplish patches are seen. Anteriorly, above the knee, the skin is normal. The discoloration reaches on the outer and to a less extent on the inner aspect to the edge of the skin flap.

On inner side of leg in region of internal malleolus, extending as high as the junction of middle and upper thirds, are a number of blebs varying in size, the smallest being pin-head size, the largest measuring four centimetres in length. They are very irregular in shape, elevated one-half millimetre; epidermis not tense, sometimes slightly wrinkled. Some are purplish red, others almost colorless. They contain a thin watery fluid corresponding in color to the color of bleb. On outer side of leg near external wound are a few blebs similar to those just described. A slight subcutaneous crepitus can be felt quite generally over surface of leg, most marked anteriorly in the middle third. The skin in general over leg and foot is dense. It pits slightly over dorsum of foot and over leg.

Muscles at site of operation appear normal in color and consistence. Underneath the skin remaining over the outer, inner and posterior aspects of thigh, corresponding to the area of discoloration described, the subcutaneous tissues are thoroughly infiltrated with blood, giving them a very dark, almost homogeneous, glistening appearance. A thin, bloody fluid containing fat droplets slowly exudes. This infiltration extends completely to the skin incision. Over the area corresponding to the popliteal space gas bubbles escape on pressure. The muscles themselves and the intermuscular tissue are not infiltrated, although along the popliteal artery the tissues are slightly edematous.

³ Dunham, E. K.: *Loc. cit.*, vol. viii, April, 1897.

⁴ Fraenkel, E.: *Münchener med. Wochenschrift*, No. 43, 1899, p. 1421.

Just above and external to the wound the tissues are undermined, forming a fairly localized area, four-fifths centimetre in diameter, irregular in shape, containing a grayish-yellow mucopurulent material. Internal to the wound the subcutaneous tissues as far as the internal malleolus are infiltrated with an abundant thin, bloody fluid everywhere containing fat droplets. There are many large areas of localized blood clot. This infiltration is limited chiefly to the subcutaneous tissues and to the course of the posterior tibial vessels. Anteriorly, along the tibia over the middle third, the tissues are easily stripped off, being separated by the fluid and gas.

Popliteal artery is intact to point of bifurcation. About one centimetre below this the posterior tibial has been divided and ligated. The posterior tibial and peroneal below this are dilated, dark red and filled with blood clots. Posterior tibial vein is intact. Several smaller vessels at wound are lacerated.

The tissues within the wound are all much macerated, dirty brown, friable, so that a probe can be easily pushed in at any point. The macerated tissue is fairly well defined from the tissue closely surrounding it, which, though much firmer, is quite friable and brownish yellow, lacking the redness and toughness of normal muscle. The muscles below the wound are pale, almost yellowish, and fairly firm. The subcutaneous tissue is everywhere edematous and in places hemorrhagic. Tissues over dorsum of foot are especially edematous, having a gelatinous, translucent appearance. No hemorrhagic areas.

The tibia, about six centimetres below the articulating surface, is badly comminuted, there being seven distinct fragments besides smaller bits of bone among the tissues. The fibula, at a corresponding point, shows a transverse, irregular fracture with no comminution. The anterior tibial artery, just after passing through the interosseous septum, contains a grayish red, rather firm plug for a distance of eight centimetres.

BACTERIOLOGICAL EXAMINATION.

The examination of the pus about the fracture showed cocci in clumps and in short chains, and great numbers of large bacilli which stain by Gram's method. With Welch's stain the capsules of these bacilli were demonstrated. In the blood of the femoral artery and the muscular tissue at the point of amputation these capsulated bacilli were also present, but not in the blebs nor the tissues of the lower half of the leg.

In cultures taken from the pus on blood serum grown aerobically at 37° C. the streptococcus pyogenes, staphylococcus pyogenes aureus and albus were isolated. There were very few of these large bacilli present in the water of the first plants. From various parts of the leg cultures were made on glucose agar, blood serum, glucose bouillon, milk and potato, and were grown at 37° C. in Buchner jars. Only those from the pus about the fracture showed a growth of this bacillus and there were many other organisms present. After three generations a culture on agar was obtained with several colonies of these bacilli. With several of these colonies a suspension was made in one cubic centimetre of bouillon, which was then inoculated in the ear vein of a rabbit. The rabbit was killed in ten minutes and placed in the thermostat at 20° C. for thirty hours. At autopsy the abdomen was found slightly distended with gas, which, escaping through a trocar, burned with a blue flame. The liver showed a few gas blebs, but the other organs were not emphysematous.

Gas bubbles were present in the blood of the larger vessels, fluid in the peritoneum and the retroperitoneal tissue. In smears from the liver and peritoneum large capsulated bacilli were found. Pure cultures of these bacilli were grown anaerobically from the heart, liver and peritoneum. In over 200 cultures the growth of this bacillus was studied and found to be almost identical with that of the bacillus capsulatus aerogenes as described by Welch and Nuttall.

These bacilli were generally about the thickness of the bacillus anthracis, but varied much in length. In shape

they were irregular, being more often straight and rarely much curved. Their ends were slightly rounded, sometimes square, and they occurred singly, in pairs or not uncommonly in short chains. In some old cultures there were quite long threads and the bacilli had nearly square ends. They stained with the ordinary aniline dyes and by Gram's method, and often showed irregular unstained spots, especially with methylene blue. In cultures that had been exposed to the air several days a great number of the bacilli decolorized by Gram's method. Rarely capsulated forms occurred in cultures. The bacilli were non-motile.

In Buchner jars at 37° C. they grew readily in nearly all media, but especially well in agar, milk, potato and blood serum. They did not develop anaerobically except that in deep stab cultures or those already started in Buchner jars there was a slow growth.

On agar at the end of twenty hours there were numerous slightly elevated colonies, varying from pin-point to pin-head size. These were almost colorless by direct light and white by transmitted light. After three days' growth the colonies were one to two millimetres in diameter, opaque except at the thinner edges, and often grayish white with a dark centre. Beneath the surface the colonies were oval or elliptical, generally with clear-cut edges, but often feathery.

In all glucose media gas was formed. In no case were spores demonstrated although many plants on blood serum were made. In glucose bouillon the bacillus only grew well when the media was neutral or alkaline. In all acid media the growth was poor. In glucose-free bouillon no indol was produced. Milk was soon acidified and a firm coagulum filled with gas bubbles floated on the clear fluid. On potato gas was formed in the water and a thin, moist, whitish growth appeared on the second or third day. None of the gelatine cultures were liquefied.

MICROSCOPICAL EXAMINATION.

A section from the periosteum just below the wound consists of fat and fibrous tissue. The tissue is markedly infiltrated with leucocytes, red blood corpuscles and fibrin, and with many large bacilli and numerous cocci. The cocci in some places are in clumps, in others in short chains. There is an active emigration of leucocytes through the walls of the blood-vessels.

The muscle bordering on the abscess near the external wound is very edematous. The spaces between the muscle fibres contain fibrin, a moderate number of well-preserved leucocytes and some red blood corpuscles. The fibres themselves are much degenerated, both the cross and longitudinal striations being to a great extent lost. Some individual fibres have become hyaline. The smaller vessels in places are plugged with leucocytes. The muscle just below the wound is, on the whole, very well preserved histologically. Even where the fibres are completely surrounded by myriads of bacilli the striations are perfect, though the nuclei of the fibres are lost. There is some edema but no infiltration with leucocytes where the bacilli are not associated with other organisms.

The lumen of the anterior tibial artery is filled with fibrin intimately attached to the vessel wall and containing leucocytes in its meshes. No organisms can be demonstrated within the vessel. There is some necrosis and much infiltration with leucocytes around the vessel, where the bacilli and cocci are very abundant.

Tissues from dorsum of foot show much edema but no organisms and no cellular exudate. The tissues at point of amputation show no histological changes.

Now let us compare these cases with those which occurred prior to our knowledge of the Welch bacillus.

CASE III. Boy, twelve years old, fell from a tree with a resulting compound fracture of both bones of the left forearm three inches above the wrist. Ether, thorough cleaning of the wound, sterile dressing, plaster of Paris. At the end of one day delirium in the

evening, temperature $101\frac{1}{2}^{\circ}$, upper arm tender and slightly discolored. At the end of the second day delirium increased, swelling and discoloration much greater. On the third day emphysema extended over the whole arm and out onto the chest. Amputation just below shoulder-joint through diseased tissue, both flaps crepitate, stump left open without stitches. Complete convalescence in one month without interruption. Pathologist reports no emboli or thrombi in the vessels of the arm.

Here, then, is another case identical in all ways except that the Welch bacillus was not known or sought for.

In the Medical and Surgical Reports of the Boston City Hospital, seventh series, 1895, Dr. Abner Post reports three similar cases in an article entitled "Pseudo-Malignant Edema." In presenting his cases he says:

The cases to which I refer were distinguished by numerous blebs, rapid swelling, and a discoloration which extended far in advance of the actual gangrene, and by the presence of gas, more or less imperfectly recognized in the tissues about the wound, and in the dark-colored fluid which flowed from it. The cases often followed injuries of slight moment which promised at first sight to do well, but which in their rapidly fatal course were really due to a poison over which the surgeon has as little control as over tetanus. Occurring infrequently, the disease has been looked upon simply as a rapid form of septicemia and has hardly gained a separate place in our nosology.

It is said to have been observed 29 times during the Crimean War by Sallaron. I have not been able to identify it among the recorded fatalities of our Civil War, though I have reason to think that it may have occurred occasionally among the cases characterized as hospital gangrene. It is not mentioned by name in the medical and surgical history of the war so far as I can find.

The cases may be summarized as follows:

CASE I. Boy, fifteen years old, fell off Stony Brook bridge, sustaining a compound fracture of the right wrist. Ether, thorough scrubbing of the seat of injury with corrosive sublimate, sterile dressing, plaster of Paris. On the third day great pain, swelling, temperature 104° , plaster split. On the fourth day tenderness of the axilla, plaster removed, arm covered with blebs, patient delirious. On the fifth day discoloration over the axilla and onto the breast. At the end of five days, death without operation, the patient having refused it.

In commenting on this case, Dr. Post says:

It was something of a shock to find that in spite of the most careful antiseptic precautions one of the most unpleasant forms of septic infection had taken place. It was evident that we were face to face with something of an unusual nature. That the infection was one that in some way set at naught antiseptic precautions was, I believe, the opinion of those of the surgical staff who saw it.

CASE II. Man, twenty-seven years old, cut his left arm in attempt to commit suicide. He then crawled along the dirt floor of the cellar in which he was lying and was brought to the hospital six or seven hours later, his wound having been dressed by a physician in the interval. Ether, sutures removed from the wound, thorough scrubbing with corrosive sublimate, aseptic dressing, plaster-of-Paris. One day later slight delirium, a discolored hand, some odor, dressing changed, slight discharge from the wound. Two days later delirium increased; incontinence of

urine. Died in less than forty-eight hours from the time of injury.

AUTOPSY DIAGNOSIS, SEPTICEMIA.

Autopsy by Dr. Dwight eight hours after death. Body well developed and nourished. Warm. Rigor mortis present. Left arm, shoulder and left chest swollen, discolored, and large amount of emphysema extending into right clavicular region. Several large blebs on flexor surface of left arm. About two inches below bend of elbow incised wound five inches long. Edges separated by swelling from within, with protrusions from its lower end of blood clots and muscular substance. On pressure anywhere in vicinity large amount of frothy fluid can be expressed. Foul odor and discharge.

Head. — No sign of injury. Skull normal thickness. Meninges adherent to skull over both frontal and right parietal regions. Meninges injected. Brain substance rather soft, and vessels injected, otherwise normal.

Chest. — Each pleural cavity contained small amount of reddish fluid, emphysema of precordial tissues.

Lungs. — Entirely free, inflated, emphysematous, considerable amount of watery edema.

Heart. — Pericardium contains about one ounce of clear fluid. Heart muscles somewhat soft and opaque. Size normal. Valves normal. Right side of heart and both auricles contain large amount of clotted blood, with considerable emphysema.

Liver. — Normal in size, soft and somewhat injected.

Spleen. — Considerably enlarged, dark red, soft and pulpy.

Kidneys. — Normal size, considerably injected. Capsule not adherent. Adrenal glands enlarged, firm and red.

Bladder. — Contained considerable quantity of clear urine.

Mesenteric and post-peritoneal glands considerably enlarged, soft and red.

Intestines. — Large, has large amount of soft, unformed, yellow fecal matter. Small intestine, about a foot and a half above ileocecal valve, was somewhat injected, and in this region the Peyer's patches and follicles were moderately enlarged.

Aorta and great vessels normal.

Cultures were taken from urine, heart, chest walls, etc.

DIAGNOSIS.

Infected wound of arm, septicemia, acute congestion of liver and kidneys and spleen, enlargement and congestion of mesenteric and post-peritoneal glands, granular degeneration of heart, congestion and edema of lungs, chronic adhesive meningitis.

Some earth from the spot where the accident took place was obtained and was examined bacteriologically by Dr. E. W. Dwight. It contained many bacilli resembling the Koch bacillus of malignant edema, but it was not that bacillus.

In the absence of the regular pathologist, I attempted to demonstrate the organisms present in this case. Cultures from the liver, lungs, and urine were negative. Sections of muscular tissue from the edges of the wound in arm showed numerous staphylococci and large bacilli in chains of three or four elements. Cultures from wound, spleen, and heart's blood showed staphylococcus pyogenes aureus, and the above bacillus in great numbers. In cultures from the chest wall the aureus was absent, but the bacillus present resembled in appearance and biological characteristics the bacillus of malignant edema. This was not the bacillus edematis maligni, because of its failure to liquefy gelatine, and its not being strictly anaërobic. Its growth, spore, and gas formation were very rapid, and in bouillon, under hydrogen, the chains were much larger, often containing eight or ten elements. In earth from the cellar where the injury was inflicted a similar organism was demonstrated in great numbers. This would seem to be a mixed infection, in which, if the bacillus reported was not the direct

cause of death, it certainly influenced materially the progress of the infection.

These cultures were seen by Dr. F. B. Mallory, assistant pathologist at the Boston City Hospital, who confirmed Dr. Dwight's description.

In commenting upon this case Dr. Post says :

This case presented in a striking manner the characteristics of malignant edema. The autopsy seemed to confirm that diagnosis. It was a disappointment to find that the bacteriological examination failed to disclose the existence of the bacillus of malignant edema.

CASE III. Man, thirty-five years old, was thrown from a wagon, sustaining a compound fracture of both bones of the right leg. He then crawled one hundred yards in the dirt, was picked up and brought to the hospital in an ambulance. Ether, the usual careful scrubbing with corrosive sublimate, sterile dressing, plaster-of-Paris bandage. First day, patient restless and in great pain. Third day, delirium marked; thought to be alcoholic. Fourth day, plaster and dressing removed; no pus, but a slight sloughing of the edges of the wound. Nothing to account for the general condition of the patient. Sixth day, patient failing, temperature high, marked edema, leg covered with blebs and cyanotic. Patient died seventh day after injury without operation. After death a large amount of thin, frothy, non-purulent discharge with a bad odor came from the wound. No autopsy allowed. Specimens from the vicinity of the wound were examined by Dr. J. H. Wright and showed streptococci and a bacillus with rounded ends, which Dr. Wright, after careful study, decided was not the bacillus of malignant edema and that its identity was uncertain.

SEARS PATHOLOGICAL LABORATORY, HARVARD MEDICAL SCHOOL, December 6, 1894.

Report of the bacteriological examination of Dr. Post's case of peculiar cellulitis of the leg following a compound fracture, Boston City Hospital, November, 1894 :

The material examined was the seropurulent exudate in the deep subcutaneous tissue not far from the wound. Direct examination with the microscope showed the presence of numerous leucocytes and numerous bacteria of two kinds, namely, streptococci, and large numbers of a rather large bacillus, with rounded ends and one or two clear, unstained areas in its protoplasm. This bacillus was apparently present in somewhat greater numbers than the streptococci. Gelatine cultures, made after the manner of Liborius for anaërobic cultivation, showed very numerous colonies throughout the medium after twenty-four hours. After forty-eight hours these colonies had increased in size, attaining a diameter of two or three millimetres. They were all alike. None of the colonies of the streptococci (which grows only feebly on gelatine) were to be made out. To the naked eye the colonies appear as hazy, cloudy, spherical spots two or three millimetres in diameter, with a faintly radiate structure and denser centre. Under the low power of the microscope the colony is seen to consist of a dense spherical centre from which radiate in all directions bizarre, contorted, elongated (sometimes corkscrew-shaped) daughter colonies. These are very small and very numerous, more numerous near the central mass, but becoming progressively fewer in number toward the periphery. These small daughter colonies constitute the hazy, faintly radiate appearance noted with the naked eye. They may be observed with the microscope in small numbers, far beyond the microscopic limits of the colony, and having no visible connection with it. The development of the colonies in the deeper portions of the gelatine, where the oxygen of the air does not penetrate, is apparently better than on or near the surface, but growth does occur in the latter situations, so that the organism is not a strict anaërobie. The gelatine

is not liquefied. In sugar gelatine an abundant development of gas occurs.

Microscopical examination shows the colonies above described to be composed of the same bacillus observed in the direct examination of the exudate. The bacillus is slightly above the medium size, rather plump, with rounded ends. It is somewhat variable in length, but may be said to be about three times as long as broad. In its protoplasm one or two clear spaces may be seen centrally. In some cases in the centre of a rather short, plump rod a large and distinctly refracting, unstained oval body was to be seen, which was considered to be a spore. The bacillus is motile, occurs frequently in pairs, but not in chains, and is decolorized when subjected to the staining method of Gram.

Inoculations of a mouse and a guinea-pig subcutaneously with the material, and a guinea-pig subcutaneously with the culture, were made without any marked effect on the animals.

The identity of this bacillus is uncertain. It is clearly not the so-called "bacillus of malignant edema."

JAMES H. WRIGHT, M.D.

Here again was a case of clinical malignant edema with a similar but not identical bacillus.

Here are four cases, three of Dr. Post's, and one of my own, which were, clinically speaking, cases of malignant edema; in two of them it was definitely demonstrated that the bacillus present was not the Koch bacillus, although similar to it. Were not these cases, in all human probability, cases of infection due to the above-described bacillus of Welch?

In ending this very interesting article Dr. Post says:

In view of the foregoing I dare to draw the following conclusions: (1) Spores may find entrance to the human body and flourish there without the power of antiseptics to kill them; they must be mechanically removed if at all. (2) The symptoms of malignant edema may be caused by other spore-bearing, gas-producing organisms equally well as by the bacillus now known as the bacillus of malignant edema.

That the record of Dr. Post's conclusions was a true one Professor Welch has proven, and the two cases reported to-night serve to illustrate the fact and to call it again to our attention.

Now as to the lesson to be learned from these cases it seems to me to be this: Operate as early as possible, but operate even after the time when the whole of the diseased tissue can be removed if earlier operation is possible. In Case I the amputation was performed on the third day, but twenty-four hours later than the writer now believes it should have been done. The disease had already extended to the chest wall and the man died two days after operation, having in the interval *showed a marked remission* in the severity of his septic symptoms prior to death. In Case II the amputation was performed on the fourth day through diseased tissue. The disease made a last vain effort to progress after the operation, the emphysema extending as far as Poupart's ligament, but the operation removed the bulk of the disease and enabled the patient to take care of the remainder. Recovery followed. In Case III amputation just below the shoulder-joint was performed on the third day, at a time when the infection had extended over the shoulder and chest to the sternum. Both flaps were very emphysematous. The boy recovered.

In the face of such evidence it is hard to see how any surgeon can refrain from operating even if he fails to get the case at a time when his operation can remove all the diseased tissue.

REPORT OF CASES IN WHICH THE BACILLUS AÉROGENES CAPSULATUS WAS FOUND.

BY JOSEPH H. PRATT, M.D., AND FRANK T. FULTON, M.D.,
From the Pathological Laboratory of the Boston City Hospital.

IN November, 1891, Dr. Welch reported the discovery of a gas-producing bacillus in the blood and tissues of a man who died after the rupture of an aneurism of the aorta. In 1892, Welch and Nuttall¹ published a careful study of this organism, which they named the bacillus *aërogenes capsulatus*. Their description was so complete that little has been added by subsequent investigators. Dunham,² in 1897, showed that the bacillus *aërogenes capsulatus* produced spores on blood serum. But even this is not a constant feature, and spore production has not been observed in any of our cases. In 1893, E. Fraenkel³ demonstrated that the organism was the cause of gaseous phlegmons. In 1896, Welch and Flexner,⁴ in an elaborate paper, showed that the organism had marked pathogenic properties and was the cause of a variety of pathological processes. Doubtless the gas bacillus is a more common and widespread infectious agent than is generally supposed. Bloodgood⁵ has recently collected 22 cases of emphysematous phlegmon due to this organism.

Five* cases of invasion of the body by the bacillus *aërogenes capsulatus* have been observed at the Boston City Hospital during the past eighteen months. Two of these were surgical infections and are reported by Dr. Thorndike in this number of the JOURNAL. In the remaining three cases the micro-organism was found at autopsy, (1) in the blood and tissues of a man whose liver was ruptured by a fall; (2) in the pus of multiple abscesses of the liver; (3) in the fibrinopurulent exudate in a case of general peritonitis.

CASE I. RUPTURE OF LIVER; DEATH IN TWELVE HOURS; BACILLUS AÉROGENES CAPSULATUS IN BLOOD AND EMPHYSEMATOUS TISSUES.

Foster C., age twenty-six years. Admitted to Dr. Burrell's service at the Boston City Hospital, January 5, 1899, in a state of shock. Early that morning he had fallen the distance of two stories, striking on his left side and abdomen. It was found that he had fractured three ribs. Internal injuries were suspected. The bladder was irrigated with boracic acid. The fluid came back clear. He went into a condition of collapse, and, although stimulated, failed to rally, and died the same day at 6 P. M.

Autopsy (99.3) by Dr. Mallory, sixteen hours after death. Body 169 centimetres long; very stoutly built; rigor mortis marked. Lividity of face, neck, upper part of thorax, and dependent portions of body. Subcutaneous tissues of neck, upper part of thorax and lower portions of abdomen emphysematous. No evidence of post-mortem decomposition. Peritoneal cavity contains about 300 cubic centimetres of fluid and clotted blood. Peritoneum covering intestine beaded with small vesicles containing gas. Pleural cavities free from adhesions except over right apex, where several old fibrous adhesions are present. Pericardial cavity contains an excess of fluid; the serosa is stained red due to diffuse inhibition of blood coloring matter. Surface of heart shows everywhere beneath the pericardium minute bubbles of gas. Lungs are congested.

* Since this paper left our hands another case has occurred. At autopsy, in a patient dead of cerebral hemorrhage, on section of the liver some bubbles of gas escaped from the blood-vessels. Cover-slips showed an organism identical morphologically with the gas bacillus. There were no gas blebs in the liver. Some of the blood was inoculated into a rabbit and typical emphysema developed. A capsulated bacillus was recovered from its blood in pure culture which possessed the characteristics of the bacillus *aërogenes capsulatus*.

A few interstitial blebs present. No evidence of any injury to lung. Heart: Weight, 349 grammes. Valves and cavities normal. Many bubbles of gas of various sizes beneath endocardium, especially of left ventricle. No gas in the heart's cavities or in the blood-vessels. Spleen: Weight, 210 grammes. Rather firm; on section lymph nodules fairly distinct; pulp dark in color. Gastro-intestinal tract: Stomach empty. Nothing unusual found in mucous membrane of intestine.

Liver: Weight, 2,560 grammes. In the left lobe is a long curved fissure beginning at the insertion of the round ligament and running parallel with the anterior border of the left lobe for a distance of 16 centimetres, and from three to four centimetres above it. In the right lobe is a similar fracture running parallel to the right border and five centimetres from it. It begins six and a half centimetres from the anterior edge of the liver and runs backward nine centimetres, and then extends at right angles and reaches almost to the right edge of the liver. The fracture of the left lobe extends through to the capsule on the under surface. There is another extensive fracture on the under surface of the left lobe running from before backwards across the middle. It begins near the anterior edge and runs back 14 centimetres, and then extends three centimetres towards the lower border of the liver. There is another extensive fracture beginning near the angle formed by the fracture just described and extending five centimetres, just up to the point of entrance of the portal vein. Still another fracture extends posteriorly from the portal vessels almost to the attachment of the diaphragm. On section, liver substance yellowish; lobules made out with difficulty.

Kidneys: Combined weight, 300 grammes. Apparently perfectly normal. Bladder empty beyond about two cubic centimetres of a turbid secretion evidently due to desquamation of epithelial cells. Testicles normal; adrenals normal. Pancreas large; small tear in the upper surface near the head, filled with small amount of clotted blood. Brain could not be examined. Organs of neck normal beyond some emphysema of the connective tissues. The seventh, eighth and ninth ribs on the left side, in the axillary line, are fractured. Aorta: A few slightly elevated yellowish streaks along posterior wall. Intima of aorta stained red with blood coloring matter. Subpericardial tissues where the gas bubbles are present and the emphysematous tissue over upper portion of thorax show the presence of numerous large bacilli, morphologically identical with the gas bacillus of Welch. They stain by Gram's method.

Anatomical diagnosis.— Multiple fractures of liver with hemorrhage into abdominal cavity; fracture of pancreas, fracture of seventh, eighth and ninth ribs on left side; extensive emphysema due to the bacillus *aërogenes capsulatus*; fatty infiltration of liver; fragmentation of the myocardium.

Bacteriological examination.— Twelve anaërobic cultures were made on various media from different parts of the body. In these there was a scanty growth, if any at all, of the large bacillus present in the cover-slip preparations. In none of the tubes was it found in pure culture. Attempts to grow it by transplanting from the original cultures and by animal inoculation failed. Some gas blebs appeared in a glucose agar tube inoculated with blood from the liver. A cover-slip preparation showed the bacillus in small numbers, and a variety of other organisms. There was no gas formation in glucose bouillon, contained in a Smith fermentation tube, nor in a gelatine stab culture inoculated with blood from the heart.

The organism was found in the original cultures from the following situations: Heart's blood, spleen, liver, lung, trachea, intestinal contents, subcutaneous fat over thorax, pectoralis major muscle. Aërobic cultures upon blood serum were made from the heart's blood, spleen, liver and kidney. In all the streptococcus pyogenes was present, and in addition a growth of a white staphylococcus was obtained from the liver and heart's blood. In the water of condensation of each tube were large bacilli, staining by Gram, and morphologically identical with those pres-

ent in the anaërobic cultures. These bacilli were not present on the surface growth of any of the aërobic tubes. As the blood contained vast numbers of the bacillus, it is not improbable that those found in the cultures were simply transferred from the tissues, and that no multiplication occurred upon the artificial media.

Microscopical examination.—Tissues were fixed in Zenker's fluid, imbedded in paraffine, and then stained with eosin followed by Unna's alkaline methylene blue. Heart: There is a marked fragmentation of many of the muscle cells. Often there is a space of twenty or thirty microns between the broken ends. Sometimes the fracture is near the end of a cell, sometimes near the centre. There are no areas of necrosis. The striæ of the muscle cells are well shown. The capillaries are congested. They contain a very few large bacilli. There are none of the organisms in the tissue outside of the blood-vessels. Blood clot from the heart shows large masses of the bacilli. They are also scattered diffusely throughout the fibrin in great number. Pectoralis major muscle: The muscle fibres appear normal. The veins are distended and contain a great number of the bacilli. Some vessels are apparently completely occluded by them. Here and there in the connective-tissue septa are large masses of the organisms; no other forms of bacteria are seen.

Lung: There is a serous exudate and some hemorrhage into the alveoli. The blood-vessels are congested; they contain great masses of bacilli; the alveoli also contain them, but in less number. No organisms are present in the bronchial tubes. Spleen: Contains much blood and there are large numbers of bacilli in the splenic pulp. Some of the cells of the lymph nodules show degenerative changes. In the lumina of the larger veins are a great many of the organisms.

Liver: Marked fatty infiltration. No bacilli in bile-ducts; fairly numerous in portal vein.

Kidney: The epithelium of many of the convoluted and straight tubules takes the stain poorly or not at all. The blood-vessels are moderately congested and contain the bacilli. The bacterium found in all the organs is a large, thick bacillus with square or slightly rounded ends; occasionally leptothrix-like forms are seen. It stains somewhat irregularly with methylene blue and also with aniline-gentian violet. It is not decolorized by Gram's method. No spores are demonstrable.

This case presents a puzzling but interesting feature. There was marked subcutaneous emphysema associated with the presence of a bacillus morphologically identical with the bacillus aërogenes capsulatus. Cover-slip preparations and tissues from various parts of the body show that this organism was present in great number, yet it was not possible to grow it upon artificial media. That the bacilli were dead when the autopsy was performed is, we think, the true explanation of these facts. Immediately after death the body was placed in the cold-storage room of the mortuary, where the temperature is usually maintained in winter a few degrees above the freezing point, but frequently falls, especially at night, to 26° F. The body was in the cold chamber sixteen hours. Of course some time elapsed before the deeper portions were cooled to the temperature of the refrigerator.

That the vitality of the gas bacillus is quickly destroyed by cold was recognized by Welch and Flexner. They record the following observations: In a case of inflammation of the urinary tract, "cover-slips from renal abscesses, renal pelvis, ureters, bladder, and perineal wound, showed a large number of bacilli with the morphology of the gas bacillus. . . . Contrary to our custom, cultures were not made at the time of the autopsy, but the organs, wrapped in wet cloths, were put on ice. Culture tubes inoculated the following day did not show the gas bacillus." In

another case, "Dr. Blumer cultivated the gas bacillus from the kidney at the autopsy, and the following day failed to obtain it in cultures from the same organ, which had remained during twenty-four hours wrapped in wet cloths on ice."

The portal of invasion in our case is doubtful, but as the organism was found in the intestinal contents, it is not improbable that in the fall the walls of the intestine were so injured that the gas bacilli were able to pass into the circulation. The widespread distribution of the gas bacillus would indicate that it entered the circulation during life, but its multiplication was probably chiefly post mortem, before the body was sufficiently cooled to inhibit its growth.

CASE II. CARCINOMA OF COMMON BILE-DUCT; CHOLETOMY; MULTIPLE ABSCESSSES OF LIVER, FROM WHICH THE BACILLUS AËROGENES CAPSULATUS WAS ISOLATED.

Nathaniel R., age sixty-three years; rope maker. Admitted to the service of Dr. Thorndike, September 10, 1899. Family history negative. Personal history negative. Present illness began two weeks ago, with an attack of sharp pain localized in the epigastrium. This was followed by nausea, vomiting, and a severe chill. Since that time the patient has been constipated and has had no appetite. One week ago his urine became dark-colored, and at about the same time he became jaundiced. The diagnosis of obstruction of the common duct was made. At operation, eight days later, the gall-bladder was found considerably distended with bile and surrounded by adhesions. It contained two pea-sized black concretions. The obstruction was not located. The gall-bladder was sutured to the abdominal wall and drained with iodoform gauze. The patient appeared to improve until the fourth day, when vomiting set in, with considerable epigastric pain. Inability to retain anything taken by mouth continued until the patient's death, seven days after the operation.

Autopsy (99.156) by Dr. Fulton, thirteen hours post mortem. Body of a man sixty-three years of age, fairly well developed, but poorly nourished. Length, 172 centimetres. Marked rigor mortis. Much lividity of dependent parts. A marked general jaundice. No subcutaneous edema. No caput medusæ. No dilatation of superficial vessels. No enlargement of the axillary lymph nodes. About six centimetres to the right of the median line and on a level with the umbilicus is a closed linear incision, seven centimetres in length, extending upward and outward. Peritoneum smooth. Appendix vermiformis 11 centimetres in length, free, extends down into the pelvis. Its lumen is patent throughout. Mesenteric lymph nodes not enlarged. Pleural cavities: Lungs are adherent in many places by strong fibrous bands. Pericardial cavity smooth, contains a few cubic centimetres of straw-colored fluid. Heart: Weight, 315 grammes. The muscle is soft, brown, and on section shows a number of small, firm, whitish, irregular areas, some of them three to four millimetres in diameter. Coronary arteries smooth; valves normal. Frozen section shows very slight amount of fat and an abundance of brown pigment.

Lungs: Voluminous; the right larger than the left. Posterior portions are dark-colored and on section are moist, exuding a frothy fluid on pressure. Anterior portions are dry on section and in general deeply pigmented. Bronchial mucosa is deeply congested and covered with a thick layer of mucus. Bronchial lymph nodes are much enlarged, very black, some of them calcified. Spleen: Weight, 230 grammes. Capsule is smooth for the most part, but is adherent over its posterior portion. It is firm, and on section is grayish red. Malpighian bodies are prominent and trabeculae easily seen. There is no increase in pulp. Stomach normal. Intestines: Small intestine contains a slimy, dark, greenish material. The colon is filled with light, clay-colored feces.

Liver: Weight, 200 grammes; dark red; friable; mark-

ings distinct. Here and there over the surface are small whitish areas, the largest three by four millimetres, which, when cut into, exude a grayish-white purulent material. A smear from this shows many pus cells and numerous large bacilli, with rounded ends, staining by Gram's method. On section these areas are seen in considerable numbers throughout the liver. The walls of these abscesses are fairly well defined and have a greenish, translucent appearance. The gall-bladder is the seat of an operation. The intestines are closely adherent to it and to each other in this region. It has been incised and contains no bile. The incision contains two small pieces of gauze drainage. The common duct is dilated throughout its length, the circumference being 4.5 centimetres. Just beneath the papilla biliaria is a small, firm nodule about one centimetre in diameter, which is freely movable beneath the mucosa, and is not attached to the pancreas. The gastrohepatic lymph nodes are enlarged, some measuring 1.5 centimetres in length. The opening of the common duct admits a probe with some difficulty. The pancreatic duct is dilated, having a lumen of about three to four millimetres, from which a clear fluid drops on section. The inferior portion of the pancreas is hard and nodular, and, for the most part, pale and homogeneous on section, but shows one small yellow patch about two millimetres in diameter. Retroperitoneal lymph nodes enlarged and very firm; the largest measure about two centimetres in length. On section they are pale, dry and homogeneous.

Kidneys: Weight, 290 grammes. Capsule slightly adherent, leaving a granular surface when stripped off. Tissue pale red; diminished consistence. Cortex measures three to four millimetres. On section, surface pale; the glomeruli appear as minute red points, and the cortex and the pyramids are not well differentiated. Some fat in the cells of the tubules. Adrenals normal. Bladder normal. Genitalia normal. Aorta: A few scattered, irregular, white, raised patches on the intima. In the thoracic portion is a small patch of calcification, measuring about one centimetre in diameter. Thyroid normal. Tracheal lymph nodes slightly enlarged.

Anatomical diagnosis.—Carcinoma of the common bile-duct with involvement of pancreas and retroperitoneal lymph nodes; multiple abscesses of liver; dilatation of pancreatic and common bile-ducts; chronic diffuse nephritis; chronic fibrous myocarditis; chronic fibrous pleuritis; chronic localized fibrous peritonitis; brown atrophy of heart; jaundice; cholecystotomy.

Bacteriological examination.—Smears from the liver abscesses stained by Gram's method show many well-preserved pus cells, large numbers of large bacilli, straight with rounded ends, staining deeply. A good many medium-sized bacilli with rounded ends, which decolorize, and a few scattered cocci occasionally in pairs retaining the stain. A few of those, morphologically like the large ones, decolorize. Anaerobic cultures in milk, agar, and bouillon all showed the three forms above mentioned. Two loopfuls from the surface of an agar culture were suspended in about one centimetre of bouillon, and injected into the ear vein of a rabbit which was killed in fifteen minutes, put in the thermostat at a temperature of 36°, and left for twenty hours.

Autopsy.—Abdomen of the animal greatly distended; marked general subcutaneous emphysema, particularly over thorax and inner side of thighs. Abdomen punctured with a trocar. The escaping gas burns with a blue, extremely hot flame for one minute. Smears from the subcutaneous tissues show the large bacilli in considerable numbers. Gas blebs abundant in the subcutaneous connective tissues. Small amount of serosanguinous fluid containing oil droplets in the peritoneal cavity. Fundus of stomach and spleen congested. Thorax contains much gas. Lungs greatly collapsed. Heart and large arteries and veins contain gas. Heart's blood contains many characteristic large bacilli. Lungs contain many bacilli. Liver very friable, a few gas blebs seen on surface and bubbles can be squeezed from it. Gall-bladder shows bacilli in smears. Kidney pale, granular and friable, containing no

gas but many bacilli. Cultures made from heart's blood, peritoneum and liver. In most of the cultures the three organisms are found. In the cultures from the peritoneum the large bacillus predominates. There is much gas produced in the water of condensation and in the agar. Milk is coagulated, decolorized, and digested. The organism produces characteristic colonies on blood serum. The medium-sized bacillus which decolorized by Gram's method is motile in twenty-four-hour cultures, acidifies milk, grows diffusely on potato, produces gas in glucose bouillon, forms indol in glucose-free bouillon and does not liquefy gelatine. It is the bacillus coli communis. The lanceolate coccus is often in pairs, forms minute pinpoint translucent colonies on blood serum, shows a very slight growth on potato, coagulates and decolorizes milk, produces no gas and no indol. In ten days gelatine is liquefied along the stab and also over the entire surface to the depth of one centimetre. A guinea-pig, weighing 100 grammes, was inoculated subcutaneously with one cubic centimetre of a twenty-four-hour culture; no symptoms developed. It is a non-pathogenic organism not identified. Cultures from heart's blood and spleen negative. Kidney and lung contain a diplococcus, with the same characteristics as that in the liver, and the colon bacillus.

Microscopical examination.—Tissues were fixed in Zenker's fluid, imbedded in paraffine, and stained with eosin followed by Unna's methylene blue. Sections of the liver show a slight cirrhosis, but the chief interest is in the abscess formation. In each of these is an area of necrotic, structureless material, portions of it hyaline, staining deeply with eosin, portions finely granular, staining with methylene blue. Immediately surrounding this are numerous poorly preserved polynuclear leucocytes and some phagocytic cells. Surrounding the abscess is an ill-defined wall composed of connective tissue containing a few liver cells and infiltrated with leucocytes and many eosinophiles. Beginning abscesses are seen in connection with the bile-ducts. In some cases the ducts are simply dilated with leucocytes, while the epithelium remains intact. In others, farther advanced, the epithelial wall remains on only one side of the abscess. About the ducts the tissue contains many plasma cells and numerous eosinophiles. From these appearances, it seems fair to assume that the infection entered by way of the bile passages. No bacteria are found in the sections except some which are morphologically and in staining reaction like the gas bacillus. Even these are not very abundant. They are found in connection with the abscesses and some are within the bile-ducts.

This case resembles closely that reported by Larkin⁶ in which there was obstruction of the common duct and multiple hepatic abscesses. In connection with the fact that no gas formation took place in the liver, two of the cases mentioned by Bloodgood⁵ are of interest. One was a laceration of the scrotum in which the gas bacillus was found in the tissues but was unaccompanied by emphysema. The other was a case of infection after ligation of the femoral artery for a popliteal aneurism. Gangrene of the leg followed the operation. Symptoms of infection accompanied by emphysema of the tissues appeared on the tenth day. The gas bacillus was found and the leg was amputated. Two months later a second amputation was done for the granulating stump. The bacillus aerogenes capsulatus was again found in a small subcutaneous abscess, but there was no gas. In a unique case reported by Gwyn,⁷ in which he repeatedly isolated the organism from the blood during life, there was also no formation of gas.

CASE III. PERFORATING GASTRIC ULCER; GENERAL PERITONITIS, IN WHICH THE BACILLUS AEROGENES CAPSULATUS WAS THE PREDOMINATING ORGANISM.

John D., age twenty-three years. Shipping clerk. Admitted to the service of Dr. Monks, November 25, 1899.

Family history negative. Personal history of no importance, except that for the last two weeks the patient has been indisposed and has lost weight. Has complained of distress after eating; no vomiting; no hematemesis. November 25th, in the afternoon, the patient was suddenly taken with cramp-like pains all over the abdomen. Pain continued until admission twenty-four hours later. No vomiting until after admission. On admission, patient was in much pain, pale and anxious. Pulse 130 and weak. Abdomen immensely distended, tender, tympanitic except in flanks, where there is some movable dullness.

Operation.—The abdomen was opened, and a dirty brownish fluid with much fibrin and gas escaped. Peritoneum red and roughened. The patient failed rapidly and the operation had to be abandoned before the perforation was found. Death occurred two hours later.

Autopsy (U. 99.36) by Dr. Fulton, sixteen hours post mortem, at the undertaker's, in the presence of friends. Partial autopsy only permitted. Organs not removed. Peritoneal cavity filled with a dirty brown fluid. Some gas escaped on opening. Peritoneum covered with scattered flakes of fibrin. Intestines much congested. Here and there are dark areas about one centimetre and less in diameter, apparently hemorrhages into the intestinal wall. Mesenteric lymph nodes enlarged. Appendix normal. Spleen somewhat increased in size and quite soft. Stomach: On the anterior surface is a round opening measuring seven millimetres in diameter, through which gas and stomach contents escape. Stomach much dilated. Permission obtained to remove stomach. The opening mentioned is two centimetres below the lesser curvature; six centimetres from the esophageal opening, and 11 centimetres from the pylorus. Over an area, five by six centimetres, surrounding the opening the peritoneal surface is whitish, opaque, with evidence of slight recent adhesions. From the inner surface the perforation is seen to be funnel-shaped, the inner orifice being 1.75 centimetres in diameter. The walls are very sharply defined, giving the appearance of having been punched out, except that they are slightly terraced, indicating the different coats of the stomach. The wall at this point measures one centimetre thick, thinning gradually for a distance of two to three centimetres from the ulcer. Posterior surface is slightly congested. No other ulceration.

Anatomical diagnosis.—Simple perforating ulcer of the stomach; acute general fibrinopurulent peritonitis; hemorrhages into intestinal wall; hyperplasia of mesenteric lymph nodes.

Bacteriological examination.—A smear from the peritoneal exudate shows vast numbers of large, thick bacilli which resemble morphologically the bacillus *aërogenes capsulatus* and stain deeply by Gram's method; a moderate number of medium-sized bacilli, and a very few slender bacilli, both of which decolorize by Gram, and a few lanceol-shaped cocci or short bacilli, often in pairs, not decolorizing. One culture made from the peritoneal cavity. The medium bacillus noted in the smears gives the cultural characteristics of the bacillus *coli communis*. After the smear was examined and the large bacillus noted, the tube was cultivated anaerobically (in a Buchner jar). A few large, thick bacilli were found in the water of condensation. This was inoculated into the ear vein of a rabbit, which was killed in fifteen minutes and placed in the thermostat over night. Autopsy the next morning. Animal much swollen and gives off an offensive odor. Peritoneum punctured and gas allowed to escape but cannot be demonstrated definitely to burn. Much subcutaneous emphysema. Gas and a chocolate-brown, oily fluid in the peritoneal cavity. Gas in pleural cavities and large blood-vessels; none in the pericardium. Smears from the subcutaneous tissue, heart's blood, liver and peritoneal cavity show many large, thick bacilli not decolorizing by Gram's method, and with an easily demonstrable capsule. Cultures show the bacillus *aërogenes capsulatus*, the bacillus *coli communis*, and an unidentified small bacillus.

In this case of acute general peritonitis the gas bacillus was the predominating organism in the exu-

date. It has already been well recognized as at least a contributing cause of peritonitis, and Welch and Flexner⁴ report a case of peritonitis due to perforating cancerous ulcer of the duodenum in which the organism was obtained in pure culture. They also report three cases of peritonitis due to the perforation of typhoid ulcers in which the gas bacillus was present, but in association with other organisms. They also mention a case of perforating gastric ulcer in one of their stock rabbits in which the peritoneal exudate contained the gas bacillus.

CONCLUSIONS.

Only one of our five cases (Dr. Thorndike's first case) was a pure infection with the gas bacillus. This case shows what marked pyogenic properties the gas bacillus may possess. In three cases the organism appeared to gain entry into the tissues from the gastrointestinal tract. In two, infection was probably referable to dirt containing the gas bacillus which gained access into the body through wounds of the skin.

Our first case shows how readily the organism may be destroyed by cold.

The lesions produced by the gas bacillus on muscle tissue are most remarkable. This was shown in both the cases of emphysematous gangrene reported by Dr. Thorndike. In some places the muscle fibres were broken into small pieces, varying in size and shape. The fragments were separated one from another and laid in different planes. Their torn edges were distinct; their striæ well preserved. The appearance was of débris thrown about by an explosion. In other places degeneration and digestion of the muscle fibres appeared to have taken place. This digestion is shown by the soft, mushy consistence of the muscle fibres, which can be teased apart with the greatest ease.

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Clinical Department.

A NEW METHOD OF INTRA-ABDOMINAL OPERATION FOR RETROVERTED UTERI.

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The present methods for holding the uterus in position, in cases where the abdomen has been opened, are practically three; namely, folding the round ligament upon itself and stitching the folds together; drawing the two round ligaments into apposition ante-

rior to the uterine and suturing them there; and finally, ventral fixation or suspension. The operations upon the round ligaments have not met with popular favor, and apparently most operators prefer some form of ventral suspension or fixation, even while feeling that it is not the ideal operation.

Fixation of the uterus brings it into permanent apposition with the abdominal wall and into an abnormal position, perhaps not so bad as retroversion, yet bad enough to be productive of many disagreeable symptoms, and a dangerous position for subsequent pregnancy.

Suspension of the uterus brings it into temporary abnormal apposition with the abdominal wall, and is intended to be followed by the formation of bands of adhesion, of uncertain length and strength, extending from the fundus to the anterior abdominal wall. The results are not always satisfactory; the uterus may be attached too high or too low on the abdominal wall, and the adhesion bands may stretch enough to allow the uterus to return to its retroverted position. Furthermore, cases have been mentioned of fatal intestinal obstruction due to these bands.

In view of my experience and that of others with the above operations, I have lately tried a new method, to which as yet I can see no objectionable feature, and which leaves the uterus in a more normal position, with natural unimpaired mobility from the start.

In all cases of retroverted uteri the round ligaments, with the peritoneal covering, are elongated, and my method consists simply in puckering them upon a gathering string, and so shortening them that the uterus is brought into normal position. In the cases I have operated upon this is exactly what has happened.

I have picked up the round ligament and peritoneum together with a double hook, about midway between the cornu of the uterus and the internal abdominal ring; then passed a suture of silk subperitoneally from the uterus as far outward along the round ligament as seemed necessary. The tissue is puckered along this suture, the two ends of which are then tied together with moderate traction. To avoid its cutting through, the silk used is of medium size, and is passed into the tissue of the fundus at its point of entrance, and through ligamentous tissue at its exit. The strain on this stitch, however, is not nearly so great as upon the stitches of a ventral suspension, which drags the uterus out of position.

I have had this operation in mind for some time, but have tried it only lately. It surely avoids the defects of other operations, but its value must be determined by extended trial, and I submit it to the profession, hoping it may be tried by others.

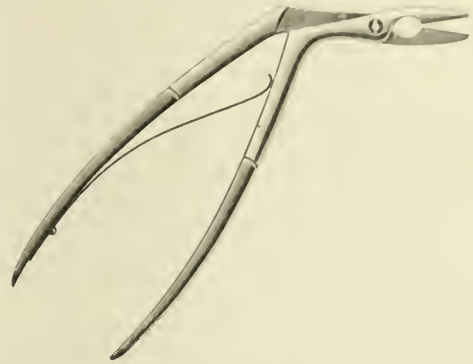
New Instrument.

A NEW NASAL SCISSORS FOR THE REMOVAL OF THE LOWER TURBINATE.

BY CAROLUS M. COBB, M.D., BOSTON.

IN removing the whole or a part of the lower turbinate bone, I have found a pair of scissors, which Codman & Shurtleff, of Boston, made for me, to be of very great advantage. The accompanying cut gives a very good idea of the instrument. It is much more convenient to use than the turbinate saw and leaves a

cleaner cut than does the saw. The fault with most nasal scissors is that the blades are not firm enough to cut through the body of the turbinate; the blades either slip by each other or one is not able to put force enough onto the handles to make the point cut anything more than the mucous membrane. The



blades of this instrument are short and the whole so strong that the blades will cut through any part of the lower turbinate. The shape of the instrument allows the operator to reach any part of the lower turbinate that can be reached by the saw or by any other instrument except the cold wire snare.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-FIRST ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

AFTER the announcements of the Committee of Arrangements and executive session, Dr. ROBERT F. WEIR, of New York, gave the Presidential Address on

PERFORATING ULCER OF THE DUODENUM.¹

The perforation usually is located within one and one-half inches of the pylorus, more commonly on the anterior wall: in 80 per cent. of the cases the ulcer is single, in eight per cent. it is double, while in the remaining cases more numerous perforations occur. The cause of ulceration is difficult to determine: it has been attributed to habits of life, to circulatory disturbances, to the naturally delicate condition of the mucous membrane, to sepsis, burns, etc. Lockwood has collected 138 cases of burns treated by modern methods, and duodenal ulcer occurred in only one case. The affection is comparatively rare, occurring in about two per cent. of all necropsies. Patients are of all ages, but it is more common between twenty and fifty. In many cases healing occurs without serious results, but in some cases cicatricial contraction results. The symptoms are often vague, and may be entirely wanting. The patient's previous history is of great importance; there is usually pain, tenderness and vomiting; hematemesis, blood in the stools and jaundice may be present. Pain usually follows some time after eating; hematemesis is less frequent than with gastric ulcer; vomiting of importance if combined with

¹ See No. 18, p. 445, of the Journal.

other symptoms; jaundice rarely follows cicatricial contraction. Blood in the stools generally gives them a tarry appearance, but in some cases the blood may be bright red. Great advances have been made in the diagnosis of such conditions of late, and Weir believes that the differentiation from gastric ulcer is not impossible. The symptoms of perforation are sudden acute pain, vomiting, shock. Later the symptoms of localized or general peritonitis supervene. The obliteration of liver dulness is not of much value, as resonance may result from a distended colon. As in perforating gastric ulcer, the mortality depends much upon the time elapsing between perforation and operation. Of 13 cases operated upon over thirty hours after perforation all died. In the earlier cases the perforation was often not found or sutured, but among later cases the perforation has been found and closed in 35 per cent. of the cases, and there is much less confusion of the diagnosis with various forms of intestinal obstruction, appendicitis, etc.

The treatment of non-perforating duodenal ulcer is seldom surgical, although in some cases gastro-enterostomy may be considered. In operating, Weir advises a long incision along the edge of the rectus muscle, then the fascia is cut transversely. If the perforation is not discovered on the anterior wall after wiping away the exudate the posterior wall should be examined. Methylene blue taken by the mouth may aid in the diagnosis. The perforation is closed by two or three rows of sutures. Excision of the ulcer is unnecessary. Closing of the perforation is but half the battle; the careful cleansing of the peritoneum is of the highest importance. If dilatation of the stomach or obstruction to the flow of bile results from cicatricial contraction, gastro-enterostomy may be performed. Weir has prepared a synopsis of 51 cases, including one case in which he personally operated, upon which he based his paper.

DR. WILLIAM L. RODMAN, of Philadelphia, read a paper on

GASTRIC ULCER, NON-PERFORATING; HEMORRHAGE.

The paper was based upon an exhaustive study of the statistics, and Dr. Rodman devoted his attention mainly to the treatment. He showed the fallacies of the statistics on this subject by Mayo Robson. The various operations which have been practised for hemorrhage were discussed. Gastro-enterostomy has been most commonly performed, and probably will continue to be because of the difficulty in locating the ulcerated vessels. In 55 necropsies the splenic artery was found to be ulcerated 17 times. Excision of the ulcer is the ideal operation unless there are strong adhesions, and the mortality in those cases in which this operation has been performed is less than that of gastro-enterostomy. Operation for acute hemorrhage is advised, with limitations, but operation for chronic hemorrhage is always indicated.

DR. J. M. T. FINNEY, of Baltimore, read a paper on

PERFORATING ULCER OF THE STOMACH.

Finney mentioned the great interest which has been taken in this subject of late, the increased number of operations and the many exhaustive papers which have recently been published. It was not until twelve years after Mikulicz first operated, in 1880, that the first successful case was reported by Kriege.

During the first sixteen years only 78 cases have been reported, but since then the number has rapidly increased until, with Finney's own recent tabulation, the number up to date is 268 cases. Of 35 patients that have been treated in the wards of Johns Hopkins Hospital for gastric ulcer, perforation has occurred in but one case, and death resulted before operation could be completed. The affection is most frequently met in young women of the lower walks of life; in men it usually occurs after forty years of age.

The site of the ulcer is more commonly on the anterior wall of cardia, next most frequently the pylorus, then along the lesser curvature, and, finally, the posterior wall. In about 20 per cent. of the cases there is more than one perforation. The severity of the symptoms arising depends on the size of the perforation, the amount and character of gastric contents, the variety and number of bacteria present. If the stomach be empty the chances for recovery are much more favorable. The stomach is capable of sterilizing itself, as the acid gastric juice kills many bacteria, but many may persist buried deeply in the mucosa. There are no symptoms of impending perforation, but Finney believes that the blood count and the finding of leucocytosis is of great diagnostic value. It is improbable that over five per cent. of patients with perforation recover without operation, and if operation is delayed septic peritonitis will supervene in case no limiting adhesions form. The less opium given the better in these cases. Operation should not be delayed until the patient has recovered from shock, but the sooner performed the better will be the results. Early exploratory operation is urged in case there is doubt as to the diagnosis. Cocaine anesthesia is sufficient in such cases; cover-slip preparations and cultures may be taken and the abdomen closed, provided no lesion is found. If necessary to continue the operation a general anesthetic may be administered. The cause of death in these cases is usually sepsis, but there has been much improvement in the results of late. While the percentage of recoveries, which is now placed at 87 per cent., may be somewhat too high, it is a great improvement over the five per cent. of recoveries which follow without operation.

WM. J. MAYO, of Rochester, Minn., read a paper on

MALIGNANT DISEASES OF THE STOMACH AND PYLORUS.

Mayo considers carcinoma of the stomach a strictly surgical disease. Early diagnosis is of the highest importance, and the surgeon should not wait to have the physician make it for him. Exploratory incision is as justifiable as in the case of the breast and uterus. The curability of malignant disease depends upon the histologic structure of the growth, its location, extension to neighboring tissues, glandular involvement and the general condition of the patient. If the tumor has a large amount of stroma its growth will be slow, and the reverse. Disease of the cardia is generally easily diagnosed, but radical intervention is likely to be impossible, and while diagnosis of disease of the pylorus is difficult the prognosis is much better. Infection of the lymphatic glands is not as common as in malignant disease of some other organs, and if present radical operation will probably be impossible.

In the beginning each operation is an exploratory

incision for methodical examination, having in view the question of radical operation, palliation or the inadvisability of attempt at relief. Even after the abdomen is opened it is often difficult to determine whether the growth be malignant. Mayo believes that in the future the more radical operation of gastrectomy will be more frequently performed. He points with pride to the fact that the first total gastrectomy was performed by Connors, an American; while Schlatter was successful, he was not original. In the case of more localized growths pylorotomy by Kocher's method is preferred. Operation in two stages: first gastro-enterostomy and some weeks later pylorotomy shock the patient less and give opportunity for him to gain strength before the final operation, but there is likely to be some trouble with adhesions if this method is followed. Curetting or the use of the cautery as a palliative measure is not favored. Gastro-enterostomy is the most generally useful palliative operation. Whether it be performed by suture will depend on individual preference and experience. Mayo uses the Murphy button without suture. He questions the supposed advantages of posterior gastro-enterostomy by von Hacker's method, and personally prefers the anterior operation. If the anastomosis between stomach and intestine be made about an inch above the lower border of the stomach regurgitation of intestinal contents and vomiting of bile will be uncommon. Entero-enterostomy in addition to gastro-enterostomy is usually but an unnecessary complication of the operation.

SECOND DAY.

DR. FREDERICK KAMMERER, of New York, read a paper entitled

BENIGN OBSTRUCTION OF THE PYLORUS.

Obstruction of the pylorus may be either congenital or acquired: there may be acute stenosis at birth as the result of fetal peritonitis, or congenital hypertrophy may exist.

Acquired stenosis most commonly is an after result of gastric ulcer; it may result from occlusion by benign tumors, from syphilitic gumma, from gall-stones obstructing the pylorus, from spastic contraction from hyperchlorhydria. If medical treatment fails, daily lavage, rest and careful diet, surgical treatment is indicated. Kammerer mentioned surgical treatment by dilatation of the stricture, simple division of adhesions and resection of the pylorus, but he devoted most of his paper to the discussion of pyloroplasty and gastro-enterostomy. Study of a large collection of statistics shows the present mortality of pyloroplasty to be 15 per cent., while that of gastro-enterostomy is 17 per cent., but the mortality of the latter operation is much lessened now and it is doubtful if it is really higher than that of pyloroplasty. The mortality of resection of the pylorus is about 28 per cent., according to Mikulicz; that of Loretta's operation is also great and both these procedures have practically passed out of use. Adhesions may reform after pyloroplasty, causing return of obstruction, but not after gastro-enterostomy. Gastro-enterostomy is likely to be followed by regurgitation of fluids from the intestine, perhaps as the result of the formation of spurs, kinks or twists. Anterior gastro-enterostomy does not empty the stomach so freely in the recumbent position, and in some cases complications arise from the small intestine encircling

the colon, hence posterior gastro-enterostomy is preferred. Kammerer has performed eleven posterior gastro-enterostomies with Murphy's button, with one death from exhaustion and one from pneumonia. In the remaining cases the after results were excellent; there was no difficulty from spur formation or regurgitation. As to the after results from these operations, the motor function is generally increased and there is reduction in the size of the stomach, but never to normal. There is no reflux of bile and intestinal fluids after pyloroplasty, but there is less reduction in the size of the stomach than after gastro-enterostomy, and there is the possibility of recontraction from inflammatory thickening or reformation of adhesions. The fact that the results are always as good after gastro-enterostomy, and sometimes much better, makes this the operation of choice in such cases.

DR. B. F. CURTIS, of New York, read a paper on

GASTRIC DILATATION — GASTROPTOSIS.

In a discussion of the anatomy of the stomach Dr. Curtis called attention to the fact that under normal conditions the pylorus can scarcely be palpated and the lesser curvature not at all. Dilatation may arise from obstruction to the outlet of the stomach from benign or malignant tumors or from atony of the stomach walls, or from a combination of these causes. Atony of the stomach walls in its turn may result from some constitutional disease or from repeated overloading. The prognosis in atonic dilatation under medical treatment is unfavorable and operation is indicated when the patient is losing ground under systematic lavage and dietetic and medical treatment. The mortality of the operation of gastroplication is low and in properly selected cases the results are good; the choice of cases is difficult, however.

The details of the operation have been variously modified from the simple folding and suture first proposed by Bircher. Dr. Curtis favors Weir's method, using several rows of sutures. Gastroptosis may be of three varieties; there may be simply fixation of the cardia and sagging of the pyloric end; this may be so extensive that we have to deal with a vertical stomach, or both cardia and pylorus may be fixed and the stomach sag in a U-shape. Dr. Curtis mentioned five operations without any accidents; improvement is not difficult to obtain whatever method of operation be adopted.

DR. F. S. WATSON, of Boston, read a paper on

HOOR-GLASS CONTRACTION OF THE STOMACH.

Hour-glass contraction of the stomach has existed as a surgical affection for only ten years and during that time 35 cases have been operated upon. The methods employed have been gastro-enterostomy, plastic operation and gastro-anastomosis by Wöfler's and Watson's own method. Dr. Watson first folds the stomach with the constricted part as a hinge; the sac nearest the pylorus is then fastened to the cardiac portion by four stay sutures and then the two sacs are securely sutured before opening the stomach; a longitudinal opening is then made in the stomach wall and the double partition between the two sacs is excised. The first patient upon whom Dr. Watson operated gained forty-two pounds in the year after the operation; she remains well and is doing her work five years after the operation. In a second case, a woman who had a long history of gastric ulcer was taken

with symptoms of perforation. Operation was performed and the perforation was sutured. The abdominal cavity and pelvis were infected at the time of operation, and the patient died four days later. At the necropsy the stomach was found to have an hour-glass shape, a fact that was not recognized at the time of operation because of adhesions. The pyloric end was also pulled up and attached to the lesser curvature by adhesions. As regards the choice of operation, Dr. Watson believes that gastro-enterostomy should not usually be performed in such cases, because the digestive function of the second sac is lost; after plastic operation there is danger of recontraction of the opening and the operation is not applicable if the opening between the two pouches is small. Under favorable conditions gastro-anastomosis is the preferable operation; if adhesions exist they should be freed if the patient's condition permits.

Dr. JOHN C. HEMMETER, of Baltimore, read a paper on

DIAGNOSIS OF CANCER OF THE STOMACH.

The only diagnosis of carcinoma that is of interest to the surgeon is the early diagnosis, and as there is a period of three months before any definite signs appear, this is very difficult. The first symptoms resemble those of nervous dyspepsia or chronic gastritis. The methods necessary for chemical and microscopical investigation are time robbing and not generally suited for general practice. Such symptoms as pain, dyspepsia and the appearance of blood are of little value, because found in other conditions. The absence of free HCl is an important symptom, but it may not be present, even at the end of the disease. The presence of lactic acid is a sign of stagnation and is not present till there is pyloric obstruction. It is present in about 84 per cent. of the cases of cancer. The *Oppler-Boas* bacillus is present in 53 out of 55 cases of carcinoma, but, like lactic acid, it may be present with benign growths. There is little hope of a diagnosis from gastroscopic examination and it is not without considerable danger. The use of the x-rays is futile and electrodiaphany is of no value until there is great thickening. Curetting the stomach by the stomach tube gives positive evidence of carcinoma if the growth has disintegrated. The appearance of atypical and asymmetrical mitoses in the cells of the tissue undergoing transformation if present is highly suggestive.

Until we gain a knowledge of the true nature of the disease, early diagnosis and successful treatment will be impossible and gastric surgery can be only palliative. In all cases of nervous dyspepsia or chronic gastritis, if there is no benefit resulting after four weeks' medical treatment, if there is lessened peristalsis and no free HCl, if atypical mitoses are found, exploration is indicated.

Dr. A. T. CABOT, of Boston, read a paper on

ADHESIONS OF THE STOMACH.

Ulcer of the stomach or duodenum and inflammatory conditions of the gall-bladder most frequently give rise to adhesions. The symptoms, if mild, often remain unrecognized, and may simulate biliary colic. Pain may be a marked symptom or it may be moderate and pass unnoticed; it does not radiate to the shoulder and is not spasmodic. In cases in which there is a history of ulcer, or the symptoms of stone

in the gall-bladder, Dr. Cabot believes that operation for the freeing of adhesions is often advisable, even if the pain be not severe. His results, after such operations, have been very favorable.

GASTRIC FUNCTIONS BEFORE AND AFTER GASTRO-ENTEROSTOMY.

Dr. C. S. FISCHER, who read this paper, believes that the results of German investigators who have studied this subject are of little value because of the short time that their patients were under observation. He reports a case that was under observation for four years for disturbance of motor function and hyperacidity before operation. This patient remains under observation two years after operation; the hyperacidity continues and has been progressive, the dilatation is less and the motor function is improved. In another case the hyperacidity was reduced, but becomes pronounced after emotional disturbances. Fischer believes that structural changes begun before operation are likely to continue after operation; in general, the motor function is improved and the intestinal function is also improved.

STRICTURE OF THE ESOPHAGUS FOLLOWING TYPHOID FEVER; GASTROSTOMY.

Dr. FREDERIC S. DENNIS, of New York, presented this paper. A man of thirty-five was shown before the society, and in Dr. Dennis's absence his paper was read by the Secretary. During the latter part of an attack of typhoid fever of three months' duration, the patient was taken with a burning sensation in the lower part of the esophagus, and later difficulty of deglutition followed. He was treated by dilatation with bougies for three months, but his condition became progressively worse. Rectal feeding was resorted to, but the patient became bedridden from exhaustion; he lost flesh until he weighed but 100 pounds, he was cyanotic, almost pulseless, and in such constant agony that he begged for any form of relief. At the time of operation he had taken no food by the stomach for three months. Gastrostomy was performed and since then the patient's condition has progressively improved; he now works hard, weighs 180 pounds and is able to enjoy life in spite of this method of feeding.

DISLOCATIONS OF THE HIP; DEMONSTRATIONS ON THE CADAVER ILLUSTRATIVE OF THEIR MECHANISM.

Dr. OSCAR H. ALLIS, of Philadelphia, presented this paper. He called special attention to the value of this method for purposes of demonstration before classes. He demonstrated on the cadaver the method of producing different dislocations, their signs and the method of reduction, verifying his statements by incisions. He laid special stress on the necessity for fixation of the pelvis during reduction, the fact that the most important factor in reduction is to find the opening in the capsule from which the head escaped and that by traction the head may be drawn up on the acetabulum and then pushed in by an assistant. By this method reduction can be accomplished even if the bone be divided.

THIRD DAY.

Dr. W. W. KEEN, of Philadelphia, opened the discussion on

SURGERY OF THE STOMACH.

Malignant disease of the stomach is of more importance at the present than non-malignant disease, because of its greater frequency and because of the great difficulties in diagnosis. During the past few years the specialist on gastric diseases has given the surgeon great aid in the diagnosis. Hemmeter has called attention to the fact that if operation is to be successful it must be performed within the first three months of the disease, and if the specialist finds any probability or even a possibility of this disease exploratory operation is indicated. There is little danger in exploratory incision, but there is danger in late operation that we shall be able to accomplish nothing. If a palpable tumor is present recurrence is almost inevitable.

DR. M. H. RICHARDSON, of Boston, believes that all methods of diagnosis should be exhausted before we resort to exploratory operation, but in case of doubt open the abdomen as soon as possible in all surgical affections of the stomach. In case of hemorrhage operation is not advisable unless medical means have failed. Perforation demands immediate operation, but the diagnosis is sometimes difficult. In case of carcinoma the time for operation is before the tumor is felt, but not one case in fifty is suitable for operation at the time it comes to the surgeon. Total extirpation probably has a more limited field than was at first believed.

DR. T. A. MCGRAW, of Detroit, described a method of performing gastro-enterostomy by means of an elastic ligature, which he introduced some years ago, but abandoned for Murphy's button. He gave the details of a case in which he performed anastomosis in this way, but the patient died of inanition fifteen days later; at the necropsy it was found that the stomach was united to the ileum only about three feet above the ileocecal valve. The method of anastomosis is to pass the needle through about an inch of stomach and intestine and tie firmly. It takes about three or four days for the ligature to cut through.

DR. DUDLEY P. ALLEN, of Cleveland, reported a case in which he operated on a patient that was apparently moribund. A perforation was found low down on the posterior wall; gauze was packed down to the perforation and recovery followed. Cultures taken from the abdomen at the time of operation failed to demonstrate the presence of any bacteria and possibly that accounted for the favorable result. In another case in which he operated for gall-stones the patient died seventeen days later from hemorrhage from a gastric ulcer. In a third case a patient who had vomited blood and passed blood by the rectum was found to have an ulcer connecting the stomach with the colon. Dr. Joseph Ransohoff, of Cincinnati, advises operation for malignant diseases of the stomach in two stages: preliminary gastro-enterostomy, then, about two weeks later, pylorotomy.

DR. CHARLES B. NANCREDE, of Ann Arbor, Mich., reported a series of experiments which show that infection with the colon bacillus is not ordinarily the cause of death, but if morphine is administered, a fatal result is likely to follow. He emphasized the desirability of statistics as to the results of pylorotomies by the members of the Association. He does not believe there is 90 per cent. mortality after this operation; if so, it is not a justifiable procedure.

DR. JAMES E. MOORE, of Minneapolis, mentioned a case that was referred to him by a specialist on stomach diseases. There had been previous good health till within three weeks, then the only symptom was pain and absence of free HCl. On opening the abdomen the disease was found too extensive for removal. In case of hemorrhage from gastric ulcer the ulcer would often be found if exploration were continued to the duodenum.

DR. S. H. WEEKS, of Portland, Maine, states that operations for carcinoma up to the present time have not proved curative, and he advocates gastro-enterostomy in such cases. He favors operation with the use of sutures rather than by Murphy's button. He uses catgut sterilized by boiling in juniper oil as a suture material.

DR. L. C. TIFFANY, of Baltimore, believes that pylorotomy is justifiable only in rare cases. He has operated in a number of cases referred to him by Hemmeter and invariably found enlarged glands which precluded further intervention. As in the case of oöphorectomy and appendectomy, the pendulum will probably swing in the direction of useless exploratory intervention, until we learn by experience, by actual handling of cases, the real conditions and indications for operation.

DR. R. F. WEIR, of New York: While a diagnosis is impossible, we operate for the relief of such symptoms as pain, hemorrhage and dilatation. As yet it is not definitely settled what operations and what methods are most desirable. Weir personally prefers posterior gastro-enterostomy in combination with entero-enterostomy, using Murphy's button. During the past year he has operated upon 11 cases with no deaths. In exploratory operations cocaine anesthesia might be much more frequently used.

DR. ARMSTRONG, of Montreal, considers many cases of gastric hemorrhage, such as capillary bleeding, amenable to medical treatment, but the severe hemorrhage which arises from deep ulceration generally requires operative treatment. Repeated hemorrhages of considerable amount also demand operative treatment. In operating, a large opening should be made near the middle of the anterior wall of the stomach to give plenty of room for exploration.

DR. L. M. TIFFANY, of Baltimore, called attention to the fact that by incising the gastrocolic omentum and passing the hand up behind the stomach, it is possible to turn the stomach practically inside out in examining the mucous membrane for ulcer.

THE METHODS OF CLOSING ABDOMINAL INCISIONS.

DR. M. H. RICHARDSON, of Boston, read this paper. He advocates through-and-through suture as quicker, more convenient, less likely to leave dead spaces which fill with blood and tend to produce infection, and he believes that there is no more tendency to hernia. After using various materials for suture he has adopted silkworm gut for closing the abdominal wall and silk for all other ligatures and sutures. It is questionable whether union is any more secure after suturing like tissues than if peritoneum be sutured to fascia, and fascia to muscles. The number of hernias through the scars of abdominal incisions is insignificant. In five years only nine such cases have come to the Massachusetts General Hospital, though over 1,500 abdominal operations have been performed. In some cases interrupted

buried sutures of the fascia may be inserted with advantage after through-and-through sutures have been first inserted before they are tightened and tied. It is well to first thread both ends of the suture with a needle, and the needles are then passed through the abdominal walls on each side from within outward.

DR. J. B. DEEVER, of Philadelphia, stated that he agreed with Richardson entirely. He confines his incisions to the muscular wall of the abdomen, preferably through the rectus muscle, not through the linea alba or linea semilunaris. He also uses silkworm gut and silk as suture material; never catgut.

DR. WEIR, of New York, believes that there is good in both methods. He uses the layer suture. The suture should not be drawn too tight so as to strangle the tissue and interfere with repair. He thinks that the percentage of ventral hernias is greater than estimated by some previous speakers.

DR. G. R. FOWLER, of Brooklyn, thought that when experts disagree on matters in which they have had wide experience, the middle course is usually the safest. Fowler uses what he calls the crossed suture, a kind of double figure of eight, which crosses twice in the tissues. The suture is easily inserted, easily removed and efficient. The skin ends are farther apart from the edge of the incision, and they are passed through a bolster of thick rubber tubing.

DR. COLEY, of New York, favors the layer suture, and has used catgut for the buried suture material for nine years. Out of 150 hernia operations since he began using gloves he has had but one infection, and that could be traced to imperfect sterilization of the skin. He has seen many sinuses resulting from the use of silk.

DR. S. J. MIXTER, of Boston, does not use either method exclusively. There are great differences in the way in which sutures are inserted. If through-and-through sutures are used the different layers should be picked up with care and they should not be drawn too tightly.

DR. GEORGE B. JOHNSON, of Richmond, Va., after extensive trial of both methods prefers through-and-through suture, as it destroys dead spaces and does not leave weak places in the abdominal wall.

DR. NANCREDE, of Ann Arbor, Mich.: The man who uses one method acquires dexterity with it, and can use it with better advantage. By repeated experiment it has been proven that catgut can be reliably sterilized by boiling in cumol, and if germs are found on the ends of it they are the same as those on the operator's hands.

DR. CARSON, of St. Louis, prefers catgut as a suture material.

DR. RANSOFF, of Cincinnati, uses continuous sutures in layers and fastens by the use of perforated shot.

DR. RICHARDSON stated that his objection to catgut is not that it cannot be sterilized but it does not tie well and is not permanent enough. Silk never gives trouble in aseptic wounds.

STRANGULATED HERNIA THROUGH A TRAUMATIC RUPTURE OF THE DIAPHRAGM; LAPAROTOMY; RECOVERY.

DR. E. W. WALKER, of Cincinnati, read this paper. A man of twenty-nine was struck by a falling tree and was only prevented from being completely crushed by one of the branches. Pain in the chest, nausea

and vomiting, constipation and extreme shock resulted. After a time the vomiting became stercoraceous. The bowel was pulled down, relieving the obstruction, and an attempt was made to suture the diaphragm. Rapid recovery followed and the patient has been in good condition since the injury.

DR. S. J. MIXTER, of Boston, reported a case in which a man was taken with severe pain near the umbilicus while pumping a hand-engine. On opening the abdomen it was found that the intestines were protruded into the thoracic cavity through a rent in the diaphragm. The thoracic and peritoneal cavities were both contaminated with feces and death followed a short time later.

DR. R. MATAS, of New Orleans, considers the transpleural route most favorable in such cases; this is the opinion of Italian surgeons who have had most experience in these operations following stab wounds.

A CASE OF SUBPUBIC HERNIA OF THE BLADDER THROUGH THE PELVIC FLOOR; OPERATION.

DR. F. B. HARRINGTON, of Boston, reported this case. A woman of forty-six, who had a large tumor of the labium majus, was taken suddenly with retention of urine. Several years previously she had been operated upon for a large edematous fibroid of this region; the fibroid had recurred and pulled down the bladder. Catheterization reduced the size of the tumor considerably, but all efforts at reduction were unavailing. Operation was performed, reducing the hernia, and recovery followed.

DR. W. W. KEEN, of Philadelphia, read a paper entitled

EXTIRPATION OF A VERY LARGE ANEURISM OF THE RENAL ARTERY.

DR. M. H. RICHARDSON, of Boston, read a paper on

A CASE OF ACUTE TUBERCULOSIS OF THE MESENTERIC GLANDS OF THE ILEOCECAL COIL; REMOVAL; PERMANENT RECOVERY.

DR. DE FOREST WILLARD, of Philadelphia, read a paper entitled

CONGENITAL CYSTIC TUMOR OF THE PELVIS.

A neurotic man had for several years had severe pain extending down his leg, and his physicians had made a diagnosis of neuritis. The pain did not follow the course of any nerve and it was not continuous. Later on a tumor appeared in the region of the groin. Various diagnoses were made, including malignant disease of the inguinal glands or of the ileum. On operating it was found that the tumor came out of the pelvis, passing over Poupart's ligament and forming a sausage-shaped mass in the groin. Hundreds of yellowish bodies, somewhat bean-shaped, were removed; they were laminated and in color resembled fat. The cyst which contained them was so intimately connected with the iliac and femoral arteries that it was impossible to remove it, and the cavity was packed with gauze. The specimen was examined by a number of competent pathologists, but as yet none of them have been willing to express an opinion as to the character of the growth. The patient died a short time later from nephritis, from which he had been suffering for some time.

DR. LEONARD FREEMAN, of Denver, read a paper entitled

UNION FOLLOWING PATHOLOGICAL FRACTURE OF THE FEMUR DUE TO SECONDARY CARCINOMA; SPONTANEOUS DISAPPEARANCE OF CARCINOMA OF THE LIP.

A woman of thirty-five, who had had a hard carcinomatous nodule of the breast removed some time previously, fractured her femur while turning in bed. Extension apparatus was applied, although union was not expected. After four weeks it was found that firm union had resulted. Microscopic examination of a specimen removed after the woman's death showed it to be carcinoma, which had invaded the bone through the Haversian canals. In a second case, a man had had an apparently typical epithelioma of the lip which disappeared. Later the submaxillary glands became enlarged and were removed. Microscopic examination showed the growth to be carcinomatous.

The following officers were elected for the ensuing year: President, Roswell Park, of Buffalo; First Vice-President, John E. Owens, of Chicago; Second Vice-President, Clayton Parkhill, of Denver; Secretary, Herbert L. Burrell, of Boston; Treasurer, G. R. Fowler, of Brooklyn; Recorder, De Forest Willard, of Philadelphia; Member of the Council, Robert F. Weir, of New York; Members on Committee of Arrangements, W. S. Halsted, of Baltimore, and W. J. Mayo, of Rochester, Minn. Next annual meeting to be held in Baltimore, May 7, 8 and 9, 1901.

Recent Literature.

The Irrigation Treatment of Gonorrhoea, its Local Complications and Sequela. By FERD C VAL-
ENTINE, M.D. Profusely illustrated. New York:
William Wood & Co.

This book of 212 pages and a carefully prepared index, is written for the instruction of the general practitioner of medicine, by a man whose knowledge of and experience in the treatment of gonorrhoea make his opinions of value. The ground covered by the author is considerably greater than the title of the book indicates, for the subjects of acute and chronic gonorrhoea are considered at some length and always from a most practical point of view. The irrigation treatment, with which the author's name is so prominently associated, is, as one would expect, given great prominence in the consideration of various methods of treatment, and it is described with the greatest care and attention to the smallest details. Short chapters on The Proofs of Cure of Gonorrhoea, and The Marriage of Gonorrhoeics bring to an end a most concise summary of the present-day knowledge of the disease. If one had a criticism to offer it would be that certain methods of treatment, notably treatment by the aid of urethroscopy, are so simply and practically described as to unduly encourage their use by men of inadequate skill and experience. The book is attractively printed and the illustrations are numerous and adequate.

THE BOSTON

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THE TWENTY-EIGHTH ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD OF ENGLAND (1898-99); SUPPLEMENT. REPORT OF THE MEDICAL OFFICER.

THIS report embraces the operations of the Medical Department of the Local Government Board of England (practically the general Board of Health) and contains much matter of interest to physicians and to sanitary authorities.

The report contains the latest digest of the vaccination returns of England, those of 1896, which shows that out of 914,205 births registered in that year, after deducting those who had died during the year, and others whose vaccination had been postponed by medical certificate, there still remained 25.6 per cent. who were unaccounted for. The percentage in London unaccounted for was 26.4 and that of the rest of England was 22.3. These percentages were larger than those of any previous year since records were begun in 1872, having increased from 8.8 per cent. in London to 26.4 per cent., and from 4.5 per cent. in the rest of England to 22.3 per cent. The report further states that 110,728 consecutive primary vaccinations had been performed under the Board's auspices, *without the occurrence of a single case of so-called insusceptibility.*

Under the amended vaccination acts of 1898, the Board was authorized to offer to vaccinate "with glycerinated calf lymph, or such other lymph as may be issued by the Board." The Board, therefore, established laboratories for the production of such lymph, appointing Dr. Frank R. Blaxall as bacteriologist with several assistants. The demand for this lymph proved to be in excess of the supply, the number of tubes issued in the first three months of 1899 being 126,038.

The operations of this establishment summarized were as follows: (1) The selection of healthy calves from three to six months old; (2) their supervision as to healthfulness; (3) vaccination of the calves and subsequent collection of the lymph at the animal vaccine establishment; (4) preparation of the glycerinated

emulsion; (5) testing of the emulsion by culture and otherwise to ensure its freedom from harmful organisms; (6) transference of the emulsion to capillary tubes; (7) compilation of the records received from public vaccinators. Each calf is slaughtered under supervision of a qualified veterinary surgeon. No lymph is sent out till a certificate has been received to the effect that the animal was healthy. In the first three months only one calf was found to be diseased, some tubercular lesions being found. None of the lymph of this animal was issued, although careful investigation failed to reveal any tubercle bacilli in it.

Several of the valuable appendices to the report contain the statements of medical inspectors relative to local inspections, hospital accommodation, sewage disposal, water supply, and the housing of the working classes.

The inspection of an unusual outbreak of measles at Burton-on-Trent, by Dr. Theodore Thomson, gave rise to the following comments of the Board:

"In order to successfully control measles in a borough of this description, where children suffering from the early stages of and incubating that disease are constantly liable to come into contact, the measures that are most likely to avail are isolation in hospital of the children first attacked, and the strict exclusion from school of all children living in houses where the disease prevails, to be followed, if need be, by actual closure of the schools. To attain the desired end with the least interference with the system of elementary education, it is as necessary for the school officials daily to seek the required information from their scholars and to transmit it to the sanitary officers as it is for the sanitary officers to transmit to the school officials information gained from the notification returns. And, above all, the time when these measures have most chance of success is at the very onset of the outbreak. Indeed, not only can no sanitary authority be expected to maintain in readiness means of isolation for more than a limited number of cases of measles, but the value of hospital isolation for preventing the extension of this disease is generally limited to quite the initial period of an outbreak."

A considerable part of the volume is occupied with reports of inspection of distant parts of the British Empire invaded by the plague and of the measures taken to prevent its entrance into England. These measures are summarized by the Board as follows:

"Briefly stated, the system adopted in this country in such cases is the medical examination of all persons on board; the removal to hospital of any person either suffering from plague or suspected to be so suffering; the disinfection of articles believed to have had opportunity of becoming infected, and of those portions of the vessel occupied by the sick; the registering on board of the names and addresses of all the remaining persons, including the crew, such persons being then free to leave the ship and to go to the addresses given; and lastly, the transmission to the sanitary authorities of the names and places of residence of

persons leaving the vessel for their respective districts, with a view to such persons being maintained under supervision of the medical officer of health during the ten days which have been determined on as representing, in so far as administrative purposes are concerned, the period of incubation of plague. The system embodied in these measures is that which England has now for a long period adopted with regard to exotic diseases; it aims at arresting at our ports actual cases of foreign disease, plague, cholera and yellow fever, and of securing the disinfection of articles which may reasonably be held to have incurred risk of infection. For the rest it imposes no restrictions on either individuals or articles imported; but it relies on the internal sanitary administration of the country to control at the onset any infection which may perchance evade the precautions adopted at our ports. Thus far it has been singularly successful, as regards all the three diseases to which it has been applied, and the responsibility which devolves under it on local sanitary authorities so to organize their local public health departments that they shall be always prepared effectually to deal with any chance infection which may reach them from abroad has had the inestimable advantage of helping to secure at the same time a standard of health at home which has resulted in an immense saving of life."

With reference to the part played by merchandise in the transmission of infection, the Board continues as follows: "Some nations and persons have, in sheer panic, attempted to impose almost universal prohibition on the importation of all articles from countries where plague prevails; and in their most pronounced form these attempts have, in so far as the interests of this country are concerned, culminated in occasional suggestions to prohibit the export of grain from plague-infected ports, or to destroy cargoes of grain, such as corn and rice, when carried by a vessel on which one or more cases of plague have occurred. With regard to such proposals, I have taken the responsibility of advising that no prohibition either as to exportation or importation, under the circumstances referred to, was called for; and further, that no futile attempts at the disinfection of cargoes such as those of grain were justifiable, except in so far as the local medical officer of health had evidence that any individual sack or sacks of grain had had opportunity of becoming infected, or afforded indication of having been soiled by, or of having been eaten into by rats whose dead bodies gave evidence of the occurrence of the disease in them. Thus far, my action, which has often been followed by the use for food of the cargoes concerned, has been fully justified by the results.

In taking this attitude as regards the importation and exportation of articles of commerce in general, I have been influenced by the following considerations: *Firstly*, as regards grain cargoes, there is an absence of anything that can be regarded as evidence to show that plague is communicable to man by means of an article of diet, and there is, further, evidence

which goes to show that even when grain is purposely infected with the plague bacillus, that organism dies in a few days when the grain is dry, as when packed for transit. *Secondly*, there is overwhelming evidence to the effect that cargoes from infected vessels have failed to communicate the infection of plague, even under circumstances when nearly every condition present seemed to favor such communication."

He further cites the fact that in 1835 plague prevailed as an epidemic among the employes of every grade who were engaged in the warehouses of the Egyptian Government. Notwithstanding this, bales of cotton handled by these laborers were transmitted to the principal ports of Europe to the number of nearly 100,000 bales, without a single case of plague resulting. No precautions whatever were taken by way of disinfection.

"Having regard," the medical officer continues, "to our present knowledge concerning the etiology of bubonic plague, I feel justified in holding the view that, in so far as danger of the introduction of that disease into this country is concerned, the first and most important point to be held in view in our port sanitary administration is such strict medical inspection of persons arriving from infected countries as shall go to secure the detection and immediate isolation of those mild attacks which are mainly identified with slight or indolent bubonic enlargements and indications of general malaise. Next to this, and always to be observed, is the disinfection of all articles of clothing, etc., which have had opportunity of becoming infected, either before they were packed for the journey or since. *Thirdly*, comes the disinfection of those portions of the vessel which may have been used by patients suffering from or suspected to have had the plague. And, lastly, measures should be adopted to prevent the conveyance of the disease to the shore from an infected ship by means of rats, which are peculiarly susceptible to the plague infection.

"But no system of inspection or other restriction is perfect, and hence, for the rest, we must trust to such local sanitary administration of our towns, villages and hamlets as will deprive a disease such as plague of the means of diffusing itself should a chance case make its way inland."

HOSPITAL STATISTICS.

WE have from time to time taken occasion to allude to and criticise the disease statistics commonly published in hospital reports. Statistics at best are proverbially fallacious, and it is clear to one reading over the lists of diseases as they occur in the various departments of a large hospital and are finally published in the hospital reports that the standard of classification is usually wholly vague, that no proper distinction is made between disease processes and prominent symptoms, and that diseases are not, as a rule, properly grouped. The result of this is the narration of a

series of conditions which lack statistical value because of the arbitrary and fortuitous way in which they are classified. It must, however, be recognized and admitted that owing to the fact that many so-called diseases are known only by their prominent symptom, and that our knowledge is on many sides incomplete, a scientific classification is a matter of great difficulty. The question at once arises, for instance, as to whether we shall classify by etiology or by pathological anatomy or by symptomatology. If we look over a hospital report we usually find that no one of these methods is exclusively used. We speak now of tuberculosis and not of phthisis, of nephritis rather than Bright's disease, of appendicitis rather than of the various inflammatory affections of that region which used to confuse the nomenclature. As our knowledge advances on the etiological and pathological side we are able to classify with more and more accuracy. There is, however, a great field where no such accurate knowledge exists, and then we fall into the error of classifying merely by symptoms, and giving to certain symptoms, for example, hemorrhage, hemiplegia, vertigo, a significance which in no way belongs to them. The inevitable result is a confusion and repetition under different names, which does little toward making statistics of value.

The faults, therefore, which we find in hospital case statistics are inherent in the nature of the subject and are certainly not peculiar to any one institution. In editorial comment on the last report of the Boston City Hospital we said in part, in our issue of September 21, 1899: "In the report before us, we find in one place apoplexy, cerebral hemorrhage and hemiplegia classed as separate diseases; in another we see multiple sclerosis and disseminated sclerosis given as distinct from one another. Under unclassified gynecological diseases are named the following conditions: Bursitis, caries of vesicle, debility, hepatic colic, infaney. Under surgical diseases, among many others equally extraordinary, are apoplexy, hysteria, delirium tremens, premature birth, general paralysis. Since so much work is necessarily put upon this portion of hospital reports in general, it is unfortunate that a classification is not agreed upon by the various departments, that some sort of order may be brought out of the chaos, and such statistics rendered really serviceable. We simply take this report as an example of an almost universal failing."

In a more recent review of the last Massachusetts General Hospital report, we said in speaking of the disease statistics: "The diseases are not carefully tabulated and are of small value as statistics or for purposes of reference. Dementia, neurasthenia and hysteria, for example, are classified as surgical diseases, as is also miscarriage. As we have before had occasion to say, such statistics are worthless unless prepared with scrupulous care. The difficulty seems inherent in the system, and is by no means peculiar to the Massachusetts Hospital." Certain persons have felt that some of the foregoing assertions are unjust,

that such statistics are not useless, and that the tabulation is far better than we were inclined to allow. That they have a certain interest to those wishing to get a general outline of the amount of work done at a hospital we are quite willing to admit, but we are equally sure that it is unjustifiable to regard any statistics of value, as statistics, which do not strictly conform to some fixed standard of classification. A reform of some sort is definitely needed, and as a suggestion we should say that the value of such tabulations will be in proportion to the simplicity of the classification. In the second place, it is highly desirable that a somewhat uniform system be adopted in our large institutions, to the end that comparisons of accuracy may be made. The over-refinement of detail which is so conspicuous a feature of the ordinary tables should be abolished to give place to a rational system which will at least have the merit of being logical and correct as far as it goes. We find precisely the opposite tendency in the long-drawn-out narration of minor symptoms, masquerading as diseases, which have no claim to be regarded as disease processes and which can fill no logical place in a rational system of classification designed to be of statistical value. We plead merely for a simple and logical method of tabulation based on what knowledge we have of disease. If this could be done, this portion of the conventional hospital report would be converted to a useful end.

MEDICAL NOTES.

AMERICAN NURSES IN PARIS.—Physicians having patients who are to visit Paris this summer may be interested to know that a number of American graduate nurses may be obtained in that city. They are graduates of St. Luke's and the Presbyterian Hospitals of New York, and are women of experience and character. They are under the charge of Mrs. Emma Keith Borth, 102 Rue Vangirard, who refers to some of the most prominent physicians of New York.

RECEPTION BY THE MEDICAL CLUB OF PHILADELPHIA.—The Medical Club of Philadelphia will hold a reception at the Hotel Bellevue on Saturday evening, June 9th, in honor of Drs. Abraham Jacobi, of New York, Alonzo Garcelon, of Maine, George H. Simmons, Secretary of the American Medical Association, James Morrison Bodine, of Louisville, Frank Billings, of Chicago, and the President-elect of the American Medical Association.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, June 6, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 80, scarlatina 54, measles 91, typhoid fever 21.

NEW YORK.

"EFFECT OF SUMMER HEAT UPON THE PUBLIC HEALTH."—On May 28th, Dr. Henry D. Chapin

read a paper on "The Effect of Summer Heat upon the Public Health." In the course of it he remarked, "It is estimated that there are 146,600 children under the age of three years now living in the Boroughs of Manhattan and the Bronx. This immense number subsists principally upon milk. Recent studies show that if cow's milk can be properly cooled, it will keep a considerable time, and this is much better than relying too largely upon superheating. Here is where the subject of ice comes properly under the physician's notice. Any difficulty in the free procuring of ice by the poor during the heated months, whether from a natural scarcity of that article or from a cornering of it by commercial greed, is a public calamity." In the discussion of the paper Dr. A. Jacobi also attacked the ice trust, saying, "Commercial enterprise should not be disturbed, but when it goes to the length of destroying life, some check ought to be put to it. We punish men for erecting bad buildings, and when a wall tumbles down and kills a person a great hue and cry is raised, and new and more stringent laws are made. When commercial enterprise is sure to kill thousands of children and adults, should it not be interfered with? Physicians should certainly take a lively interest in this matter."

A DEATH FROM SCALDING AT AN INSANE HOSPITAL.—Kate Donnelly, a patient in the female department of the Manhattan State Hospital for the Insane on Ward's Island, was recently scalded to death by another patient, Mary Brennan. It seems that two of the attendants carried the former to a bathroom and placed her in the tub, and while they were bending over the tub the Brennan woman, who has a mania for playing with water, entered and turned on the hot-water faucet. To preclude the possibility of patients handling the faucets themselves while bathing, the water is turned on and off by an arrangement several feet distant from the tub, and it was thus that the precaution taken to guard the patient proved the very means of disaster in this case. The instant that the hot water was turned on one of the attendants started to turn off the faucet and the other to secure the Brennan woman, but in the meanwhile the helpless patient in the tub was so severely scalded that the injuries resulted in death. The two attendants, who were students in the junior class of the Training School for Nurses, have since been discharged.

BASKET BALL AMONG THE INSANE.—At the women's games on the grounds of the Manhattan State Hospital for the Insane at Ward's Island on Memorial Day, which were refereed by Dr. Archibald Campbell, a spirited basket-ball match was played by a team of "chronics," dressed in brown, and one of "acutes," in blue. Over eight hundred patients, seated on two sides of the lawn, watched the contest with intense interest.

MEETING OF NATIONAL VOLUNTEER EMERGENCY SERVICE MEDICAL CORPS.—The first meeting of the founders of the "National Volunteer Emergency

Service Medical Corps," was held on June 2d. The purposes and plan of organization of this new body, the design of which is to provide prompt and efficient medical or surgical service, with skilled nursing, in case of sudden war, riots, epidemics or public disasters of any kind, are to be fully explained by its originator, Dr. J. Adelphi Gottlieb, of New York, in a paper before the Section on State Medicine of the American Medical Association at the Atlantic City meeting.

RECREATION PIERS. — The six recreation piers of Manhattan, three on the Hudson and three on the East River, were thrown open for the season on May 26th, and on May 28th a new one on the East River, in front of Williamsburgh, Borough of Brooklyn, was opened with appropriate ceremonies. On June 1st the new Hamilton Fish Park, a small East-Side park on Houston Street, was opened in the presence of nearly ten thousand children of the tenements. It contains an ample playground, a gymnasium, a bathing-house, and two fountains.

A CENTENARIAN. — Mrs. Hannah Kennedy died at her home on Columbus Avenue on June 1st, at the age of one hundred and one years. She was born in Ireland and came to this country after the death of her husband, thirty-seven years ago. She leaves six children, seventeen grandchildren and five great-grandchildren.

Miscellany.

MEETING OF THE ASSOCIATION OF MILITARY SURGEONS.

THE ninth annual meeting of the Association of Military Surgeons of the United States was held at the New York Academy of Medicine on May 31st and June 1st and 2d, with Col. Charles H. Alden, Assistant Surgeon, U. S. A., presiding. The following officers were elected for the ensuing year: President, Brig.-Gen. A. J. Stone, Minnesota; First Vice-President, Medical Inspector John C. Wise, Washington, D. C.; Second Vice-President, Brig.-Gen. J. F. Calef, Connecticut; Secretary, Lieut.-Col. Charles Adams, Illinois; Treasurer, Lieut. Herbert A. Arnold, Pennsylvania. In his annual address, the President stated that over one hundred and fifty members of the Association, nearly one-half its active membership, were selected for commissions in the United States or volunteer services during the Spanish-American War. This war, he said, has already had the effect of attracting attention to the need of our National Guard and the importance of a more intimate union between the United States and the State military forces. The present Congress, he believed, would provide more liberally than formerly for the needs of the State military, and further steps would probably soon be taken to unify the military resources of the nation. At the conclusion of the address a committee was appointed to take steps towards the establishment of a military medical journal. It consisted of the following members: Drs. A. J. Stone, Charles Adams, W. C. Borden, C. P.

Wertenbaker and John C. Wise. Colonel Griffith then announced that the gold medal offered by Dr. Eno Sander, of St. Louis, for the best essay on "Military Surgery," had been won by Capt. W. C. Borden, Assistant Surgeon, U. S. A., Washington, D. C.

In a paper on "What Should be the Standard of Vision Required of Enlisted Men in the United States Army?" Dr. Myles Standish called attention to the fact that in European countries enlisted men are permitted to wear glasses, while they are not in the United States. In a great many instances he thought an injustice was done to applicants for admission both to the army and to West Point, who were rejected without adequate reason. In a paper on "Field Work in the Philippines," Dr. F. W. Kemp stated that, in his experience, nine-tenths of the deaths on the field of battle were the result of wounds which are not necessarily fatal if the flow of blood is stopped at once. For this reason he regarded the first-aid packet as of incalculable value, and he urged a thorough instruction of officers and men in first aid. He also advocated the employment of Chinamen as litter-bearers, instead of Americans, in tropical countries; stating that he had used them for this purpose in the Philippines, and had found them absolutely tireless and totally without fear under fire. In a paper on "The Utilization of Native Troops in Colonial Possessions," Dr. L. L. Seaman also advocated the use of the Chinese. Among their recommendations as soldiers were, first, their temperance, and, second, their cheapness. The Chinese soldiers cost Great Britain about five dollars in gold per month, this amount including both pay and rations. In the Philippines, he said, there are at present twenty-five regiments of volunteers whose term of service expires in June, 1901, and he recommended that as the ranks of these regiments become depleted the battalions be reformed so that there will be in each regiment two battalions of Americans and one battalion of Chinese or Filipinos, the full complement of American officers being retained. Among the other papers read and discussed were the following: "The Value of the Schumburg Method of Purification of Water for Military Purposes," by Dr. J. H. Huddleston, of New York; "Method of Transportation of Wounded on Ships of War," by Dr. John C. Wise, U. S. N.; and "The Management of Quarantinable Diseases and Cordons," by Dr. C. P. Wertenbaker, of the U. S. Marine-Hospital Service. The annual dinner of the Association was held at the Murray Hill Hotel on the evening of June 1st.

DEATH CERTIFICATES IN RURAL DISTRICTS.

THE town clerks in the rural districts of the State of Massachusetts are undoubtedly not responsible for all the statements as to the cause of death which they annually publish in the reports of their respective bailiwicks. Bad spelling and bad chirography are not confined to prescription writing. Certificates of death come in for their share, and when State documents continue to be crammed with errors it is hardly reasonable to expect more of town reports.

The following curiosities are to be found in the reports of a dozen town officials in their reports of 1899, as causes of death: Intra menruged hemorrhage, athenna, focal impostin, cataubalis epidemicus, mul-

tiple garamati, embalesue, septic endocentitis, osteo myelitis of ilicium, puerfural eclanprice, intescrantal tumor, condylamotor, chronic cyndocarolitis, iliacutitis, hypithiticial suicide, spina befoilo.

Obituary.

E. O. SHAKESPEARE, M.D.

DR. E. O. SHAKESPEARE, of Philadelphia, died suddenly June 1st at the age of fifty-four. He studied medicine at the University of Pennsylvania and was graduated from that institution in 1869. He was later connected with the Medical Department of the University as assistant at the Eye Clinic and Lecturer on Operative Eye Surgery. He was also during his life, president of the Pathological Society of Philadelphia, pathological and ophthalmic surgeon to the Philadelphia Hospital, a member of the College of Physicians of Philadelphia, of the American Medical Association and was president of the Section of Pathology in the International Medical Congress.

In 1855 he was commissioned by President Cleveland to investigate Asiatic cholera in Europe and India, and he spent a year in that work. During the war with Spain, Dr. Shakespeare was appointed a brigade-surgeon, with the rank of major of volunteers, and at the time of his death he was acting as a member of the commission attached to the office of the Surgeon-General at Washington to investigate the causes of typhoid fever in the United States Army.

cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 471, acute lung diseases 265, consumption 254, diphtheria and croup 68, diarrheal diseases 36, scarlet fever 16, whooping-cough 20, cerebrospinal meningitis 17, typhoid fever 13, erysipelas 13.

From whooping-cough New York 14, Baltimore, Providence, Charleston, Springfield, Holyoke and Salem 1 each. From cerebrospinal meningitis New York 7, Baltimore and Lynn 2 each, Boston, Washington, Worcester, New Bedford, Somerville and Chicopee 1 each. From scarlet fever New York 10, Boston 3, Pittsburg 2, Newton 1. From typhoid fever New York 6, Pittsburg 2, Boston, Baltimore, Washington, Providence e and Newton 1 each. From erysipelas New York 11, Baltimore and Medford 1 each.

METEOROLOGICAL RECORD

For the week ending May 26th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S..20	29.63	52	58	45	72	63	68	N.W.	N.W.	13	9	O.	C.	.03
M..21	29.72	56	66	46	60	81	70	W.	W.	5	6	C.	C.	.11
T..22	29.83	58	66	45	58	39	48	N.W.	N.	19	5	C.	C.	
W..23	29.95	60	67	52	56	63	60	N.W.	W.	6	2	F.	C.	
T..24	30.01	58	65	50	71	87	79	E.	N.E.	6	13	O.	O.	
F..25	30.24	52	56	48	56	48	65	N.E.	N.E.	22	12	O.	F.	
S..26	30.23	52	60	45	48	61	56	N.E.	E.	9	5	F.	O.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 26, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.	
New York	3,654,594	1288	403	24.8	18.00	1.20	3.60	1.76	
Chicago	1,619,226	—	—	—	—	—	—	—	
Philadelphia	1,266,832	—	—	—	—	—	—	—	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	200	59	19.00	17.00	1.00	4.50	.50	
Baltimore	506,389	162	42	15.25	12.81	1.83	.61	—	
Cincinnati	405,000	—	—	—	—	—	—	—	
Cleveland	350,000	—	—	—	—	—	—	—	
Pittsburg	305,000	130	41	19.60	13.00	1.52	.76	—	
Washington	277,000	71	20	5.64	9.87	—	2.82	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	66	17	13.59	6.04	3.02	1.51	—	
Nashville	87,754	—	—	—	—	—	—	—	
Charleston	65,165	32	12	18.78	3.13	15.65	—	—	
Worcester	111,732	35	11	20.00	11.44	2.86	2.86	—	
Fall River	103,142	37	27	8.10	22.60	—	2.70	—	
Cambridge	92,520	17	4	17.64	11.76	5.88	—	—	
Lowell	90,114	23	9	13.02	21.79	—	—	—	
New Bedford	70,511	23	9	13.02	21.79	—	—	—	
Lynn	68,218	20	—	10.00	10.00	—	—	—	
Somerville	64,394	13	3	38.45	7.69	—	7.69	—	
Lawrence	59,072	20	11	40.00	15.00	5.00	5.00	20.00	
Springfield	58,266	20	6	10.00	25.00	—	—	—	
Holyoke	44,510	16	6	25.00	25.00	12.50	—	—	
Brockton	38,759	—	—	—	—	—	—	—	
Salem	37,723	16	7	6.25	12.50	—	—	—	
Malden	36,421	7	2	14.28	14.28	—	11.28	—	
Chelsea	34,235	5	—	20.00	—	—	—	—	
Haverhill	32,651	9	2	—	22.22	—	—	—	
Gloucester	31,426	8	—	—	—	—	—	—	
Fitchburg	30,523	5	2	21.00	20.00	—	—	—	
Newton	30,461	8	4	37.00	—	—	—	—	
Taunton	28,527	13	2	7.69	—	—	—	—	
Everett	28,102	7	1	—	—	—	—	—	
Quincy	24,578	4	2	—	50.00	—	—	—	
Pittsfield	23,421	—	—	—	—	—	—	—	
Waltham	22,791	6	2	33.33	16.66	—	33.33	—	
North Adams	21,583	3	—	—	—	—	—	—	
Chicopee	18,316	11	3	9.09	9.09	—	—	—	
Medford	17,190	6	2	16.66	—	—	—	—	
Newburyport	15,036	3	—	—	33.33	—	—	—	
Melrose	14,721	5	1	60.00	—	—	20.00	—	

Deaths reported 2,302; under five years of age 712; principal infectious diseases (small-pox, measles, diphtheria and croup,

SOCIETY NOTICE.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.—The annual meeting will be held on Tuesday, June 12th, at 12 o'clock m., at the Medical Library, 19 Boylston Place, Boston.

The following papers will be read: "Autopsies and Physical Examinations," by District Attorney R. O. Harris.

"The Coroner System in the United States at the Close of the 19th Century," by Dr. S. W. Abbott.

The members of the medical profession are cordially invited.
JULIAN A. MEAD, M.D., Secretary.

RECENT DEATH.

WILLIAM HENRY O'HEARN, M.D., M.M.S.S., died in Lawrence, June 4, 1900, aged thirty years.

BOOKS AND PAMPHLETS RECEIVED.

The Clinical Examination of Urine, with an Atlas of Urinary Deposits, including Forty-one Original Plates, mostly Colored. By Lindley Scott, M.A., M.D. Philadelphia: P. Blakiston's Son & Co. 1900.

A Text-Book of the Medical Treatment of Diseases and Symptoms. By Nestor Tirard, M.D. (Lond.), F.R.C.P. Adapted to the United States Pharmacopoeia by E. Quin Thornton, M.D. Philadelphia: Lea Brothers & Co. 1900.

A Memoir and Works of Henry Jacob Bigelow, A.M., M.D., LL.D., Member of the Massachusetts Medical Society, Emeritus Professor of Surgery in Harvard University, etc., and Foreign Honorary Member of Clinical Society of London, etc.

Surgical Anesthesia; Addresses and other Papers. Orthopedic Surgery and other Medical Papers. I. The Mechanism of Dislocations and Fracture of the Hip. II. Litholapaxy; or, Rapid Lithotomy, with Evacuation. Boston: Little, Brown & Co. 1900.

Cholangiostomy: Two Cases Recovering. Case History and Photograph. Eleven Cases of Castration and their Histories. Ovarian Pregnancy; Report of a Case at Full Term. By B. Merrill Ricketts, Ph.B., M.D., Cincinnati, O. Reprints. 1899-1900.

Annual and Analytical Cyclopedia of Practical Medicine. By Charles E. de M. Sajous, M.D., and one hundred Associate Editors, assisted by Corresponding Editors, Collaborators and Correspondents. Illustrated. Vol. V. Philadelphia, New York and Chicago: F. A. Davis Co. 1900.

Address.

REALISM IN MEDICINE.¹

BY A. T. CABOT, A.M., M.D., BOSTON,
Surgeon to the Massachusetts General Hospital.

MR. PRESIDENT AND FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY:—When I received the compliment of an invitation to address you to-day I first thought that here was an opportunity to present some surgical subject that would have a general interest. Before I had settled on a theme, however, I remembered that this was the year 1900, and I felt that it would be plainly unfitting, at our last meeting in the nineteenth century, to ask you to confine your thoughts to any narrow field of research. For we are just finishing the hundred years in which medicine and medical study have done more for the world than had been accomplished by the disciples of Esculapius in all previous time.

Wallace, in his recent book entitled "The Wonderful Century," draws a striking comparison between the achievements of human endeavor in the nineteenth century and in all preceding ages. He takes account of the discoveries which have been of sufficient weight to turn the current of thought or to profoundly modify the lives of men. In parallel columns he places these lists of notable events; on one side those which preceded the year 1800, and on the other those which followed it. Certainly he is justified in calling this a wonderful century, for twenty-four important discoveries are credited to it, while he has found but fifteen discoveries of similar magnitude in all past time.

However we may differ with Wallace in some of his estimates, we must agree, I think, that this comparison is substantially a fair one, and must recognize that, measured by such tests as we can apply, the world and the conditions of life upon it have been more altered by man in the past century than in all time that had gone before.

In no realm of human thought has this recent advance been more rapid than in that of medicine, and in none other has it been of such wide and lasting benefit to humanity.

When we name surgical anesthesia, cellular physiology and pathology, antiseptic surgery, and the germ theory of disease, we have an array of gifts for which the human race may well feel grateful to the medical men of the nineteenth century. Looking back through all past time, we find that in the seventeenth century Harvey discovered the circulation of the blood, and that in the eighteenth century Jenner introduced vaccination. Here the list of medical contributions of the first rank ends, four in the present, two in all past centuries. And of these two, vaccination, while working great good, did not admit of scientific explanation or understanding until the investigations arising out of the germ theory opened our eyes to the significance of acquired immunity.

It would be manifestly impossible in the time at our disposal to review in any detail the progress of medical science in the three generations just past, and I do not mean to task your patience with an attempt at such recital. But I think it may be well worth our while to take note of the discoveries which mark epochs

in medical progress and which have occurred within the memory of many of those here present. A consideration of the direction of the research or study which led to them may help us to draw from them lessons, or deduce from them curves of thought which will guide us along the best lines in the century that we are just entering.

A brief consideration of the history of medicine shows that it may, for purposes of study, be divided into two periods. Of these the first is that long period from the birth of known time up to the beginning of this century, during which idealism prevailed and theory succeeded theory only to be in its turn superseded by some newer invention of a more ingenious thinker. The second period is that of realism, in which theories are not allowed to stand unless they can be shown to rest on demonstrable facts. It is not claimed that this, the inductive method, had not been used in medicine prior to the present century. Far from it, for the two already mentioned achievements of the past, namely, the discovery of the circulation of the blood and vaccination, were both obtained by men following realistic methods, searching for facts and basing their theories on these facts only after they had been thoroughly tested.

It can be fairly asserted, however, that it is only within the past hundred years that inductive reasoning has become the prevailing influence in medicine, and that abstract ideas have come to be discredited. Now and then, even in the remotest times, men who were born observers attained some insight into the realities of things. Such men often solved the practical difficulties that were presented to them in the best manner and introduced rational methods of treatment which did much to keep medicine out of disrepute during that long period when error masqueraded in the cloak of philosophy. The questions that were intelligently handled in those early times were mostly anatomical or surgical, and dealt with the visible or easily accessible parts of the body. The moment that obscure functions or the hidden causes of disease came under discussion, then the all-pervading idealism resumed its sway and the wildest speculation and theorizing prevailed.

Thus at the time when surgeons met the serious difficulties of an operation for stone in the bladder in a rational and enlightened manner, their medical brethren were treating pneumonia, typhoid fever and other diseases that taxed the endurance of their patients to the utmost, by bleeding and other methods of depletion, which still further reduced the strength so greatly needed.

It is true then of all time that medicine has owed its successes to its use of inductive methods. It has reached lasting results only when it has rested its theories on accurately observed facts. We recognize the human senses as being, on the whole, reliable observers, worthy of acceptance as witnesses to the facts.

No one would for a moment deny that our senses are fallible and often deceived; but they are the only witnesses we have and we must make the best of them. They must not be easily trusted and their observations must be constantly verified by independent investigations. This constant re-examination and verification or disproof of work done has been a marked feature of medical progress in this century.

Louis, the great clinician, who was active at the time when idealism was losing its hold and realism

¹ The Annual Discourse read before the Massachusetts Medical Society, June 13, 1900.

was coming to the front, said: "As often as I have formed an *a priori* idea and had afterward opportunity to prove the facts, I have invariably found that my idea was false." Here is the testimony of an honest man, striving after the truth and forced to recognize the fallibility of the human mind when acting without the constant control of the observant senses.

The present, consistent and ever advancing progress of medicine toward a solid and enduring position among the arts and sciences of the world dates from the time when medical men came to Louis's way of thinking, and ceasing to be content with the so-called systems of medicine which had their origin in the minds of ingenious closet naturalists, sought to establish a foundation of fact for the superstructure of their thought.

It was then that they ceased to be animists, vitalists, Brunonians or animal magnetists and began to be scientific investigators, searching after the truth with the best powers of observation that nature had put at their disposal.

They were no longer content with the pleasing and fleeting shows of the imagination, but when they found a fact which kept its integrity through all the tests that their ingenuity could apply, they duly prized it and put it by, to use when they could make it applicable. Such tested facts and the beliefs founded on them were kept under constant scrutiny, and if an improved method of investigation was discovered, the previously trusted facts were re-examined and rejected if found wanting.

The scientific spirit is one of skepticism, hard to convince and very annoying to the intuitive thinker. But the nineteenth century has shown us that this patient piling of fact upon fact builds up structures of an interest and beauty before which the wildest dream of the idealist pales and with a quality of durability which is in strong contrast to the ever changing beliefs of the past.

The history of surgery affords, perhaps, as good an illustration as is possible of the triumph of the materialistic, the modern scientific method over the old idealism.

Who can tell us better the aspirations and hopes which seemed justified under the old régime than Ambroise Paré? No one better represents the high ideals of the surgical art in the past than he. In 1575 he said: "God is my witness, and men are not ignorant of it, that I have labored more than forty years to throw light on the art of surgery and bring it to perfection. And in this labor I have striven so hard to attain my end that the ancients have nought wherein to excel us, save the discovery of first principles; and posterity will not be able to surpass us (be it said without malice or offence), save by some additions such as are easily made to things already discovered."

To-day this prophecy sounds ludicrously short-sighted; yet it remained true for almost three centuries and forecast with considerable accuracy the course of surgery up to the time of the scientific upheaval which realism brought about. Could Paré come back to earth at this time, what joy he would take in the triumphs of modern surgery, for he loved his art truly and disinterestedly, and he would freely forgive the manner in which his prophecy has been belied. Not the least part of his pleasure would be in finding that with all the extraordinary advances that surgeons have made, they still hold fast to the ligatures that he

gave them for the control of hemorrhage. Paré was the great realist of that day. He delighted in close observation and dared to follow what he saw.

To trace a little in detail now the paths along which the modern advances have been made, we find that at the beginning of the century the human senses, while recognized as credible witnesses and depended upon in a measure for the investigation of truth, were found to lack the acuteness necessary for penetrating many of the secrets of nature; and human ingenuity began to be turned to efforts to assist the perceptions and to widen their scope.

The power of the eye had for a long time been increased by the use of lenses, and the wish to aid its penetration into the depths of the body led to the invention of the ophthalmoscope, the laryngoscope, the cystoscope and other combinations of mirrors and lenses which brought the various cavities of the body within the reach of direct observation. Efforts in this direction will not pause till man ceases to be an inquisitive animal. Every year sees improvement in all such methods of investigation and a consequent widening of our knowledge of the hollow organs. Finally, at the end of the century, the remarkable discovery of Röntgen has enabled the vision to penetrate and discover the secrets hid in solid tissues.

In the meantime, the sense of hearing was not neglected. Something was known of percussion in the seventeenth century and a rude auscultation of the borborygmi in the bowels had been practised before that; but the thorough and efficient use of these methods of diagnosis waited for Laennec, who, in the first half of this century, by his invention of the stethoscope, greatly aided the sense of hearing and opened the way for the modern practice of auscultation and percussion, which has reached such perfection that the relative positions of deeply lying organs can be accurately made out; and the lightest whisper in lung or artery is heard and understood.

Even the sense of touch has had its range of usefulness widened. For modern surgery affords so many opportunities for the correction of ideas gained through palpation that the accuracy of deductions drawn from what it is possible to feel has been greatly increased, and a modern abdominal or pelvic examination is as great an advance on the less assured methods of a century ago as are the modern means of locomotion over the old stage coach.

Extraordinary as have been these advances in the investigation of living conditions under the earnest and constant pressure of clinical workers, it is when we turn to regard what has been accomplished by the post-mortem study of tissues healthy and diseased that we approach that part of achievement in medicine which will make this century memorable.

Much had been done in the way of accurate observation of morbid conditions prior to the present century, but it was after the improved lenses of the modern microscope made possible the close study of the individual cells that medicine made the forward stride which placed it in the ranks of exact science. Many men contributed to this result; for with the awakening of interest in the objective study of medicine, the laboratories, where such existed, were thronged with eager investigators, and if the time served, many of these might be mentioned with honor and reverence, for they advanced nearly abreast into the newly opened regions of cellular pathology.

It is impossible, however, to speak of this movement without mentioning the name of Rudolph Virchow, who will ever be remembered as the one who stepped forward from the ranks and led this advance. I well remember my first impression of Virchow when I went to Berlin in 1876 to study in his laboratory. He was not at first sight an imposing figure, and one would not have picked him from a crowd as the foremost medical thinker of the time. Any sense of disappointment on this score was, however, soon dispelled when he was seen at work. If I had brought no other impression from my foreign study I should have felt amply rewarded by the opportunity of seeing that trained intellect, backed by unrivalled powers of observation, leading the way through the most complicated pathological problems and making that way so clear that we wondered we had not seen it for ourselves. His eye seemed to penetrate to the centre of the organ he was examining, and we students used to say it was as good as a No. 7 Hartnack objective. One might well feel that to have been associated with him was a liberal education in medicine.

The habit of verifying with the microscope appearances dimly seen with the naked eye, and studying out the cellular changes involved, laid the foundations of modern pathology. At the same time, the optical instrument makers were constantly improving the lenses and methods of illumination in the microscope, so that it was possible from year to year to get a more and more accurate idea of the cells and of the changes that occurred in them as the result of morbid processes. Embryology, too, threw much needed light on the life history of the cell and upon the characteristics of different tissues.

This patient work of investigation required for its proper prosecution institutions devoted to the scientific study of medical problems, and it also required adequate means for the support of the investigators. Such institutions and the necessary endowments hardly existed in this country until the last quarter of this century, so that the earlier American students who wished to be properly instructed in these higher methods of research were forced to go abroad to seek the opportunity. Especially in Germany, they found good laboratories and inspiring teachers, and they came back after their probation inoculated with the skeptical, investigating Tenon habit. Even if they were soon plugged in the everyday work of their profession, and found but little time for the further prosecution of purely scientific work, still this habit of inquiry and of constant scrutiny of conditions passing under their eyes clung to them, and was of the greatest service in their practice and in such study of their cases as they could make.

A man with his standard of work thus raised was no longer content with a name as the explanation of a set of symptoms, but felt driven to seek out and understand the morbid process which caused the observed phenomena, and, if possible, to learn the cause of that morbid process. He had thus ceased to be an empiric and had become a scientific practitioner of his art.

The arousing of this spirit throughout the medical world has been perhaps the best gift of this century to medicine. The establishment of the cellular histology and pathology marks one goal reached by this movement, which is pressing on with a still accelerating speed.

We now come to speak of the second great contribution which this scientific spirit has made to the century. I refer to the germ theory of disease. The manner in which this discovery was made and in which the facts thus far established have been reached is most encouraging, and awakens inspiring hope for the future. For it was not revealed by any flash of inspiration to a closet thinker, nor was it accidentally stumbled upon by an erratic investigator groping far ahead of his time. On the contrary, it came as the logical result of concerted human effort, stepping forward constantly from fact to fact. It was the most complete possible demonstration of the worth of this sort of study. There could be no more convincing proof of the value of laboratory work than this. When the cause of a disease is discovered by such investigation, and its authenticity is shown by its power to reproduce the same disease, we at once feel that we have here solid ground from which to start for further researches.

It was this achievement, perhaps, more than any other, that informed the world that at last medicine was ceasing to be merely an art, and was taking its place among the exact sciences.

We cannot speak of the germ theory without thinking of certain illustrious men. The names of Pasteur and of Lister will at once occur to you all. We must not forget, however, that long before Pasteur's discovery of the influence of micro-organisms in producing fermentations, important work had been done by Vogel, Davaine, Schulze, Chevreul and many others. It remained for Pasteur to so illuminate the facts that thenceforward no one could doubt that the minute organisms associated with putrefaction and other fermentative changes were really the cause of those changes, and not an accidental accompaniment or result of them.

Lister was deeply impressed by these discoveries. It had long been observed that subcutaneous injuries were quick to heal and followed a usually afebrile course, in marked contrast to the suppurations and fevers that accompanied the healing of open wounds. He was at once struck by the important bearing that Pasteur's discovery had upon this hitherto unexplained fact, and conceived the idea that the putrefaction produced in animal fluids by the action of organisms might be responsible for the unfavorable course of healing in wounds exposed to the air. To test the correctness of this hypothesis he devised means of excluding organisms from wounds. The success of his efforts in this direction compelled the attention of surgeons, and led by rapid steps through antiseptic to the aseptic surgery of the present day.

The discovery of this application of the germ theory threw the door wide open for the surgeon to enter safely into the inner recesses of the body, and to interest himself in the functions and disturbances of organs that had before been as sealed books to him.

The triumphs of the new surgery might well fill a discourse. It is with difficulty that I turn away from so fascinating a subject. To one whose surgical activity began with the introduction of antiseptic principles and who has grown up with the growth of modern surgery, it might well be forgiven if he dilated somewhat upon the triumphs of this golden age in which the power wielded by the surgeon has so wonderfully grown year by year. We are constantly urged forward by the encouragement, Be bold; be

bold, and but rarely are checked by the admonition, Be not too bold.

I cannot, however, allow myself the pleasure of such a digression, but must be content to point out that all this splendid achievement is one step in the onward progress of medical science, and that we owe it to the patient, plodding work of investigation that had gone before.

The interest of every laboratory, and indeed almost every microscope, was now turned to the scrutiny of fluids and tissues, for the purpose of discovering the individual organisms which caused each disturbance. One after another the bacilli, streptococci and staphylococci were ferreted out and classified, and with the aid of solid gelatine media, they were presently obtained in pure cultures and their individual characteristics were made demonstrable.

It was now found that special organisms produced special diseases with such certainty that in cases of doubt the detection of the microbe involved in a morbid process at once settled the character of that process. Thus a malignant pustule could be at once distinguished from an ordinary furuncle or carbuncle and the appropriate treatment could be adopted early.

In the presence of such exact knowledge the nomenclature of disease improved, and instead of speaking of erysipelas, lymphangitis or cellulitis, it now became usual to say, a streptococcus infection of such and such an extent. We ceased to use the terms scrofula or consumption, but began to speak of tuberculosis of this or that organ, and to demand a demonstration of the correctness of our diagnosis by the recognition of the bacilli.

These well-known instances of our changed conceptions of familiar diseases are selected as illustrations of the fundamental alteration of our habits of thought wrought by these newly learned facts.

The next natural step in the investigation of the action of micro-organisms within the body was the study of the effects of these organisms on the tissues and of the provisions that nature made to resist their deleterious action and to limit their growth. Considerable progress has been made in this research.

It has been shown that the blood serum has a certain amount of destructive power and that the white blood cells are active in the attack upon them. It has also been found, in the case of certain germs, that their growth in the body produces a future immunity of greater or less duration, and in the case of the Klebs-Löffler bacillus this immunity has been traced to the blood serum, which acquires, under the influence of the organisms, a positively antidotal power.

The action of the antitoxic serum obtained from horses treated with the diphtheritic poison is so well known to you all that it would be both superfluous and tedious to dwell upon it here. It is, however, perhaps the high-water mark reached by this modern investigation of disease. To learn the ultimate cause of a disease and then, by a study of this cause, to obtain the knowledge which enables us to meet and vanquish the morbid elements after they have obtained a foothold in the body, is certainly an achievement to be proud of.

It is natural that other organisms should have been studied with the object of discovering similar antitoxins. Efforts in this direction with the tetanus bacillus have yielded results that are decidedly hopeful.

And the organisms of relapsing fever, cholera, the plague and tuberculosis have also yielded sera which seem to have some power in either checking or protecting against the parent disease. These are results most encouraging in view of the comparatively short time during which investigations in this direction have been under way. Much, however, remains to be done.

I now wish to turn aside for a moment to speak of an achievement which has been of incalculable benefit to medicine and mankind, but which lay out of the line of the regular advance of scientific medicine and stands by itself as a gift made by empiricism. I allude to the discovery of surgical anesthesia. No consistent, experimental study preceded and led gradually up to the final triumph. To be sure, an unconsciousness which, if not too deep, could be recovered from had been produced by carbonic dioxide, and as early as the year 1800 it became known that nitrous oxide gas would produce a temporary unconsciousness to pain, but even this latter agent, which has since been shown to have some degree of efficiency, was at that time deemed so unsatisfactory that it attracted little attention.

At this time, when the world was unprepared for such good fortune, the knowledge of the anesthetic properties of sulphuric ether was given to Thomas G. Morton, a Boston dentist, who was without scientific training, but who was possessed of the idea that surgical anesthesia was possible and who, in his effort to compass it, was ready to take any hint that came to his ears as to an agent by which it might be obtained. His good luck led him to hear that sulphuric ether, when inhaled, produced a temporary unconsciousness. Knowing no more than this, ignorant of the possible dangers of the drug, he risked his reputation and future peace of mind by trying it. Had ether possessed dangerous qualities and caused the death of the first patient, or had that patient been so unfortunate as to die from asphyxia, a mishap that might well have happened with the then incomplete knowledge of proper methods of etherization, Morton would have probably gone to jail and later to a dishonored grave. He took those risks and Fortune smiled on the brave, albeit reckless, man. His was the venture and his is the honor.

Surgical anesthesia was thus discovered, as it were, by accident. It came as a revelation rather than as a result of consecutive steps leading to that goal.

It is interesting to notice, too, that it was revealed at the very time when experimentation upon animals was beginning to be necessary to medical research. It seems to have been pre-arranged that when man's development reached the point of needing to study the phenomena of life upon the living, then his intelligence should compass the relief of pain.

This discovery, as I have said, lay to one side of the line along which scientific medicine was advancing; but it has been of incalculable aid to that advance. How greatly the triumphs of aseptic surgery would have been curtailed if surgical anesthesia had not been attained. And in experimental medicine it has done far more than to alleviate the pain of necessary operations. Without it, many of the most important investigations would have been impossible. For the delicate dissections and manipulations necessary in physiological research could not have been made on animals conscious and struggling.

(To be continued.)

Original Articles.

CLOSING STATEMENT FOR THE REMONSTRANTS TO THE MASSACHUSETTS HOUSE BILL NO. 917, ENTITLED "AN ACT FOR THE FURTHER PREVENTION OF CRUELTY TO ANIMALS," BEFORE THE JOINT COMMITTEE ON PROBATE AND INSOLVENCY, MARCH 15, 1900.

BY HAROLD C. ERNST, A.M., M.D., BOSTON,
Professor of Bacteriology in the Harvard Medical School; President of the Boston Society of Medical Sciences.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE:—We are glad to hear the counsel for the petitioners acknowledge this morning that all the experts are on our side in this matter, for that is, of course, where we think they are, and I have to say for myself that I need so much more time for the "summing up" for the remonstrants than the petitioners will take, for the reason that there seems to be so much more to say on our side of this question.

In beginning what I have to say for the remonstrants to the bill before you, I should like to present for your consideration the following extract from one of the clearest writers of the day.¹

"The insidious growth of selfishness is a disease against which men should be most on their guard; but it is a grave though a common error to suppose that the unselfish instincts may be gratified without restraint. . ." (Page 41.) "The fatal vice of ill-considered benevolence is that it looks only to proximate and immediate results without considering either alternatives or distant and indirect consequences. A large and highly respectable form of benevolence is that connected with the animal world, and in England it is carried in some respects to a point which is unknown on the Continent. But what a strange form of compassion is that which long made it impossible to establish a Pasteur institution in England, obliging patients threatened with one of the most horrible diseases that can afflict mankind to go—as they are always ready to do—to Paris, in order to undergo a treatment which what is called the humane sentiment of Englishmen forbids them to receive at home! What a strange form of benevolence is that which, in a country where field sports are the habitual amusement of the higher ranks of society, denounces as criminal even the most carefully limited and supervised experiments on living animals, and would thus close the best hope of finding remedies for some of the worst forms of human suffering, the one sure method of testing the supposed remedies, which may be fatal or which may be of incalculable benefit to mankind!² . . .

"It is melancholy to observe how often sensitive women, who object to field sports, and who denounce all experiments on living animals, will be found supporting with perfect callousness fashions that are leading to the wholesale destruction of some of the most beautiful species of birds, and are in some cases dependent upon acts of very aggravated cruelty."

That we are obliged to fight against exaggerated statements will, I think, be evident to you from this, which is taken from the *New England Antivivisection Society Monthly*, October, 1899: "What is vivisection, and what can I do to help the crusade against it?"

Answer: Vivisection is the mutilating, cutting and burning of living animals; they are dissected, roasted, boiled and skinned, when alive and in full possession of their faculties. Nerves are dissected out, laid bare and connected with the poles of a powerful battery from which currents of electricity are passed over these nerves; this probably causes the greatest agony of which sentient beings are capable. At the present time, the only way to attack this horrible crime is by printing and circulating information so as to let the public know just what vivisection is, and how much it is done.

"The New England Antivivisection Society has been organized and incorporated for this purpose. In order to accomplish its object it must have money to pay its office rent, and for printing and postage; every additional member increases its influence, apart from the income from membership. At present it has several hundred members, and it wants to have several thousand before the end of another month" (a hope evidently disappointed, for at the hearing the treasurer testified that the membership of this Society was "several hundred"); "every dollar given aids the work directly; all of its officers serve without pay, a thing that can be said of no other society of its kind in this State; annual membership is five dollars; associate membership is one dollar, which does not give the right to vote; life membership is one hundred dollars. The New England Antivivisection Society opposes vivisection, (1) because the number of animals vivisectioned, with unknown and inconceivable agony to each one, is probably several thousand each day; (2) because anesthetics are very seldom efficiently used; (3) because the results of vivisection are as near to absolute worthlessness as it is easy to get, in fact cause great and absolute harm; (4) because, as recent revelations in the *Transcript* and other papers abundantly show, vivisectioners of prominence and supposed character are, almost without exception, untruthful, and cannot be relied upon to speak the truth about their own acts," and so on.

These statements are so positive, and if true would be so overwhelming, that it is hardly conceivable that they would have been put forth with no better evidence to support them than has been offered here, and of this evidence and by whom given I shall speak later.

At the outset it should be stated that vivisection includes *not* merely the dissection of anesthetized animals, but all the great series of inoculation experiments that have been mentioned to you—those made for purposes of diagnosis, for the preparation of toxins and antitoxins of various kinds, as well as for the purpose of securing further light on our knowledge of the causation of disease. As an illustration, it may be said that the passage of such a bill as is before you would prevent all studies upon bubonic plague, which is now threatening our shores.

To show that we are here voicing the sentiment of the medical and scientific workers of the country, as well as those of this State, I beg to present the following votes of the most important scientific bodies of the country.³ There are sixty-nine such societies here represented, and others have voted since that time, as did these, in opposition to the retributive legislation such as is here proposed.

¹ Lecky, W. E. H.: *The Map of Life*, 1899, pp. 36 and 41.

² See also Seton-Thompson in the current *Century Magazine*.

³ Senate Document No. 31, 54th Congress, Second Session.

I am indebted for much of the next following legal statement to the report of the hearing held before the Legislature on this same subject four years ago:

"There are probably three things, Mr. Chairman, in regard to which you and your Committee wish to be satisfied: Whether vivisection is useful, productive of valuable results; whether there are abuses within this State which you ought to regulate; whether there is such secrecy in the practice of it that you cannot find out whether there are abuses or not. As to its usefulness, that is a matter of expert opinion. The medical profession is a very large one and contains men of all sorts of training and all sorts of opinions. It is possible to select, as the proposers of this bill have done, certain names of physicians who are opposed to vivisection — or who *were* opposed to it, for it is noticeable that almost all the opinions quoted are old opinions, not based on facts which correspond with the practice of vivisection as it exists to-day. Speaking generally, however, it is possible to say that the great consensus of medical opinion — trustworthy, authoritative opinion throughout the world — is in favor of vivisection, as productive of the very highest good, and as being actually indispensable to the progress of medicine. A few years ago, this question was submitted by the Government of Germany, through the Minister of Public Instruction at Berlin, to the universities. Among other questions asked was: Whether the Faculty considered vivisection an indispensable method of research, which medical science could not possibly give up without positive damage to itself. The University of Berlin, among others, answered the questions, and the Faculty were unanimous in their opinion that vivisection *is* indispensable to the progress of medical science, and that the renunciation of the practice would not only do positive damage, but would cause an absolute paralysis of medical science, and would bring about the annihilation of its further progress. The same questions were put to the other great universities in Germany, and they returned answers to the same effect.

"The second point is as to the existence of any abuses that this law can correct or influence in the slightest degree more than that already on the statute books, and we submit that there is no evidence of the existence of any. No such evidence has been submitted by the supporters of this bill as existing in this State, and we have had representatives of the men engaged in research upon animals here, from whom it has not been possible to gain any knowledge of such abuses; they have all testified, or would have testified if the specific question had been asked of them, that none such exists to their knowledge.

"Finally, as to the point of secrecy, there is no secrecy in the laboratories of any of the men who have testified here, and none in those of others, so far as we know. Any properly minded person can obtain admission to any one of these laboratories at any time, so far as a desire to conceal what is going on is concerned. It may of course be conceivable that at the time of application there may be some specially delicate operation in progress which might delay the freest admission for a few moments; and, of course, what goes on in the Medical School is not open to the promiscuous public and should not be, and properly so. An irresponsible person, coming there without credentials, and with the fixed purpose (although this might not be known) of obtaining evidence that

might be used to excite the public mind and cause agitation, should not be admitted; but nobody in the community who will take proper pains to be introduced, and who will come to the Medical School in an open manner, will be excluded."

I want to call the attention of the Committee to the present provision of the law, for if it is proposed to alter the law, it is pretty important to know what the law is now. We have⁴ a law against cruelty: "Whoever overloads, overdrives or overworks, or deprives of necessary sustenance, or cruelly beats or mutilates an animal, or procures this to be done to any animal; or having charge or being in custody of any animal, inflicts unnecessary cruelty upon it, etc., is punishable by imprisonment in a jail for a period not exceeding one year, or by a fine not exceeding two hundred and fifty dollars, or both" (a punishment more severe than expressed in the bill before you). "A corporation which violates this provision is punishable by fine and is responsible for the knowledge and acts of its agents or servants. Officers are authorized to arrest, without a warrant, persons who are suspected of being guilty of this act, and, finally, there is a most stringent and unusual provision to the effect that when a complaint is made to a court or magistrate, and when the complainant believes, and has reasonable cause for believing, that this law is being violated in any particular building or place, and the magistrate or court is satisfied that there is reasonable cause, he may issue a search warrant to search the building. There is, therefore, in Massachusetts a law, applicable to vivisection, of the most extreme kind, which would enable any person who could satisfy a court that he has reasonable cause to suspect that cruelty was being practised in a Massachusetts medical school, or elsewhere, to procure a search warrant to search the premises and discover the animal and the parties cruelly treating it, and to cause the arrest without a warrant of the persons who are suspected of practising the cruelty. There is also a later act, passed in 1894, which absolutely prohibits the practise of vivisection in all public schools in this Commonwealth, and prohibits the exhibition of the body of an animal on which vivisection has been practised; so that this agitation is directed, as indeed has already been practically acknowledged, against the professional schools, for vivisection is not practised in any other schools in this Commonwealth."

We are constantly hearing quoted in such agitations as the present Dr. Parvin's opinion in regard to the usefulness or not of the study of vivisection. So important has this opinion been thought that the American Humane Society has seen fit to print for distribution "excerpts" of the address, — italicizing here and there, — and these excerpts have been made use of in all agitations of the nature of this bill, but not with — what shall it be called? — a *quite fair* presentation of the author's statements; as, for example, in the pamphlet of the American Humane Society, page 15, we read: "Should the law restrict the performance of vivisection? I think it ought, chiefly as an expression of public sentiment and for moral effect."

But the publishers of this pamphlet do not give the remainder of this sentence, which in the original runs on as follows:

"For violations of its provisions could usually only be discovered by a system of espionage, by the employment of detectives, of spies and informers, utterly

⁴ Public Statutes, Chap. 207, paragraph 52.

alien to our system of government, and who are, as a rule, abominable."

Westcott⁵ says; "If we had depended upon the results of experiments on living animals for the introduction of chloroform or ether into surgical practice, we might never have had those blessings." In contrast to this, W. H. Welch,⁶ in his address on "The Influence of Anesthesia upon Medical Science," says; "The opponents of animal experimentation have endeavored to utilize for their purposes the alleged absence of experiments upon animals as the basis of this discovery. As a matter of fact, even leaving out of account the pioneer experiments upon animals by Humphrey Davy with nitrous oxide, the first successful trial of ether as a general anesthetic for human beings by Morton was preceded by his demonstration of the power of this agent to produce in dogs unconsciousness and insensibility to pain. It would be strange, indeed, if these striking results of experiments upon animals had no influence in inducing him to test their applicability to human beings. It must, however, be admitted that the production of anesthesia in man by inhalation of ether was not preceded by such numerous and properly conducted experiments on animals as were required to afford any adequate conception of its effects or its possibilities of danger." In other words, Dr. Morton took a very serious risk in his experiments at the Massachusetts General Hospital — without, as we should think to-day, having made the necessary preliminary experiments upon animals to fully study the effects of the agent he proposed to use.

We have been told here that the results of vivisection are useless in advancing our knowledge of disease. Such statements *can* be made only by those who are helplessly or wilfully ignorant of the facts, and as illustrations in point, I present to you these plates of the results of the treatment of cretinism with injections of thyroid extract, and the colored representations of the behavior of the diphtheritic membrane after the administration of diphtheria antitoxin; the latter can be seen any day of the year at the South Department of the Boston City Hospital. It seems to me, gentlemen, that the change represented in the condition of one such child as is pictured among the cretins is a justification for the work that we are defending.

One of the witnesses for the bill in one of his communications to the public press takes ground that I believe to have been quite unintentional. Because Dr. Joseph Winters, of New York, has not been in accord with the general feeling in regard to the specific nature and value of the antitoxin of diphtheria, his name has been used to give implied added weight to the assertions against the value of animal experimentation in medicine. The following letter of Dr. Winters will demonstrate that his name must be absolutely excluded from any arguments against this method of investigation in the future.

NEW YORK CITY, March 1, 1900.

MY DEAR DR. ERNST:—Your letter to Dr. Park has been referred to me by him. I cannot understand how my attitude on animal vivisection could have been called in question. Vivisection has done so much for localization of disease processes of the nerve centres that every well-read medical man must feel it imperative that he should favor this valuable guidance for the surgeon in the relief of diseases of the nervous system. But for ani-

mal vivisection there could never have been a Claude Bernard, a Charcot, a Ferrier, and hosts of others equally well known, and valuable workers in diseases of the nervous system. All that they have done for the medical profession and for mankind throughout the world has had as its basis the results of vivisection. In every department of medicine every well-trained clinical physician realizes the debt he owes to the writings of those who have so patiently conducted experiments on animals in the physiological laboratory. All they have done is a thankless task. Very few physicians there are in the world who would be willing to relinquish the fascinations of practical medicine for the thankless task of the experimental physiologist. It grieves me to think that the value of this work should be questioned by intelligent, thoughtful and rational people, where the enthusiastic antivivisectionists are to be classed. Would that they could realize how much their misguided efforts are interfering with the well-guided, humane efforts of the vivisectionist. It seems to me that the antivivisectionist should visit the laboratory of the vivisectionist, and see how humanely he conducts his work, before he raises his voice or takes his pen in hand. One visit to any well-directed laboratory would still his voice. Again, he should know that a large part of the success for the relief of the suffering of mankind by medical men is due to the discoveries made in the physiological laboratory by the vivisectionist. The most advanced of sympathetic practitioners of to-day would, I believe, relinquish that which is dearer to them than their own lives, namely, their efforts to relieve the sufferings of their fellow beings, were they deprived of the inspirations afforded them by the results of experiments on animals.

Excuse me, dear doctor, for this lengthy communication, but I am deeply grieved and chagrined that my name could be used by one who opposes the value to mankind of animal vivisection.

Sincerely yours,
JOSEPH E. WINTERS.

Certain representatives of the clergy and others who have experienced the benefits of the antitoxin of diphtheria have appeared before you to state their feelings in regard to the effectiveness of this treatment as it has appeared in their own experience, and with their testimony, the following letter should be submitted for your consideration:

OAK PARK, ILL., March 9, 1900.

MY DEAR DR. STONE:—I shrink, as I suppose every humane man does, from the infliction of needless pain upon any living creature. So far forth I hold with the most intense antivivisectionists. But I am persuaded that it is sometimes necessary to cause pain that pain may be prevented. I do not doubt that some vivisection has been performed with needless cruelty; on the other hand, I know some men who constantly perform it, and who are most tender-hearted, high-minded men. I favor such restrictions as put a check upon cruelty without restricting the progress of science.

I was often at the Medical School Laboratory four years ago when my children were sick with diphtheria, and saw much there and at the Boston City Hospital of the preparation and use of antitoxin. Just in proportion as I love my own children I am willing that certain guinea-pigs should be experimented upon if necessary for their sakes. I am not willing that a single guinea-pig should be tortured needlessly, but I want the man who takes the life of my child in hand to do no needless experimenting upon the child in order to save guinea-pigs. My own impression is that vivisection is sufficiently restricted in Massachusetts. If further restrictions are to be made, it ought to be done with the approval of the more intelligent physicians.

Yours very truly,
W. E. BARTON.

⁵ Boston Transcript, March 1, 1900.

⁶ The semi-centennial of anesthesia, Boston, 1897.

It has been said here that the antitoxin of diphtheria does no good, and when the statistics are quoted, the reply is that they are falsified, and that the percentage of mortality is brought down by adding cases that are not diphtheria, that are diphtheria *only* because the diphtheria bacillus is present in them without symptoms, or that moribund cases are excluded in making up the returns. The only place of convenient access that I know where a record is kept of cases treated with and without antitoxin of diphtheria is Lawrence, Mass., and I have here the mortality statistics of that city for the thirteen months from January 1, 1889, to February 1, 1900. The total cases of diphtheria there reported is 393. Of this number there were treated with diphtheria antitoxin 274, with a mortality of 10.2 per cent. There were 119 cases treated without antitoxin, with a mortality of 26 per cent. If antitoxin was accessible in these latter cases, a very serious responsibility lies on the shoulders of the physicians of those patients who were allowed to die without trying its beneficial effects.

The antitoxin of diphtheria is prepared by the injection of horses, and the use of their blood serum. The horses are bled at more or less frequent intervals, and that the treatment is not cruel may be seen by the photographs I present to you, which show that the animals are fat and healthy looking (having been used for the production of antitoxin for from two to four years, and constantly bled in that time), and by the assertions that I am able to make in regard to these animals, that the bleeding was not attended by any pain, as was constantly shown by the fact that they would eat from the hand while being bled, and that the trocar could be introduced in many cases without any restraint whatever, and never with more than a "twitch" lightly applied.

In their abstract of the bill before this Committee, the petitioners have summarized matters as follows:

RESTRICTIONS.

(1) "All experiments on living animals must be performed with a view to the advancement of knowledge by new discovery." This will prevent the daily application of methods of recognizing and preventing disease that have become matters of routine, such as the recognizing of hydrophobia, always made by inoculation experiments, and the preparation of vaccine virus, now always made upon calves, the preparation of the antitoxin of diphtheria, and other diseases attacking man and the animals themselves, or the utilization of any new discoveries that may be made in this direction, if indeed any are made under such a restrictive measure.

(2) "Any one performing an experiment must previously obtain a license from the Secretary of State." This is practically a prohibitory measure, for the bill requires that a license shall be obtained for each experiment, and no worker has the time to secure permission for each experiment he may be called upon to carry on, notably in the direction of diagnostic or curative procedures, which must be attended to at the time, and will not permit of delay (illustrated by Dr. Burrell's case of anthrax in his testimony).

(3) "All pain to the animal must be prevented by the use of chloroform or ether," which seems to us to be absurd, for it practically prevents the use of any other means for deadening pain, or any possibility of the discovery of any new agent for the suppression of

pain in the future, such as chlorotone, now being tried.

(4) "If pain is likely to continue after the effect of the chloroform or ether has ceased, the animal must be killed before recovering therefrom;" in other words, no physician is to be allowed to take advantage of what most of us are sure is the most certain means of helping his patient in diphtheria and other like diseases; no one anxious to help the cause of suffering humanity is to be allowed to do so except in the line of what can be accomplished in the course of an hour or two, and by what practically amount to anatomical studies.

(To be continued.)

THE MECHANICS OF LATERAL CURVATURE OF THE SPINE.¹

BY ROBERT W. LOVETT, M.D., BOSTON,
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THE present paper is a preliminary one, and reports a series of observations made on the normal movements of the spine in the cadaver, and the living model, studied especially with reference to the mechanism of scoliosis. The subject is so extensive and the problems involved are so intricate that it is not possible for the writer to do more at present than to call attention to certain demonstrable facts and to certain deductions to be drawn from them.

It is a well-recognized fact that in lateral curvature of the spine, at least in cases of moderate grade, the lateral bending is associated with a twisting of the vertebrae in the long axis of the spine. To the latter phenomenon the word rotation is applied by common consent.

A large amount of literature has been accumulated in the attempt to explain the mechanism of scoliosis, especially to account for the existence of the rotation, but among the theories dealing with the subject there is no one wholly satisfactory. For the most part they are very complicated; they differ widely from each other, and no one meets with general acceptance. It is perhaps hardly worth while to enumerate them, as they may be found in such books as Hoffa and Lorenz.²

These theories have for the most part been formulated either from purely theoretical considerations or by reasoning back from the pathological changes found in more or less advanced cases. As neither of these methods has so far yielded satisfactory results, it may be advisable to turn to the study of the normal movements of the spine to see if in them is to be found any explanation of the phenomena observed in scoliosis.

Bradford's experiment.—One previous attempt has been made and published in this line of investigation by Bradford, who demonstrated that in the cadaver a rotary lateral curvature of the type seen in life might be produced by superincumbent weight coming obliquely upon the spinal column. This important experiment demonstrated that in the normal spine of the cadaver exist conditions capable of producing the phenomena found in scoliosis when super-

¹ Read before the American Orthopedic Association at Washington, May 1, 1900.

² Hoffa: *Lehrbuch der orth. Chir.*, 1898, p. 370; Lorenz: *Path. und Ther. der Seitl. Rueckgratverkrummungen*, 1886, p. 17.

incumbent weight falls obliquely upon the column.³ Some similar work on the cadaver was done by Dr. E. G. Brackett, but was never published.

The experiments described in the present paper were made by the writer during the past six months, in part at the Harvard Medical School by the courtesy of Prof. Thomas Dwight, to whose supervision and suggestions he is greatly indebted. The work was undertaken with a hope of contributing something to the present knowledge of the normal movements of the spine without especial reference to scoliosis, but early in the investigation certain phenomena bearing so closely on the causation of scoliosis were observed that the rest of the investigation was deferred and the time devoted wholly to the question of the causation of rotary lateral curvature. It is the hope of the writer to pursue the rest of the investigation at some future time.

Movements of spine. — The movements of the spine are generally accepted as being four in number:⁴

- (1) Flexion (forward bending).
- (2) Extension backward bending).
- (3) Lateral bending (side bending).
- (4) Torsion.

Although this classification is usually found in the books it has been often recognized that torsion is in some way associated with lateral bending. That lateral flexion probably does not exist as a pure movement has for some time been recognized by some if not all anatomists, and has been taught for some years by Professor Dwight. As long ago as 1844 Henry J. Bigelow⁵ wrote: "The principle of torsion is illustrated by bending a flat blade of grass or a flat, flexible stick in the direction of its width. The centre immediately rotates upon its longitudinal axis to bend flatwise in the direction of its thickness. In the same way the spine, laterally flexed, turns upon its vertical axis to yield in its shortest or anteroposterior diameter." Occasional references are found to the association of torsion with lateral flexion,⁶ but no definite recognition of the relation between the two seems to exist.

It is the purpose of this paper to show that lateral flexion and torsion of the spine are associated parts of one compound movement and that neither can exist without the other. That, however, in side bending from the flexed position the torsion is diametrically opposite from what it is in the extended position and that the spine follows the laws governing flexible rods in this regard.

(1) *Flexion* apparently exists as a pure forward movement and its amount varies greatly with the flexibility of the individual.

(2) *Extension* apparently exists as a pure backward movement and its amount varies greatly with the flexibility of the individual.

(3) *Lateral flexion* of the spine apparently does not exist as a pure movement. Something very like a pure lateral flexion is found experimentally in one position of the trunk, but owing to the complex conditions existing it is not possible to measure it with sufficient accuracy to say how pure the movement is

or with how much torsion it is associated. In general, lateral flexion in any position of the trunk is associated with torsion.

The cadavers used in these experiments were six in number and had previously been used in the dissecting-room. The sternum and contents of the chest and abdomen, as well as the arms and scapula, had been removed, as well as the abdominal and most of the back muscles.

Experiment, cadaver: Flexion. — If the pelvis of a normal cadaver is fixed in a vice and the upright spine flexed, and by a cord attached to the atlas pulled to the left side, a very marked torsion occurs through the whole column, and each vertebra appears to change its relation to the one below it, not only in the lateral movement that it makes, but by torsion around the long axis of the spine. And this torsion always occurs in one direction in flexion, the bodies of the vertebrae turning toward the convexity of the curve and the spinous process toward the concavity. Each vertebra twists upon the one below it in the long axis of the spine, the body turning in one direction and the spinous process in the other. In the cadavers experimented upon the torsion of the cervical vertebrae upon the last lumbar in side bending amounted to perhaps forty-five degrees in flexion. This torsion is slight in the lumbar region and marked in the dorsal region, especially between the fourth and twelfth dorsal vertebrae.

In the photograph (Fig. 1) thin boards are shown fastened to the chest and pelvis to mark the lateral plane of each, and hat pins were driven into the spinous processes of the first sacral, one of the lower dorsal, one of the upper dorsal, and one of the lower cervical vertebrae, to mark the anteroposterior axis of each vertebra. By having both of these modes of measurement at the same time, it may be shown that the variation of the boards corresponds to the torsion of the vertebrae — as represented by the pins driven into them.

Model: Flexion. — The same experiment was then made upon two models. Both were young women, professional models and markedly flexible; one had been upon the stage as a dancer, and the other kept herself flexible by exercises to enable her to take difficult poses without lameness. If the model bends forward and flexes her spine to the left the same phenomenon occurs that is seen in the cadaver. The spinous processes turn to the concavity of the curve; that is, to the left, which means that the vertebral bodies turn to the convexity and the right side of the chest becomes more prominent behind; that is, the rotation is backward on the convex side of the curve, as in the rotation of scoliosis. In the experiments the models were ignorant of the purpose of the experiment and were told to bend to the left without twisting.

Fig. 2 shows Model 1 with boards fastened to pelvis and chest in a similar position to that of the cadaver in Fig. 1. Fig. 3 shows Model 2 in the same position as that of the cadaver in Fig. 1 with cardboard indicators fastened over the spinous processes by sticking plaster. The rotation backward of the chest on the convexity of the curve may be seen in both Figs. 2 and 3.

In reply to a possible criticism of the experiment, that the scapulae, ribs and muscles cause an apparent rotation of the boards in the living model which does

³ Bradford and Lovett: Orthopedic Surgery, 2d Ed., 1899, p. 94.

⁴ Poirier et Prenant: Traité d'Anat. Hum., i, 744; Gray's Anatomy; Landerer: Mechanotherapie, 1894, p. 217, etc.

⁵ Orthopedic Surgery. Boylston Prize Essay for 1844, Boston, 1845, p. 168.

⁶ Hoffa: Lehrbuch der orth. Chir., 1898, p. 372; Henke: Handbuch der Anat. und Mech. der Gelenke, p. 66; v. Meyer: Virch. Arch., xxxv, p. 225; Tubby: Orthopedic Surgery, London, 1896, p. 143; W. A. Lane: Guy's Hospital Reports, xxix, p. 293.

not exist, it may be said that the direction of the boards and indicators have been shown to correspond to each other in the cadaver, and each one of these taken separately behaves in the model as it does in the cadaver. Moreover, the rotation of the spinous processes of the vertebrae in the live model can be easily appreciated by the fingers, showing that it is a real torsion and not an apparent one.

Lateral bending, then, in both cadaver and model in positions of marked flexion is accompanied by torsion, and this torsion is in this position always in one direction, and is of the same type as the rotation seen in scoliosis; that is, backward on the convexity of the curve, or, in other language, the bodies of the vertebrae turn toward the convexity of the lateral curve. Various attempts were made to reverse this torsion while making side bendings in the flexed position by pulling the vertebrae apart, pressing them together, etc., but in all cases in both cadaver and model the type of torsion described above persisted.

Cadaver: Extension.—If the spine of a cadaver is fixed in an upright position in a vice which clamps the sacrum, and if this spine is hyperextended (bent backward) and pulled to the left in this extended position by a cord attached to the atlas, a torsion takes place, but this torsion is exactly the reverse of the one occurring in the similar pull to the left made in the flexed position. The spinous processes rotate toward the concavity of the curve and the type of the rotation is the reverse of that usually seen in scoliosis in life (Fig. 4). This torsion occurs less in the lower dorsal and lumbar region than does the one described in speaking of flexion, and is located higher in the column. The method of observation was by boards and pins, as in the flexion experiment.

Model: Extension.—If, now, a model is asked to extend her spine and then to bend to the left, it is noticed that the board marking the lateral plane of the chest turns backward on the side of the concavity of the curve, which is the reverse of the condition found in side bending in flexed positions; that is, in the model the rotation of the vertebral bodies must be toward the side of the concavity. This type of torsion is constant in all side bendings in the extended positions as observed in models and in patients.

Fig. 5 shows the Model 1 bending to the left with backward rotation of the chest on the left side.

Fig. 6 shows Model 2 bending to the left in an extended position, with cardboard indicators fastened to the skin over the sacrum, the upper lumbar, the middle dorsal, and the lower cervical region. It will be seen that the indicators show a marked rotation of the spinous processes in the dorsal region toward the convexity of the curve, and the bodies must rotate toward the concavity. Compared with Fig. 4 it will be seen that the indicators point in the same direction as in the cadaver placed in the same position, and compared with Fig. 3, a photograph of the same model bending to the left in the flexed position, it will be seen that the indicators point in the opposite direction.

In the intact spine of the cadaver, therefore, and in the model, side bending in the extended position is accompanied by torsion of the vertebral bodies toward the concavity of the curve; in other words, the rotation is backward on the concavity of the curve, which is the reverse of the condition ordinarily seen in life in scoliosis.

Experiment, cadaver: Flexion and extension.—As the complicated movements of the spine in these experiments introduced an element of mixed planes most confusing to the observer, the following experiment was undertaken by Professor Dwight and the writer at the suggestion of the former, in order to obtain a graphic record of the torsion: A spine was placed upright in a vice at the edge of a table three feet from the floor; a hole was bored through the eleventh dorsal vertebra from behind forward; that is, in the median plane of the body. Through this hole was passed a brass rod five feet in length, which projected three feet behind the spine and a short distance in front of it. This rod, of course, represented the anteroposterior axis of the vertebrae. By means of a plumb line, dropped from the rod, the direction in which this rod pointed could be projected upon the floor and its variations in the horizontal plane recorded graphically. This eliminated any element of confusion on the part of the observer by giving a permanent and accurate record. The spine was then flexed, and before being bent to either side, the direction of the indicator was projected. The spine was then bent sideways to the right and to the left in the flexed position and the direction of the indicator recorded in those positions. It was then extended and bent to the right and left in the extended position and a diagram was obtained (Fig. 7). The crossing of the two lines to the right of the median plane, one for right flexion and one for right extension, shows plainly enough that there exists one type of torsion for side bending in flexion and another for bending to the same side in extension.

Pure lateral flexion.—If one type of torsion changes to the other type in going from flexion to extension, there must be a position between marked flexion and marked extension where the planes cross, and in this position, if anywhere, the purest lateral flexion must exist. By experiment in both cadaver and model this plane was found to be in slight flexion of the spine in the upright position, perhaps fifteen degrees in front of perpendicular. In the sitting position in the model, this plane exists in a slightly more extended position than when standing upright. In the upright position of the soldier, side bending is accompanied by the extension type of torsion.

Reasons for torsion.—It is obvious from these experiments that there must be some fundamental reason for the constant occurrence of one type of torsion for side bendings in flexion and the occurrence of another type in extension, as well as for the constant association of torsion with side bending. The vertebral column is a flexible rod capable of bearing great weight. It is not equally flexible in all directions, but it is of course capable of some movement in all planes, and as such, should come under the control of the laws governing flexible rods in general. The extent of any of the movements of the spine are, of course, greatly influenced by the shape of the vertebral bodies, the curves of the spine, the character of the articular processes, the resistance of the ligaments and the relative strength of the muscles. But in spite of these complicating elements, it seemed worth while to investigate the behavior of flexible rods in general under similar conditions. Professor Dwight suggested that this line of investigation might be of use.

To Professor Hollis, of Harvard University, the



FIG. 1. Spine fixed in vice, flexed and bent to the left. The boards mark the plane of the pelvis and chest. The bat pins are driven into the spinous processes. The torsion of the spine is shown by both boards and pins, the bodies turning to the right.



FIG. 3. Model flexed and bent to the left. The cardboard indicators have turned to the left.



FIG. 2. Model with spine flexed and bent to the left. The boards show the planes of chest and pelvis. The board marking the chest has rotated backward on the convex side of the curve.



FIG. 5. Model with spine extended bending to the left. The board marking the plane of the chest has rotated backward on the left side.



FIG. 4. Spine fixed in vice, hyperextended and bent to the left. The boards mark the plane of the pelvis and chest. The pins are driven into the spinous processes. The pins have twisted to the left; that is, toward the concavity of the lateral curve.

FRONT

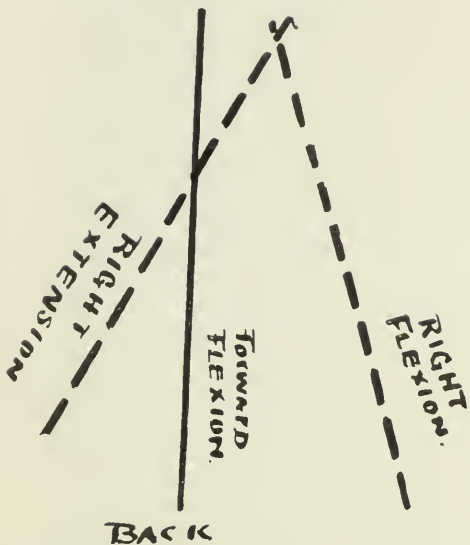


FIG. 7. Diagram of position of brass rod in right flexion and tension of spine of cadaver.



FIG. 8. Spine without vertebral bodies extended and bent to left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 4.)



FIG. 9. Spine without bodies flexed and bent to the left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 1.)



FIG. 6. Model with spine extended bending to the left. The cardboard indicators show that the spinous processes have turned to the right and the bodies to the left.



FIG. 10. Model twisting to the left, showing consequent lateral deviation of the spine



FIG. 11. Model sitting on an inclined seat. The cardboard indicators show that the bodies of the vertebrae have rotated to the left; that is, toward the convexity of the lateral curve.

writer is indebted for much information on the mechanical side of the question.

From the mechanical point of view, torsion results from any motion in which all the particles of a straight flexible rod do not move in parallel planes. Consequently, if such a rod is bent in two planes at the same time, torsion must inevitably occur. The vertebral column is not a straight flexible rod, but one bent in the anteroposterior plane by a series of gentle curves; side bending must therefore inevitably lead to torsion, because it means bending in two planes. Nor does the fact that the intervertebral discs permit motion in all directions affect the question, because from a mechanical point of view the vertebral column behaves in general as it would if it were a homogeneous flexible rod, and one does not have to wait for torsion to occur until the intervertebral discs are compressed and the edges of the vertebrae come into contact, for, from a mechanical point of view, the torsion begins with the beginning of the side bending. It therefore seems very unlikely that pure lateral flexion of the spine ever exists.

A strip of sponge rubber, half an inch in diameter and fourteen inches long, rotates in the same way that the vertebral column does in the same position. It rotates in one direction for side bending when bent forward and in the opposite direction for side bending when bent backward, and the rotation follows the same rule observed in the vertebral column in the cadaver and in life. A lateral curvature, in what corresponds to the flexed position of the spine, may be produced in the rubber strip following the same rule of rotation seen in life; that is, the front of the rod turns towards the convexity of the lateral curve. An artificial lateral curvature in the rubber strip, made in what corresponds to the extended position of the spine, results in a reverse rotation to that from the rotation of the flexed position. A piece of rattan, a gum-elastic catheter, a piece of rubber tubing, or a strip of sponge rubber, round or square, behave all in the same way, and rotate in the same direction as does the spine when placed in a similar position to those described in the experiments on the model and cadaver except that they allow pure side bending in the lateral plane.

For side bendings, when bent forward, the flexible rod rotates one way, and when bent back and to the same side it rotates the other way. So far as this analogy goes, the spine, therefore, in its rotations does no more than to follow certain laws governing flexible rods, and the elaborate theories to account for the occurrence of rotation in scoliosis may be replaced by the statement that the spine behaves in general as any flexible rod would under similar condition so far as rotation is concerned.

Articular processes.—Although it is easy to understand that the column of vertebral bodies by itself might easily behave as a flexible rod, yet the articular processes cannot be left out of account. They must be an important factor in determining torsion, and they must do one of two things. Either they must fall in with the behavior of the flexible column of bodies and serve to carry out the rotation which would occur without them, or they must obstruct or reverse the rotation which would occur in the column of vertebral bodies alone.

Experiments, cadaver: Spine without vertebral bodies.—The experiments to be given seem to show that

when the articular processes are in contact they merely serve to accentuate the same rotation that would be present if the column of vertebral bodies were by itself.

Two vertebral columns, which had been previously used and which had conformed to the usual rule, were prepared for experiment by removing the column of bodies by cutting through the pedicles. The columns experimented upon then consisted of laminae and articular processes with their ligaments. The ribs were not removed from these columns. These could no longer be regarded as flexible rods, and were only anatomical preparations to demonstrate just what part in rotation the articular processes would play if left to themselves.

Each of these spines was then placed in a vice as in the experiments described above and pulled to the side in the same way. When the spine was extended and pulled to the left rotation occurred of the same type as in the intact column in the similar position, a rotation of the ribs backward on the side of the concavity. That is, the articular processes alone do the same thing in side bending in the extended position that the intact column does (Fig. 8).

In side bending from the flexed position, however (Fig. 9), the spine without bodies rotates in just the reverse direction from that of the intact spine in the same position, the rotation of the ribs being backward on the side of the concavity. This, of course, suggests that in side bending in the extended position the articular processes are active, but that in flexed positions they are not.

To see if this state of affairs really existed, a spine which had been used and which had followed the rule was sawed longitudinally in such a way as to divide each articular process in the long axis of the spine. The portion on the outer side of this cleft was removed, giving a view of each articulation. The spine was then flexed, and it was found that as moderate flexion began the articular joint surfaces in the dorsal region, which was the particular field observed, began to separate, and in extreme flexion were separated by an interval of perhaps one thirty-second of an inch. As the spine was extended they seemed to come into close contact at about the point where the flexion rotation changes to the extension rotation. In marked extension they were firmly in contact.

The conclusion from this is that the column of vertebral bodies alone, without articular processes, would rotate in just the same way in side bending in flexion and extension that the column does with articular processes present. That in flexion they are not sufficiently in contact to determine the rotation, but that in extension they are in contact, and are the active factors in determining the rotation which occurs in extension. That rotation is, however, in the same direction that it would be if the column consisted of vertebral bodies alone. They apparently serve to accentuate and carry out the behavior of a flexible rod in general, although they undoubtedly aid in preventing pure lateral flexion of the spine.

Leaving for a moment out of consideration the behavior of the column without vertebral bodies, and confining ourselves to the intact column in the cadaver and the model, it is shown by the experiments that there is one torsion for side bending in flexion and a diametrically opposite one for side bending in extension, and that the type of torsion seen in scoliosis in

life is the one occurring in side bendings in flexion where, in orthopedic terms, the rotation is backward on the side of the convexity of the curve.

(4) *Rotation*.—The fourth motion of the spine mentioned at the beginning of the paper must now receive attention. If lateral flexion is associated always with rotation, if the two are component parts of one composite movement, one would expect as a corollary to what has gone before that rotation could not exist without causing lateral flexion.

An experiment was made on the cadaver, which was fixed as described above and the atlas sharply rotated to one side. A well-marked lateral deviation of the spine took place.

Model No. 1, seated on a stool, was told to twist to one side but not to bend laterally in so doing; Fig. 10 shows that a well-marked lateral deviation of the spine occurred in this experiment. A similar photograph was taken of model No. 2, showing exactly the same condition. It therefore seems as if torsion of the trunk could not occur without lateral deviation.

Accepting the fact that in the spine lateral flexion cannot exist without torsion, it is plain why rotation should accompany any degree of lateral deviation of the spine; they are two parts of one movement and neither can exist alone.

Causes of lateral deviation of the spine in life.—To account for the phenomena found in rotary lateral curvature one has then only to formulate the factors which will cause the spine to be held to one side of the perpendicular; compensatory lateral deviation must occur and with it rotation. Such causes are manifold and well recognized, for asymmetry is the rule rather than the exception. Neither the head nor the pelvis can vary from their normal relation without producing some degree of compensatory lateral deviation somewhere in the spine.

Asymmetry of the head is a factor not often taken into account. Asymmetrical position of the head is favored by the fact that in most cases the condyles of the occiput are not in their best contact with the superior articular surfaces on the atlas when the head is held straight; a closer and better contact is generally obtained by a slight twisting of the head. This fact was pointed out to the writer by Professor Dwight. Ocular defects causing improper balance of the head are an obvious cause. One has only to observe the faulty carriage of the head in many cases of scoliosis to see that here is a condition of importance and often too marked a condition to be accounted a result of the scoliosis. Asymmetry of the pelvis as described by Barwell must be accounted as a not infrequent cause of asymmetrical positions. Asymmetry of the spine itself and unequal thickness of the vertebral bodies on the right side as contrasted with the left must be remembered as a demonstrated condition.⁷ Shortening of one leg is so common that it fails to attract the attention that it deserves.⁸

All these defects of conformation must lead to some lateral deviation of the spine. It depends upon the individual whether these are taken care of by nature in some compensatory way, or whether they

cause a deviation notable enough to be classed as a deformity.

Aside from the structural defects causing asymmetry and consequent lateral deviation, are to be found the vicious postures resulting from attitude and occupation, which must be accounted another important factor in producing scoliosis.

Type of rotation in scoliosis.—In flexion it may be repeated that side bending of any part of the spine must be accompanied by rotation of the vertebral bodies toward the convexity of the curve. Inasmuch as the great majority of cases of scoliosis show this type of rotation, it is evident that such scoliosis must have had its beginning during flexed positions of the spine. It is a well-known fact that many cases of scoliosis are produced by round shoulders, and the muscular development of patients with scoliosis is as a rule below the average. Poor muscular development of course predisposes to a flexed position of the trunk.

It seems likely that the beginning of scoliosis is much more often acquired by children in the sitting than in the standing position, because the sitting position makes flexion of the spine more easy than does the standing position.

An experimental scoliosis with rotation is shown in Fig. 11, in which the Model 2 was asked to its squarely, but at ease, on an inclined seat. The indicators on the skin over the spinous processes show that the bodies of the vertebrae have rotated toward the convexity of the lateral curve.

Reverse rotation.—The "reverse rotation," where the rotation of the vertebral bodies is backward on the side of the concavity of the curve, has been described as occurring in life, and has been somewhat discussed.⁹ Although the writer is not yet prepared to accept the fact that this apparent type of rotation is anything more than a slight lateral deviation with excessive rotation, yet the experiments above related show how the so-called "reverse curve" in scoliosis might occur from an anatomical point of view. If a column is curved laterally in the extended position this type of rotation must be found. One has only to examine a dried vertebral column to see that lateral motion between the dorsal vertebrae when their articular processes are in contact must result in the rotation of the bodies toward the concavity of the lateral curve. Moreover, such a type of rotation is an intrinsic property of any flexible column bent to the side in the extended position.

School furniture.—In the prophylaxis of scoliosis, from this point of view, correct school furniture seems to be of the greatest importance. Sitting to one side in the flexed position is to be avoided on anatomical grounds, and it is interesting to note that the weight of opinion has inclined to the style of chair and desk in which the edge of the desk overhangs the edge of the chair, the so-called "minus distance." It is easy to see that an arrangement of school furniture which allows a growing child to sit for hours with a flexed position of the spine, with muscles tired and stretched, is one which predisposes to a deformity which is associated with the flexed position. Inasmuch as we have seen that torsion causes of itself lateral deviation of the spine, the twisted posi-

⁷ Herth: *Zeitsch. f. orth. Chir.*, 1892, i, p. 246; Schulthess: *Zeitsch. f. orth. Chir.*, 1899, vi, p. 1.

⁸ Hunt: *American Journal Medical Sciences*, January, 1879; *Philadelphia Medical Times*, August 3, 1878; T. Dwight: *Journal of Anatomy and Physiology*, xlii, 1879, p. 502; Morton: *Philadelphia Medical Times*, July 10, 1886; Bradford and Lovett: *Orthopedic Surgery*, 1899, 2d Ed., p. 595.

⁹ Jach: *Zeitsch. f. orth. Chir.*, 1892, i, p. 252; Steiner and Schulthess: *Zeitsch. f. orth. Chir.*, 1896, v; Kirnison and Sinton: *Revue d'Orthopédie*, 1895, iii; Vulpius: *Zeitsch. f. orth. Chir.*, 1896, iv, p. 63.

tion that children assume in writing, especially in connection with flexion, must of itself be accounted a direct cause of scoliosis, inasmuch as it causes lateral deviation of the spine. It has been demonstrated¹⁰ that children who sit squarely at their writing, and who learn the upright style of writing, show a smaller percentage of scoliosis than children who learn the slanting hand, a fact easily explained from this point of view.

Treatment.—Of course, theoretical conditions such as those given above are of value only in so far as they may influence prophylaxis and treatment. Scoliosis on this supposition may be assumed to be a deformity arising from superincumbent weight, coming obliquely upon a spinal column in the flexed position. The correction, so far as possible, of asymmetrical attitudes and the prevention of undue flexion of the spine would seem to constitute the prophylaxis.

In the treatment of the condition when it exists, on this supposition, much emphasis must be laid on the detection and correction where practicable of the causes of asymmetrical attitudes. It is not always possible to do this. A short leg can be compensated for by a thicker sole, but an asymmetrical pelvis cannot be rectified.

The second and more important deduction to be made from the experiments is the importance of securing and maintaining the spine in a position of extension at the seat of the deformity. If the rotation of the extended position is the reverse of that of the flexed position, the use of extension as a means of treatment deserves a much more important place than it has received.

It is easy to see from this point of view why symmetrical gymnastics, cultivating the extensor muscles, such as those described by Teschner,¹¹ are of so much value; and it also explains what many of us have found out empirically, that it is desirable to hold and exercise the spine in positions of extension.

The problem seems to be, from an anatomical point of view, to bring the articular processes into firm contact, and to get their influence in counteracting the rotation acquired during flexion, as well as to call upon the intrinsic property of the spine as a flexible rod to reverse in extended positions the rotation acquired in the flexed positions. In a case of dorsal lateral curvature it is not enough to give backward flexions which shall take place chiefly in the lumbar region; such backward flexions must be made so far as possible to take effect in the region where the lateral deviation exists. It is the extended position of the deviated region that one wishes to bring about.

Given a fairly movable spine with a primary curve to the right in the dorsal region, and a rotation backward on the right side of the curve, the correction of such a rotation must be most easily made by exercises given to induce extension of the dorsal part of the spine where the deviation exists. By calling upon the intrinsic property of the spine to reverse in extended positions the rotation acquired in flexed positions, it would seem that we were pursuing the most rational course. It would seem also that forcible correction should also be made in the position of extension of

the spine and that a forward thrust at the seat of the lateral deviation should diminish the rotation.

When, however, it comes to the question of fixed curves and deformed vertebrae, the question is one of such complexity and difficulty that it is impossible from these experiments to speak at present as definitely as one can in cases more nearly normal.

The use of symmetrical extension exercises and of side bendings in the extended position is, therefore, from an anatomical point of view, most important.

Gymnastics.—It must be evident from what has been said that simple gymnastic exercises are safer than complicated ones. Many persons prescribe exercises of such complexity and intricacy that no one can possibly judge just what he is doing. If side bendings inevitably cause torsion and torsion lateral deviation, they are dangerous gymnastic elements to introduce into a problem already difficult enough. Safety lies in prescribing only exercises of which one can estimate the anatomical effect.

The writer is fully aware that this paper leaves out of consideration the subdivision of lateral curvature into the varieties according to their etiological types as well as the various types of curves. Given, as we have in the spine, the mechanism ready to produce a scoliosis and a superincumbent weight coming obliquely upon the column from some of the causes mentioned above, the column will yield where it is weakest; it may be in the lumbar region or in the dorsal. Compensatory curves will occur, bony deformity will result if the condition continues, and the complicated structure of the parts involved will allow of almost infinite variety in the location and the character of the curve. The ribs, of course, follow the rotation of the vertebrae to which they are attached. The writer has endeavored to deal only with the broader aspects of the question and to avoid generalizations from clinical experience.

SUMMARY.

This paper may be summed up in a few words as follows:

Torsion and side flexion of the spine are parts of one compound movement and neither exists to any extent alone. Lateral deviation of any part of the spinal column is therefore necessarily associated with torsion (rotation) at the seat of the deviation.

In flexed positions bending is associated with torsion in one direction, in extended positions by torsion in the opposite direction. In this it follows simply the mechanical law governing flexible rods, which rotate in general in the same way in corresponding positions. From the kind of torsion observed in scoliosis it is obvious that the deformity originates in the flexed position of the spine. The correction of the rotation would therefore seem to be logically made by throwing the spine into extended positions and in taking side bendings from extended positions.

Sitting in the flexed position by school children is likely to be harmful, and sitting in a twisted position of necessity induces lateral deviation temporarily. The immediate cause of lateral deviation is, as a rule, to be found in some asymmetry of development or posture which leads to an oblique direction of superincumbent weight, causing the spine to deviate from the middle line.

¹⁰ Burchard: *Zeitsch. f. orth. Chir.*, 1892, ii, p. 1; *Kotelmann: School Hygiene*, p. 315.

¹¹ Teschner: *Transactions American Orthopedic Association*, vol. ix, p. 10.

MALARIA AND MOSQUITOES.

BY IRVING C. ROSSE, M.D., F.R.G.S., WASHINGTON, D. C.

MUCH that has lately appeared in the journals relative to malaria and mosquitoes is at variance with the medical experience and personal observation of myself and others. The mention of a few facts of a different nature, which seem inconsistent with the allegations of tropical medicine that the mosquito is an agency in the spread of malaria, may therefore be in order.

More than usual experience as a traveller in such latitudes as tropical America, Africa, the vicinity of the North Pole, and many out-of-the-way islands never visited by the globe-trotter, has brought me into much practical contact with the question. Medical geography, however, does not explain such incongruities as the observance of malarial fever in mountainous places like the Island of Mauritius, the high Sierras of Spain, or in certain parts of Japan and Alaska, while there is almost exemption, for instance, in the marshes around the city of Mexico and in certain islands wanting in altitude, as Saint Helena and Bermuda. Moreover, the very old modern notion which attributed to living organisms the production of malaria, has been more labored than advanced since the days of Vitruvius and Columelle, who believed paludism owing to insects that inhabited marshy regions. The question as to the nature of malaria has varied according to the epoch, and although of late years its investigation has assumed more scientific direction and development, many vague generalities still prevail both among the people and physicians. For instance, all the common affections incident to atmospheric vicissitudes, bad cooking and general irregularity of living that obtain in Washington are called malaria. I have known Bright's disease, cancer of the stomach, and even basilar meningitis, chronic alcoholism, dorsal tabes, and other nervous affections to be mistaken for malaria and treated as such. Some of the veriest nonsense has been written as to the notions concerning malaria; on the one hand, the metaphysical hypothesis of the marsh acting as an occult power, on the other, that of living organisms being concerned in its production. In the present development of the subject an order of mind not content with studying phenomena only seems to be satisfied with the sensuous notion conveyed by the bacillus malaria, and its transmission by the genus anopheles.

It is claimed that a single mosquito may infect an individual, or, in fact, several individuals, for the investigators have found numerous parasites in the salivary glands of mosquitoes by whose bites they aver they have experimentally produced malaria in healthy subjects. Two Italians want us to believe that nearly all of forty-two harvesters near Rome had become affected with malaria at the end of July or early in August from mosquito bites, while a physician from the London School of Tropical Medicine has erected a bungalow in the most malarial part of the Roman Campagna to collect and send mosquitoes to England to bite healthy persons and thereby produce experimental intermittent fever. If experience counts for anything, it is safe to say that the persons volunteering for the test will never have the fever.

I am not aware that Arctic voyagers have ever suffered from any form of malaria after encountering

mosquitoes, which have caused great annoyance to explorers as far north as man has penetrated. Myriads of mosquitoes make life almost unendurable in northern Siberia, and Arctic mosquitoes as encountered during the cruise of the United States steamer *Corwin* in the Arctic Ocean surpassed anything of the kind I ever experienced elsewhere. So annoying were they at times that it was almost impossible to use instruments in taking observations when the position of a spot on shore was to be determined. On one occasion at a desolate spot on the top of Chamisso Island, about two hundred feet above the sea, we found an astronomical station that had been established by the English in search of Sir John Franklin, and near it was a notice telling of a bottle with information buried so many feet to the magnetic north. Curiosity, of course, prompted to get it by all means, but the mosquitoes coming in such myriads actually caused the search to be abandoned. Many of the *Corwin's* crew were seriously incommoded by their bites and stings on exposed parts of the body, one man's neck and face being so swollen from this cause as to result in temporary loss of eyesight. Yet not a single trace of malaria occurred in any of the crew, except in the case of a man who had come from the Chagres River a few weeks before. Perhaps the mosquitoes were not anopheles, although their bite and venom was as sharp as that of their southern congeners.

On another occasion when surgeon to a training ship with a healthy crew from a New England port, a stay of several days was made at the Delaware breakwater. Sleep was impossible during the several days of acute misery spent there, owing to extreme annoyance of the mosquitoes. No one questions the notorious reputation of the Chesapeake peninsula for malaria and anopheles, and if there be anything in the alleged transmission, an epidemic of malarial fever should have occurred. But such was not the case. Many months afterward not the slightest trace of paludism had appeared in any of the crew.

I may also cite similar instances where healthy people from the North have been temporarily exposed to bites in the vicinity of Norfolk, Va., at Tybee Island, Ga., the New Orleans quarantine, and on the Rio Grande River, all points at which anopheles prevail — yet not one of whom has been affected by malaria.

During a considerable residence in southern France and in Italy, I had frequent occasion to study this question. Monte Carlo is most prominently associated in my mind with broken sleep caused by mosquitoes during an autumnal visit. Yet among those of my personal acquaintance with the same experience none has since showed the slightest trace of malaria.

A similar remark applies to Leghorn and to Rome, where, owing to the most important changes in public hygiene that Europe has ever witnessed, malarial fever is seldom seen except among the poorer classes. Englishmen and Americans, who constitute two-thirds of the foreigners in Rome, now reside there for years without an attack of malaria, in spite of mosquitoes and of what the Italians consider their eccentric and imprudent habits. I am aware that the books written on the climate of Rome and the Campagna would alone make a library of more than one thousand volumes; hence, further digression would be almost as extensive as the decayed grandeurs of the

classic city itself. The old tradition of applying to every ailment from a cold to enteric fever the generic term "Roman fever," a vague disease that has no place on the nosological table, has created a prevailing notion hard to correct. As a matter of fact, the study of mortuary statistics and the sanitary condition of Rome, where I spent some time as sanitary inspector for the Government, show that with the exception of London, it is the best watered, the best drained and healthiest capital in Europe, and that a European or a native of New England runs greater risk of contracting malarial fever in Washington, where it is more prevalent and where anopheles are equally aggressive. The latest medical information from South Africa shows the entire absence of malaria in many localities where mosquitoes are most troublesome. An old and experienced practitioner of New Orleans tells me that the same is true of Louisiana, notably among residents of the salt marshes extending from six to fifteen miles inland from the Gulf. On the other hand, I am told that malarial fevers are common in the foot-hills of Virginia, as at Charlottesville, where mosquitoes are such a negligible quantity as to be almost unknown.

Perhaps the foregoing remarks lack the more labored details of "malarial parasitology" and the com-
munity of scientific observers, who may place different interpretations upon an unsettled question. According to the best entomological authority, the gnats herewith mentioned were in most instances of the genus anopheles. The facts relative thereto are honestly submitted for what they are worth without inclination or bias, and speculation is left to the reader.

Reports of Societies.

AMERICAN ORTHOPEDIC ASSOCIATION.

FOURTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900, HARRY M. SHERMAN, M.D., OF SAN FRANCISCO, PRESIDENT.

FIRST DAY.

DR. V. P. GIBNEY presented a paper entitled

THE SIMPLE AND EFFICIENT TREATMENT OF CALCANEUS PARALYTICUS IN YOUNG CHILDREN,

in which he advocated treatment by means of plaster of Paris in complete extension, changing the plaster every three or four months.

DR. L. A. WEIGEL, of Rochester, spoke of the danger of excoriation, and referred to a case in which the foot was still in the calcaneus position because there was no form of dressing which could be applied to such a case without risk of producing gangrenous ulceration.

DR. JOHN RIDLON, of Chicago, remarked that the idea of improving the function by prolonged and constant retention in an appropriate position was not new, for Mr. Hugh Owen Thomas had practised this method systematically in a large number of cases. The object was to keep up a state of tension, and for this purpose he used a shoe with a wedge sole, two and one-half inches thick at the heel and thin in front, reinforced by a bar extending two-thirds of the length of the shoe and up the back of the leg to the calf.

DR. H. P. H. GALLOWAY, of Toronto, referred to a class of cases in which, he said, the shortening of the tendo Achillis caused either supination or pronation according to the direction the foot happens to be given.

DR. A. B. JUDSON, of New York, said he had abolished the joint at the ankle. The first effect of the apparatus was to transfer the weight of the body from the anterior part of the foot to the anterior side of the upper part of the skin. In cases of extreme calcaneus the gait could be made absolutely perfect if managed in this way.

A FINAL REPORT ON THE USE OF PURE CARBOLIC ACID IN THE TREATMENT OF TUBERCULAR AND PURULENT DISEASES OF JOINTS AND BONES.

DR. A. M. PHELPS, of New York, read this report. His plan is to lay open the capsule for about two-thirds of its extent, irrigate the joint cavity with 1-1,000 bichloride of mercury solution; then fill it with pure carbolic acid, and after this had been allowed to remain for just one minute, wash it out first with strong alcohol, and afterward with a two-percent. solution of carbolic acid. In the last eighteen months he had operated upon 70 cases. The results had been very satisfactory, and, on an average, the cases of excision had been discharged from the hospital at the end of three weeks.

DR. ROBERT W. LOVETT, of Boston, said that at the Children's Hospital in his city they had endeavored to prevent abscesses by putting the patients to bed whenever there was irritative muscular action about the joints. When an abscess had formed, the joint was freely opened, irrigated with bichloride and drained.

THE MECHANICS OF LATERAL CURVATURE OF THE SPINE.¹

DR. ROBERT W. LOVETT, of Boston, read this paper.

SOME OF THE PROBLEMS INVOLVED IN THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

DR. NEWTON M. SHAFFER, of New York, described by means of diagrams his conception of the mechanical principles involved, and stated that he had arrived at practically the same conclusion as had Dr. Lovett.

THE RELATION OF DEFORMITY OF THE PELVIS TO LATERAL CURVATURE OF THE SPINE.

DR. H. P. H. GALLOWAY, of Toronto, read this paper. He said that many writers had considered pelvic distortion to be the effect of the lateral curvature, but personally he was inclined to believe it was the cause. It seemed more logical to look for the faulty construction in the foundation than in the superstructure.

SPASMODIC LATERAL CURVATURE OF THE SPINE.

DR. ARTHUR J. GILLETTE, of St. Paul, presented in this communication a report of several cases of hysterical curvature.

THE RESULTS OF MY OBSERVATIONS IN LATERAL CURVATURE OF THE SPINE, CLINICALLY, MECHANICALLY AND PATHOLOGICALLY.

DR. A. M. PHELPS, of New York, gave in this paper a description of a post-mortem study on a severe

¹ See page 622 of the Journal.

case of rotary lateral curvature. The subject was forty-five years of age. Throughout the whole region of curvature he had found extensive degeneration of muscles, more marked on the convex side. The intervertebral cartilages on the concave side were totally destroyed. He concluded from this study that it was futile to expect to cure lateral curvature of the spine after changes in the bone had taken place. He was of the opinion that all the machines for forcible correction now in use are of but little value.

DR. E. H. BRADFORD, of Boston, insisted that there were certainly some cases in growing children that were benefited by treatment.

DR. L. A. WEIGEL said that he had frequently seen the most rigid muscles relax thoroughly after forcible correction, and even this degree of improvement was worth striving after.

DR. SHAFFER said he felt firmly convinced that lateral curvature of the spine is dependent primarily on changes in the muscles, though quite probably an underlying cause was to be found in the nervous system.

DR. H. AUGUSTUS WILSON, of Philadelphia, suggested that lateral curvature might sometimes result from an asymmetrical hip action in apparently normal subjects.

DR. PHELPS replied that only the physiological curve could be cured. It was not necessary to do myotomy in mild cases in young children, yet at the present time he was cutting more than one-third of his cases of lateral curvature.

DR. A. B. JUDSON spoke in admiration of Dr. Lovett's ingenious and convincing model, and added that in 1876 he had himself advocated, and in one case practised, the application of a spinal brace for the production of extreme lordosis in cases of lateral curvature, on the ground that as in rotation the anterior part of the column was affected by deviation from the median line, it was good practice to shift the weight of the body from the anterior to the posterior part of the column. Had he then looked as far ahead as Dr. Lovett had done, he would, in all probability, have thought even more favorably of the method. He now believed that it promised many advantages.

ANTERIOR SUPPORT SUPPLEMENTING THE TAYLOR BRACE IN POTT'S DISEASE.

DR. GEORGE B. PACKARD, of Denver, the author of this communication, spoke of the advantages of anterior support, and the carrying forward of the ribs which resulted from the sinking forward of the upper dorsal spine.

A SUSPENSION PRESSURE CHAIR FOR SCOLIOSIS.

DR. PHILIP HOFFMANN, of St. Louis, described this inexpensive apparatus. It is the pressure chair described by Dr. Bradford, to which has been added lateral steel bars, four feet and a half high, which meet in an arch overhead. To the arch is attached an apparatus consisting of a system of compound pulleys. It is intended as an accessory gymnastic apparatus.

RESULTS OF TREATMENT OF CONGENITAL DISLOCATION OF THE HIP.

DR. E. H. BRADFORD, of Boston, made some remarks on this subject, and presented a pathological specimen illustrating both the operative and the bloodless method of effecting reduction. He advocated ex-

posing and incising the portion of the capsule which covers the acetabulum, and thus constitutes one of the obstacles to successful treatment. By suture of the capsule after reduction one could, in a large measure, prevent relapse.

DR. GIBNEY heartily commended his suggestion.

DR. RIDLON thought it was possible in young patients in whom the head and neck of the femur were fairly developed, to replace the bone by the bloodless method, but in order to get a permanently good result it was necessary to make and maintain considerable abduction. Failure was not infrequently due to a neglect to prevent flexion of the leg.

DR. HARRY SHERMAN, of San Francisco, said that he had tried, in one or two instances, Dr. Bradford's method of suturing, but had become convinced that if the head were placed in between the two lateral halves of the pocket, it would be quite as stable as if it had been sutured. This pocket was a very definite obstacle which could be appreciated in an open operation.

DR. BRADFORD said that he had seen a few cases that had relapsed after a year. He characterized the bloodless method as one which sacrificed precision to the timidity of the patient. Before operating by the cutting operation all the contractions of the soft parts should be overcome, either by stretching or by open incision and myotomy. He did not feel that he could operate successfully on patients over six years old.

A NEW BACK BRACE FOR POTT'S DISEASE.

DR. JOHN DANE, of Boston, exhibited this brace, the object of which was to combine the advantages of a plaster-of-Paris jacket with those of an anteroposterior brace. The usual apron is dispensed with, and there is a high cross piece with straps passing around under the arms.

TENDON TRANSPLANTATION IN THE TREATMENT OF PARALYTIC DEFORMITIES.

DR. W. R. TOWNSEND, of New York, presented this paper. He declared that in many patients suffering from drop-wrist the function could be more or less restored by tendon transplantation. Among the cases cited was one of his own, a case of right hemiplegia, pes equinus and drop-wrist. Here the tendon had been shortened by lapping one portion over the other, fastening it by the method previously described by Dr. Joel E. Goldthwait.

A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER, WITH RADIOGRAPH.

DR. JOHN L. PORTER, of Chicago, present by invitation, reported this case.

DR. JOEL E. GOLDTHWAIT approved of the method pursued by Dr. Townsend in his case, that is, going directly through the interosseous membrane, because in the foot where the anterior tendons had been made posterior tendons and carried around the leg the results had not been very satisfactory. In some of his own cases of tendon transplantation the results had been surprisingly good.

DR. WEIGEL thought it was absolutely essential in certain cases to completely divide the tendon, and cited a case in illustration.

DR. BRADFORD said that in some cases he had taken special pains not to completely divide the tendon, believing that this secured a more powerful muscle. He had operated on one hand by the method de-

scribed by Dr. Townsend, and when last seen the child seemed to have gained.

A CASE OF TUBERCULOSIS OF THE ASTRAGALUS WITH ANCHYLOSIS AND SUBSEQUENT AMPUTATION.

DR. V. P. GIBNEY, of New York, reported this case, occurring in a girl of sixteen who had sprained her ankle. At first the case had seemed to be one of synovial tuberculosis. She had been treated by braces for about twelve years, but had recently returned with extensive tuberculous disease of the astragalus. Removal of the astragalus had not proved sufficient, and, after consultation, the foot had been amputated. The specimens were exhibited.

DR. GOLDTHWAIT showed in this connection a water-color drawing of a case of excision of the knee, in which the tissues about this joint had been found infiltrated with tuberculous material, and some of the fringes hanging down two inches or more. No central tuberculosis could be detected.

(To be continued).

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5-8, 1900.

GENERAL SESSIONS.

FIRST DAY.

THE general sessions of the American Medical Association were held in the Marine Hall of Young's Pier, DR. W. W. KEEN, of Philadelphia, presiding.

Governor Voorhees was to have delivered the first address, but was absent, and the Acting Governor of the State and President of the State Senate, HON. H. M. JOHNSON, welcomed the Association. MAYOR H. P. STOY and DR. THOMAS S. REED, of Atlantic City, also made brief addresses of welcome.

DR. PHILIP MARVEL, of Atlantic City, read the report of the Committee of Arrangements, and DR. WM. J. HERDMAN, of Ann Arbor, Mich., in his report of the General Business Committee, presented several resolutions relating to the workings of the Association, which were adopted. The text of the Annual Address of the President of the Association, DR. W. W. KEEN, which was delivered at this time, appeared in the last issue of the JOURNAL.

The report of the Treasurer, DR. HENRY P. NEWMAN, of Chicago, showed a gratifying increase in membership and receipts. The receipts for the year ending December 31, 1899, were over \$39,000. The cash now on hand amounts to \$13,556.56, and this, together with a loan of \$3,000 and \$10,000 in Government bonds, gives a total of assets of \$27,396.86.

The Secretary, DR. GEO. H. SIMMONS, of Chicago, reported that a copy of the Code of Ethics had been given to every medical student graduated this year. He recommended the general adoption of the metric system. A letter from the Secretary of the Wayne County (Mich.) Medical Society, urging interstate reciprocity in the matter of licenses to practise medicine, was read.

DR. U. O. B. WINGATE, of Milwaukee, reported for the Committee on Department of Public Health, that the main work of the Committee had been in reference to quarantine regulations and legislation.

DR. H. L. E. JOHNSON, of Washington, D. C., reported for the Committee on National Legislation, mentioning a number of bills recently presented to Congress, which the Committee had favored.

DR. E. ELIOT HARRIS reported for the Special Committee on Revision of the Constitution and By-Laws.

DR. REYNOLDS, of Kentucky, made a motion that two members from each of the various sections and the army and navy corps be appointed for the third Pan-American Medical Congress, to be held in Cuba this year.

By resolution offered by DR. WM. J. HERDMAN, and adopted, the name of the General Business Committee was changed to General Executive Committee.

DR. EDWARD JACKSON, of Denver, Col., was elected on the Committee of Prize Essays for ensuing year. The Executive Committee urged a decrease in the number of papers on section programmes, which are often so overcrowded.

After some further routine business and announcements the meeting adjourned.

SECOND DAY.

DR. W. L. RODMAN, of Philadelphia, delivered the

ORATION ON SURGERY.

The text of this appeared in the last issue.

DR. VICTOR C. VAUGHAN, of Michigan, delivered the

ORATION ON STATE MEDICINE.

After the report of the General Executive Committee, DR. T. J. HAPPEL, of Tennessee, read the report of the Board of Trustees. This report showed the finances of the Association to be in an excellent condition. The receipts for the year ended December 31, 1899, were \$109,115.33; the total expenditures were \$93,609.40, of which \$77,641.01 was for the Journal of the Association. The total amount invested in United States bonds and the Indianapolis loan is \$13,812.50, and the total cash on hand is \$14,355.51, making an aggregate of \$28,168.01 in the Treasurer's hands January 1, 1900. Recent expenditures leave a real balance at present of \$4,131.36 available for debts.

The report of the Committee on the American Medical Association Medal was read by DR. GEORGE M. GOULD, of Philadelphia. Six essays were submitted to the Committee, and the one recommended by the Committee was entitled "Quantitative Tests for Proteolysis," by A. L. Benedict, A.M., M.D., of Buffalo, N. Y. The Association accepted the Committee's report. Dr. Jackson was appointed on the Committee for the ensuing year.

The report of the award of the N. Senn gold medal was next read by DR. W. S. RODMAN, of Philadelphia. The winner was the author of the essay entitled "Exstrophy of the Bladder," by Dr. F. Frederick Connell, of Chicago.

The Committee on the Reorganization of the Army and Navy Medical Corps, of which Dr. Thomas H. Fenton, of Philadelphia, is chairman, failed to report.

DR. J. C. WILSON, of Philadelphia, chairman of the Rush Fund, reported new contributions during the year, from various medical societies, of \$938.01,

and a total on hand of \$11,330.05. After the report of special committees, and the transaction of miscellaneous business, the meeting adjourned.

THIRD DAY.

After reading of the minutes and announcements by Dr. MARVEL, of the Committee of Arrangements, Dr. J. M. ALLEN, the Third Vice-President, took the chair. Dr. JOHN A. WITHERSPOON, of Nashville, Tenn., delivered the "Oration on Medicine."

The Secretary of the General Executive Committee next reported.

The resolution of Dr. L. B. TUCKERMAN, that the National Legislative Committee, in conjunction with the Special Committee on the Reorganization of the Army and Navy Medical Corps, cause to be drafted a bill providing for adequate instruction in hygiene and sanitation in the national military and naval academies, was adopted.

The matter of selecting a place of meeting for next year was referred to the General Executive Committee.

The recommendation that the prize medal be open for competition to members of the Association only was adopted.

The Committee endorsed the action of the Prize Medal Committee, and accepted the medal offered as a model for future medals. It was resolved to appropriate \$500 annually for the encouragement of scientific research, provided no one individual prize exceed \$100.

The name of the Section on Neurology and Medical Jurisprudence was changed to Section on Nervous and Mental Diseases.

Dr. STONE, of Minnesota, read the

REPORT OF THE NOMINATING COMMITTEE.

It was unanimously adopted, and the following officers were declared elected for the ensuing year:

President, Dr. Charles A. L. Reed, of Ohio; First Vice-President, Dr. A. W. Calhoun, of Georgia; Second Vice-President, Colonel Woodhull, of Maryland, U. S. Navy; Third Vice-President, Dr. Philip Marvel, of New Jersey; Fourth Vice-President, Dr. W. E. Quine, of Illinois; Treasurer, Dr. Henry P. Newman, of Illinois; Secretary, Dr. Geo. H. Simmons, of Illinois; Assistant Secretary, Dr. Wm. Davis, of St. Paul; Librarian, Dr. Geo. Webster, of Illinois.

Board of Trustees.—Dr. Miles F. Porter, of Indiana; Dr. E. Fletcher Ingals, of Illinois; Dr. W. L. Rodman, of Pennsylvania; to fill the vacancy caused by the resignation of Dr. Charles A. L. Reed, Dr. James M. Matthews, of Kentucky.

Judicial Council.—Dr. James R. Guthrie, of Iowa; Dr. G. B. Gillespie, of Tennessee; Dr. R. C. Moore, of Nebraska; Dr. Ida J. Heiberger, of District of Columbia; Dr. John B. Roberts, of Pennsylvania; Dr. Charles L. Rodman, of Connecticut; Dr. L. L. Jepson, of West Virginia.

The Address on Surgery.—Dr. John A. Wyeth, of New York.

The Address on State Medicine.—Dr. John M. Kober, of the District of Columbia.

The Address on Medicine.—Dr. N. S. Davis, Jr., of Illinois.

Place of Meeting.—St. Paul, Minn.

Committee of Arrangements.—Dr. John F. Fulton, Chairman, of St. Paul.

The newly-elected President, Dr. REED, having been called away by telegram, was now installed, and made a short address of acceptance. The special committees followed. The Committee on Revision of Constitution and By-Laws reported. The resolution that men graduating from four-year medical schools only should be eligible for membership to the Association after 1901 was adopted. Under miscellaneous business Dr. Denslow Lewis, of Chicago, brought before the Association the matter of the publication of his paper, read at Columbus last year, and made a motion that the Association should vote a special order for its publication in the *Journal of the American Medical Association*. The matter was referred to the General Executive Committee to be reported Friday.

FOURTH DAY.

After the reading of the minutes of Thursday's session, and report of the Committee of Arrangements, the elections of officers of sections was announced as follows:

Diseases of Children.—Chairman, Samuel W. Kelley, Cleveland; Secretary, William E. Darnell, Atlantic City.

Diseases of Women.—Chairman, Harry P. Neuman, Chicago; Secretary, C. S. Bonniwell, Cincinnati.

Surgical.—Chairman, A. J. Ochsner, Chicago; Secretary, Martin B. Tinker, Philadelphia.

Neurology.—Chairman, W. P. Tomlinson, St. Peter, Minn.; Secretary, F. S. Pearce, Philadelphia.

Ophthalmology.—Chairman, J. A. Lippincott, Pittsburg, Pa.; Secretary, E. C. Ellett, Memphis, Tenn.

Materia Medica.—Chairman, N. S. Davis, Jr., Chicago; Secretary, J. N. Upshur, Richmond.

Laryngology.—Chairman, John Nahand Mackenzie, Baltimore; Secretary, George C. Stout, Philadelphia.

Cutaneous Medicine.—Chairman, W. L. Baum, Chicago; Secretary, R. R. Campbell, Chicago.

Stomatology.—Chairman, R. R. Andrews, Cambridge, Mass.; Secretary, Eugene S. Talbot, Chicago.

Practice of Medicine.—Chairman, J. M. Anders, Philadelphia; Secretary, W. Britt, Philadelphia.

Business Committee.—A. E. Baldwin, Chicago; G. V. I. Brown, Milwaukee; M. H. Fletcher, Cincinnati.

Physiology and Dietetics.—Chairman, Elmer Lea, New York City; Secretary, R. Harvey Cook, Oxford, O.

State Medicine.—Chairman, Ernest Wende, Buffalo, N. Y.; Secretary, J. H. Hurty, Indianapolis, Ind.

Dr. DENSLow LEWIS, of Chicago, brought up the matter of the publication of his article on "Gynecologic Consideration of the Sexual Act." The Executive Committee reported against the publication of the article, which report, after considerable discussion, was adopted. The Committee also reported in favor of continuing the pathologic exhibit from year to year, under charge of the newly-formed pathologic section, and that \$500 be appropriated for the exhibit. The resolution was adopted.

The pathologic exhibit was one of the features of the meeting. It comprised over 1,500 specimens and photographs, under the direction of Dr. Frank B.

Wyun, of Indianapolis, secretary of the unofficial committee on pathologic exhibit, and of the provisional pathologic section. The idea originated three years ago with the Indiana State Medical Society, and was this year, for the first time, made part of the work of the Convention, though unofficially, and will hereafter be a permanent part of the work, under the newly-formed pathologic section. The exhibition is intended as a practical, interesting and instructive object lesson to the members of the Association, and embraces a large number of specimens of almost every pathologic condition. The chief features were the collection of gross specimens of the lungs, heart, liver, kidneys, intestines, etc.; the 95 specimens of diseased meats, showing trichinosis, actinomycosis, cholera, etc.; and a large collection of photographs and skiagraphs, the microscopic and bacteriologic exhibit, and the sanitary exhibit of the Marine Hospital. The specimens were furnished by colleges and specialists from all over the country.

The work of the National Committee on Legislation was approved. This committee has recommended a number of bills lately before the Senate, and suggested a number of new bills regarding national medical affairs.

SECTION ON SURGERY AND ANATOMY.

FIRST DAY.

The meeting was called to order by the Chairman, DR. H. O. WALKER, of Detroit, who delivered the Annual Address, entitled

A RETROSPECT OF SURGERY OF THE STOMACH.

In the two decades since Billroth gave the first impetus to gastric surgery great progress has been made. Operative measures may be divided into two great classes: those for benign affections and those for malignant disease. Among the benign affections was mentioned stenosis of the pylorus. For the relief of this condition he prefers the operation of pyloroplasty, provided the pylorus is not greatly hypertrophied or bound down by adhesions; in such cases gastro-enterostomy is the operation of choice. For the relief of gastroptosis the operation of gastroplication has given good results; operations shortening the ligaments are of double value; gastropexy may be indicated in certain cases. He has operated in two cases for hour-glass contraction of the stomach. The first patient was a woman of thirty-seven who had suffered with digestive difficulties; a tumor could be felt in the epigastric region. On opening the abdomen a constriction was found near the middle of the stomach giving it an hour-glass form. Partial resection was performed. The patient died on the seventh day following operation. Partial resection was performed on a man of fifty-seven for the relief of a similar condition; death followed on the fifth day from giving way of the sutures. Early diagnosis is highly important in the case of malignant disease, and the stomach specialists have given surgeons much aid in this respect of late years. Pylorectomy is advocated in the case of freely movable tumors. Dr. Walker has previously reported a successful pylorectomy; in two other cases his patients died as a result of the operation. If the disease is more extensive gastro-enterostomy is indicated. He has used Senn's plates, Murphy's button, and simple suture with equally good results. The mortal-

ity of this operation has been growing less. In the preparation for operation he advises preliminary free purgation, careful attention to asepsis and care in manipulation. It is better to ligate first and then cut than to cut and then ligate, as is the usual custom; the approximating sutures should not be drawn too tight so as to cause death of the tissues. The operation of total gastrectomy is yet under judgment. He has experimented with the operation on dogs. Of 12 operated upon one died on the table and the others died in from three to forty-eight hours after the operation; two from sepsis and nine from hemorrhage and shock. In closing Dr. Walker advised exploratory operation in all obscure cases.

DR. W. L. RODMAN, of Philadelphia, read a paper entitled

NON-PERFORATING GASTRIC ULCER WITH AND WITHOUT HEMORRHAGE.¹

DR. TURCK, of Chicago, mentioned the spasmodic contraction of the pylorus which may occur specially with hyperchlorhria as a form of pyloric obstruction in which operation is not indicated. In gastric myesthesia medical means may fail to restore muscular power. Accumulation of mucus which decomposes and causes septic conditions may occur. The pyloric sound was mentioned as a means for more exact diagnosis. X-ray photographs were shown showing that the sound had passed through the pylorus into the intestine. The general condition of the patient is not always thought of in considering the contraindications for operation; this is the reason why many patients die four or five days after operation from such causes as renal insufficiency or auto-intoxication. The importance of skill and perfected technic on the part of the surgeon was emphasized.

DR. FENGER, of Chicago, thought that he had discovered a method to avoid the constant vomiting which often follows gastro-enterostomy, but vomiting occurred in the fourth patient operated upon by this method, and he finds himself as far from this desirable result as ever. Instead of presenting a paper on this subject, as he originally intended, he demonstrated from a series of drawings the position of the palate, epiglottis, etc., during anesthesia. In certain cases in which there is danger of suffocation from the tongue falling back he passes a silk thread around the hyoid bone with which to draw it forward, and he showed that this would give more room for breathing than any other method.

THE DIAGNOSIS AND TREATMENT OF CHOLELITHIASIS.

DR. W. J. MEANS, of Columbus, O., reported 20 cases that had come under his observation in which the diagnosis of cholelithiasis was made. He operated in 10 of these cases without any mortality. Death resulted in three of the 10 remaining cases in which operation was not performed. Gall-stones were found at the time of operation in every case but one. In four cases the affection followed typhoid fever. The importance of the following symptoms was emphasized: pain, nausea and vomiting, jaundice, clay-colored stools, high-colored urine, pruritus and tenderness over the gall-bladder. In making the diagnosis it should not be forgotten that the disease almost always occurs in patients over thirty years old. Operation in uncomplicated cases is almost free from danger and

¹ See No. 23, page 586, of the Journal.

Dr. Means believes that early operation will reduce the mortality almost as much as early operation for appendicitis.

CHOLECYSTECTOMY WITH SPECIAL REFERENCE TO REMOVAL OF THE MUCOUS MEMBRANE OF THE GALL-BLADDER IN CERTAIN CASES AS A SUBSTITUTE.

Dr. W. J. MAYO, of Rochester, Minn., read this paper. Total removal of the gall-bladder is indicated in most cases of severe traumatic injury, gangrene, phlegmonous processes and in malignant disease. In cases of chronic suppuration or prolonged mucous discharge he recommends removal of the mucous membrane as a substitute for cholecystectomy. The operation is easily performed, it is less dangerous and the results in seven cases which he has operated upon by this method are excellent. The method of operating in cases in which the gall-bladder has been previously drained was also given.

THE IMPORTANCE OF EARLY OPERATION FOR BILIARY CALCULI.

Dr. M. H. RICHARDSON, of Boston, read this paper. He believes that gall-stones should be removed by operation as soon as the diagnosis is reasonably certain, unless some lesion of some other organ of the body makes operation more hazardous than leaving the stones. His own experience has led him more and more to favor early operation. Early operation is attended by almost no mortality; it is but little more dangerous than the operation for appendicitis in the interval. The dangerous cases are those in which cholemia is present; in these cases the danger is as great as in operating for acute appendicitis. He has had 13 deaths and about 100 recoveries following operations on the biliary passages; in but few cases was the operation undertaken early in the attack. All his operations on the common duct were successful. In one case death followed later from malignant disease of the liver. The frequency with which malignant disease of the liver follows inflammatory affections seems to favor early operation. He gave brief notes of his fatal cases. All the patients had suffered from the prolonged mechanical effects of gall-stones; in many cases operation was undertaken as a forlorn hope; in others there were severe complicating diseases; several of the patients were of an advanced age. Among conditions indicating operation are mentioned: a single attack of biliary colic in case a faceted stone appears in the stools (if the stone be smooth operation is not indicated); successive attacks of colic even if of moderate severity.

Dr. WYETH, of New York, endorsed Dr. Richardson's views entirely.

Dr. MYNTER, of Buffalo, commended Dr. Richardson for calling attention to his fatal cases; these cases are often the most instructive. He mentioned a case in which he removed 565 stones from the gall-bladder. One of his patients died from capillary hemorrhage; one died after operation on the common duct. Jaundice is not as important a symptom as some speakers would lead us to believe; it does not appear while stones remain in the gall-bladder, but only when they are being passed. Dr. Mynter considers intermittent pain and tenderness the most important symptoms, and when these are present he operates. As illustrat-

ing the difficulties of diagnosis he mentioned two cases: in one of these he operated for appendicitis and found the gall-bladder distended with stones; in the second case he operated for gall-stones and found the inflamed appendix adherent to the gall-bladder.

Dr. SENN, of Chicago, believes that in the x-rays, in the hands of experts, we have a certain means of diagnosis of gall-stones. Dr. Senn considers the removal of the mucous membrane of the gall-bladder, as suggested by Mayo, difficult to accomplish, and infected mucous membrane is likely to be left behind. He protests against the extreme views that had been presented with regard to operation in all cases of gall-stones as soon as the diagnosis is made, and believes that we should operate only in cases in which there is danger to life from the symptoms caused by stone.

Dr. GRAY, of Jersey City, reported an operation for the removal of several large stones.

Dr. MARCY, of Boston, mentioned a case in which biliary colic had recurred three years after operation, and a gall-stone was passed in the stools. He favors Dr. Richardson's views as to early operations. In doubtful cases surgeons fail in performing their duty by not operating.

Dr. DEEVER, of Philadelphia, believes that ultra-conservatism is a dangerous doctrine; late operation will not save lives. He has never yet been successful in diagnosing gall-stones by means of the x-rays. In uncomplicated cases he finds operations on the gall-passages easy.

Dr. WYMAN, of Detroit, believes that the remedial power in cholecystostomy is not generally appreciated.

Dr. RICKETTS, of Cincinnati, approves of all that Richardson said as regards early operation. The early operation is usually one of the easiest in surgery; late operation with a contracted gall-bladder is one of the most difficult.

Dr. OCHSNER, of Chicago: In every case of death mentioned the fatal result was due, not to the operation, but to the delay. Early operation is comparatively harmless, because practically extraperitoneal, and because the contents of the gall-bladder are aseptic. Symptoms referred to the stomach are among the earliest usually mentioned. Mayo's operation of the mucous membrane is theoretically difficult but practically very easy, and gives satisfactory results.

Dr. BEVAN, of Chicago, does not agree that all cases should be subjected to operation as soon as a diagnosis is made. In his dissecting-room experience he found gall-stones in 16 per cent. of all subjects, and in the post-mortem room stones are found in 25 per cent. of the patients over sixty years old, yet by no means all of these needed operation for gall-stones.

Dr. GRANT, of Louisville, considers it unwise to operate for conditions which are producing no symptoms. He has not found the x-rays of any value in diagnosis.

Dr. SUMMERS, of Omaha, Neb., advises passing the finger through the foramen of Winslow when using the Murphy button.

Dr. MEANS, in closing, stated that he had found the x-rays of no help in cases in which the presence of stone was later demonstrated at the post-mortem or at operation. He does not agree with the ultra-conservative views that were expressed, and does not believe that stones exist any considerable length of time without producing symptoms.

Dr. MAYO stated that he did not advocate operation in two stages, as some had understood him, but removes the mucous membrane from the bladder in cases in which cholecystotomy has failed to cure.

Dr. RICHARDSON believes that there is too great a tendency to conservatism among most practitioners; they do not bring their cases to the surgeon until too late to be benefited, and it is necessary to call attention to the need for earlier intervention.

SECOND DAY.

THE PRESENT STATUS OF THE MURPHY BUTTON,

by J. B. MURPHY, of Chicago. In Dr. Murphy's absence his paper was read by Dr. EVANS. It is now eight years since the anastomosis button was first used in operating on a human being. Murphy states that he has been so frequently misquoted and misunderstood, and the button has been so frequently improperly constructed and incorrectly used that it is time to consider the actual results which have been attained. Up to April 1, 1900, one of Murphy's assistants has collected 1,620 cases in which the button has been used, not including 111 cases collected by Murphy in 1895. The mortality has been reduced to 20 per cent., and should not be over 10 per cent. Seven hundred cases of gastro-enterostomy by Murphy's button have been collected, with a mortality of 19 per cent.; in 166 non-malignant cases there were 97.7 per cent. of recoveries. Entero-enterostomy has been performed in 750 cases, with a mortality of about 19 per cent., and in non-malignant cases it has been only 14.4 per cent. In no cases is the button of greater value than in cases of strangulation and gangrene requiring resection. Cholecystenterostomy had been performed in but 11 cases previous to the invention of the button, and it was primarily devised for use in this operation. Of late years he has used the button only in cases of irremovable obstruction, but probably it might better be used in many other cases rather than to undertake more extensive operative measures. Considering the fact that operations have been performed in all parts of the world, in many cases by unskilful operators, often in the case of patients *in extremis* and with imperfectly constructed buttons, it is strange that the results are so good as they are.

A historical review was then given of the various mechanical devices which were in use previous to the discovery of the button. Among the advantages of the use of the button which were mentioned were the fact that sutures are not needed, which shortens the time of operation, the ideal approximation which is obtained, the fact that cicatricial contraction is less likely to occur than after other methods, and that the physiologic function of the intestine is not interfered with. To use the button successfully a considerable knowledge of surgery is necessary, and most of the unfavorable results are from lack of skill of the operator. The objections to the use of the button are the danger of the opening becoming occluded, and that it may be retained for a long time. In all the cases collected but 11 cases of occlusion are reported, with only three deaths. This danger may be easily avoided by careful attention to diet. In many cases in which it has been thought that the button was not passed it has been found later not to be in the body, even in some cases in which operations were undertaken for its removal.

COLOSTOMY FOR PERMANENT FECAL FISTULA.

Dr. J. A. WYETH, of New York, described a method of operating for a thorough understanding of which the drawing that was presented would be necessary. The essential feature is the pulling up of the slack of intestine formed by the sigmoid flexure from below to the region above the point at which it is desired to form the artificial anus. This gives storage room for fecal matter, so that it may be retained for some time, and that the patient will not be troubled with incontinence of feces.

THE TREATMENT OF OBSTINATE CONSTIPATION BASED ON NEW POINTS IN THE ANATOMY AND HISTOLOGY OF THE RECTUM AND COLON.

Dr. J. R. PENNINGTON, of Chicago, discussed the anatomy of the sigmoid flexure and rectum at some length and demonstrated a large number of carefully prepared specimens and drawings illustrating the points brought out in his paper. He showed that the sigmoid flexure is not confined to the left iliac fossa, as is usually stated in text-books, but it may occupy the pelvis or extend into the right iliac fossa. The results of a series of careful histologic examinations by Dr. Evans, of the University of Illinois, of numerous specimens of the rectal valves were given. These examinations show that the valves may contain mucosa, muscular layer and serous coat, or only part of the normal intestinal wall may be present. An abnormal position of the sigmoid flexure or large rectal valves may give rise to constipation. To relieve this, Pennington has divided the valve with a knife, in one case with resulting peritonitis; he has also used the canterly and the results were not entirely satisfactory. He called attention to an instrument which he calls the valve clip, designed to cut a section out of the valve, and demonstrated a table which is a modification of one devised by Martin.

Dr. TUTTLE, of New York, mentioned five cases in which Murphy's button had not been observed to pass, but no harm had resulted. He criticised Wyeth for using the term fistula, and considers the term artificial anus more suitable to designate fistulas established by operative measures. He believes that in his method Wyeth has struck the keynote in preventing constant and uncontrollable fecal discharge. Tuttle commends Pennington's work.

Dr. FINLAYSON, of Iowa, reported a case of obstinate constipation in which he found the sigmoid flexure entirely on the right side.

Dr. MARTIN, of Cleveland, stated that six years ago he made the researches and employed the methods reported by Pennington as his original work. Nelaton in 1850 and Jacobi in 1862 called attention to the fact that the sigmoid flexure may be located on the right side. Most cases of stricture of the rectum are really hypertrophy of the rectal valve. All cases of idiopathic dilatation of the colon should be examined carefully to make certain that they do not arise from this cause. There is no danger in valvotomy if the proctoscope is used, for then we can see what we are doing.

Dr. PENNINGTON, in closing, expressed the belief that operation as proposed by Martin is dangerous.

REPAIR AFTER RESECTION OF THE INTESTINE.

Dr. W. A. EVANS, of Chicago: The fact that no cases of stricture are reported following operation, in

view of the numerous operations of the past ten years, seems good evidence that such trouble is unusual. Evans has found the amount of scar tissue that results from such operation to be unusually small; the fibres which give rise to stricture are circular, and these circular fibres are not found in the connective tissue. This is probably due to the fact that in scar tissue the fibres form in the direction of the tension. In cases operated upon some time previously it is difficult to even find the site of anastomosis. We may conclude from these studies that the dangers of stricture are not great enough to make it necessary for us to consider some other procedure as a substitute for end-to-end anastomosis.

DR. WIGGIN, of New York, in his experience has found no difficulty as to stricture following end-to-end anastomosis and he prefers this method of operating. In experiments on animals he has found it difficult to locate the site of union. He prefers to use horse-hair as a suture material, as it is elastic and prevents bad results which may result from swelling. Evans in closing stated that in a number of text-books the dangers of stricture following end-to-end anastomosis are emphasized, and this led him to make this series of investigations. The dangers are certainly not great.

APPENDICITIS; COLITIS AS AN ETIOLOGIC FACTOR;
THE QUESTION OF REMOVAL OF THE APPENDIX
IN ALL CASES OPERATED UPON.

DR. MILES S. PORTER, of Fort Wayne, Ind., mentioned a case in which appendicitis began with colitis and stated that since then he had seen a number of other cases in which the appendicitis seemed to take its origin in an inflammatory condition in the colon. He believes that a knowledge of this etiologic relation is important as to the prophylaxis of certain cases of appendicitis. In certain cases of appendicitis the patients, if subjected to excision of the appendix, will die, but if simply incision and drainage is practised they will recover. The number of cases of recurrence after incision and drainage without removal of the appendix is comparatively small.

APPENDICEAL FISTULA.

DR. J. B. DEEVER, of Philadelphia, read this paper. He considers fistula one of the most important sequels of appendicitis. Such fistulas are of two types, external and internal. External fistulas are of two kinds: those leading to abscess cavities which are only suppurating sinews and tend to spontaneous recovery, and those communicating with the lumen of the intestine in which there is fecal discharge. Internal fistulas communicate with some of the surrounding viscera. Among the causes mentioned were the cutting out of sutures, particularly in cases in which the cecum is much inflamed, the continued use of the drainage tube, and particularly a gangrenous condition in cases in which operation has been too long postponed. He believes that many cases of perinephritic abscess arise from abscess of the appendix behind the colon. He mentioned cases in which he had found appendiceal abscesses emptying into the lung, the bladder and the ureter. The most favorable internal fistulas are those which break into the ascending colon or cecum. The treatment of these cases will vary with condition of the patient. As a rule they close spontaneously; they should be kept

clean, irritation by syringing, etc., should be avoided and if they persist, operation should be performed. If an abscess cavity is present the mouth of the sinus should be opened widely, in some cases it may be scraped, and it should be packed with gauze. For the cure of internal fistula it may be necessary to open the peritoneum, and remove the appendix; in some cases resection and end-to-end suture must be performed. Great stress was laid on importance of the avoidance of fistula by early operation.

DR. SENN, of Chicago, has seen more fistulas following operation than without operation, and he does not believe in operation as a preventive of fistula. Operation in all cases as soon as a diagnosis is made is extreme, and extremes in surgery are dangerous. Ordinary expectant treatment will bring about recovery in 80 per cent. of all cases of appendicitis. The operation for fistula is usually dangerous and he is conservative about advising it in such cases in which it seems probable from the history that the fistula leads into the cecum.

DR. M. PRICE, of Philadelphia, endorses Dr. Deaver's views. In 125 operations performed as soon as the diagnosis was made he found pus in all but two cases. He advises the use of gauze instead of a tube for drainage. The statement that 80 per cent. of all cases recover without operation he believes incorrect and dangerous.

DR. DAWBARN, of New York, entirely agrees with Dr. Deaver that we cannot be too radical in dealing with the appendix. It is so generally possible to prevent fistula that when it occurs it may be usually ascribed to faulty technic. He advises the insertion of a purse-string suture about necrotic areas in the cecum which seem likely to give rise to fistulas.

DR. HAMILTON, of Columbia, believes that most fistulas will recover if a nourishing liquid diet and tonics are given together with massage and care as to cleanliness.

DR. MYNTER, of Buffalo, favors the position taken by Dr. Deaver. When pathologic conditions are present such as are found in appendicitis medical treatment can do no good. He agrees with Dr. Porter that in the case of large abscesses after the fifth day it is best simply to incise and drain. He has found periphlebitis a more important sequel of appendicitis than fistula.

DR. KEEN, of Philadelphia, called attention to the discussion on the subject of appendicitis which occurred at the meeting of the American Surgical Association thirteen months ago. Two questions were considered: Shall all cases of appendicitis be operated upon as soon as the diagnosis is made? And shall we remove the appendix in every case? Both of the questions were decided in the negative by all present, except Drs. Deaver and Hart. In 300 necropsies on patients that had died from causes other than appendicitis Dr. Hektoen found that the appendix had been at some time inflamed in 100 cases, yet these recovered and died from other causes. Each case of appendicitis should be considered by itself, and not only the condition of the patient, but the skill of the surgeon who is to operate should be considered. A surgeon who operates only once in three months should not undertake it unless absolutely demanded. As general rules may be stated that no case should pass the second attack without operation; all cases of considerable gravity should be operated upon and in most cases

the appendix should be removed. It is rare that fecal fistula does not heal spontaneously. In operating for fistula Dr. Keen usually makes the abdominal opening at one side of the fistula, excises, inverts, closes with Lembert sutures, and packs with gauze.

DR. McRAE, of Atlanta, said probably in 75 per cent. of all cases recurrence follows if the appendix is not removed. To break up adhesions in every case in which suppuration is present, as suggested by Price, he believes is dangerous. In operations during acute attacks he considers the greatest danger to be ventral hernia, and not fistula, as stated by Deaver. Most fistulas close spontaneously. Gauze drainage he prefers to use of the tube.

DR. MURPHY, of Chicago, congratulated Deaver on his successes in repairing the defective work of others and his labors to prevent such defective work. Granting that 80 per cent. of all patients with appendicitis recover without operation, the results are not as good as after early operation, for probably all but about two per cent. recover from such operations. This is a saving of 18 per cent. of lives over the conservative methods of treatment. The diagnosis is easy in every case within twenty-four hours, and there are few towns so small that good surgical skill is not available within a few hours. The mortality of early operation is probably not over one per cent. and that is from primary perforative peritonitis. Dr. Murphy has not lost a case that was operated on within the first twenty-four hours. He believes that we should refuse operation in those cases in which suppurative peritonitis is present; the responsibility for death should then rest with the physician who has allowed the patient to reach such a condition.

DR. GRAY, of Jersey City, believes in operation as soon as a diagnosis is made. Any surgeon with common sense and ordinary skill can perform the operation. He pleads for operation in cases of general peritonitis; we should eviscerate on hot towels, sponge the intestines, peel off patches of adherent lymph, wash with salt solution and drain freely in such cases. He has saved a number of patients by such treatment.

DR. HALL, of Cincinnati, believes that we should give the desperate cases a chance.

DR. BOLT, of New York, operates upon every case, if not moribund. If there is recovery from the first attack there is danger of a second attack, and danger from immediate perforation.

DR. FENGER, of Chicago, considers the question of first importance, "How shall we get the patient out of the attack alive?" This is not always best accomplished by operation. Operation in the interval is safest, hence it is best not to operate as soon as the diagnosis is made, if there seems to be a possibility of recovery from the attack. The patient is put in a hospital and carefully watched, and if the symptoms increase in severity operation is performed.

DR. ASHTON, of Philadelphia, agrees with Deaver as to the advisability of early operation; it is never possible to tell what the patient's condition will be the next day.

DR. LAPLACE, of Philadelphia, thought the mortality too high in appendicitis; every case could be saved at some stage by operation, and this is usually early in the attack. It is never possible to tell whether the infection is caused by a mild or virulent germ, and the only safety lies in early operation.

DR. OCHSNER, of Chicago, advises withholding ab-

solutely all food and cathartics, thus avoiding nearly all peristalsis, which tends to pull away the protecting omentum. If this treatment is followed abscess formation will not occur in some cases, and if it does occur it will be localized and readily successfully treated. The mortality of operations during the interval is much less than if performed during the attack.

DR. PORTER, in closing the discussion, stated that he is absolutely opposed to breaking up adhesions in case of abscess formation as suggested by Price. He does not believe that recurrent attacks follow in 75 per cent. of the cases in case the appendix is left. Murphy gave a wrong impression when he stated that he would not operate in case of septic peritonitis. We should give every man a chance for recovery, no matter how desperate the case.

DR. DEAVER, in closing, stated that he was certain of only two things in connection with the subject of appendicitis: the method of making a diagnosis, and that all cases should be operated upon as soon as a diagnosis is made.

Officers.—The officers of the Section chosen for the ensuing year were: Chairman, Dr. A. J. Ochsner, of Chicago; Secretary, Dr. Martin B. Tinker, of Philadelphia.

(To be continued.)

SECTION ON THE PRACTICE OF MEDICINE.

FIRST DAY.

The Chairman, DR. GEORGE DOCK, of Ann Arbor, delivered the Chairman's Address.¹

DR. GEORGE M. GOULD, of Philadelphia, read a paper entitled

A SYSTEM OF PERSONAL BIOLOGIC EXAMINATIONS THE CONDITION OF ADEQUATE MEDICAL AND SCIENTIFIC CONDUCT OF LIFE.

DR. C. N. B. CAMAC, of New York, read a paper entitled

HOSPITAL AND WARD CLINICAL LABORATORIES.

Rarely is any one finding in medical science the open sesame to the secrets of disease. The clinical laboratory makes no claim other than that it may add its fraction to the whole in the estimation of the changes in disease processes. The workshop of the clinical diagnostician is the sick-room, the bedside, and the ward. Those who object to the establishment of clinical laboratories do so on one of the following grounds: (1) Diagnosis is satisfactorily made without these tests; (2) the laboratories require too much space. But it is found that an area of 6x6 feet or at most 10x10 feet is ample and all that is requisite is a table and a window. Gas and running water are helps; but the alcohol lamp and the ordinary wash-bottle can be made to do; (3) the cost of establishment and maintenance is too great. Three hundred dollars will fully equip one of these ward laboratories, including a microscope with an oil-immersion lens and a cabinet for instruments and reagents. This laboratory should be kept clean on account of its proximity to the beds of the patients. Fifty dollars per year is ample to cover the running expenses; (4) the tests require too much time and are too difficult. In order to overcome this objection internes should be appoin-

¹ See No. 28, page 581, of the Journal.

ted to all hospitals, whose sole duty it should be to attend to this side of ward work. Among the advantages of this method of laboratory work may be mentioned: (1) The increase in the number of competent observers that such routine work would develop; (2) the production of accuracy in diagnosis and in treatment; (3) the accurate taking of records. Such a method may, with profit, be applied to dispensaries. In this way clinical pathology will become the link between the clinician and the pathologist.

DR. M. HOWARD FUSSELL, of Philadelphia, read a paper entitled

EXAMINATION OF THE BLOOD, ITS VALUE TO THE GENERAL PRACTITIONER.

The vast majority of physicians do not make blood examinations unless they are suggested by the consultant. In some cases the blood examination is as important and in other cases it is more important than the examination of the urine, and it is already acknowledged that an examination of the urine is necessary in every case. As a general practitioner, the author examines the blood in all obscure cases. As a result of such an examination: (1) The physician will avoid administering iron to a patient because the face is pale, since all pale people are not anemic; (2) it will be found that patients with flushed faces often have decided reduction of the hemoglobin and of the number of red blood corpuscles; (3) patients with cardiac and pulmonary symptoms are sometimes diagnosed as cases of organic disease, when a blood examination would reveal chlorosis; (4) blood examination will positively indicate the presence or absence of malaria; (5) the diagnosis between leukemia and other organic conditions, such as tuberculosis and carcinoma of the stomach, may be made; (6) the blood examination combined with the Widal test will diagnose between typhoid fever and malaria, or, possibly, show a combination of the two diseases; (7) counting the leucocytes will often give satisfactory results in clearing up obscure conditions. The physician does not need to take a microscope to the bedside of the patient; if the diluting tube is surrounded by a rubber band the blood may be preserved for a long time and the counting done at leisure.

DR. WILLIAM OSLER, of Baltimore, said that he had been impressed by the value of the ward laboratories. They are essential to the hospital and to the dispensary. The benefit of a clinical laboratory to the patient in the dispensary, where the diagnosis should be made, is inestimable.

DR. SIMON FLEXNER, of Philadelphia, read a paper entitled

DYSENTERY.

The paper treated of the results of the study of cases of dysentery made in the army hospitals in Manila during the summer of 1899. The dysentery in the tropics does not conform to a single type. It is a mistake to think that tropical dysentery is always amebic in origin. Three groups of organisms have been thought to be the cause of the disease: (1) The pyogenic cocci; (2) the bacillus coli communis, and (3) the ameba coli. Amebic dysentery is not confined to the tropics, and the status of the ameba coli in the production of the disease has undergone a change because the organism can be found in the normal stools. Tropical dysenteries occur in which the

ameba coli is not present. These cases are acute in character, lasting from six to eight days, or they may run into a chronic form. Secondary lesions, such as abscess of the lungs and liver, are rare. A bacillus was found in these cases which was not the bacillus coli communis. This organism is not found in the normal intestine and a blood serum from a patient with the acute form of the disease agglutinates a pure culture of the organism. In the early stages of the disease the organism is present in large numbers; but as the disease becomes more chronic it diminishes in number, and later may disappear entirely. The bacillus agrees with a micro-organism obtained from the stools of patients suffering from dysentery in Japan by Shiga, the bacillus dysenteriae. The lesions of the acute form of dysentery are different from those of the ordinary amebic dysentery. Small animals may be rendered immune and animals that were immunized in November last are still alive. It seems to be possible to produce a preventive serum.

DR. JOHN H. MUSSER, of Philadelphia, read a

NOTE ON TROPICAL DYSENTERY.

A soldier, age thirty-two years, had been in Puerto Rico for fifteen months, and for eight months of that time had had dysentery. The disease was characterized by colitis and proctitis, prostration and emaciation, pigmentation of irregular degree but of uniform extent. The skin presented many boils and purpura was present. The stools contained no fresh blood and but little mucus. The mouth had the appearance of a malignant case of scorbutus. There was no periodicity in the intestinal symptoms. The blood of this patient agglutinated a pure culture of the bacillus of Shiga, which was brought by Dr. Flexner from Manila. The patient died and at autopsy it was found that the anatomic changes in the intestine were very slight.

DR. WILLIAM OSLER, of Baltimore, had also seen a case in the person of a soldier from Puerto Rico. The blood of this patient also agglutinated the bacillus of Shiga. An attempt was made to agglutinate this organism with blood serum from cases of amebic dysentery without result. This seems to indicate that there are two types of dysentery. He thought that the epidemic of dysentery that is at present raging in Japan might be like those epidemics that are seen in jails and hospitals in this country occasionally.

DR. NORMAN BRIDGE, of Los Angeles, asked Dr. Flexner whether typhoid fever might not occur coincidentally with this form of dysentery. Or, if this does not occur, will the blood of the dysenteric patient agglutinate the typhoid bacillus? He had seen a patient from Cuba with symptoms like those of Dr. Musser's patient, whose blood gave a perfect Widal reaction. The blood of another patient with similar symptoms failed to give the reaction.

DR. HUNTER, of Minneapolis, had seen two cases of dysentery, in one of which the ameba coli was found and in the other of which no ameba were found. The symptoms were similar to those of Dr. Musser's patient.

DR. WOODHULL, of the United States Army, said that it was the policy of the army surgeons to return dysenteric patients to the United States as soon as possible, because they did not convalesce rapidly in the Philippines.

DR. MURPHY, of Missouri, had seen three cases of

amebic dysentery in patients who had not been away from the United States.

DR. VICTOR C. VAUGHAN, of Ann Arbor, had studied cases of dysentery bacteriologically, and had only found the bacillus coli communis, although these studies were made when technic was not as exact as at present. In the camps in the Southern States during the Spanish War there were cases of dysentery characterized by the passage of fresh blood. The number of chronic cases, however, was small. During the Santiago campaign, the dysenteric patients did not pass fresh blood. These cases were apparently benefited by strychnine hypodermically.

DR. WILSON, of Pennsylvania, had seen two cases in soldiers of the Tenth Pennsylvania Volunteers. The patients did not pass blood and did not have fever. The disease in one lasted for six months.

DR. FLEXNER said that the epidemics in jails and hospitals may be identical with the disease that he had seen in Manila. It is important that in every epidemic now, no matter how small, bacteriologic examination should be made and the agglutinating properties of the blood be studied. He offered to give cultures of the bacillus of Shiga to any one who was interested in the work. The organism looks very much like the bacillus typhosus. There is no reason why typhoid fever and dysentery might not exist at the same time. There is undoubtedly more than one kind of tropical dysentery. In the type of the disease under discussion liver complications are uncommon, while they are very common in the amebic form. The bacillus coli communis can do damage to the intestines, but it is probably not responsible for epidemics of dysentery.

DR. MÜSSER said that the cases of tropical dysentery under his care were afebrile.

DR. J. C. WILSON, of Philadelphia, read a paper entitled

SERUM THERAPY IN CROUPOUS PNEUMONIA.

Croupous pneumonia is due to infection with the pneumococcus through the respiratory tract. Toxins may enter the circulation and produce a septicemia. The sera produced up to the present are anti-infectious, although it is hoped by Dr. Macfarland that in time a serum will be found that will benefit the symptoms. In the German Hospital, in Philadelphia, the antipneumococcal serum was used in 18 cases of croupous pneumonia, but it was not used to the exclusion of other treatment. The injections were given in the majority of instances immediately after admission to the ward. There were two women and 16 men in whom the treatment by injections of serum was used. They varied in age from fifteen to forty-eight years. They were admitted to the ward from the first to the sixth day of the disease. The temperatures ranged from 101.2° to 105°; the pulse-rate varied between 90 and 128. Albumin was present in 15 cases, casts in nine, and blood in one. There was leucocytosis in 13 cases. The pneumococcus was found in 15 of the cases. The serum, which varied between seven and fifty-three days in age, was given hypodermically over periods varying from six hours to eight days. Total doses of from 22 cubic centimetres to 460 cubic centimetres were given. The effects seemed to be better when a recent serum was used. After the injections the temperature became

lower, the pulse slower, the pain less, and the patient felt better. Four of the patients died. Deferescence occurred by crisis or by rapid lysis. The duration of the attack did not seem to be lessened or the defervescence hastened. In a series of 20 cases treated at the Pennsylvania Hospital at the same time without serum four died.

DR. A. O. J. KELLY, of Philadelphia, reported the case of a man, an alcoholic, age thirty-five years, who was admitted on the fourth day of an attack of pneumonia of the right lower lobe. On the day after admission the left lower lobe became consolidated, and 20 cubic centimetres of antipneumonic serum were given every three hours for seven doses. The leucocytes were at first diminished, but later increased. The autopsy confirmed the clinical findings. The serum was of no avail in this case.

DR. ROCHESTER, of Buffalo, gave serum from a blister on a patient that was convalescent from pneumonia to a patient ill with the disease. There was improvement for twenty-four hours. He thinks that the evidence points to the future development of a therapeutic agent of value.

DR. NEWTON, of Montclair, N. J., asked for the details of preparation of the serum.

DR. JOSEPH MACFARLAND, of Philadelphia, said that he regretted that up to the present time there is no method of measuring the strength of the serum. The serum is prepared by administering live cultures of the pneumococcus to horses. The organism is difficult to grow, and the measure of the toxin is not accurate. The organism is kept virulent by growing it alternately on artificial culture media and in the rabbit. The nature of the serum is uncertain; it may be antitoxic or it may be antimicrobial, possibly the latter. It is probable that the serum may be used for other micro-organisms than the pneumococcus. He believes that the use of serum from convalescents is unreliable. It is possible that the serum should be injected into the blood-vessels in order to produce the desired result.

DR. W. BLAIR STEWART, of Atlantic City, N. J., read a paper entitled

THE INFLUENCE OF SEA-AIR AND SEA-WATER ON DISEASE.

The purest air is on the sea. The presence of iodine is doubtful, but ozone is surely present. Atlantic City is on an island of pure sand, five miles from the mainland and twenty miles from tidewater. The Gulf Stream makes a difference of from 10° to 20° in the temperature as compared with other places in the country. The great effects of the air are seen on the nervous system and on the digestion. The author spoke of the class of patients that are benefited by residence in such a place. Salt-water baths are in reality medicated baths and should only be used in an intelligent manner, and, for patients, under the direction of a physician. He spoke of the physiologic effects of surf-bathing. The least exhausting form is to lie in the water between the shore and the point of breaking of the waves. A person should leave the bath when the exhilaration is at its height. Surf-baths should be taken three hours after eating, and a meal should not follow until reaction is complete. Warm salt-water baths should be taken in a warm room and should not last longer than ten minutes.

SECOND DAY.

DR. T. J. HAPPEL, of Trenton, Tenn., read a paper entitled

PSEUDO(?) OR MODIFIED(?) SMALL-POX.

The paper was based on the personal observation of 200 cases and on the inspection of 100 additional cases as county health officer. In the first cases seen none of the patients had been vaccinated. The premonitory symptoms of backache, headache and fever were present; but as soon as the eruption appeared the fever disappeared and the patients felt perfectly well except for some slight discomfort caused by the presence of the eruption, which in some of the cases was confluent in character. All patients that were exposed were vaccinated; but only two escaped the infection. Patients that were vaccinated in childhood also contracted the disease. The pustular stage of true small-pox was absent; there was no itching; there were no crusts, no scars, and no mortality. The author considered the disease not to be true small-pox.

DR. JAMES J. WALSH, of New York, called attention to the fact that Senator and his pupils believed in the existence of a disease that is intermediate between varicella and variola. He thought that these cases might correspond to such an intermediate stage.

DR. JAMES, of Missouri, had seen similar cases, but in them he was able to demonstrate the efficiency of vaccination in preventing the contraction of the infection.

DR. CHAPMAN, of Ohio, said that he had seen the disease. According to his experience, the majority of the patients were adults and the majority had been vaccinated during childhood, but not since. He does not think the disease is varicella and is of the opinion that, unless vaccination is systematically carried out, the country will experience a severe epidemic of small-pox.

DR. CORLETT, of Ohio, believes that chicken-pox and small-pox are distinct diseases and that there is no intermediate stage.

DR. WOODWORTH, of Ohio, said that vaccination protected in the cases seen by him. He called attention to the fact that cases of small-pox following vaccination often resemble varicella.

DR. STEWART, of Philadelphia, said that he considered that the cases reported by Dr. Happel were not cases of small-pox, nor were they cases of chicken-pox; but that they should be classed as some form of vesicular exanthem.

DR. HAPPEL said in closing that none of the cases presented the typical appearance of small-pox. He wished to go on record as a thorough believer in the efficiency of vaccination as a preventive measure against small-pox.

DR. EUGENE WADDIN, of the United States Marine-Hospital Service, read a paper on

YELLOW FEVER, ITS NATURE AND CAUSES.

He believes that the bacillus icteroides is the cause of yellow fever. The infection takes place through the respiratory tract and secondary infection may then soon arise. The toxin produced by the growth of the bacillus has a marked potency and a preventive serum is probably possible. The bacillus icteroides was present in 85.7 per cent. of autopsy cases. The bacillus produced the disease in the lower animals.

The bacillus X of Sternberg and the bacillus icteroides are distinct micro-organisms; the former being, probably, a member of the colon group. The domestic animals may be a factor in the spread of the disease, since it has been carried spontaneously from inoculated to non-inoculated animals. The bacillus icteroides is an artificially pathogenic organism; it is profoundly influenced by temperatures at or below the frost-mark, and at such temperatures loses its toxic, septic and specific properties. This explains the cessation of the disease on the appearance of frost. The disease is air-borne, it first attacks the respiratory tract and the resulting intoxication produces the first symptoms. The organism may then pass into the circulation and develop its septicity. The fulminating cases are sterile because the bacillus has not passed into the blood. The guinea-pig is resistant to the infection, but other rodents, particularly rats, are susceptible. These animals may be active in the propagation of the disease.

DR. FLEXNER, of Philadelphia, said that while the facts expressed in the paper seem to be well authenticated, before they can be accepted as undoubted they must be confirmed by future observations. The propagation of the disease by the lower animals is at present merely a hypothesis. Animal experiments do not actually reproduce the normal conditions pertaining to an infectious disease, because the animals are overwhelmed by huge doses of the organisms. The effect of the natural method of spread of the disease should be studied on the lower animals.

DR. WADDIN said that in his work the animals had been infected by the insufflation of lycopodium powder containing small quantities of bouillon culture of the organism, so that the conditions were as near normal as possible. Animals in an adjoining room to the one in which the insufflation experiments had been made took the infection and died, the organisms having undoubtedly reached them through the air. In answer to Dr. Gerry, of Boston, he said that one attack of yellow fever does not necessarily protect against a second attack of the disease. Undoubted instances of second attacks of yellow fever are on record.

DR. WILLIAM OSLER, of Baltimore, offered a resolution of regret for the death of Dr. James T. Whitaker, of Cincinnati, which was adopted.

The following papers were read by title: "Prolonged Fevers of Obscure Origin," Dr. Robert B. Preble, of Chicago; "Some Interesting Cases of Infectious Diseases," Dr. DeLancey Rochester, of Buffalo, N. Y.; "Certain Clinical Features of Influenza Recently Epidemic," Dr. H. S. Anders, of Philadelphia; "Influenza with Four Distinct Pneumonic Attacks Accompanied by Otitis Media Purulenta, Cerebral Hyperemia, Colitis, Marasmus, Recovery," Dr. Julius Ullman, of Buffalo, N. Y.; "Observations on Direct Antiseptic Treatment of Infectious Diseases," Dr. C. am Ende, of New York City.

THIRD DAY.

A paper by DR. JESSE W. LAZEAR, of the United States Army, entitled

PATHOLOGY OF MALARIAL FEVERS; STRUCTURE OF THE PARASITES AND CHANGES IN THE TISSUES,

was read by the Secretary, DR. FUTCHER. The author described the method of making cover-slip

preparations of the blood for the study of the malarial organisms. He then proceeded to describe the microscopic appearances of the tertian, quartan, and estivo-autumnal parasites throughout their cycles of development. In the latter type of organism there is a sexual development; the male form is furnished with a flagellum, while the female form is devoid of any such appendage. Observers have seen the male form penetrate the female parasite.

DR. W. S. THAYER, of Baltimore, Md., read a paper entitled

ETIOLOGY OF MALARIA WITH SPECIAL REFERENCE TO MOSQUITOES.

The author read a summary of the recent work dealing with the mosquito as an agent in the transmission of malaria. This work shows that the mosquito is able to remove the parasite from the human body, that the parasites develop by sexual methods in the stomach wall of this host, that thence, passing into the venomosalivary gland, the parasite, in the form of sporozoids, may be inoculated into uninfected individuals and produce the disease. These results have been confirmed by the author and his associates in Baltimore. The parasite undergoes an asexual cycle of development in the human body and a sexual cycle in the body of the mosquito of the genus anopheles. The author thinks that the investigations will finally show that the mosquito bites are the only means by which the disease can be transmitted. Investigations seem to show that mosquitoes are always present in a malarial district, or else the cases occurring in such a district are imported. Further, the observations seem to show that the mosquito acquires the parasite only from man. The early spring cases are all relapses, which decrease in number in June, and the new cases begin in July, when the anopheles begin to bite. Prophylaxis requires that patients be isolated under mosquito netting and that the mosquito larvæ be killed.

DR. L. O. HOWARD, of the United States Department of Agriculture, gave a lantern demonstration of

STRUCTURAL AND OTHER DIFFERENCES BETWEEN THE SEVERAL MOSQUITOES OF NORTH AMERICA.

The slides shown illustrated the life history of the genus culex, the life history of the genus anopheles and the biologic difference between the two genera. The eggs of the culex are deposited in a raft-shaped clump, while those of the anopheles are distinct. The larva of anopheles is dark, while that of culex is light. The respiratory siphon of the anopheles is short, while that of culex is long. The larva of culex has a big head and a small body, while that of anopheles has a small head in proportion to the size of the body. The anopheles larva feeds at the surface of the water, while the larva of culex feeds on the bottom, coming to the top of the water periodically to breathe. The note of culex is high pitched, while that of anopheles is about four tones lower. The genera megarinus and psorofora should be investigated.

(To be continued.)

CANCER IN GERMANY. — Drs. von Leyden and Kirchner are presidents, and George Meyer secretary of a committee for collective investigation of cancer in Germany.

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THE MASSACHUSETTS MEDICAL SOCIETY.

THE one hundred and nineteenth annual meeting of the Massachusetts Medical Society has just been held. This meeting, like its predecessors, has brought together practitioners from every section of the State, who, no doubt, have imbibed certain added knowledge from contact with their fellows and from attendance at the section meetings, and more important than this, have renewed old acquaintanceship, and deepened, to a certain extent, the social relationships which, in the activity of practice, are apt to languish. For after all, while we make a bold front to present at our annual medical gatherings certain of the results of the progress of medicine, it is not to be denied that the predominating attraction is the social element, accompanied by the relaxation and professional companionship which is the just reward for a year of work. This is as it should be.

However valuable papers may be enshrined in a volume of *Proceedings*, it is not to be expected that they should awaken an extreme degree of enthusiasm on an exceedingly hot day, as days are apt to be in June, particularly when those same papers are later to be published in full. This portends no lack of scientific enthusiasm, but simply a weakness of human nature which demands recognition and respect. This general fact has been more and more realized by the Committee of Arrangements of the Massachusetts Medical Society, with the gratifying result that the programme of the meetings grows simpler year by year rather than more complex, in spite of the ever-widening range of possible subjects for discussion. For example, this year there were presented at the various sections but three general topics — pneumonia, the diseases of joints, and a discussion of uterine displacements, with but two added communications. There is not the slightest doubt that this method is a good one, and one designed to give the maximum of instruction with the minimum of intellectual effort on the part of the listeners. A few subjects discussed thoroughly and from various points of view is much to be preferred to the superficial rela-

tion of personal experiences, to which the medical meeting, without strict watchfulness, is apt to degenerate. The success of this latest meeting of the Massachusetts Medical Society and the evident interest taken in the scientific communications is sufficient proof of the correctness of our position. Dr. Wm. H. Welch's Shattuck Lecture on "Diseases Caused by *Bacillus Aërogenes Capsulatus*" was peculiarly timely because of the recent interest aroused in this subject in Boston, through the researches of Thorndike and others. The Annual Discourse, delivered by Dr. A. T. Cabot, was an able and fitting literary termination to a century of usefulness and progress.

THE DEATH-RATE OF CHICAGO.

RECENT quotations from certain statements in the monthly bulletin of the Health Commissioner of Chicago, in regard to the death-rate of that city, which have very much the usual Western flavor and can hardly be regarded as reliable, have attracted our attention. The following fallacies in the Chicago figures are worthy of notice:

(1) All death-rates depend upon two factors, the number of the population and the number of deaths occurring in such population in a given time or period. An error in either produces an error in the result. Now, the number of the population is obtained at the taking of a census and the liability of error increases greatly in proportion to the time which has elapsed since the taking of the census. In this instance eight years had elapsed since the taking of the census, and the growth of all Western cities has been exceedingly irregular in intercensal periods. Very little reliance can be placed in any local census made by the school or police or other local officials.

(2) The average age at death is not an index of sanitary conditions, but depends chiefly upon the age distribution of the population, and the fact that the average age of decedents has doubled in Chicago is not necessarily an indication of increased length of life. To illustrate: The average age at death in a certain infant asylum is two years and six months; that of a neighboring old ladies' home is seventy-five years. We are not, therefore, to infer that the health of the old ladies' home is thirty times as good as that of the infant asylum. This, to be sure, is an exaggerated instance, but the illustration applies equally well to cities and towns. In the two towns of Yarmouth and Winthrop in Massachusetts, each situated in healthy locations on the seacoast, the average age at death in 1885 was respectively sixty-seven years and six months, and seventeen years and four months. This cannot be interpreted as meaning that the sanitary condition of Yarmouth was fourfold better than that of Winthrop. The explanation, as in the other instance, is that Yarmouth, like most of the Cape Cod towns, has a scarcity of young children, while Winthrop has a corresponding dearth of old people. Almost any populous Western city has an unusually large proportion of young and healthy

people between the ages of fifteen and thirty years, an age at which the death-rate is very low, not over seven or eight per thousand. Hence it is that in England, when comparing death-rates, the custom has arisen of correcting them, and of referring them to a standard population, such as that of the country at large, or to that of some unusually healthy country like Sweden, which has always had a low death-rate. There is, therefore, a manifest fallacy in comparing the death-rate of Chicago with that of any foreign country, without making the proper correction due to the difference in the constitution of the population.

(3) The health commissioner has adopted an expedient which among sanitary authorities can hardly be considered as a fair method of representation, that of comparing extremes instead of means. The year 1872, as is well known, was throughout the United States the most unhealthy year of the last half century. In every large city where records were kept the death-rate was at its maximum. Almost every known infectious disease seemed to run riot in that year, while, on the other hand, 1898 was a year of unusual health, the death-rate throughout the country being exceptionally low. The only fair method of comparison would have been to compare the means of two five- or ten-year periods, as, for example, 1871 to 1875 with 1891 to 1895, or 1894 to 1898.

AMERICAN MEDICAL ASSOCIATION.

THE last meeting of this growing Association has just been held under more favorable weather conditions than are ordinarily to be expected at this time of year. The gathering was an enthusiastic one, as attested by the fact that upwards of 2,000 members were present. Corresponding with this attendance was a programme which has rarely been equalled in the number and variety of communications presented. Of quantity, therefore, there was certainly no lack, but we are inclined to feel that in these days of excessive literary zeal in medical writing a certain censorship, tending to an improvement of the quality and the arrangement of the subject matter, would not be amiss. Sporadic papers on such occasions are of comparatively small value, and serve rather as a personal advertisement than as a substantial addition to medical progress. It is to be hoped that this representative Association will make a virtue of necessity and bring its programmes in the future within reasonable limits. Science would not suffer, and the responsibilities placed upon the broad shoulders of the medical editor would be visibly lightened. We are, therefore, quite in accord with our contemporary, the *Philadelphia Medical Journal*, when it comments editorially on the recent meeting: "There was the same plethora of papers offered, again proving how necessary it is that the officers of sections should weed and choose and limit according to their judgment and conscience, and regardless of personal influences."

MEDICAL NOTES.

INTERNATIONAL MEDICAL CONGRESS.—At the request of Henry B. Jacobs, M.D., Secretary, American National Committee of the International Medical Congress, the following official statement is made: According to instructions from Dr. A. Chauffard, Secretary-General of the Thirteenth International Medical Congress, no subscriptions to the Congress will be received after the 15th of July, and the name of no subscriber will appear in the official programme whose subscription is not received before the 15th of June. The publications of the Congress will consist of seventeen volumes, one of which will be sent gratuitously to each subscriber; that is, the volume containing the papers of the section under which he has inscribed himself. The other sixteen volumes may be purchased at a price of four francs per volume, or forty-five francs for the series.

PHILIPPINE ASSOCIATION OF ACTING ASSISTANT SURGEONS, UNITED STATES ARMY.—The first annual meeting and dinner of the Philippine Association of Acting Assistant Surgeons was held in Manila, May 3d. The Association was formed April 28, 1900, on board the United States Army transport *Grant*, on which seventeen of the members of the Society came over to the Philippines to care for sick and wounded soldiers. The following were elected officers of the Association: President, H. W. Beal; Vice-President, H. Morell; Corresponding Secretary, R. M. English; Recorder, H. M. Stromberger. It is the intention of the Association to enroll as members all the acting assistant surgeons in the Philippine Islands and hold a meeting and banquet on "Dewey Day" (May 1st) every year in the future.

PRIVILEGES FOR MEMBERS OF THE INTERNATIONAL CONGRESS.—The following special privileges are to be accorded to the members of the Congress: The right to participate in the proceedings of all the sections; invitation to all festivities; entrance free of charge to the Exposition during the session of the Congress, August 2d to 9th; a badge engraved for the Congress by M. Vernon; reduction in railway and other fares; facilities for securing lodgings.

CHOLERA IN BOMBAY.—A serious epidemic of cholera is reported from the northern districts of Bombay. The sufferers from famine fall an easy prey to this disease. The Government has made a special appropriation of £1,000 for immediate cremation of the dead.

DEATHS ABROAD.—The following deaths of distinguished physicians are announced: Dr. A. Milne Edwards, Paris; Dr. Apostoli, Paris; George Viner Ellis, F.R.C.S., London.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, June 13, 1900, there were reported to the Board of Health of Boston, the following

cases of acute infectious diseases: diphtheria 61, scarlatina 34, measles 89, typhoid fever 16.

MORTALITY REPORT OF BOSTON.—The number of deaths reported to the Board of Health for the week ending June 9th was 215, as against 208 the corresponding week last year, showing an increase of 7 deaths, and making the death-rate for the week 20.2. The deaths from consumption were 25; pneumonia, 27; whooping cough, 1; heart disease, 22; bronchitis, 6; marasmus, 7. There were 8 deaths from violent causes. The number of children who died under one year was 35; under five years, 67; persons more than sixty years, 40; deaths in public institutions, 63.

APPOINTMENTS AT THE HARVARD MEDICAL SCHOOL.—Franz Pfaff, M.D., has been appointed assistant professor of pharmacology and therapeutics for five years. Dr. F. H. Davenport has been reappointed assistant professor of gynecology.

PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY.—Dr. F. W. Draper, of Boston, has been elected President of the Massachusetts Medical Society.

DIPHTHERIA IN WATERTOWN, MASS.—Several new cases have recently been reported to the Watertown Board of Health.

NEW YORK.

STATISTICS OF WOUNDS IN WAR.—In a paper read by Capt. W. C. Borden, U. S. A., on the last day of the recent meeting of the Association of Military Surgeons, on "The Mortality of War Wounds, with Tentative Conclusions Relative to Modern Weapons and Surgical Methods," the following statistics were given: In the American Civil War out of every 100 persons struck by a bullet 15 per cent. died on the field of battle; in the Russo-Turkish War, 21 per cent.; in the Spanish-American War, 17 per cent. Of the 100, 40 received wounds of the head, 29 wounds of the abdomen, 26 wounds of the chest, and three wounds of the extremities. Of the men wounded and carried from the field of battle during the Civil War, 10.9 per cent. died; in the Spanish-American War, seven per cent.; in the Boer War, four and a half per cent.; in the Philippine War, six per cent. Having given the statistics of wounds in different parts of the body in the several wars mentioned, Dr. Borden stated that the data he had collected showed that so far as the modern armament in death-dealing weapons is concerned, the modern weapon seems to be as destructive as those of earlier years, as regards wounds in the head, chest and abdomen, on the field of battle. The fact that there was a smaller percentage of deaths from wounds in other portions of the body showed the improvement in surgery and the care of the wounded. In the Boer War two-thirds of the British soldiers who were wounded and attended in the hospitals were able to return to the field. The reason for this was not so much the lessening of the destructive power of the rifle as the great progress made in surgery and hospital care.

DESTRUCTION OF GARBAGE.—Capt. F. M. Gibson, Deputy Commissioner of Street Cleaning, has advertised for proposals for the erection of a plant, or plants, for the destruction of the city garbage, to replace the works on Barren Island, which, under an act passed by the last Legislature, must be removed within a year. Among those desirous to undertake the work, it is said, is the Horsfal Company, an English corporation, which cremates the garbage of Liverpool, Leeds and a number of other British cities. In the meanwhile, the department has been notified by the present contractors that they purpose testing the constitutionality of the new law.

BIOLOGICAL LABORATORY FOR VASSAR COLLEGE.—Announcement has been made of the completion of the fund of \$50,000 for the construction and equipment of a biological laboratory at Vassar College. Over a year ago a friend of the College residing in New England, whose name was not made public, offered to subscribe \$25,000 for this purpose, on condition that the additional \$25,000 required could be raised. The hope was expressed that all the money might come from New England, and it is said that the entire sum has been secured through the efforts of the Boston branch of the Vassar Alumnae.

COMMENCEMENT, MEDICAL DEPARTMENT OF CORNELL UNIVERSITY.—The annual commencement of the Medical Department of Cornell University was held at Carnegie Music Hall on June 6th. There were fifty-three graduates, twenty-one of whom were women. On the roll of honor, which comprised ten names, there was one woman. President Schurman announced that of the entire number of graduates thirty-four have already received appointments in hospitals in New York and adjoining cities. The address to the graduating class was made by the Rev. Dr. Vanderwater.

APPOINTMENTS AT THE COLLEGE OF PHYSICIANS AND SURGEONS.—At a meeting of the Trustees of Columbia University, held June 4th, the following appointments in the Medical Department (the College of Physicians and Surgeons) were announced: Dr. Frank Hartley, professor of clinical surgery and instructor in operative surgery; Dr. Francis H. Markoe, professor of clinical surgery at the New York Hospital; Dr. Bern B. Gallaudet, demonstrator of anatomy; Drs. Robert A. Budington and Nathan W. Greene, assistant demonstrators in anatomy.

REGULATIONS REGARDING TUBERCULOSIS IN NEW JERSEY.—The Board of Health of Trenton, N. J., with the backing of the State Board, has recently adopted an amendment to the Health Code, placing consumption among the contagious and infectious diseases. It provides fines and imprisonment for physicians who fail to report cases of consumption within thirty days after they are diagnosed. Hospitals are not exempted from the general provisions.

COMMENCEMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK.—At the sixty-eighth annual

commencement of the University of the City of New York, which was held at the Metropolitan Opera House on June 7th, there were thirty-eight graduates in the Medical Department (University and Bellevue Hospital and Medical College), and eight graduates in the Department of Veterinary Surgery.

COMMITTEE OF ONE HUNDRED ON INDIA FAMINE RELIEF.—A committee of one hundred representative citizens of New York, under the chairmanship of Wm. E. Dodge, has recently been formed to the end of sending relief for India famine sufferers. The committee will constantly study the conditions of the famine itself, and make every effort to choose the best method of relief.

ARMY NOTE.

INVESTIGATION OF DISEASE BY ARMY MEDICAL OFFICERS.—A board of medical officers has been appointed to meet at Camp Columbia, Quemados, Cuba, for the purpose of pursuing scientific investigations with reference to the infectious diseases prevalent on the island of Cuba. The board will act under instructions from the Surgeon-General of the Army. The detail for the board consists of Major Walter Reid, Surgeon U. S. A., and Acting Assistant Surgeons James Carroll, Aristides Agramonte and Jesse W. Lazear. It is understood that the board will chiefly devote attention to the investigation of yellow fever. Dr. Agramonte has been studying this disease in Havana for the past eighteen months, while Major Reid and Dr. Carroll, at the Army Medical Museum in Washington, have been engaged in an exhaustive study of Sanarelli's bacillus and serum, the results of which have already been made public. The work of the board will be done in the army laboratory at Quemados. As mentioned in a previous issue, the systematic investigation of disease by army medical officers in Cuba, Puerto Rico and the Philippines has already been of great value to medical science. From the organized investigations now going on, much may be expected.

Miscellany.

HORSEFLESH AS A FOOD.

In view of the fact that horseflesh is being used more and more as a food in Germany, and through force of necessity, as in the South African War, must at times be eaten in lieu of other meat, it becomes a matter of importance to determine its effects upon the body. This Professor Pflüger has done, his results being published in the *Archiv für Physiologie*, and abstracted in a recent number of the *Lancet*. The experiments went to show that the known deleterious effect of horseflesh, characterized chiefly by excessive diarrhea, is due to a toxin, probably consisting of neurin or some modification of that poisonous agent.

The paper concludes with some suggestions for cooks in beleaguered garrisons who are reduced to horseflesh as food, which, coming from the pen of one of the most distinguished living physiologists, deserve consideration. In one mode of dressing the horseflesh is converted into a pulp, and for every two pounds about three-quarters of an ounce of ox fat or mutton fat taken from the region of the kidneys is served up with a sauce of meal as a hash. Another is to cut it into collops, boil it in water, throw away the broth, and serve it with a fat sauce. Beer, wine, tea or coffee may be taken with it. A third is to convert it into a pulp, add a tenth of its weight of rice and a fortieth of its weight of fat, and cook by steaming; or, lastly, it may be beaten up with plenty of fat and eaten with an oily sauce.

Obituary.

PAUL GIBIER, M.D.

DR. PAUL GIBIER, of New York, died June 9th, from injuries inflicted by an accident. He was born in France in 1851, and was at one time a pupil of Pasteur. In 1888 he was commissioned by the French Government to make an investigation of yellow fever, in Havana and Florida, and on his way back to Paris, while in New York, conceived the idea of establishing an institute in the latter city for the treatment of hydrophobia. With this work he was closely identified until his death.

Correspondence.

PRELIMINARY REPORT ON INVESTIGATIONS IN THE BACTERIOLOGY OF SCARLET FEVER IN THE SCARLET-FEVER WARDS OF THE CHILDREN'S HOSPITAL, BERLIN.

BERLIN, May 18, 1900.

MR. EDITOR:—The work described below is according to plans I formed some eighteen months ago, at which time I lacked proper opportunities for carrying them out. Under strict aseptic precautions I have lately collected, through a canula into sterile test tubes, hydrocele fluid from a healthy child of nine months who has never had any of the contagious diseases or even been vaccinated. Specimens of this material remained sterile after a number of days at body temperature. Into this media I made inoculations from the blood of several patients in the early eruptive stage of scarlet fever, observing rigid asepsis. Cultures were similarly prepared on coagulated ascitic fluid, bouillon, agar-agar and milk. All were kept at body temperature for about thirty-six hours. Examination then showed no development in any but the hydrocele fluid, in which appeared a feeble growth of a capsulated diplococcus in pure culture. It grew thus from the blood of each case, and while probably the same organism often described in connection with scarlet fever as the diplococcus pneumoniae cruposæ, it may be but a variety of that germ. On re-inoculation of this into agar-agar, gelatine, blood serum and hydrocele fluid, a luxuriant growth now appeared in each within twenty-four hours. In the latter media the bacteria developed very rarely in anything but pairs. The ends of these oval cocci always pointed away from each other, and unstained preparations seemed to show dark granules in the protoplasm. The growths on the blood serum and agar appeared as frosty, granular, grayish-white streaks limited to the path of the inoculating needle. The stab culture in gelatine was similar and

no liquefaction attended it. Cover-slips prepared from these took the methylene blue stain irregularly. No change in reaction accompanied the growth on the media.

On investigating as to why I did not succeed in inoculating the artificial media from the patient's blood, and why the original cultures in hydrocele fluid were hindered in developing, my experiments showed a reactive power in the blood of scarlet-fever patients against this diplococcus. I found that in hanging-drop preparations from the second generation in hydrocele fluid the organisms when placed simply in normal salt solution remained scattered throughout the droplet in pairs and kept their slight motility for hours. A similar drop in salt solution to which some blood from a patient convalescent from this fever was added gave quite a different appearance after some minutes. The bacteria were then found only at the edge of the drop, had become quiet and often appeared in groups. However, when hanging-drop preparations were treated simply with blood from a child which has never had scarlet fever the cocci gave the same appearance as when only in normal salt solution.

From a culture of the streptococcus which I prepared on blood serum from the throat of one of the patients (as I did not meet with it in the several cultures from the blood) I inoculated a colony into the hydrocele fluid and also into the latter media after coagulation. No growth developed in the former and only three or four colonies in the latter, but numerous colonies of streptococci were found after I caused the diplococcus to grow on the media. From the heart blood of one of the cases which proved fatal I did not succeed in growing the diplococcus.

My experiments as to the power existing in the blood of convalescents from scarlet fever to hinder the growth of the diplococcus when already developing on media are not yet complete. The inability to gather sufficient supply of suitable hydrocele fluid while at work in the contagious wards has as yet prevented my carrying the investigation out on a more extensive scale or to definite conclusions. Up to this time I have not experimented with hydrocele fluid in the other contagious diseases, nor can I say how the germs mentioned will act on the hydrocele fluid from those children believed to be immune to scarlet fever.

I injected half a cubic centimetre of the vigorous growth in hydrocele fluid into the peritoneal cavity of a kitten and no symptoms whatever followed.

The results of my examinations thus far would seem to justify the following inferences:

- (1) The early presence of this diplococcus in the blood of many if not all scarlet-fever patients, and the absence in the blood at this time of the streptococcus.
- (2) That hydrocele fluid from a child who has not had a contagious disease may possess qualities better suited for investigating that disease than the artificial media or serum changed by heat.
- (3) That the blood of those who have been infected with this diplococcus a short time shows a reactive power against it.
- (4) That the doings of this "happy pair" seem to open the way for the serpent of streptococcus to bring evil into the Eden of childhood.

Very truly yours,

W. F. DOOLITTLE, M.D.,

of Cleveland, Ohio.

FOREIGN BODY IN THE RECTUM.

WINCHENDON, MASS., June 4, 1900.

MR. EDITOR:—A man, age sixty, recently consulted me at my office for what he termed "a little trouble with his rectum." On enquiring the nature of the trouble, he said he thought there was a "small vial" in it. He said he had inserted it about thirty-six hours previously; had consulted his doctor at home, who did not examine him but gave a cathartic. On examination I found what seemed to be a bottle of considerable size, well inside the sphincter, with the neck down. It was firmly impacted and I was

soon convinced that its removal would be a matter of difficulty. He was having a good deal of pain and the abdomen was considerably distended and tympanitic. With the assistance of Dr. Thorning, he was thoroughly anesthetized and by grasping the neck of the bottle with two pairs of heavy tooth forceps, having the jaws well guarded with compresses, after a difficult and disagreeable labor we succeeded in delivering the vial. It proved to be a round bottle, fortunately of very heavy glass, and with quite a rim at the neck which afforded an excellent hold for the forceps. It was of the following dimensions: Length five and one half inches, circumference of neck five and one fourth inches, of shoulder eight and one fourth inches, of base six and three-fourths inches.

By diligent questioning, I obtained the following scanty history. Of vigorous physique, he had always enjoyed excellent health, and had for many years been employed in a shop. Was married, and till within a year or two his relations with his wife had been pleasant, but for a year or two they had occupied separate beds, and his wife had accused him of improper relations with other women. Admitted that he was quite amorous, and that he had on one or two previous occasions introduced something into his rectum.

Very truly yours,
J. G. HENRY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 2, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.	
New York . . .	3,654,594	—	—	—	—	—	—	—	
Chicago . . .	1,619,226	—	—	—	—	—	—	—	
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—	
St. Louis . . .	623,000	—	—	—	—	—	—	—	
Boston . . .	539,416	216	77	22.08	14.26	.92	5.52	—	
Baltimore . . .	506,389	152	44	17.82	12.54	2.64	1.32	.66	
Cincinnati . . .	405,000	—	—	—	—	—	—	—	
Cleveland . . .	350,000	—	—	—	—	—	—	—	
Pittsburg . . .	305,000	—	—	—	—	—	—	—	
Washington . . .	277,000	111	33	33.33	9.00	5.40	1.80	4.50	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	59	17	27.04	27.67	4.38	1.69	—	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Charleston . . .	65,165	—	—	—	—	—	—	—	
Worcester . . .	111,732	36	18	12.62	30.47	2.77	—	2.77	
Fall River . . .	103,142	25	14	28.00	36.00	8.00	—	—	
Cambridge . . .	92,520	19	8	42.08	10.52	5.26	—	—	
Lowell . . .	90,114	28	16	17.85	14.28	3.57	—	—	
New Bedford . . .	70,511	20	4	5.00	15.00	—	—	—	
Lynn . . .	68,218	19	4	36.82	5.26	—	—	10.52	
Somerville . . .	64,394	12	3	50.00	8.33	8.33	—	8.33	
Lawrence . . .	59,072	19	10	36.82	5.26	—	—	10.52	
Springfield . . .	58,266	25	5	8.00	16.00	—	—	—	
Holyoke . . .	44,510	—	—	—	—	—	—	—	
Brockton . . .	38,759	6	3	16.66	50.00	—	—	16.66	
Salem . . .	37,723	16	7	25.00	—	6.25	—	6.25	
Malden . . .	36,421	5	1	20.00	20.00	20.00	—	—	
Chelsea . . .	34,235	11	4	18.18	—	—	—	—	
Haverhill . . .	32,651	14	2	35.70	14.28	—	—	—	
Gloucester . . .	31,426	6	—	16.66	—	16.66	—	—	
Fitchburg . . .	30,523	13	—	30.76	7.69	—	—	7.69	
Newton . . .	30,461	8	3	—	—	12.50	—	—	
Taunton . . .	28,527	9	3	22.22	11.11	11.11	—	—	
Everett . . .	28,102	6	—	16.66	16.66	—	—	—	
Quincy . . .	24,578	6	3	50.00	—	—	—	—	
Pittsfield . . .	23,421	—	—	—	—	—	—	—	
Waltham . . .	22,791	19	3	15.78	15.78	—	—	—	
North Adams . . .	21,583	13	5	15.38	23.07	—	—	—	
Chicopee . . .	18,316	—	—	—	—	—	—	—	
Medford . . .	17,190	2	2	—	—	—	—	—	
Newburyport . . .	15,036	6	1	33.33	—	—	—	—	
Melrose . . .	14,721	4	1	—	—	—	—	—	

Deaths reported 907; under five years of age 308; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 220, acute lung diseases 128, consumption 105, diphtheria and croup 27, diarrheal diseases 24, measles 12, scarlet fever 10, cerebrospinal meningitis 10, whooping-cough 9, typhoid fever 7, erysipelas 5.

From scarlet fever Boston 8, Washington, Worcester and Lawrence 1 each. From cerebrospinal meningitis Quincy and

Marlboro 2 each, Boston, Baltimore, Worcester, Cambridge, Lynn and Gloucester 1 each. From whooping-cough Boston 3, Baltimore and Salem 2 each, Washington and Providence 1 each. From typhoid fever Washington 2, Boston, Baltimore, Providence, Lawrence and Newburyport 1 each. From erysipelas Boston, Baltimore, Washington, Somerville and Lawrence 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending May 26th, the death-rate was 18.4. Deaths reported 4,098; acute diseases of the respiratory organs (London) 296, measles 127, whooping-cough 126, diphtheria 81, diarrhea 39, fever 34, scarlet fever 34, small-pox (Liverpool) 2.

The death-rates ranged from 12.3 in Croydon to 27.4 in Liverpool: Birmingham 20.1, Bradford 16.1, Cardiff 12.6, Gateshead 18.6, Hull 21.2, Leeds 22.1, London 16.4, Manchester 25.5, Nottingham 17.0, Portsmouth 16.0, Salford 23.8, Sheffield 19.4, Swansea 15.8, West Ham 13.4.

METEOROLOGICAL RECORD

For the week ending June 2d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S...27	29.98	57	66	48	65	47	56	N.W.	S.	4	8	O.	F.
M...28	30.28	49	53	45	74	38	56	N.E.	N.E.	16	3	O.	C.
T...29	30.33	58	74	42	57	42	40	W.	S.	6	10	O.	C.
W...30	30.14	68	82	55	47	51	49	W.	S.W.	8	12	C.	O.
F...1	29.92	74	87	61	64	57	62	W.	W.	12	8	C.	F.
S...2	30.01	77	86	68	52	62	57	N.W.	S.E.	8	7	O.	O.
S...3	29.83	76	86	65	67	68	68	S.W.	S.W.	14	10	O.	O.

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

SOCIETY NOTICES.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—The tenth annual meeting of this Association will be held September 25, 26 and 27, 1900, at the Academy of Medicine, New York City.

MAINE MEDICAL ASSOCIATION.—The forty-eighth annual meeting of the Association will be held in Portland, Me., June 13, 14 and 15, 1900.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the Chicago Pathological Society, from May, 1897, to June, 1899. Vol. III. 1900.

Normal Histology. By Edward K. Dunham, Ph.B., M.D., Professor of General Pathology, Bacteriology, etc. Second edition, illustrated. Philadelphia: Lea Brothers & Co. 1900.

Contributions to the Science of Medicine. Dedicated by his pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate. Baltimore: The Johns Hopkins Press. 1900.

Transactions of the New York State Medical Association for the Year 1899. Vol. XVI. Edited for the Association by M. C. O'Brien, M.D., of New York County. New York City. 1900.

Verhandlungen des Vereins für innere Medizin zu Berlin. Herausgegeben von dem Vorstande des Vereins, Jahrgang XIX, 1899-1900. Sonderabdruck aus der "Deutschen medicinischen Wochenschrift," Jahrgang, 1899-1900. Berlin. 1900.

A Manual of Obstetrics. By A. F. A. King, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in Medical Department of Columbia University, etc. Eighth edition, revised and enlarged, illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

The Management of Large Congenital Exomphalos; Infantile. The Therapy of Feminine Hernia in the Adult. On Radical or Tentative Treatment of Piles. Hemorrhage and Circulatory Disturbances in Complicated Fracture. By Thomas H. Manley, M.D., New York. Reprints. 1889-1900.

A Text-Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc. Illustrated. Eighth edition. Philadelphia and New York: Lea Brothers & Co. 1900.

Address.

REALISM IN MEDICINE.¹

BY A. T. CABOT, A.M., M.D., BOSTON,
Surgeon to the Massachusetts General Hospital.

(Concluded from No. 24, p. 618.)

I HAVE presented to you this brief and incomplete sketch of the great movement of medicine under the guidance of realism, to show how it has steadily proceeded along a path without a break, or rather the progress has been more like that of an army penetrating an enemy's country, where different columns, mutually supporting each other, advance along parallel lines, meeting success now here, now there.

Cellular pathology put us in a position to appreciate and understand the action of germs, and the work in bacteriology opened ways in which the student of the cell could make still further conquests.

I have not tried to do more than point out the grand strategy of the forward movement and the important places that have been taken. Many of the lesser achievements in this advance have, however, been essential to the success of the greater.

Physiology, physiological chemistry, pathology, bacteriology, embryology, anatomy, clinical medicine and surgery, have all, within their own fields of action kept abreast of the general movement. Men trained in science, skilled investigators, have occupied the firing line, constantly pushing forward, and as fast as they have gained new territory the practitioners of medicine have moved in like settlers and made it their own.

After this hasty review of the general course of medicine in this century, it should be of especial interest to us to study the part which America has played in promoting and in keeping step with the advances that have been made.

At the beginning of the century the main idea that an American student had in entering upon the study of medicine was to learn what he could of the care and treatment of the sick, with so much understanding of anatomy, physiology and pathology as could be made of service in his practical work. The teaching in the scientific branches of medicine was, as I have said, very meagre in this country, so that a young man, wishing to be thoroughly abreast of the times, was forced to seek instruction in the laboratories of Europe. The result of this was that a well-trained American physician had usually passed two years abroad acquainting himself with the methods of the best teachers of the world.

The lack of opportunity at home, forcing men to travel, had its partial recompense. For the young American, travelling from teacher to teacher, going for each part of his education to the place where that was best taught, learned to look at things in a broader way than would have been the case had he found all that he required in one school.

This increased breadth of view was at once reflected in the medical practice of the men so trained, and long before American physicians began to take their proper place as scientific investigators, they developed in their ranks some of the best practitioners in the world.

Many men came back from their foreign travel filled with a desire for research; but the absence of

laboratories and the need for self support stunted their aspirations in such directions. It was not until the last quarter of the century that the use of laboratories became so manifest that they began to spring up and to receive adequate support in this country. I cannot, even in so condensed a review of this movement, forbear to speak of the pioneer work done at the Johns Hopkins Hospital under the inspiring lead of our guest, Prof. William H. Welch. The wise provisions of that foundation gave the Johns Hopkins Medical Faculty the almost unique opportunity of putting their school on the right line from the start. And, thanks to the wisdom and energy of Professor Welch and his co-workers, the scientific investigation of disease at once took its proper place in that institution. Since that time the constant help that laboratory investigation gives to the clinical study of disease has appealed so strongly to the practical American mind that pathological laboratories have sprung up in every direction and are still constantly on the increase. These have been of the greatest value in raising the scientific quality of the work in many of our communities. Such laboratories have given men inclined to research opportunity for pursuing their studies, and have also enabled many clinical workers to acquire a knowledge and facility in scientific methods. This training has been of great service in their practice. They have gained a clearer understanding of morbid processes and have come to have a personal acquaintance with the germs against which they are constantly waging war. When a man thus trained speaks of a bacillus, he has in his mind a distinct picture of its appearance and its characteristics. He knows where to look for it and what effects to expect. If it is a pneumococcus he watches the serous membranes and early detects its migration to them. His horizon has become wider and his vision more acute.

With the appearance of laboratories the need of endowments for pathological and other scientific work has been brought home to our people. Practical business men see that the researches in the higher branches of medicine bear tangible and most valuable results; that by them the health of the community is improved and protected. They are thus encouraged to invest in a movement which has such evident good effects in the present and that holds forth still brighter promises for the future. Considerable sums of money have been drawn into these enterprises and have already done much good. They have, however, been but as a drop in the bucket which we wish to see filled. This work, by its interest attracts the best minds and the world should discharge its proper obligation to them and should see that they are adequately cared for.

The administration of laboratories and the prosecution of complicated investigations is expensive.

At present I see no direction in which charity to the human race can better expend itself, with full assurance of lasting good, than in assisting the prosecution of such studies, whose benefits are shared by all peoples and go down to remotest posterity.

The perfecting of a system under which the scientific investigation of disease may flourish should be the constant aim of all American physicians. The profession of this Commonwealth have already taken steps in this direction, of which mention may be here appropriate. A quarter of a century ago we had at the Harvard Medical School, a chemical laboratory, a

¹ The Annual Discourse read before the Massachusetts Medical Society, June 13, 1900.

physiological laboratory, a dissecting-room and a small pathological laboratory. Students had fairly good opportunities for the study of chemistry and anatomy, but they had no regular laboratory instruction in either physiology or pathology. Both of these important branches were taught by lectures to large classes in which each individual had but little personal contact with the professor, or with the phenomena described. The pathological instruction up to that time and till a considerably later period, was given by men who depended on clinical practice for their support and gave what time they could spare from this to their own scientific studies and to the instruction of the students.

It would take too long to describe in any detail the gradual changes by which this condition of things grew and expanded into that which exists to-day; but a statement of the present provisions for research and teaching in the Harvard School will give an idea of the rapidity with which this movement has advanced.

The physiological laboratory, with a professor, an associate professor and a greatly increased corps of teachers, is now thrown open to the students, who receive personal instruction in small classes. There is a laboratory for embryology and histology, where the development and the finer anatomy of the tissues is taught to small classes by the professor, the assistant professor and other assistants.

There is a good-sized pathological laboratory under the direction of a professor who gives his whole time to study and teaching, and he has in addition to this the control of the clinical laboratory at the City Hospital, which is under the supervision of the assistant professor.

The clinical laboratory at the Massachusetts Hospital is also available for teaching purposes, and being under the direction of one of the instructors in pathology, makes very substantial contribution to the opportunities that students have in this branch.

Surgical pathology has a special demonstrator and the curator of the anatomical museum, having control of the surgical material obtained at the Massachusetts Hospital, is able to give special instruction in it. In the new buildings now nearing completion, he will have a large room devoted to his department and will have ample accommodation for small classes in this specialty. The surgical department, too, have taken steps towards the establishment of a special laboratory in the Medical School for surgical pathology.

Even this list does not complete the recital of what the Harvard Medical School is doing for pathology, for at the Bussey Building in West Roxbury the professor of comparative pathology has his laboratory and is constantly at work on the pathological questions suggested by the diseases of animals and has done much in tracing out their connections with human diseases. The limitations of the laboratory space at his disposal prevents his accommodating students, but his own original researches are making constant valuable contributions to our knowledge of microbic diseases.

In addition to these laboratories and teachers devoted to the study of pathology, the medical school has also a large and well equipped laboratory devoted to bacteriology, and a professor with a corps of assistants devoted to the study of the life history of microorganisms. Besides the instruction and research work done there, great assistance is rendered to private

practitioners by the systematic examination of material submitted. Thus this department acts in a measure as a clinical laboratory for the profession outside of the hospitals.

A considerable enlargement of the chemical laboratory and its staff, the establishment of a laboratory for physiological chemistry under able direction, a laboratory of pharmacology and a laboratory of hygiene, with an assistant professor, who, besides his research and teaching, gives aid to practitioners by examinations made for them, complete this rehearsal of the present provisions and opportunities for scientific training.

Certainly the contrast between the conditions of twenty-five years ago and those of to-day indicates that our medical teachers are fully awake to and mindful of the demands of modern science. Indeed, despite all the recent improvements that I have imperfectly recounted, the College is, at this moment, considering a plan for the very great enlargement of the Medical School accommodations. They are driven to this by the need for still more laboratory space to meet the requirements of modern medical education.

I have selected the Harvard Medical School to serve as an illustration of the recent advances in American methods of study, because it is the institution with which we are most familiar. Similar changes have been going on in greater or less degree in all our centres of medical study, and as a result of this awakening of interest in scientific investigation and teaching, we have already reached the point where it is no longer necessary for American practitioners to go abroad to complete their training in the higher branches of medicine. Ample opportunities now exist in this country for the attainment of an education wholly up to the modern requirements of practice.

It is still wise for a man who can spare the time to travel and learn what he can of other points of view and methods of work. I am inclined to think that the time is near, if not already here, when our foreign *confrères* might learn something by coming to this country.

An acquaintance with the literature of a subject does not widen a man's field of view in the way that an acquaintance with the makers of that literature does.

To return from this digression and to continue our consideration of home matters, we find that this movement towards scientific and accurate methods is not confined to the teachers of medicine. If the time served, it would be a congenial task to say a few words of deserved praise of our boards of health.

The executives of State and city have been fortunate in selecting competent, sagacious men to guide the public in matters of sanitation. We are not surprised, therefore, to find that they have been fully alive to the forward movement in medicine, and have established laboratories for the study of sanitary questions. Here are made the many tests necessary in the selection of cases for isolation. Antitoxin is here carefully prepared for distribution, and all possible aid is given to practitioners in the application of laboratory methods to the study of their cases.

We are thus entering the twentieth century with an enthusiasm and a promise for the future which are well justified by what has already been accomplished.

We have many unfinished tasks on our hands. Important principles have been established in the nine-

teenth century the detail of which remains to be worked out.

There are many infectious diseases and others believed to be parasitic in origin, of which the microbial causes remain to be discovered.

Our knowledge of the action of microbes in the body and of their effects upon the tissues is in its infancy.

What we know of the action of the tissues in protecting themselves from the micro-organisms and their products is as nothing to what remains to be known.

Efficient autitoxic sera are as yet few, but the list is slowly growing.

These are all questions which bear directly on the successful treatment of disease. We wish, however, to aim higher than this and to learn how to prevent disease.

Our experience with small-pox and diphtheria shows that for some diseases, at least, the body may be made resistant by producing alterations in its fluids or tissues. Lister has shown us, too, how other diseases may be prevented by intercepting the microbes and preventing their entrance into the body. This is comparatively easy in surgery, where we have full control of the conditions; can we not protect the body from other infections? Our methods of disinfection of dwellings and public places are constantly improving, but they are still lamentably inadequate. Our boards of health have accomplished something by the isolation of cases of infectious disease and by the extensive use of disinfectants to cleanse the habitations of the sick. The street cars are adorned with signs warning against expectoration, in the hope of thus limiting the spread of tuberculosis, the germs of which are contained so abundantly in the sputa of those afflicted.

May we not hope that further knowledge of the life history of micro-organisms and a more widely spread habit of seeking them out may make their destruction more generally attempted and more thorough?

If every public hall and school-room could be safely and quickly disinfected during the night hours while it is empty, is there any doubt that the public health would be greatly benefited thereby? Sanitary engineering may make this possible, in which case every enlightened community will make it obligatory. Unfortunately, there is a force constantly contending against the efforts of our sanitarians and this is the very steady increase in the numbers and consequent crowding of our populations. For germs flourish in a crowd.

It is to be hoped that the efficiency of our methods of sanitation will be so greatly added to in the near future as to enable us to meet and overcome these increasing difficulties.

There is another nut that the nineteenth century leaves for the twentieth century to crack, if it can. It is the question of the cause and nature of malignant growths. With all the knowledge of them that we have gained through cellular pathology and embryology, we are still left much in the dark with regard to their causation. Bearing considerable resemblance, as some of them do, to processes that are known to have a microbial cause, it is natural that attempts should have been made to convict them of a parasitic origin. Without going into the arguments or a minute consideration of the evidence advanced, I think

that I shall be in accord with the best present opinion if I bring in a verdict of "not proven."

Diseases of this sort, especially the carcinomata, are apparently on the increase. So prevalent are they and so much to be dreaded that were it possible to choose in advance the next great medical achievement, the world's vote would probably be for the discovery of a cure for cancer.

It will then, perhaps, be interesting for you to know that provisions have been recently made in this community looking to systematic research into the cancer question, and I am sure you will be glad to hear what steps are being already taken in this direction. Last year a sum of money was put at the disposal of Harvard College for the investigation of this question. The donor, Mrs. Caroline Brewer Croft, left by will, \$100,000 for this purpose, and after deducting the exceedingly liberal legacy tax which England exacts, a still considerable sum is left for the furtherance of the wishes of the testatrix. The income of this fund, with some substantial additional gifts obtained by the professor of surgery for the same object, are now available for these researches. The investigations under the direction of a committee appointed by the corporation of the college have been put in charge of the department of surgery, and the instructor in surgical pathology has been selected to especially devote himself to a study of the pathological side of the subject. The co-operation of the laboratories of the Boston City Hospital and of the Massachusetts General Hospital has been obtained, and workers in these laboratories have been selected to devote their time to this object. All of these men are in close touch with each other and will have the control of a large amount of material.

At first it is proposed to examine the present theories of cancer production. The question of the relation of germs or parasites to these growths will receive minute and exhaustive attention. Incidental to this examination, the inoculability and infectiousness of malignant growths will be studied.

Besides this study of the pathological side of the subject, attention will be given to the general question of whether the impression that malignant growths are on the increase is well founded. Statistics are already being collected with a view to getting information upon this point as well as ascertaining the conditions of life which favor the development of these neoplasms, and it is hoped that by a long persistent effort in this direction, light may be thrown on the etiological side of the question.

Something may also be hoped from a patient investigation of remedial agents. In syphilis and in some skin affections we have new growths of tissue which are caused to disappear by the constitutional use of drugs. The effect of arsenic in so-called sarcoma of the skin, and the fact that this same drug has, in some cases, effected or seemed to effect the disappearance of a sarcoma which had invaded the lymph glands, offers some encouragement in this direction.

Such is the beginning of this enterprise. The funds are barely sufficient for a good start, but for so good an object it is to be hoped that others will be forthcoming. In the neighboring State of New York a liberal appropriation has been made by the Legislature for similar researches. So much earnest effort cannot be without avail, and it is satisfactory to us all to feel that America is lending her hand to the investiga-

tion of this burning question. Whatever comes of it we may be sure the labor will not be wasted.

Most of us here are practitioners of medicine, men so occupied in the care of the sick that but little strength or time is left for the pursuit of purely scientific studies. Are we then mere spectators of this forward movement? I do not think so; and I wish to close this rather rambling discourse by pointing out a few of the ways in which the busy profession at large may substantially assist their brethren who are devoting themselves to research.

The mere moral support of feeling that the profession are backing them up and are appreciative of their labors and quick to profit by them is of great importance to the investigators.

The intelligence of the audience has a stimulating effect upon the teacher, and if we take an active interest in this work and keep ourselves informed of the steps gained, we shall lend the encouragement of our interest to the men working in laboratories. We shall, at the same time, fit ourselves to properly judge new ideas and shall be stimulated to accurately observe and record phenomena which pass under our eyes. It must act as an incentive to the men who are working out the higher problems of medicine to feel that any hint they are able to obtain will be at once made of practical value, or will at least be fairly tested and its value determined.

A profession thus made up of men who are in the habit of applying all known scientific methods to the study of their cases and who demand that every patient shall have the advantage of as minute an investigation as is possible, will keep the scientists supplied with material for their studies and by bringing them in contact with patients will make them in a measure sharers in the emoluments of practice.

This last consideration is no small matter, for in this country where government does not support its investigators, they must be provided for in other ways. The medical colleges supply places and salaries to a certain number, but there are many men of scientific bent who are unable to follow their inclinations because they must be sure of adequate support for themselves and families. If an enlightened profession demands the services of such men, we may be sure the supply will equal the demand. The army of investigators will not lack recruits. Many a good man will be enabled to spend his life in congenial research instead of seeking his livelihood in the routine of practice, for which perhaps he is ill fitted.

Do not understand me to disparage the practice of healing the sick or to imply that any other pursuit is higher. I only wish to point out that a man loving the laboratory may if driven into general practice prove to be a square peg in a round hole.

Lastly, it is important that the profession at large, who come in close contact with the people, should keep the community informed of the importance and magnitude of scientific work. In this way only can the proper interest be aroused and necessary endowment and support be obtained.

These are a few of the many duties devolving upon us as we enter the twentieth century. We are in the middle of the stream of medical progress and the current shows no sign of slowing. Let us do our utmost to ensure that it flows on with increasing tide and that there are no back eddies or slack water on the American side.

Original Articles.

CLOSING STATEMENT FOR THE REMONSTRANTS TO THE MASSACHUSETTS HOUSE BILL NO. 917, ENTITLED "AN ACT FOR THE FURTHER PREVENTION OF CRUELTY TO ANIMALS," BEFORE THE JOINT COMMITTEE ON PROBATE AND INSOLVENCY, MARCH 15, 1900.

BY HAROLD C. ERNST, A.M., M.D., BOSTON,
Professor of Bacteriology in the Harvard Medical School; President of the Boston Society of Medical Sciences.

(Concluded from No. 24, p. 622.)

THE Committee must remember that this bill is not aimed alone at the studies of normal and abnormal processes in the physiological laboratories, but at all inoculation experiments as well, and that these may last over a series of days, weeks or sometimes months. These inoculation experiments include all studies upon the etiology (causation) of the infectious diseases, and cannot be studied in the time that an animal will survive under ether or chloroform. Upon these experiments are based practically all the advances that have been made in sanitation of the infectious diseases, much of their treatment and the great triumphs of modern surgery in the way of safe operative procedures unattended with the risks of blood-poisoning and pus formation. Perhaps the best examples of the results obtained are the disappearance of hospital gangrene, that curse of the hospitals of the Civil War, and of puerperal fever, the fear at one time of every mother in childbirth. I believe it to be true that these two infectious processes have so completely disappeared that it is now not possible to give instruction in either of them, by actual demonstration, to the students of medicine of the day. Tuberculosis, another great curse, perhaps the greatest, of civilized communities is disappearing — without question as the result of the knowledge gained in regard to its infectious nature within the past thirty-five years by direct experimentation upon animals.

The provisions of the bill are summarized as follows:

(a) "The Secretary of State shall have power to grant and revoke licenses, and (b) all places where experiments are performed shall be registered and a detailed report of every experiment shall be transmitted to the Secretary of State." The Secretary is ready to appear before you and give you his feeling in regard to this provision; its irksome nature, in bearing heavily upon the energies of those whose time may be better occupied than in clerical work, is so manifest that it seems hardly necessary to lay stress upon it.

(c) "All persons licensed to experiment upon living animals must be vouched for by competent medical authorities." The bill itself specifies that the application for license must be signed by three physicians duly licensed to practise, and actually engaged in practising medicine in the State of Massachusetts, and also by a professor of physiology, medicine, anatomy, medical jurisprudence, *materia medica* or surgery, leaving it out of the power of any professor of pathology, bacteriology or hygiene to have any voice in the procuring of licenses for the workers in his special department. I fancy that the heads of such departments as these, and of biology in general, or the many departments of that study, would protest most vigorously against this absurd discrimination.

(d) "The authorized agents of humane societies in Massachusetts shall be permitted to visit any registered place at any time and without previous notice." The bill says "of any society for the prevention of cruelty to animals in the State of Massachusetts." So far as we know, this places the power of inspection in the hands of the only two societies organized for the purpose of the prevention of cruelty to animals now existing in the State — the Massachusetts Society for the Prevention of Cruelty to Animals, and the Animal Rescue League. The president of the latter has already refused to sign the petition for this bill, and no representative of the former has appeared here in its support. If this were allowed, what sort of reports would be forthcoming? Can it be expected that they would be such as would tend to allay public suspicion, or rather reports in which the inspector would be put to his utmost endeavors to detect for his employers some sort of sensational incident, some sort of impression which could be used either in their weekly paper or in the daily press, to promote the objects of the society? There could not possibly be a more ill-advised or dangerous method of inspecting this work, and we object fundamentally to anything of the sort.

These objections would hold against the New England Antivivisection Society, but that their treasurer — the only officer we have seen — has stated that the Society is "not to prosecute, but to disseminate a knowledge on vivisection." It is hardly possible that such important matters could be put in the charge of a body that conducts its avowed work as loosely as has been shown to be the case with this one.

We are told that there is a large number of people demanding this legislation, and that there are many ready to appear in its favor. As a matter of fact, the petitioners have been represented at these hearings by their counsel, and by three witnesses only, whose testimony may be summarized about as follows:

The first witness for the bill was Herbert D. Ward, but such a witness is hardly worth attention, for how can a man be worth belief who will allow himself to make the statement which closed his testimony: "I do not consider it necessary to go into a laboratory in order to find out what is going on there?"

If this is what the petitioners want, to be allowed to judge of what goes on at any given time by what has gone on in some other place at some other time, it would hardly have been necessary for the remonstrants to have taken up the time of the Committee in listening to them.

This witness brought forward certain cases of the effects of vivisection upon the "finer feelings"; this at Cornell and at Matteawan. We have not attempted to find out the state of the case at Cornell, but if it is the same as at Matteawan, it would hardly be necessary.

The witness stated: "At Matteawan, a public school teacher dissected a cat. The animal was not under extreme anesthesia, the feelings only partly dead, and the parents of the children of that school made such a fuss that the teacher was obliged to withdraw."

One of the students at the Harvard Medical School heard this testimony given, and as he was born in Matteawan, and knew something of the place, was sufficiently interested to make some inquiries on this matter. I beg to present to you the following letters in regard to the Matteawan matter, brought forward

by this person — permit me to remind you — as an authentic instance of the effect of vivisection (the dissection of *living* animals) on the pupils:

BOSTON, MASS., March 5, 1890.

SUPERINTENDENT OF SCHOOLS, MATTEAWAN, N. Y.,

Dear Sir: — At a hearing before the Massachusetts Legislature on a bill "For the further prevention of cruelty to animals in Massachusetts," introduced by the New England Antivivisection Society, I was surprised to hear the following statements made: "At Matteawan a public school teacher dissected a cat; the animal was not under extreme anesthesia, the feelings only partly dead." The last time that I was at home I heard of this case, but if my memory serves me the cat was dead. I should be very much obliged if you will write me a brief statement of the facts.

Yours truly,

WALTER R. BRINCKERHOFF.

MATTEAWAN, N. Y., March 6, 1890.

WALTER R. BRINCKERHOFF,

Dear Sir: — Three years ago a cat was dissected before a class of High School pupils in Matteawan. The cat was *completely and thoroughly dead* before it was taken to the class-room.

Very truly,

G. R. MILLER.

BOSTON, March 8, 1890.

MR. G. R. MILLER,

Dear Sir: — Your letter about the Matteawan cat case received. Do you know of any other occurrence that could have given rise to the statements that I quoted in my last letter?

Thanking you for prompt answer to my letter, I remain

Yours truly,

WALTER R. BRINCKERHOFF.

MATTEAWAN, N. Y., March 9, 1890.

MR. WALTER R. BRINCKERHOFF,

Dear Sir: — No dissection of a cat or of any other animal has ever taken place in the schools of Matteawan, except in the one case referred to.

It has always been our custom to bring before our classes some parts or organs of animals for the inspection of the class. This is a common practice in schools. The parts usually taken before the class are those that can be commonly obtained at any meat market.

There is only one case, aside from the one cited, from which any idea such as stated in your first letter could be obtained. It was as follows: One year after the dissection in the school, the teacher of science dissected a cat at her own home and brought the vital organs before her class in school on the following day. These are the plain facts. Any other statements are either distortions or falsehoods.

Appreciating your interest in the case, and hoping to learn the results of your efforts, I remain

Very truly,

G. R. MILLER.

Following this witness, whose testimony was closed by the remarkable statement given above, that he did not need to be an eye-witness to know what was going on, came the treasurer of the New England Antivivisection Society, J. M. Greene, the only officer of the Society we have yet seen. The testimony of this witness has been shown to be inaccurate by many of the gentlemen who have appeared here to remonstrate against the proposed legislation, but I should be glad to add something to that testimony. He begins by saying that he has no personal knowledge of experimental laboratories, but goes on to say that personal evidence is impossible. This has been shown not to be the case to any properly qualified person. The wit-

ness made the same charges of cruelty in regard to the experiments on animals that have been flung about so freely in this and other antivivisection agitations. Now cruelty in law means an act inflicting severe pain and done with wilfulness and malice. I can assure the witness that the remonstrants listened with much interest to hear the specific instances of cruelty that he would support with evidence, but none were forthcoming, and perhaps the Committee will remember that when Dr. Porter asked this witness whether the experiments he referred to of Dr. Porter's were meant by him (the witness) to be specific instances of cruelty, and whether the witness so charged, the answer of the witness to this specific question was not secured. I wish to point out that such a specific answer in regard to a specific case would be a more serious matter than general statements. This witness repeated the old charge that animals are not anesthetized, which has been sufficiently answered already, and reiterates the old assertion that chloral is in no sense an anesthetic. Anesthetics and narcotics both attain the desired end, the doing away with the sensibility to pain; chloral will do this as effectively as ether, as has been stated many times.

That I have not said this first is evidenced by the following from *Anesthesia*:⁷ "I trust that I may be pardoned if I pause here for a moment to correct a misconception which does not exist among well-informed medical men, least of all among practitioners of medicine, but which plays a considerable part in antivivisection literature. I refer to the distinction there made between the use of anesthetics and that of narcotics for the purpose of rendering animals insensible to pain. So far as the point in question is involved, this distinction is ridiculous, and seems to be based upon a misunderstanding of some old physiological experiments. For prolonged experiments, it is often advantageous to place the animal in the sleep induced by morphine or chloral, instead of that of ether or chloroform. These drugs are administered in much larger doses and often in different ways than is customary in human beings. That under these circumstances the animal is rendered insensible to pain is a fact the knowledge of which might have been gained from ordinary medical experience."

The witnesses' more general statements that vivisection is of slight use, or that the medical profession should not be allowed to control it, would seem to have been sufficiently answered. Certainly in the last case,—an unscientific body of ill-informed agents are not the persons to entrust its management to. The witness's further assertions that the present laws do not cover the case, that the advance of medicine of late years is not real, that serum medication has failed, and that the study of bacteriology has done nothing have been considered by other speakers or myself.

So, too, after what has been said, it seems hardly necessary to refer again to his statements in regard to the antitoxin of diphtheria, but it would really seem to be advisable for the witness to take some other than the *Medical Brief* for his authority before making the statement that it is the carbolic acid in the diphtheria antitoxin that does the benefit, when this is a statement that he could have at any time known to be untrue so far as this State is concerned, by a

simple inquiry, which would have told him that no carbolic acid has ever been used in such antitoxin, made either by the Boston Board of Health or the State Board. Such inquiries might also have kept him from the insult offered to the State Board of Health in the implication that their efforts to secure a cheap and reliable product of this material were due to their desire to be on the side of the latest fad.

In other words, this witness takes the very easy ground that when his opponents bring forward evidence that is not to be pushed out of sight or disproved, the only answer that is to be made is a charge of false witness, which may be a temporarily happy frame of mind, but is an exceedingly dangerous one.

Finally, gentlemen of the Committee, we come to the testimony of the last *successful* witness for the supporters of the bill, A. Westcott, a professional agitator according to his own admission; one who has been for eight years doing nothing but getting up such evidence as he could on the subject of vivisection, under salary all the time; a non-resident, not a citizen of this Commonwealth or country, and not even a man with a scientific training; one who calls Charcot a brain surgeon. It was no evidence that this witness offered, but an oration that was evidently well in hand until the Committee itself felt it necessary to disturb its smooth-flowing sentences, that withal sounded strange and somewhat uncouth to our unaccustomed ears. This witness asserted that nine-tenths of the experiments were made in a spirit of "curiosity." A closer acquaintance with the definitions of the word would assure him that one of them is as follows: "The desire to see or learn something that is new, strange, or unknown;" so that after all he came nearer the truth than perhaps he intended, that the desire of all experimentation in a new field is to see or learn something new, strange, or unknown, but of value to the human race.

To such a witness it would do no good to say that anesthetics (or narcotics) are usually used in experimentation on animals, as has been here testified, nor would it be of value to refute his statement that the facts learned have no bearing in man, but it will be of value to remind the Committee that this is not the case, and that many processes are the same in man and some of the lower animals, or very similar, so that close analogies can be readily drawn by the study of these processes in animals. Does not the witness know of, or does he mean to deny, the transmission of various infectious diseases from animals to man or to each other. What about rabies, by the bite of a dog (usually); diphtheria, from pet animals; tuberculosis, in cattle; plague, by rats and other house vermin and insects, flies, etc.; anthrax (in man called malignant pustule, woolsorter's disease, and so on); glanders, in the groom from an infected horse; actinomycosis, from infected grain, and possibly meat and milk; malaria, undoubtedly carried by mosquitoes; typhoid, by flies at Chickamanga, and hog cholera, foot and mouth disease, bacillus typhi murium and the experiments in Thessaly? Of course if all these great epochal studies are to be called "nothing," then "nothing" is of value to some of us, but argument is useless.

The object of the petitioners is said by this witness to be not to retard "science" but to eliminate barbarities, so that then the experimenter may devote

⁷ Welch, p. 66.

himself to "true science," whatever they may mean by that. I would again call the attention of the witness to the definition of words, and inform him that (1) "science" means knowledge, comprehension, or understanding of facts or principles, and (2) knowledge gained by systematic observation, experiment and reasoning. I regret I cannot trust his judgment to answer the question, but perhaps the Committee will tell us what higher or truer science there is than that which benefits the human race.

I should like to bring to the attention of the Committee an editorial from the *Boston Herald* of Thursday, March 8, 1900, the authorship of which is entirely unknown to me, and from which I will quote the last paragraph: "We must take the universe as we find it. It is one in which life is constantly destroyed, doubtless for the benefit of other lives. As the highest type of the animal species, we at least need not be consciously cruel, but we should be blind to the teachings of nature and invite race destruction if we did not seek to strengthen our species by endeavoring in every way to provide for it safeguards against the ravages of the lower types of life."

I wish before closing, gentlemen, to contrast the character of the evidence brought forward, and by whom presented. On the one hand the three individuals whose testimony for the bill I have just spoken of; on the other, against the bill, the words of experts, actually engaged in the work of which they speak, of practitioners of medicine using the results of that work, of the greatest educational force this country has known, of the clergy, both from the general point of view, and from the results seen in their own daily life, and of members of the community who have experienced the benefits of the results of animal experimentation, and also knew what was being done for them. It seems to us that we are justified in our protest against this bill as unnecessary and unjust.

I thank you, gentlemen, for the courtesy you have extended to me.

(In opposition to this bill there appeared: Dr. H. P. Bowditch, professor of physiology in the Harvard Medical School; Dr. W. T. Sedgwick, professor of biology in the Massachusetts Institute of Technology; Dr. W. T. Porter, associate professor of physiology in the Harvard Medical School; Dr. Theobald Smith, professor of comparative pathology in the Harvard Medical School; Dr. W. T. Councilman, professor of pathological anatomy in the Harvard Medical School; Dr. John H. McCollom, superintendent of the South Department of the Boston City Hospital; Mr. and Mrs. Arthur Astor Carey, the Rev. A. A. Berle, A. Parker Browne, Esq., to relate personal experiences; Dr. J. C. Warren, professor of surgery in the Harvard Medical School; Dr. H. L. Burrell, assistant professor of clinical surgery in the Harvard Medical School; Dr. James J. Putnam, professor of diseases of the nervous system in the Harvard Medical School; Charles W. Eliot, President of Harvard University; William Lawrence, Bishop of Massachusetts; Professor Wilcox, of Wellesley College; Prof. J. S. Kingsley, of Tufts College.)

AN AUTOMOBILE AMBULANCE. — The new automobile ambulance of St. Vincent's Hospital, New York, the first of its kind in the city, made its first regular trip on June 13th. It cost \$3,000, and is the gift of Mr. Edward Kelly.

THE LAW OF DYING DECLARATIONS.¹

BY M. J. RUGHRICE, ESQ., BOSTON.

THE rules of evidence relating to the competency of statements of dying persons are a branch of the law with which physicians are frequently called upon to deal. A brief recital of some phases of this branch of the law, the scope of which has recently been extended by statutory enactment, is here attempted.

It is a general rule of law that statements made by third persons are not admissible in evidence, but are within the class of hearsay evidence, and are usually excluded. To the rule excluding hearsay evidence there are some exceptions; among them are dying declarations. Dying declarations are statements of material facts concerning the cause and circumstances of a homicide made by the victim, under the solemn conviction of impending death.

There are certain other declarations of dying persons which may not be admissible under the dying declaration rule, but which may be competent as part of the *res gestæ* (which are the circumstances of the transaction) on the ground of their natural, contemporaneous and explanatory connection with the main transaction. To be admissible under the latter rule, the declarations must be so nearly contemporaneous with the main fact as to be part of the *res gestæ*, but need not have been made under a conviction of impending death. On the other hand, to be admissible under the dying declaration rule, the declaration need not be part of the *res gestæ*, but must have been made in the consciousness and expectation of immediately approaching death.

Certain declarations made in the presence of the defendant are also competent for the purpose of showing defendant's response, when charged with causing the injury done to the deceased; the admissibility of this class of evidence depends upon the conduct, presence and response of the defendant. It is not necessary to the admissibility of dying declarations that the defendant should be present when they are made. Confessions, admissions and declarations are words frequently used interchangeably, but are each technical terms of distinct significance. A confession is a statement by a person of his agency or participation in a crime. An admission is an acknowledgment by a party to a suit of the truth of some incidental fact or facts. Confessions and admissions are made by parties to the indictment or suit; declarations are made by third parties.

An examination of the law of personal statements generally would involve a broad inquiry of no special interest from a medico-legal standpoint and will not here be attempted; but that branch of this law which relates to dying declarations is alone considered.

A fuller statement of the rule relating to dying declarations than the one hereinbefore given is this: Where a defendant is on trial for homicide, the declaration of the person whom he is charged with having killed, if made while *in extremis* and under the solemnity of a conviction that he was at the point of death, and relating to matters of fact concerning the homicide which passed under his own observation, may be given in evidence.

The reason for the rule excepting dying declarations from the rule against hearsay evidence is that the

¹ Read before the Massachusetts Medico-Legal Society, February 7, 1900.

solemnity of the circumstances under which such declarations are made, naturally constitutes a guarantee of their truth equal to that which is afforded by the customary oath.

The further reason for the rule is in the necessity of the case; the victim of the homicide having passed away, and as there may be no other witness to the transaction, in order that the malefactor may not go unpunished, the strongest reasons of public policy require the admission of this testimony.² It was objected that the admission of this testimony contravened the constitutional provision that the accused should be confronted by his witnesses face to face, but Chief Justice Shaw declared that dying declarations are admissible notwithstanding the Twelfth Article of the Declaration of Rights, that every subject shall have the right to meet the witnesses against him face to face, and this rule has been affirmed so often that the question is no longer open.³

In order that a dying declaration may be given in evidence the following conditions must be shown: That the declarant must have been conscious of impending death; that death must have occurred; that the statement must relate to the crime and be a description of the crime itself, and its manner of commission and of the person who committed it.

Even if the death was impending, if the declarant did not so believe, the declaration would not be competent; all hope of recovery must have been abandoned, and the declarant must be without hope or expectation of recovery.⁴

It is not necessary that declarant should be actually breathing his last; even though he lived some time, the declaration is competent if made under a sense of impending death.

It has been held that statements made by the deceased while he yet entertained hopes of recovery are admissible if they were reaffirmed by him after he lost all hope.

FORM AND MANNER OF GIVING DECLARATIONS.

The form of the declaration is immaterial; it may be made orally or in writing. It is not necessary that a declaration should be expressed in words; it may be communicated by signs. It was said by Chief Justice Shaw, in *Commonwealth v. Casey* cited above, that "If the injured party had but the action of a single finger, and with that finger pointed to the words 'yes' and 'no,' in answer to questions, in such a manner as to render it probable that she understood, and was at the same time conscious that she could not recover, then it is admissible evidence."⁵

It will be sufficient if the declaration is taken down in writing by a bystander, and the writing then read over to the deceased, who assents to its terms and affixes his signature. But it is not essential that it be taken down in writing or that it be signed, but it will be useful so to do to preserve the evidence.

If the statement is carefully drawn and is a fair recital of the declarant's statement, it is not fatal to its competency if the exact words of the account of the case are not used. The declaration is admissible even if brought out by means of questions. It is not necessary that the declarant should be sworn. Dying declarations are admissible in favor of the accused as

well as in favor of the Commonwealth.⁵ But in each case the declarant must be the person who was the victim of the homicide.

CASES IN WHICH DYING DECLARATIONS ARE ADMISSIBLE.

They are admissible only in cases of homicide, and in such additional cases as have been provided for by statute.⁶ By statute, abortion cases have been included.⁷ Dying declarations are admissible only where the death of the declarant is the subject of the inquiry; they are not admissible to prove any other death. On an indictment for murder it is not competent to introduce the statements of another person that he killed the deceased.⁸ Defendant in a case tried in New York offered to introduce a letter which might be regarded as containing a confession of another person that he had committed the murder; the evidence was excluded.⁹

Where three persons are jointly indicted for murder, and one of them is tried separately, it is not competent for him to give in evidence a conversation between the other two when they were alone, inculcating themselves, and exculpating him from all participation in the crime.¹⁰

On an indictment for an assault with intent to murder, it was held that although the accused might exculpate himself by showing that another was guilty, yet this rule goes no farther in favor of the accused than to allow him to show another's guilt by some appropriate evidence directly connecting that person with the *corpus delicti*. Therefore mere disconnected threats and declarations of third persons are inadmissible.¹¹

Where the defence of a criminal charge is that a third person committed the offence, the confession of such third person, made after the offence and not part of the *res gestæ* is not admissible in evidence.¹²

The testimony of the declarant may be discredited as that of a witness taking the witness stand and testifying. It may be shown that the declarant was not mentally capable of making a statement, that his reputation for truth was bad. The statement of the dying person must be of matter competent; it must not be merely an expression of opinion, it must be a statement of facts which could be testified to if the declarant lived and was a witness at the trial.

It is competent for the defendant to introduce testimony to show that the deceased has made contradictory statements, and it is competent for the government to introduce testimony corroborative of the dying declaration.

In passing upon the weight to be given to dying declarations the jury have a right to consider all the circumstances under which it was made, and all the conditions by which the dying person was surrounded, and the state of mind of declarant, as shown by all that was said and done. Conduct, deportment, condition, all should be noted by the person who is to be a witness. Declarant's conduct in saying farewell to his relatives, in making such provision as is made by persons about to die; if the declarant is a Catholic, if

⁵ *Commonwealth v. Bishop*, 165 Mass., 148.

⁶ *Commonwealth v. Thompson*, 159 Mass., 56.

⁷ Statute of 1889, chapter 100, Laws of Massachusetts.

⁸ Wharton on Homicide, Section 603.

⁹ *Greenfield v. People*, 85 New York, 75.

¹⁰ *United States v. Douglas et al.*, 2 Blatchford, 207.

¹¹ *State v. Baudet*, 53 Ct., 536; *West v. State*, 76 Ala.

¹² *Peck v. State*, 86 Tennessee, 259.

² *Commonwealth v. Casey*, 11 Cushing, 421.

³ *Commonwealth v. Casey*, 12 Cushing, 246.

⁴ *Commonwealth v. Bishop*, 165 Mass., 148.

he receives extremeunction, this is of importance as indicating the state of mind. It will be found a most useful practical rule in these cases first to ascertain the state of mind of the dying person, and after that an expression by him that he has no hope of recovery, then to listen to a recital of the story of the crime.

It is because of a failure to proceed in this way that physicians frequently obtain an account of a crime which cannot be used in evidence, and it is more often because of inadvertence than want of knowledge; but the result is equally disastrous so far as a successful prosecution is concerned. Particularly is this true in abortion cases, in many of which, apart from the evidence obtained at the autopsy, there is no testimony save the dying statement of the person operated upon, which by reason of the carelessness or ignorance of the person hearing the statement is worthless as evidence.

Another form of declaration of deceased persons made competent evidence by a recent statute which will be likely to call physicians into court to some extent hereafter is the law passed in 1898, Chapter 535 of Massachusetts Laws; this will be used in civil cases only; it is entitled, "An Act Relative to the Declarations of Deceased Persons." It reads: "No declaration of a deceased person shall be excluded as evidence on the ground of its being hearsay, if it appears to the satisfaction of the judge to have been made in good faith before the beginning of the suit and upon the personal knowledge of the declarant."

In closing this paper it is proper, perhaps, to say that in speaking on the occasional failure of some person to comply with the exact legal requirement of the particular situation, it is with no desire to criticise, but on the contrary with a full recognition of the aid received from physicians and also of the fact that in most instances every requirement of the rules of evidence is complied with. The abortionist, the poisoner and the murderer would often have very little to fear from the best efforts of lawyers seeking to prevent crime were it not for the skill, the watchfulness and the fearlessness of the trained minds which trace the evidence of subtle poison or the course of the murderer's bullet. Without this assistance, in many instances the law would be helpless, and the fact that detection is made certain by the attainments of these scientific men restrains the criminal by bringing close to him the certainty of detection.

A CASE OF EXTRA-UTERINE PREGNANCY.¹

BY FRANK HOLYOKE, M.D., HOLYOKE, MASS.

ON December 5th, at 2 A. M., I was summoned from police headquarters to view the dead body of a woman who, though unmarried, called herself Mrs. Eugene S., of Boston. She had been visiting a friend in Holyoke for the previous three days. Her history and habits for the past sixteen years had not been a credit to her sex. The friend whom she was visiting stated that the deceased had visited her on the 6th of last July and again on the 15th of September, on each occasion complaining of considerable abdominal pain. On this her last visit, she reached her friend's house December 1st, at 11.20 P. M. On the second day she went out in the morning and did not return until

evening; on the third she lay down most of the day, and on the fourth she went out after dinner and came back at 4 P. M., complaining of terribly severe pain in the belly. At 8 o'clock she began to grow weak, very restless and pale, calling for water continually. She was conscious until near the end; refusing to see the priest or physician. She died at 1.15 A. M., three-quarters of an hour before I viewed the body. The body was still warm. There was at this time no rigor mortis.

On making a vaginal examination I was unable to reach the os, but through the anterior vaginal wall, which protruded forcibly into the vagina, I could very readily feel ballottement of a floating body of a size which would indicate that she was at least five months pregnant. The posterior cul-de-sac bulged prominently as though filled with fluid. There was no trace of blood in the vagina nor history of hemorrhage. Through the very thick abdominal wall a tumor could be felt rising from the pelvic cavity as high as the umbilicus.

The body was removed to an undertaker's ware-room, where, nine hours and a quarter after death, the autopsy was made. The body was that of a woman thirty-six years of age, weighing about one hundred and sixty pounds; the skin surface was pale; there was marked absence of livid spots; the belly was much distended. The abdominal walls were very fatty. Large, black, tarry clots covered the omentum, and the abdominal cavity was filled with clots and serum. Beneath the omentum there was found what looked, at first sight, like a large, ruptured ovarian cyst with a very vascular wall, to which the omentum and intestines were extensively and firmly adherent. This cyst lay between the folds of the right broad ligament. It reached as high as the umbilicus. The cyst wall was ruptured in the upper anterior part.

The uterus was pressed high up out of the pelvic cavity to the left, which accounts for my inability to find the os by vaginal examination before the autopsy. This abnormal position of the uterus was produced by the combined pressure of extravasated blood in the posterior cul-de-sac and the forcible bulging of the tumor anteriorly. I doubt if the uterus was so hard to reach prior to the rupture. The uterus was six inches long, the cervix softened and filled with mucus. The body of the uterus was soft and thickened proportionately to its size, though the enlargement was more in the long axis. The lining of the uterus was softened and very pale.

The tumor was ruptured at the site of the placenta. In breaking up adhesions the sac wall tore readily, showing, beneath, the amnion, unbroken and adherent throughout to its covering, which was composed of the anterior and posterior layers of the broad ligament; the pregnancy being tubal in origin, and primary rupture having occurred in the early months. The amnion contained a six months fetus, lying transversely with its breech toward the right ilium.

I could find no hematoma or other evidence of earlier hemorrhage, though such probably took place to some degree at the time of the primary rupture of the tube into the broad ligament; in such a case the hemorrhage is usually less than when it occurs in the abdominal cavity, and the fetus is more likely to live and to continue developing until destroyed by secondary hemorrhage into the placenta, or into the general peritoneal cavity by a secondary rupture of the sac.

¹ Read before the Massachusetts Medico-Legal Society, February 7, 1900.

The pelvis of the right kidney was very much distended, as was also the ureter, and this was caused by pressure of the tumor and its firm adhesions. The lungs were perfectly healthy. The gall-bladder contained one calculus. All other organs of the body showed a tendency to fatty degeneration.

She had been treated last September for what was pronounced as rheumatism in the right buttock and thigh, which, however, was probably a mistaken diagnosis, as her regular physician tells me that she had never suffered with rheumatism before. But many of these cases of extra-uterine pregnancy complain of intense pain following along the course of the sacral-plexus distribution.

With apology, I add to my report of this case a few notes from some of the latest literature on the subject, which, being of interest to me, will, I hope, not weary my listeners; for, with the exception of appendicitis, nothing seems to have interested the surgeon and gynecologist more than this subject during the past few years; and while they are discussing the treatment and proper time for operation it behooves us to consider the subject from its medico-legal side, if in a hasty review of a few of the peculiar anomalies which interest us, we can find some facts or theories to work from which may increase the importance of this subject in forensic medicine.

Most writers believe that it has been proved that the normal place of impregnation is in the tube. How much, then, may we be helped by a review of the supposed causes of the occurrence of tubal pregnancy? Some authors think that the larger percentage of these cases occurs among the lower classes, attributed chiefly to their malnutrition; while others believe that the hard work or straining at heavy lifting is a chief cause of arresting the ovum in the Fallopian tube. But we read that other possible causes are fright or shock; and that catarrhal or other inflammatory diseases of the tube, or any diminution of its lining epithelium, or any mechanical obstruction in the nature of new growths within the tube, or pressure from abdominal or pelvic tumors, have also been demonstrated as causes of the arrest of the ovum in the tube.

Dr. T. A. Stoddard,² however, presents the history of a few cases to illustrate what he considers a plausible theory, that the large majority of cases of tubal pregnancy, if not all, are impregnated just prior to a menstrual period.

It has been considered that, as a rule, tubal pregnancy follows a sterility of some years, but to this rule there are many exceptions. It occurs both in multiparæ and in those who have never given birth, and with many complications.

We find, for example, cases of tubal pregnancy occurring two or three times in the same individual. Tubal twin gestation has also been reported. A number of cases have been collected of ovarian or tubal pregnancy together with normal uterine pregnancy; "the mother, in one case, being delivered at full term of two healthy, well-developed children."³

In fact, extra-uterine fetation carried to maturity is not exceptional, and laparotomies performed near the end of gestation with living extra-uterine child are no longer rare, but "the fruit is not only short-lived but deficient in development,"⁴ both physical and mental."

I would say that if our old and beloved instructor in anatomy were among us, Dr. Oliver Wendell Holmes, he might explain a reason for this deficient development of these record-breakers of our genealogical tree, for I well remember in one of his lectures, in referring to the calibre of the Fallopian tube, he straightened himself up to his full height, which was indeed majestic, when he spoke with emphasis, and looking very seriously at the class said: "Just here, gentlemen, I want you to understand that not one of you is any better than I am, for we have all passed through the sixteenth of an inch."

The diagnosis is often very difficult, but has been made before operation as early as the second week, although for a diagnosis to be made before the fourth or fifth week is very unusual, even for the most expert gynecologist. Primary rupture occurs more often within the first three months, most frequently in the second and third. However, it may take place in any month.

Cessation of menstruation is not always a symptom of extra-uterine pregnancy; but the menstrual irregularities may induce us to suspect the possibility of its existence. In case of rupture and the throwing off of the decidua from the uterus, we have symptoms which closely resemble a miscarriage. It is advisable that the physician examine the patient with the possibility of finding a tubal pregnancy. In a case of hematocele this also becomes our duty. Hemorrhage may occur by rupture of distended vessels upon the surface of the sac.

This completes the few points which occur to me as of special interest to the medical examiner in connection with a report of the specimen. But I ask myself of what immediate value, medico-legally, is the autopsy of a case where the history and view, together with external and vaginal examination, all point to rupture of an ectopic sac, unless we may thereby help to solve some question connected with the administration of justice? May we not expect to discover approximately at what time she conceived? Can we not help to prove or disprove an attempted abortion? Or may we not be the means of freeing a fellow-practitioner from suspicion of malpractice, as did Dr. Flavian Krug in an interesting case where the physician in charge was believed to have given poison by mistake; the death of the patient from rupture of the sac unfortunately following his hypodermic almost instantly?

Such and possibly other questions may arise in a given case. But the most valuable notes on this specimen you will now have the pleasure of listening to from Dr. F. W. Whitney, who has carefully examined and prepared it for the Warren Museum, as a peculiarly interesting addition to the study of this subject.

ANATOMICAL REPORT BY DR. W. F. WHITNEY.

The specimen consists of the uterus and adnexa. The uterus is enlarged, the extreme length 14 centimetres. The wall is thickened, the cervical portion measures one centimetre, the fundus measures three and a half centimetres, and the breadth of the fundus is eight centimetres. The interior of the uterus is lined with a soft, slightly shaggy and irregular membrane varying in thickness from two to four millimetres and was somewhat folded. The cervix is dilated and filled with tough mucus, the glands about the orifice being large and distended with the same material.

¹ American Gynecological and Obstetrical Journal, January, 1897.

² H. Ludwig: Wien. klin. Wochenschr., July 2, 1896.

³ L. E. Frankenthal: American Gynecological and Obstetrical Journal, September, 1896.

On the left side the ovary and tube are normal. On the right side the tube is normal for a distance of a few centimetres and then is lost on the surface of a sac 21½ centimetres in diameter.

There are no adhesions between the uterus and the tumor, which is cystic in character and lies between the folds of the broad ligament. On the upper part the covering is more or less torn and reveals a shaggy mass which is divided into two parts—one measuring about seven centimetres, in which is a considerable hemorrhage; and the other about five centimetres in diameter, which is pale and bloodless. This shaggy coat is partly lifted up and reveals a fetus of apparently about the sixth month, lying in an unruptured amniotic sac. The fluid surrounding the fetus is of a dark bluish-red color. No ovary could be detected on this side.

The diagnosis is a retroperitoneal pregnancy originating in the tube, and apparently about the sixth month. A decidua was present in the uterus.

THE MARKS PRODUCED BY PISTOL SHOTS.¹

BY G. DE N. HOUGH, M.D., NEW BEDFORD, MASS.

THE object of this research was to ascertain what inferences could be drawn as to calibre of weapon and distance from which it had been fired from the marks produced on the skin or clothing.

The material used was as follows: One .22-calibre revolver of unknown make capable of using either long or short cartridges. With this I used Winchester Co.'s .22 short cartridge containing 3 grains of powder and 30 grains of bullet; the same make smokeless cartridge containing 1½ grains powder and 30 grains bullet; the Union Metallic Cartridge Co.'s .22 short and .22 long cartridge whose exact contents of powder and bullet I was unable to learn. All .22 cartridges are rim fire, and it is not probable that the Union Co.'s differs much in charge from the Winchester's. Judging from the mark, however, the former uses a coarser grained powder. In .32 calibre I had several pistols: (1) A Young America, double action, centre fire, with a 2-inch barrel firing a short .32 U. M. C. Co.'s cartridge with 10 grains of powder and 88 grains of bullet; (2) Hopkins & Allen's Mfg. Co.'s Dictator, single action, rim fire, 3-inch barrel, with a Winchester .32 short cartridge, containing 9 grains of powder and 82 grains of bullet; (3) Hopkins & Allen Co.'s X. L., double action, rim fire, 3-inch barrel, with Winchester .32 short, containing 9 grains of powder and 82 grains of bullet, and U. M. C. Co.'s .32 long, containing probably 13 grains of powder and 90 grains of bullet (this is what their long centre fire, .32 and W. Co.'s long rim fire .32 contain); (4) Iver-Johnson Arms & Cycle Works, double action, tip up, automatic ejector, centre fire, 3-inch barrel, with U. M. C. Co.'s .32 short, containing 10 grains of powder and 88 grains of bullet, and also with the U. M. C. Co.'s .32 short smokeless, containing about 4 grains of powder and 90 grains of bullet. In .38 calibre I had: (1) American Bull-dog, double action centre fire, 2½-inch barrel with U. M. C. Co.'s short .38, containing 15 grains powder and 146 grains bullet; (2) a Belgian imitation of Smith and Wesson's Automatic Ejector, double action, 3½-inch

barrel, with same cartridge as in previous pistol, also with the .38 central fire S. & W. cartridge of the United States Co., of Lowell; (3) a Colt's single action, 7½-inch barrel with U. M. C. Co.'s .38 long Colt's, centre-fire cartridge, containing 18 grains of powder and 150 of bullet. I had finally an old-fashioned Derringer of .41 calibre and 2½-inch barrel requiring a .41 short, rim-fire cartridge. I had great difficulty in obtaining ammunition for this pistol, and that which I did get was without label on the box, so I cannot tell by whom it was made. The W. Co.'s cartridge of this size contains 13 grains powder and 130 of bullet. It is probable that the cartridges I obtained contain about the same charge. I regret very much that I was unable to procure any pistols of larger calibre and that my outfit was so limited, and I wish to point out here, once for all, that my conclusions are based on experiments with the above-mentioned weapons and ammunition, and refer only to the marks produced by them. Whether any modification of my conclusions will be rendered necessary by experiments with other calibres and ammunition, I of course cannot say.

Method of experimentation.—I had an apparatus constructed which would enable me to measure the distance of the muzzle of the pistol from the target within one-eighth of an inch and at the same time hold the pistol securely while not preventing the recoil or the upward jump of the muzzle at the instant of firing. As targets, I used a variety of things—various sorts of leather, cloth and paper. Whatever material I used, the character of the mark was the same. I used white blotting paper most extensively because the mark could more easily be seen, and because it was my opinion that powder grains would embed themselves in it about as easily as in the human skin. Now while the character of the mark is the same, its appearance varies much with the different materials, so that, given a powder mark on a piece of clothing, I should consider it extremely advisable to confirm one's opinion as to the weapon and the range by actual experiment with similar pieces of cloth.

Results.—The same pistol at the same range with similar ammunition produces the same mark. The mark consists of (1) the bullet hole; (2) the burn; (3) the smut; (4) the tattoo. Beyond a certain distance, a pistol mark consists only of the bullet hole. This distance depends upon the calibre of the weapon and the size of the powder charge. Thus for a .38 long Colt, central fire, which is loaded with 18 grains of powder and 150 grains of lead, fired from a Colt's revolver of 7½-inch length of barrel, I could get no mark except the bullet hole at a distance of anything over 11 feet. As we approach the target, the tattoo begins to develop. This consists of unburned powder grains and droplets of the grease with which the bullet is lubricated. With the pistol and ammunition above mentioned the tattoo is well defined at a range of 7 feet, but the individual grains are widely scattered. Further diminution of the range results in a condensation of the tattoo, the individual grains getting closer together, the whole mark covering a smaller area, and there being a larger and larger number of the grains close to the bullet hole. It occurred to me to count the grains in the marks by means of the device which I now show you. In general it is undoubtedly true that there are more grains

¹ Read before the Massachusetts Medico-Legal Society, February 7, 1900.

between the centre and the 1-inch circle than between the 1-inch circle and 2-inch circle, and more between the 1-inch and 2-inch than between the 2-inch and 3-inch, and so forth. The progressive condensation at progressively shorter ranges is still more strongly brought out by counting the number of grains in equal areas, situated half an inch, an inch, etc., from the centre.

I hoped that the numbers found might enable one to determine definitely the distance at which the shot had been fired, but the variation in size of the grains is too great and there are other difficulties which seem to me insurmountable at present. Arriving at a certain distance, which with the pistol and ammunition above mentioned is 15 to 18 inches, the aggregation of powder grains immediately about the bullet hole has become so dense that the mark has a distinct black spot at its centre which I call the *smut*. At the same time the burn becomes visible. Continuing to diminish the range the smut and burn become larger and larger and the visible tattoo smaller and smaller, until finally there is nothing but the smut and burn to be seen. At the same time the form of the mark becomes more and more perfectly circular, until with the muzzle of the weapon in actual contact with the target we have nothing but a round black mark.

As long as we use ordinary powder, this is the series of changes which the mark undergoes, no matter what the weapon or ammunition may be. The variable parts of the mark (smut, burn and tattoo) are produced by that portion of the powder charge which is not completely burned and one would naturally expect that with any one pistol the size of the mark would depend upon the quantity of powder in the charge and that the distance at which a certain kind of mark is produced would depend upon the same element. This is not true, however, as is shown by a comparison of the series of marks produced by short and long .22 or .32 cartridges; at any rate when the difference between the charges is as little as in these instances no difference in the mark is manifest.

In the case of the long and short .22, there is a difference of 40 per cent. in the respective charges of powder and in the case of the .32 the difference is 44 per cent.

The difference in the mark produced by pistols of different calibre is very noticeable, the size of the mark increasing with increase of calibre and the range at which the different elements of the mark are developed differing considerably. With pistols of the same calibre but different length of barrel different marks are produced at the same distances but the differences are by no means as great as one would suppose, as may be seen by a comparison of the marks produced by the .38 Colt with 7½-inch barrel with those of a .38 American Bull-dog with 2½-inch barrel.

There are about 12 different calibres in use, varying from .22 up to .50. Some of these, namely, .22, .32 and .38 can be obtained in almost any city or town, the others, except by accident, only in large cities unless they are specially ordered. The possibility, however, of one of these unusual calibres being used in any case can never be excluded and neither can we say beforehand that an assailant may not have somehow come into possession of one of the many forms of obsolete muzzle-loading pistols, though the latter can hardly be found, that is, if you want one, except in a museum.

I regret to say that it is not possible to determine with absolute accuracy, from the mark alone, what was the calibre of the weapon used or the distance from which it was fired. Still these points can be determined within certain limits, the calibre from the size of the mark and the distance from its character. In my experiments, if the mark is wholly a smut, with no tattoo zone, the shot was fired at a distance of not over 6 inches. If the mark consists of a tattoo with a distinct smut at the centre, then the distance at which the shot was fired was not over 2 feet. If the mark consists of the bullet hole alone, then the range was not less than 4 to 6 feet if a .22 calibre was used, 7 to 9 feet if a .32, and 9 to 12 feet if a .38 or 41.

For practical purposes one must have a library of experimentally produced marks as standards, and by comparison of the mark actually found with these standards, helped in some cases by a little additional experimenting, a sufficiently close approximation to the calibre and range of the weapon used can ordinarily be made.

Reports of Societies.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.

JULIAN A. MEAD, M.D., SECRETARY.

THE Society met in Boston, February 7, 1900, with a full attendance of members, and the President, Dr. B. H. HARTWELL, in the chair.

After the transaction of routine business, M. J. SUGHRUE, ESQ., of Boston, read a paper on

THE LAW OF DYING DECLARATIONS.¹

DR. WHITNEY: I should like to ask if in the case of a dying declaration which has been made before the person admits his belief that he is in this extreme condition, he then reaffirms the story, after his conviction is expressed, would this be sufficient?

MR. SUGHRUE: Quite so; if the reaffirmation is made with sufficient distinctness, and it is a part of the statement. The danger is in the strict requirement to conform to the rule of law. The objecting lawyer might say that the reaffirmation did not reaffirm that the statement was sufficiently covered: but that would never occur when the sequence follows, as suggested in the paper; it would be perfectly good, if complete, under the rule of law.

DR. MEAD: I should like to ask if it adds strength to the declaration to have the defendant at the bedside when the declaration is taken.

MR. SUGHRUE: Not to the declaration; but it makes it not only a declaration, but another kind of evidence. It is very frequently the case that when the defendant is present, and a statement is made inculcating him, he makes some answer that is apart from the dying declaration; it then becomes subject to the ordinary rule of evidence, and competent to be used against him.

DR. MEAD: Is it advisable to have the defendant there?

MR. SUGHRUE: It would be a question of expediency rather than otherwise, having in mind the temperament of the person whose declaration was sought.

¹ See page 653 of the Journal.

Dr. Hough: I would like to ask if it is extremely unusual to find that a dying declaration is false?

Mr. SUGHRUE: I think that it is. More can be said in favor of it than of any kind of testimony. It is argued that here is a person who has every reason to tell the truth; who is beyond any expectation of any interest to serve him; who is, ordinarily, under religious injunction to tell the truth, and whose condition is the best safeguard of the truth itself; and I think that it is generally accepted by juries as the very best kind of evidence and as being much more infallible than any other.

Dr. Hough: I would like to mention a case that has come under my observation. An injured man, being informed by a physician that he was surely about to die, having received extreme unction, he being a Catholic, in the presence of the priest and the attending physician, and in the presence of the defendant, whom he identified, told an absolutely false story of the crime. The hearing in the district court found the defendant to be unimpeachable, and the testimony went to show that the homicide was in self-defence, and the defendant was not even brought before a grand jury, the evidence was so strong in his favor.

Dr. BUCK: I would like to add another case—a case of abortion, where the victim fully expected death and received extreme unction, and her dying declaration was taken down. She did recover, however, but that declaration was false. The case was never brought before the court, yet, if it had been, if the victim had died, and there had been occasion, the declaration would have been found false.

I should also like to ask whether it is advisable to multiply the witnesses, whether it would be well to have more than the physician, or more than two witnesses, when a dying declaration is made.

Mr. SUGHRUE: I should say have no additional witnesses usually. If the statements are taken down in writing, it would be well to have any number of witnesses to testify to the fact that these were the statements made. If the statements were not written, if the declarations were oral, every witness would remember the facts somewhat differently from every other, either adding something to, or taking something from, the statement itself, and in that case it would not be advisable to have a number present. Two are quite enough, and in many cases two witnesses are one too many in an oral declaration. But if the statement is taken down in writing, then simply multiply the number present to give evidence to the fact that the statement was made.

Dr. BUCK: Is it better to have the declaration written and signed?

Mr. SUGHRUE: It adds something to your testimony. You have then the material fact, something besides the recollection of the witnesses; you have the material fact in writing.

Dr. BUCK: I should like to ask another question. Is it essential that a physician should receive this statement in order that he may testify as to the certainty of death in the mind of the person, or would a layman's opinion be sufficient?

Mr. SUGHRUE: That is purely a practical question. The testimony coming from a physician, if the physician had stated to the declarant his opinion as to death and received a response, would come more fittingly and more convincingly from him than from a layman. There would be no difference in the testimony except

for that reason, that the declarant would be more apt to have that sort of a conversation with a medical man.

Dr. PERKINS: I have a case now coming up which I expect to be thrown out through a failure in the dying declaration. The trouble with it is that when we come to look it over carefully in different parts of the statement, the declarant has apparently contradicted herself; it is not of much importance in itself, and only a small part of the declaration; but the fact that she contradicted herself was thought an important matter, and the court might properly throw the case out before it comes to grand jury.

Mr. SUGHRUE: I do not think that it would be thrown out. The fact that parts of the statement are contradictory would affect the story, but not the competence of the declarant.

Dr. PERKINS: The contradiction was only a small part of the statement. The case was one where a man was arrested for killing his wife, and she said in her declaration that he threw an oil stove at her, and later she stated that as she stooped to pick it up he kicked it at her. This contradiction was not noticed at first, but appeared afterwards when it was read over, and we expected that the declaration would be thrown out.

Mr. SUGHRUE: Perhaps as important a thing as I can say in conclusion is this. It is, unfortunately, frequently the case that a physician will hear the story of the dying person, and get a full recital of the case, of the crime and of the criminal, and then will ask the person if he is conscious that he cannot recover, and if he says that he is conscious, and makes no further statement, but rests there, that declaration cannot be used. That is a condition with which prosecuting officers are confronted. Physicians should remember that it is extremely important that they should first obtain from the declarant the conviction on his part that there is no hope of recovery, and then obtain the recital; then there is no trouble when the evidence comes in, otherwise it is of no importance, and the testimony can never be used.

Dr. G. DE N. HOUGH read a paper entitled

THE MARKS PRODUCED BY PISTOL SHOTS.²

Dr. DRAPER said that he deemed it very important in making experimental shots in preparation for a homicide trial that the same weapon should be used as was used in the homicide, and that ammunition of identical kind and calibre with those which the accused had employed should be taken. In cases where a defendant's liberty or life is at issue, the expert should avoid guessing as well as dogmatism in his opinions and the nearer a medical witness can come in his experiments to the same conditions as those of the crime the more trustworthy his conclusions will be. Observations like those reported by the reader have a distinct value, but they suffer an obvious loss in trustworthiness as data because an attempt is made to establish a standard by means of shots from revolvers chosen for the purpose without reference to those used in the crime itself. Better evidence would seem to be afforded by photographs of the bullet wound found upon the victim of the crime; such photographic representations tell their own story much more graphically than could be accomplished in any other way.

Dr. HOUGH: I want to state that the object of my

² See page 657 of the Journal.

investigation was to discover what, if anything, we could tell from the mark; if we have the weapon that was used, it simplifies the problem very much indeed. I think that if we have the weapon and know the ammunition that was used, we can say that the problem is practically no problem; and I stated in my paper that marks produced on different sorts of material are different in appearance, although the same in character, and I further stated that it was extremely advisable in experiments in any given case that the same material be used on which the mark has been made. I quite agree with Dr. Draper in what he says. I simply wish to call attention to the fact that I was aware of these objections he makes, and I thought that I brought that out strong in my paper, though not strong enough apparently. I would not for a moment go into court and testify as to the calibre and distance at which a weapon was fired, with nothing to guide me except these things, unless I made considerable reservation. But you can see from these papers how the difference in the mark is produced at a small difference in range, and I think that it is important, and that it shows us that we can tell very closely, if we take sufficient pains, the calibre and distance from which a weapon was fired by the mark found.

DR. MEAD: I think that the legal profession are fully aware of the importance of having the same powder and the same material in experimenting. In a case in which I was interested, the man being killed, Attorney-General Knowlton insisted that the experiments with the revolver be made on a leather jacket, same as the one worn by the dead man; not the same jacket, but another one similar, and they took this pains to get it. The police failed to get this leather jacket at one of the city stables, where it was thought that the men all wore leather jackets, for it was found that they were all using canvas. A man was then posted on the old Mill Dam Road, and stopped somewhere from twenty to thirty milkmen, until he found two leather jackets that were like the one the deceased had worn when he was shot, and he spent all night getting that jacket to bring it out to Watertown to me to make experiments in the morning. And that taught me a lesson of the importance of getting the same material, if these experiments are made; and I think it is one of the lessons to carry away from the reading—to experiment with the same powder and same weapon, and to make the experiment as near as possible on the same material as that of the homicidal act.

MR. SUGRUE: This has all been very interesting to me. It seems to me that the prosecuting officer could, and would, receive very great assistance from such experiments as have been made here. The difficulty that has been suggested in reference to experiments upon the same coat or upon the same substance is ordinarily one that is not of great importance, because it is not competent to introduce evidence of experiments. The court will not permit you to make experiments in court, and the only use of such experiment as this is as illustrations. The expert comes in and states his opinion, and the importance of his opinion depends upon that upon which it is based, and the danger of such testimony is that if it is not accurate, if the expert can be attacked, if there is a wide range between the experiments, and if it is shown that it is not exact and that his testimony is based upon a

foundation that is not very secure, it is very bad. But I can conceive that such experiments as have been made here would be of very great value in a trial for homicide by shooting or intent to murder; if it can be said, within given limits, that certain things mean certain other things, it is going to be of very great importance, and I can conceive that this would result from such experiments as Dr. Hough has made, and would be of very great importance in the trial of cases.

DR. PERKINS: In the case that I reported at the last meeting something came up in regard to the mark made by the shot which did not play any important part, but was of some interest. The woman shot at had on a blanket wrapper, and as I was not certain in regard to the distance at which the weapon was held, I made experiments. I obtained material the same as that worn in the blanket wrapper, by going to several of the wholesale houses; I also used the same revolver, although I could not get the same ammunition, and I found by the burns that the revolver had to be within twelve inches of the burned blanket wrapper. But another thing in regard to these burns which I found out was the care which should be taken in preserving the material burned. In that case I transferred the garment to the police, and as it was some distance to the station, the man took it to his home; when he got it again, he found that the servants had carefully washed it, and as a result the evidence of the burn had been destroyed. As this was an insanity case, it made no difference, but in another case it might be of great importance.

DR. HOUGH: I want to speak of a case where this was of some importance. The weapon and ammunition were unknown, and from the mark, I told the officers that it had probably been made with a .32-calibre, and the distance, as I figured it, had probably been not more than two inches. The man pleaded guilty when the case came into court. But the officers found the pistol which he might have used, and the ammunition which he might have used, and which they believed he did use, and it was found they corresponded with my suggestion.

Another point which I did not mention, because it did not amount to anything, was, I was in hopes that marks in cloth, for instance, that of a black coat, might be brought out by the x-ray photograph, but the cross light coming through carbon prevented satisfactory results.

DR. FRANK HOLYOKE reported

A CASE OF EXTRA-UTERINE PREGNANCY.³

THE MASSACHUSETTS MEDICAL SOCIETY.
COUNCILLORS' MEETING.

THE annual meeting was held at Mechanics Building, Boston, on Tuesday, June 12, 1900.

The meeting was called to order at 5 p. m. by the President, Dr. Edwin B. Harvey. One hundred and twelve Councillors were present.

The Secretary read the names of 160 Fellows admitted since the last annual meeting, and of 29 whose deaths had been recorded.

It was voted, on recommendation of the Committee on Membership and Finance, that \$3,500 of the sur-

³ See page 655 of the Journal.

plus in the treasury be distributed among the district societies.

The Committee on Publications reported that Dr. William F. Whitney, of Boston, has been appointed to deliver the Shattuck Lecture at the annual meeting of the Society in 1901.

The Committee on Nominations reported, and the following were chosen officers of the Society for the ensuing year: President, Dr. Frank W. Draper, of Boston; Vice-President, Dr. William W. Eaton, of Danvers; Treasurer, Dr. Edward M. Buckingham, of Boston; Corresponding Secretary, Dr. Charles W. Swan, of Brookline; Recording Secretary, Dr. Francis W. Goss, of Roxbury; Librarian, Dr. Edwin H. Brigham, of Brookline. Dr. Charles F. Folsom, of Boston, was chosen orator of the annual meeting of the Society in 1901.

Voted, That the next annual meeting of the Society be held in Boston on the second Wednesday in June, 1901.

The following standing committees were appointed:

On Arrangements.—Drs. M. Storer, S. Crowell, W. H. Prescott, F. G. Balch, J. C. Hubbard, Farrar Cobb.

On Publications.—Drs. O. F. Wadsworth, G. B. Shattuck, H. L. Burrell.

On Membership and Finances.—Drs. E. G. Cutler, L. R. Stone, F. W. Goss, W. Ela, C. M. Green.

To Procure Scientific Papers.—Drs. H. L. Burrell, A. K. Stone, F. H. Thompson, G. de N. Hough, H. W. Van Allen.

On Ethics and Discipline.—Drs. G. E. Francis, F. C. Shattuck, C. G. Carleton, E. Cowles, J. F. A. Adams.

On Medical Diplomas.—Drs. H. E. Marion, E. N. Whittier, O. F. Rogers.

On State and National Legislation.—Drs. F. W. Draper, H. P. Bowditch, S. D. Presbrey, S. W. Abbott, B. H. Hartwell.

ANNUAL DINNER.

The annual dinner of the Society was held at one o'clock, June 13th, DR. EDWIN B. HARVEY, the President, presiding.

The literary exercises were opened by prayer by the REV. DR. E. L. CLARK. In his introductory remarks the President spoke of the prosperity of the Society at large and the success of the meeting just terminated. After formally committing the conduct of the Society to the newly elected officers, he introduced as the first speaker Dr. W. H. WELCH, of Johns Hopkins University.

Dr. WELCH referred felicitously to his Shattuck Lecture, which had concerned itself with gas sepsis, and expressed the hope that his remarks might not be a psychological variety thereof. Speaking on the toast of the "Medical Profession," he felt that he had never before been in the presence of a body of men where such a theme should inspire better thoughts, that high medical ideals had always prevailed in Massachusetts and that it had offered more contributions to medical science than any other section of the country. The expectation which he had formed of standing in the presence of exceptionally intelligent men had been more than met, as he faced his audience. He felt that the medicine of to-day offers intellectual pleasures as never before; it now has all the attraction of a natural science, such as before belonged only to

physics, geology and kindred subjects. The same intellectual pleasure is now to be had, whether study is conducted in the laboratory or at the bedside, and the term "scientific" is to be applied to the one no more than to the other. There is a growing solidarity of all workers in medicine, and the one aim of prevention and cure of disease is common to the laboratory workers and to those engaged in the practice of medicine. However seemingly remote the problems of the pathologist and bacteriologist may appear, the fact remains that all knowledge, however gained, must finally be of practical use, and the distinction at times made between the laboratory and the practical man is wholly false. Dr. Welch, in concluding his remarks, thanked the Society for the cordial reception accorded him, and brought the greetings of the Medical and Chirurgical Faculty of Maryland, which is one of the oldest State societies in the country. He felt that the bond of sympathy between the States of Massachusetts and Maryland was continually growing closer.

DR. HARVEY, introducing the next speaker, ATTORNEY-GENERAL HOSEA M. KNOWLTON, spoke of the age of the Massachusetts Medical Society and of its relations during the nearly one and a quarter centuries of its existence to the Commonwealth. Attorney-General Knowlton spoke at considerable length; he said in part: There is a definite relationship between the Commonwealth and the medical profession which it is my desire in part to elucidate. The medical profession is a company of artists, and by an artist I mean a man who knows how to do something useful to mankind better than the ordinary man. Physicians live to educate themselves and to benefit the world by their education. In general the government of the Commonwealth has in common with you a desire to protect its citizens from imposture, quackery and swindling. This is a ground of agreement. A difference is that the Commonwealth is not intolerant. It was founded on the principle of tolerance, that every man could do, say and think what he pleased. You have at times wanted to interfere with that doctrine; you may have attempted to regulate the practice of medicine by legislation. The Commonwealth cannot do that; it permits entire liberty of action to its citizens; it has not the right to prevent a man from employing any means of cure he may choose, but we have required that a man shall know something about this frame of ours before he calls himself "doctor." The less you undertake to regulate private conduct the better off you will be.

The time, however, is not far off when parents even should not be allowed to substitute humbug for medical science in the treatment of minors. In the second place, while any man may do as he pleases as concerns himself, no man has a right to communicate disease. Things are settled in the law; our work is finite; yours to a certain extent is infinite. Appreciate the fact that no one knows everything; that every sect has given you something. Let false dogmas expose themselves.

Mr. Knowlton concluded his remarks by a humorous allusion to Christian Science, which he had been reading and trying to understand, but without success. He felt that medicine as practised by its devoted students the world over was the true "Christian Science."

DR. HARVEY then introduced MR. HENRY L. HIGGINSON, "whom if we have not met we all know."

Mr. Higginson eulogized the medical profession and saw great hope for the future in the broader education which it would be the function of the physician to inculcate among the people.

The Graduate Glee Club, under the leadership of Dr. Richard C. Cabot, rendered a number of admirable songs during the course of the dinner.

AMERICAN ORTHOPEDIC ASSOCIATION.

FOURTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900, HARRY M. SHERMAN, M.D., OF SAN FRANCISCO, PRESIDENT.

(Concluded from No. 24, p. 631.)

SECOND DAY.

THE RECUMBENT KYPHOTONE, AND A SIMPLE DEVICE FOR APPLYING PLASTER JACKETS FOR THE CORRECTION OF THE DEFORMITY OF POTT'S DISEASE.

DR. R. TUNSTALL TAYLOR, of Baltimore, exhibited both of these devices.

FORCIBLE CORRECTION OF SPINAL CURVATURE FOLLOWED BY PARALYSIS.

DR. H. AUGUSTUS WILSON, of Philadelphia, reported this case. The kyphosis had been noted only a few weeks before coming under observation, and there was good reason for believing that it was of very recent development. Two attempts to reduce the deformity forcibly under profound anesthesia had resulted in an audible snap but in only slight improvement in the deformity. The operation had been followed by fever, lasting two weeks, and by sloughing of the soft parts. At the end of nine weeks the patient had been able to move around feebly, but had returned in forty days with an almost complete spastic paraplegia.

DR. A. M. PHELPS remarked that this case seemed to be a typical one of pressure myelitis from invasion of the cord, the forcible correction having nothing to do with the paralysis.

DR. RIDLON concurred in this opinion.

DR. R. W. LOVETT, commenting upon the brace presented by Dr. Dane, said that this apparatus was interesting in that it aimed to produce torsion. His own studies in lateral curvature had taught him that it was important to throw the weight backward on the articular processes, though not necessarily by producing lordosis. The problem was to determine in just what position of the spine the weight could be thus thrown on the articular processes to the best advantage.

DR. PHELPS said that it was only when the spine was bent backward considerably that any pressure is made on the articular processes, and that if there was any lateral deviation present, the application of an anteroposterior brace would aggravate this.

DR. LOVETT contended that this statement was erroneous, because experiment had shown that the articular processes come in contact at a point about fifteen degrees in front of the erect position.

A CASE OF SCORBUTIC SPINE.

DR. JOHN RIDLON, of Chicago, reported an interesting case of this kind in an infant of one year. The

symptoms had developed so suddenly as to lead to the belief that the knee had been injured. The child was large and fat, with a rough and muddy skin. The spine was arched forward and rigid. The gums were dusky. Dr. Ridlon had ordered the child fed on unsterilized milk, raw meat and orange juice, and in two weeks the boy was well. In making the diagnosis one was called upon to differentiate scorbutus from rheumatism of the acute articular variety, infantile paralysis and rickets. In rickets the onset was gradual, and the spine was bent backward or laterally, and did not become stiff and painful without evidence of the disease.

DR. R. H. SAYRE said that he had put these children on a pillow with a shirt-board inside of it, and had then bandaged the child to the pillow. In addition, the diet had been appropriately regulated. All these scorbutic children that he had seen had been fed on sterilized milk or on some patent infant food.

DR. HOFFMAN spoke of a case of scorbutic spine that he had seen in a child of fourteen months. The kyphosis had been sharper than ordinarily seen in rickets. The infant had made a satisfactory recovery on a recumbency splint, being wet-nursed and fed with orange juice.

DR. HENRY LING TAYLOR, of New York, said that he had reported to this Association one of the earliest cases noted in this country. In these cases there was not true paralysis, but the limbs were kept quiet because motion caused extreme pain.

DR. STEWART L. MCCURDY, of Pittsburg, said that he had seen and reported several such cases. In none of them had there been bleeding from the gums. The absence of pain, fever and fretfulness enabled one to differentiate between scorbutus and rickets.

DR. R. H. SAYRE did not see how the paralysis in his case could be looked upon as only apparent, for when pins had been stuck into the feet, the child had made no effort to retract the part, and when the limbs had been lifted, they had fallen as though lifeless. He was inclined to believe that acute rickets was as good a term as scurvy.

DR. TAYLOR thought it unfortunate to confuse rickets and scurvy. Several cases had been recently reported in which there had been absolutely no rickets.

KNEE-JOINT SURGERY FOR OTHER THAN TUBERCULAR PROCESSES.

DR. JOEL E. GOLDTHWAIT, of Boston, read a paper with this title. The paper was based on a study of 27 patients and 33 operations. One of these operations had been for the removal of loose pieces of cartilage from the knee-joint in a woman of sixty-five. Another case was an irreducible dislocation of the patella of many years' duration. Eight of the operations had been because of the presence of loose cartilages. Apparently a relaxed condition of the joint had favored the crushing and tearing of the inner edge of the cartilage. The point usually contused was the inner thin edge. The best treatment was the removal of the cartilage, and this method had the advantage of extending only over a period of three weeks. There was danger of over-treatment. Where there were marked fringes, they should be removed, as they usually act as foreign bodies, excite frequent attacks of synovitis, and in course of time large coagula form in the joint.

DR. W. R. TOWNSEND cited as an instance of the importance of early exploratory incision a case in which two well-known surgeons had confirmed his diagnosis of tubercular disease of the knee, and yet exploratory incision had proved the true condition to be sarcoma.

DR. GOLDTHWAIT said that the object of his paper was to remove the dread of many surgeons have of invading the knee-joint. He believed it was just as safe to enter the knee as the peritoneal cavity. In the cartilage cases he had made use of a straight incision, about one inch and a half long, inside of the patellar tendon. For exploration of the joint he made an incision, three inches long, on either side of the knee, and about one inch outside of the patella. He sutured the capsule separately when closing the wound.

THE TREATMENT OF VERTEBRAL TUBERCULOSIS WITH REFERENCE TO THE FORCIBLE CORRECTION OF THE DEFORMITY.

DR. JOHN RIDLON opened this discussion. In the past three years he had straightened two cases of rheumatoid stiffening of the spine, and had operated upon eight lateral curvatures under ether, and more than 35 cases of Pott's disease. In the worst cases that he had treated he had gained at first one and one-fourth inches in height, and at the second attempt, three-fourths of an inch. In all of the cases of lateral curvature almost all that had been gained had been subsequently lost; hence he no longer favored straightening such cases under ether. In a case of rachitic curvature he had gained nothing by the method. He had operated upon both old and recent cases of Pott's disease, and those with and without abscess. There had been two fatalities. One of these, a case whose previous and personal history had not been sufficiently studied, died of tuberculosis two months after operation. The other fatal case was one having an abscess at the time of operation. The child had done well for six or eight months; then two or three abscesses had developed, and death had finally taken place as a result of the exhaustion consequent upon the prolonged suppuration. The operation seemed to him a reasonably safe one if done with proper care. In many cases he had used almost no pressure with his hands; in other cases the force had been very considerable, and exceptionally he had made use of as much force as he could exert with both hands. There had always been some crunching of the bones. In none had paralysis subsequently developed, while some, paraplegic at the time of the forcible correction, had improved as regards the paralysis. In the earlier cases he had hung his patients up by the heels; later he had tried supporting the head and pelvis, with the face down, while the plaster was applied. More recently he had made use of the Goldthwait frame, and had since then never included the head in the plaster. The shortest case had been four weeks in bed; the longest case had been in bed for about one year. His aim had been to keep them in bed for six or eight months, allowing them to lie on the face, back or side. In a few instances there had been no return of the deformity; about half a dozen had gone for a year without support or return of the deformity. In the majority of cases he had succeeded in keeping the deformity reduced to about half of what it had been before the operation.

DR. GOLDTHWAIT said that in the past two years or more it had been a common practice at the Children's Hospital in Boston to apply an apparatus in the hyperextended position, for the most part without ether. He then exhibited a number of tracings that had been taken during the period in which the hyperextension treatment had been in use. They showed, in general, that the deformity had not increased, though in some instances there had been an increase in the compensatory curve. As a result of the work of the last two years he would hesitate to forcibly correct any spinal deformity resulting from tuberculosis unless it was associated with a paraplegia that had resisted other methods of treatment. He did not think the mortality had been materially increased by the use of forcible correction.

DR. W. R. TOWNSEND said that he had predicted that this treatment would ordinarily be followed by a recurrence of the deformity. There had been no deaths from forcible correction in the Hospital for Ruptured and Crippled. There the Goldthwait frame was employed without anesthesia.

DR. DE FOREST WILLARD, of Philadelphia, said that this treatment had always seemed to him illogical and unsurgical, and consequently he had only made use of it in one case of total paralysis, which was at the time in a desperate state. The child had been able to walk about quite well at the end of six months. In a few selected old paraplegics this operation seemed to him justifiable.

DR. R. H. SAYRE said he believed many cases of severe lateral curvature could be benefited by great force applied under anesthesia.

DR. T. HALSTED MYERS, of New York, said that his experience with forcible correction had been limited to four cases, but in all these it had been unfortunate.

DR. GALLOWAY said that while he had always regarded forcible correction as unscientific, he had held it in reserve for the first case of Pott's paraplegia incurable by other methods. Such a case had not yet presented itself.

DR. MCCURDY said he was accustomed to classify these cases into three groups, namely: (1) Old cases which require an anesthetic and considerable force for correction; (2) cases of paraplegia in which forcible correction may be beneficial, and (3) cases under active treatment in which there is a beginning kyphosis which gradual but forcible correction seems to improve.

DR. WEIGEL thought the reports just presented indicated that the mechanical support used after the forcible correction had been inefficient.

DR. R. TUNSTALL TAYLOR, of Baltimore, had not been favorably impressed with his trial of the method, and he was of the opinion that the older mechanical methods were safer and more accurate.

DR. HOFFMANN said that great stress had been laid upon the use of forcible correction in cases of Pott's paralysis, yet he had never seen a case of this kind that had not recovered if the spine had been rigidly immobilized and the patient kept on the back.

DR. JOHN L. PORTER, of Chicago, said that from his observation of Dr. Ridlon's cases he felt positive that fully 50 per cent. of those straightened under anesthesia continued to show an improvement in the deformity.

DR. RIDLON said that he would certainly try to

straighten every paraplegic case. Since seeing Dr. Goldthwait's tracings he had formed a better opinion of the value of the correction method with the aid of anesthesia.

DR. GOLDTHWAIT remarked that he had purposely not brought tracings of the cases treated under anesthesia because they were not better than those already exhibited. He was not in favor of using much traction or other force in securing correction.

THIRD DAY.

BRACE FOR LATERAL CURVATURE OF THE SPINE.

DR. GWILYM G. DAVIS, of Philadelphia, exhibited a new lateral curvature brace having a hip band and both anterior and posterior uprights. A shoulder piece encircles the high shoulder. From the posterior upright a band passes over the lump and underneath the arm of the affected side. The two points of support are on the arm above and the hip below.

DR. R. H. SAYRE was of the opinion that if the pressure were made on the large side, as it would be with this brace, the peak of the arch would become more arched.

DR. WEIGEL remarked that simply keeping the high shoulder down could have no special corrective influence on the deformity.

DR. DAVIS replied that he believed that the brace exerted a twisting force as well as a direct pressure.

RETARDATION OF GROWTH AS A CAUSE OF SHORTENING AFTER COXITIS.

DR. HENRY LING TAYLOR, of New York, read a paper on this subject. He said that measurements of some 30 cases of long-standing coxitis in children had shown that the tibia and foot of the affected side, as well as the femur, were considerably shorter than on the sound side. A comparison of a group of 10 cases of old unilateral poliomyelitis with a similar group of hip cases showed about the same amount of bone shortening. Retardation of growth was also found in the affections of childhood which disable one limb, and somewhat in proportion to the amount and duration of the disability and restraint imposed.

DEVELOPMENTAL SHORTENING IN TUBERCULAR BONE DISEASE.

DR. STEWART L. MCCURDY, of Pittsburg, presented in this paper several cases going to confirm some of the statements made in the paper just preceding.

DR. R. H. SAYRE said that in cases in which apparatus had been removed from one limb a considerable time before removal from the other he had noted the greater growth in the limb first liberated.

DR. GOLDTHWAIT said that by measurements and skiagraphs he had demonstrated in a series of hip-joint cases under treatment that the shortening took place below the knee.

DR. GIBNEY said that in tubercular disease of the knee the limb actually lengthens. Some of the dry cases which go on so well at first sometimes show after a few years a sudden and alarming degree of shortening.

DR. H. AUGUSTUS WILSON, of Philadelphia, said that according to Dr. Hurd's observations in China, after the use of the muscles of the feet in Chinese women had been partially restored there is evidence of increase in the diameter and length of the bones.

DR. PHELPS thought the shrinkage of the muscles was largely owing to a neurotic influence.

DR. NEWTON M. SHAFFER, of New York, said that where the nervous phenomena are most marked the shortening is apt to be proportionately great.

REPORT OF SOME STUDIES UPON THE ARTICULATIONS OF THE FOOT.

DR. JOHN DANE, of Boston, presented this report, illustrating, by means of anatomical specimens, the more common anomalies of articulation.

OBSERVATION ON CERTAIN PAINFUL AFFECTIONS OF THE FEET.

DR. LOUIS A. WEIGEL, of Rochester, made some remarks on this subject, illustrating them freely with skiagraphs.

INVESTIGATIONS AS TO THE TREATMENT OF FLAT-FOOT.

DR. E. H. BRADFORD, of Boston, sent a communication on this subject, but was unable to be present to read it.

A CASE OF CONGENITAL DISLOCATION OF THE WRIST.

DR. PHILIP HOFFMANN, of St. Louis, reported this case, and DR. GIBNEY then showed a second example of this dislocation, occurring in the person of one of the audience.

A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER.

DR. JOHN L. PORTER, of Chicago, read the report of this case by invitation.

DR. PHELPS said that he had had eight cases of this dislocation, and had operated on four of them. In the latter he had invariably found fracture of the posterior border of the glenoid cavity. He now believed that the cause of the condition was always trauma.

DR. GIBNEY remarked that many of these cases were classified in the neurological clinics as examples of Erb's paralysis.

RAPID OSTEOCLASIS FOR THE CORRECTION OF RHACHITIC DEFORMITIES OF THE LEGS.

DR. WALLACE BLANCHARD, of Chicago, advocated in this paper a method of osteoclasia occupying not over eight seconds. The advantage claimed was that when operating so rapidly the circulation of the part was not impaired, and, as compared with supracondyloid osteotomy, the limb was increased in length instead of shortened. After the osteoclasia he exaggerates the correction of the curve. A long experience with the Grattan osteoclast in its original form had led him to think very highly of this instrument, which did not slip or cause splintering.

DR. T. HALSTED MYERS said that he had employed osteoclasia a good deal in the New York Foundling Hospital, and had found that if the pressure bar were applied on the inner side the bone could be fractured much more easily than if applied on the outer side.

AN OPERATION FOR UNUNITED INTRACAPSULAR FRACTURE OF THE HIP.

DR. GWILYM G. DAVIS, of Philadelphia, described in this paper a method of uniting the fracture by the insertion of ivory pins through an anterior incision after having freshened the edges of the fragments.

The following officers were elected: President, Dr.

Arthur J. Gillette, of St. Paul; First Vice-President, Dr. B. McKenzie, of Toronto; Second Vice-President, Dr. Louis A. Weigel, of Rochester; Treasurer, Dr. E. G. Brackett, of Boston; Secretary, Dr. John Ridlon, of Chicago.

The next annual meeting will be held at Niagara Falls, in May, 1901.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5-8, 1900.

SECTION ON SURGERY AND ANATOMY.

(Continued from No. 24, p. 637.)

THIRD DAY.

THE TREATMENT OF HERNIA IN CHILDREN,

by A. J. OCHSNER, of Chicago. He gave as predisposing factors of hernia the existence of the opening of the inguinal canal, weakness of the abdominal wall and hereditary tendency; the influence of a long mesentery is of doubtful importance. Among the exciting causes increased intra-abdominal pressure is of great importance; this may be partly due to indigestion and distention of the intestines with gas as a result of improper feeding; the digestive trouble often causes the child to cry, thus aggravating the condition; pressure may also be increased by straining at stool as a result of constipation, straining because of phimosis, and as a result of coughing. These conditions are much more common among the poor; the children are usually badly nourished, and their tissues abnormally lax and soft. In children, if the hernial sac is kept empty, and the abdominal pressure is removed, the majority are cured spontaneously. To keep the hernial sac empty, put the child in bed with the foot of the bed elevated. Remove digestive disturbances by careful attention to diet, and treat constipation, phimosis, coughing or other causes of intra-abdominal pressure. The child is thus relieved of its discomfort, is contented and sleeps most of the time. In this way the majority of cases of hernia can be cured. Operation is indicated if the hernia becomes strangulated, in case of irreducible hernia which becomes adherent to the sac, if the hernial opening is large and it cannot be retained with a truss, and if accompanied by hydrocele. The operation consists in dissecting out the sac, ligating it, and cutting it away, after which the stump is allowed to retract into the abdomen, and the opening is simply sutured.

TREATMENT OF VENTRAL HERNIA.

Dr. M. M. JOHNSON, of Hartford, Conn., believes that ventral hernia occurs in nearly 10 per cent. of cases after abdominal operations. Factors influential in its causation are drainage and granulating wounds, stitch abscesses, division of the motor nerves, lowered vitality and hereditary diseases. Dr. Johnson described his method of operating, in which he uses buried kangaroo-tendon sutures with quilled stay sutures of silver wire. He reported two bad cases in which he had operated successfully.

CURE OF INGUINAL HERNIA IN THE MALE.

Dr. H. O. MARCY, of Boston, said it is scarcely ten years since the radical cure for hernia has become a

recognized operation. The various methods of operating need not be considered in detail, but only the essential points of any successful operation. In most hernias except the inguinal variety there is a simple opening, and its closure will give rise to cure of the hernia. The essential point of difference in inguinal hernia is produced by the passage of the cord through the inguinal canal. Under normal conditions Marcy does not believe that a funnel-shaped process of the peritoneum such as is described by many writers exists. Sufficient attention has not been called to the importance of closure of the internal ring in the cure of hernia. Operations in which the cord is passed directly through the abdominal wall and transplanted under the skin are not followed by the best results, as the obliquity of the inguinal canal is a natural protection against protrusion of the abdominal contents. Among the essentials of successful operation were mentioned free, careful dissection, proper disposition of the hernial contents, careful attention to asepsis, the use of buried animal sutures, closure of the wound without drainage, and sealing the wound without further dressing.

Dr. W. B. DEGARMO, of New York, considers some defect of the abdominal wall the most important predisposing cause of hernia, while constipation is considered the most important exciting cause. He hesitates to operate upon children under five years old, for he believes that 95 per cent. of them can be cured by the use of a truss. He does not endorse the plan of treatment by putting the child in bed, for this prevents its development. The method of operating first described by Marcy and now generally known as Bassini's method he considers the best.

Dr. FERGUSON, of Chicago, considers deficiency of the internal oblique muscle at Poupart's ligament the most important etiological factor in inguinal hernia. The honor of proposing the method for the cure of inguinal hernia belongs to Marcy.

Dr. MAYO, of Rochester, Minn., believes that the majority of hernias occurring in children can be cured by the method suggested by Ochsner. The most important factor which tends to give permanent cure in operations by Bassini's method is the fact that the scar tissue is divided into two lines, the first line protected by Poupart's ligament, the second by the thick abdominal muscles. Scar tissue is always weak and this division is consequently of great value.

Dr. OCHSNER said that Dr. DeGarmo's objection to his method of treatment in bed does not hold, as it is continued only six weeks.

Dr. MARCY said that ventral hernia may usually be avoided. He has not had a single hernia in non-suppurative cases after over 1,000 abdominal operations.

Dr. W. L. WILLS, of Los Angeles, Cal., read a paper on

EXTERNAL DRAINAGE OF SUPERFICIAL LUNG CAVITIES, WITH REPORT OF TWO SUCCESSFUL CASES.

It is difficult to explain why suppurating tuberculous cavities of the lung are allowed to go on to infect the other lung and to produce pyemic conditions, when surgeons would feel justified in operating for such suppuration in any other part of the body. Wills advocates external drainage in such cases, but finds it difficult to get the consent of patients to the operation. He reported the case of a man of forty-five,

who had been losing strength and weight and who had all signs of a tuberculous cavity of the lower part of the left lung. Tubercle bacilli and elastic fibres had been found in the sputum. Under medical treatment he improved, and refused operation, but returned and consented to operation after his condition became much worse, three months later. An incision was made in the anterior axillary line and the seventh rib was resected; no pus was found in the pleural cavity, but a drainage tube was inserted. A gush of pus came, nine days later, simultaneously from the trachea and the wound. After this the temperature fell to normal, and there was free, foul discharge. The patient left the hospital with several discharging sinuses, and when seen about a year later, his sinuses had closed, he had gained seventy-five pounds in weight and was working hard. Special attention was called to the fact that strong solutions of mercuric chloride were used for irrigation without poisonous effect, and these were thought to have had something to do with the cure. [Wills has evidently lost sight of the fact that absorption does not take place from granulating surfaces, such as the walls of abscess cavities.] A second operation was reported, which was performed by a colleague of the speaker. A slight-built, emaciated man with signs of tuberculous cavity was subjected to resection of the rib, and three days later free discharge appeared and the temperature fell to normal. After eight days the patient left for home much improved in health. Both patients took the anesthetic very poorly.

Dr. MURPHY, of Chicago: If no adhesions of the pleura to the chest wall are present there is danger in opening the thorax. Puncture with a needle, admitting air, is not dangerous, and the air will produce compression of the lung and evacuation of the abscess cavity through the bronchi. If adhesions exist the lung should be directly incised instead of being opened with canterly.

Dr. WILLS, in closing, mentioned the advantages of California climate for such patients, and the importance of getting them out into the air soon after operation.

SURGICAL ERRORS OF SKIAGRAPHY.

Dr. CARL BECK, of New York, reported a case of fracture of the tibia, showing the necessity of two or more skiagraphs in the diagnosis of fractures. In this case of oblique fracture it was impossible to see any break by a skiagraph taken in the frontal plane, but it was clearly seen in one taken from one side. Unless the normal epiphyses are understood they may be taken for fracture, as may also the os intermedium pedis. Several skiagraphs were exhibited.

DIAGNOSIS OF CALCULOUS DISEASE OF KIDNEY, URETERS AND BLADDER BY THE X-RAYS.

Dr. C. L. LEONARD, of Philadelphia, read this paper. If skilfully used the diagnosis by the x-rays is absolutely accurate. He reports 20 cases in which the diagnosis of calculus was confirmed by operation, necropsy, or passage of the stone. Not only is positive diagnosis possible but a negative diagnosis may be made, thus avoiding unnecessary operation. The x-ray diagnosis is preferable to exploratory operation. Errors are only possible from faulty technic or lack of skill in reading the negatives.

TREATMENT OF INJURIES OF THE URETER.

Dr. B. B. DAVIS, of Omaha, Neb., described a method of ureteral anastomosis which he employed in uniting the ureter in a case in which it was divided while removing an intraligamentous cyst. The lower end of the duct was split for about one centimetre, threaded needles were passed through the walls of the upper end, then through the lower end, and on drawing on the sutures the upper end was drawn down and invaginated into the lower end. Later examinations proved that the ureter remained patulous. This method is quicker, simpler and sacrifices less tissue than that of Van Hook.

Dr. KELLY, of Baltimore, commended Leonard's work with the x-rays; in several cases in which he had been unable to locate ureteral stone with wax-tipped bougies, a diagnosis was made by Leonard with the x-rays. He briefly described his method of end-to-end anastomosis of the ureter with a guide, and reported a case in which he freed the bladder from its attachments and sutured it to the psoas muscle in order to get it high enough to anastomose with a short ureter.

Dr. BEVAN, of Chicago, mentioned a case in which two stones in the pelvis of the kidney and one in the kidney substance were located by the x-rays. The third stone was found only after some needling, and would not have been discovered had it not been previously located by the x-rays. He considers the x-rays a most valuable means of diagnosis.

Dr. BOVÉE, of Washington, D. C., considers anastomosis usually the best method of dealing with a severed ureter. Implantation into the bowel is the next best procedure. Over eighty operations of this kind have been reported with a large number of successes. He believes that the dangers of ureteral anastomosis have been overestimated; the function of the ureter is usually completely restored. Out of 21 cases thus far reported an unfavorable result followed in but one case.

Dr. GOODHUE, of Dayton, O., reports a case of ureteral anastomosis by Van Hook's method.

Dr. WINSLOW, of Baltimore, reported having operated on a case several years ago, by a method similar to that described by Davis.

Dr. BECK, in closing, expressed his belief that the importance of a negative x-ray diagnosis is not sufficiently appreciated. To make such a diagnosis three or four skiagraphs are necessary.

Dr. McARTHUR, of Chicago, called attention to the different intensity of shadows produced by calculi of various chemical compositions.

Dr. SUMMERS, of Omaha, Neb., mentioned a case in which he found double ureter present at the time of operation.

Dr. CARPENTER, of San Francisco, in removing an intraligamentous cyst cut out a section about two inches long from the ureter; he performed implantation into the bladder and showed a button, devised on the plan of Murphy's button, which had been devised for such operations.

Dr. LEONARD, in closing, emphasized the importance of using a low vacuum tube in diagnosing renal calculi by means of the x-rays, and the necessity for skilful technique.

Dr. DAVIS, in closing, called attention to the fact that the ureter is apt to be divided in severe, long

operations and hence the necessity for a rapid method of repair such as he had described; the operation could be performed in five minutes.

DR. MORGAN VANCE, of Louisville, Ky., read a paper entitled

EXSTROPHY OF THE BLADDER, WITH EXHIBITION OF A CASE.

A boy of seventeen came under observation for exstrophy of the bladder and hypospadias with all the disagreeable consequences. Operation was performed by sliding triangular flaps from the iliac region without inverting the skin, and after seven operations at different times extending over a period of two years a successful result was obtained. The patient was present for examination.

DR. DE FOREST WILLARD, of Philadelphia, considered the result in this case one of the most admirable he had ever seen. In most cases success is not obtained even after repeated operations. If the skin is turned in, concretions form and give rise to pain and discomfort, sometimes making it necessary to reopen the bladder. He believes that the most satisfactory treatment in these cases is to transplant the ureters into the colon above the sigmoid flexure, thus preventing incontinence of urine. It is best to remove a section of bladder wall with the ends of the ureters, for in this way the best possible valve is obtained.

DR. KELLY, of Baltimore, agreed with Willard that transplanting the ureters into the bowel was the most successful operation. In one case he loosened the sacro-iliac joint as had been done by Trendelenburg to aid in approximation. Vance's operation had the advantage of giving a functioning penis.

DR. MEANS, of Columbus, has a case similar to Vance's under treatment.

DR. HERZEL, of Chicago, has been favorably impressed with the operation of anastomosing the intestine and bladder in such cases.

DR. EASTMAN, of Indianapolis, Ind., mentioned a case in which he did nephrectomy on one side and sutured the ureter into the groove of a hypospadiac penis on the other for the relief of exstrophy. The patient is still in excellent health.

DR. SUMMERS, of Omaha, Neb., mentioned a case occurring in a female in which he performed anastomosis between bladder and vagina, thus obtaining a narrower opening from which to collect the urine.

DR. VANCE, in closing, expressed his belief that the case presented was as bad as any case could be and that a similar result could be obtained in any case by perseverance and boldness in dragging on the tissues.

SURGICAL ASEPSIS OF THE URETHRA AND BLADDER.

DR. FERD C. VALENTINE, of New York, read this paper. Attention was called to the difficulties of obtaining anything like a sterile condition of the urinary tract; urinary diluents, antiseptic drugs taken internally and injections with the piston-syringe are evanescent in their effects and give only an approach to asepsis. Valentine demonstrated an apparatus which he devised seven years ago for copious flushing of the urethra. During that time he has invariably practised such irrigation before and after all instrumentation of the urethra and he has not had a single case of urethral fever. He advises auto-irrigation by the use of the apparatus also in cases of gonorrhoea in which the patient cannot visit the physician regularly and for

those obliged to use the catheter themselves for enlarged prostate, etc.

THE TREATMENT OF PROSTATIC HYPERTROPHY.

DR. PARKER SYMS, of New York, described the pathologic conditions found in these cases and the well-known series of symptoms produced. For the operative relief of this condition, Bottini's operation and prostatectomy are the only procedures which merit discussion. The former operation he has not performed, but he thinks favorably of it; the latter operation he considers one of the greatest achievements of modern surgery. The death-rate has been high, not because of the dangers of operation, but because operation was left as a last resort and undertaken when the patient was unfit for any operation. Operation, to be successful, should be undertaken before the appearance of pain, infection and cystitis. It should not be undertaken on men with atheromatous arteries, unfit for any operation. He advises the perineal operation without suprapubic incision, and he showed a bulb which he has devised which can be introduced into the bladder in a collapsed condition and then filled with air to force the prostate down, so that it is readily accessible for operation.

DR. C. C. THAYER, of Clifton Springs, N. Y., commended Valentine's apparatus, but believed a fountain-syringe might be substituted for it. Local applications offer the best hope in the treatment of urethral affections.

DR. GLENN, of Alabama, believes that Valentine is over-enthusiastic in using irrigation, and that it is unnecessary except when there is urethral discharge.

DR. YOUNG, of Baltimore, has performed the Bottini operation successfully in several cases and considers it a very valuable method.

DR. CHISMORE, of San Francisco: The method of complete enucleation of the prostate commends itself to him as a great advance in the treatment of prostatic hypertrophy.

DR. BECK, of New York, agrees with Valentine that irrigation is advisable in all cases of instrumentation of the urethra.

DR. ROBBINS, of Detroit, considers urotropin the only internal urinary antiseptic of any value, and considers copious irrigation a valuable procedure.

DR. EASTMAN, of Indianapolis, credits Valentine with the introduction of Janet's irrigation method in America. He believes that a large piston-syringe is more easily sterilized, more convenient, and in skilful hands may be more accurately used than the fountain-syringe.

DR. BULLITT, of Louisville, Ky., considers Valentine's apparatus unnecessarily complicated; the shield is an advantage. It is impossible to gauge pressure by the piston-syringe and it is not easily sterilized.

DR. GRAY, of Jersey City, thinks more favorably of prostatectomy than of Bottini's operation.

DR. GUTERAS, of New York, believes that irrigating the urethra and bladder always improves their condition. Auto-irrigation should not be advised if there is any obstruction, and irrigation should always be discontinued as soon as there is any discomfort felt. An enlarged prostate should not be enucleated if there is pyelonephritis or arterial disease. The Bottini operation is suited to cases in which there is not great enlargement and in which the obstruction is mainly caused by the middle lobe. The mortality has been

placed too high by some writers; in the hands of skilled operators it should not be over five per cent., while the mortality of enucleation is never less than 20 per cent.

(To be continued.)

SECTION ON THE PRACTICE OF MEDICINE.

(Continued from No. 24, p. 641.)

DR. A. E. WOLDERT, of Philadelphia, read a paper entitled

INOCULATION OF MALARIAL FEVER THROUGH THE AGENCY OF THE MOSQUITO, WITH SOME SECTIONS AND DISSECTIONS OF THE MOSQUITO. ETIOLOGY OF MALARIAL FEVER AND SOME OBSERVATIONS MADE IN THE SOUTH SEVERAL YEARS AGO.

The paper dealt with the varieties and the anatomy of mosquitoes. Among the agents for destroying mosquito larvæ it was found that a solution of tobacco in kerosene oil was the most efficient.

A paper by DR. CHARLES F. CRAIG, of the United States Army, entitled

SOME TYPICAL CASES OF ESTIVO-AUTUMNAL AND TERTIAN MALARIAL FEVERS, WITH A STUDY OF THE PARASITES OBSERVED IN THE BLOOD,

was read by the Secretary of the Section, DR. FUTCHER. The paper described the symptoms, temperature curves, and course of cases of quotidian and of tertian estivo-autumnal malaria. Small doses of quinine will cause the temperature curve and the symptoms to become so changed that the disease cannot be recognized as malaria. The infection by two forms of parasite will also produce abnormal temperature curves. The paper described the differences in the microscopic appearances of the two forms of parasite.

A paper by DR. GOLTMAN, of Memphis, Tenn.,

EXPERIENCES WITH SOME OF THE PERNICIOUS FORMS OF MALARIA,

was read by title.

DR. FRANK A. JONES, of Memphis, Tenn., read a paper entitled

CLINICAL OBSERVATIONS IN MALARIA.

In the Mississippi swamps the doctor frequently sees cases of malaria that are chronic from the start. When the patient who has this form of malaria goes to a non-malarial district chills will develop in from twenty-four to forty-eight hours. A patient coming from a non-malarial into a malarial district often puts on fat and suffers from boils in winter, which the author thinks is due to the malarial poison. In the swampy regions pneumonia is common and the attacks are irregular and fatal. Cases of pernicious malaria are common. The negro seems to be immune to malarial paroxysms. Hemoglobinuria is the end product of neglected malaria; it is more frequent after the occurrence of the first frost, and at that season of the year it is more fatal than at other seasons. In cases of hemoglobinuria paresis of the bowels is common. Quinine is dangerous in such attacks. The author believes that attacks of true splenic leukemia are due to malaria.

DR. WM. BRITT BURNS, of Deckerville, Ark., read a paper entitled

MALARIAL HEMOGLOBINURIA.

The author has found estivo-autumnal parasites in the blood in all cases of malarial hemoglobinuria that he has seen, 16 in number. He is an advocate of the use of quinine in the disease. He has seen it in full-blooded negroes.

In the discussion that followed the reading of these papers, DR. WILLIAM KRAUSS, of Memphis, Tenn., said that in his opinion hemoglobinuria following malaria is a syndrome if not a distinct disease, and that it is not a mere symptom. The condition is not a toxic one. There must be some substance in the blood that allows quinine to produce the condition, since that drug sometimes will, and again will fail to, produce it. The attack of hemoglobinuria usually kills the parasites in the blood, which accounts for the fact that they are seldom found. There has never been a malarial toxin described. The determining factors in the production of the condition are: (1) Neglect of an old malaria; (2) the superposition of a new attack of the disease; (3) some indiscretion; (4) constipation and hepatic stasis; and (5) change to a non-malarial climate. The speaker had never found the parasite in the tissues of a patient dead of the disease.

DR. THAYER, of Baltimore, said that Romanowsky's stain is an important advance in clinical hematology. He has not been able to find a quotidian estivo-autumnal parasite. Nephritis and pneumonia are common in malarial negro patients. In some cases of malarial hemoglobinuria quinine does harm, while in other cases it does good. A rule is suggested for the administration of the drug: when the parasite is found active in the blood of the sick patient, give quinine; when the plasmodium is not found, do not give it.

DR. WESLEY, of Chicago, said that he had seen chronic malaria in the negro soldiers who had returned from Santiago.

DR. DAVIS, of Chicago, asked whether the anopheles migrated. If this insect does not migrate, how can the disappearance of the disease and its reappearance in a given locality be accounted for?

In answer to this question DR. HOWARD said that there was no evidence that the anopheles migrated by itself, but that it was frequently carried from place to place in public conveyances. Finding a suitable place for breeding in a new locality it would then become a resident. The anopheles has been found from 1,500 to 2,000 feet above the level of the sea.

DR. ROBERT B. PREBLE, of Chicago, read a paper entitled

PROLONGED FEVERS OF OBSCURE ORIGIN.

The author is of the opinion that many continued fevers are manifestations of sepsis and that they may be due to the pus cocci, the pneumococcus, the gonococcus, or the bacillus pyocyaneus. The cases may be either systemic or focal. They may be classed as cardiac, pulmonary, gastro-intestinal, hepatic, renal, osteo-arthritis, hemolytic and nervous. The author then gave a description of the symptoms of the various forms of the cases as classified above. Such cases were formerly diagnosed typhoid fever or typho-malaria. The differential diagnosis is best made by blood examination. He believes that the cases of so-called malignant endocarditis may be a manifestation of sepsis. Many of the joint diseases that are now

diagnosed as rheumatic and the condition known as peliosis rheumatica are probably also septic manifestations. The treatment should be symptomatic and supporting.

DR. ROBERTS, of Syracuse, asked whether the reader would exclude typhoid fever if the Widal and the diazo reactions were absent?

DR. BISHOP, of New York City, said that he was of the opinion that some of these obscure cases might be atypical cases of typhoid fever. If they were it would be possible to determine definitely by resort to serum diagnosis.

DR. DAVIS, of Chicago, advised those that had to do with all forms of febrile disease to watch for endocarditis, especially in these atypical septic conditions. Many cases of malignant endocarditis have not been such from the start, but are instances of endocarditis engrafted upon some septic disease.

DR. PREBLE said that he would not make a diagnosis on the presence or absence of the Widal reaction alone. A large number of these cases recover. He would not exclude the terms rheumatism, purpura, etc. from the nomenclature, but would instruct students that these conditions are probably not entities but symptoms of septic conditions.

DR. KRAUSS, of Memphis, Tenn., and DR. FAVILL, of Chicago, also took part in the discussion.

PATHOLOGY OF RHEUMATISM.

DR. DAVID RIESMAN, of Philadelphia, says that the facts pointing to the infectious origin of the disease are: (1) The fever; (2) the chill; (3) the occasional epidemic outbreaks; (4) the seasonal and climatic influence; (5) the character of the complications, which are those of the infectious diseases; (6) a demonstrable portal of entry for the virus in many cases, such as the tonsils, otitis media, operation in the nose, felon, furuncles, fistula in ano and vaccination; (7) the occurrence of acute endocarditis; and (8) the direct transmission of the disease from the mother to the fetus. Bacteriologic examinations seem to lead to the conclusion that acute polyarthritis is an entity caused by a single agent as yet to be discovered. The anaërobic bacillus of Achalmé seems to be the most promising of the organisms yet isolated from the diseased tissues. The joint changes found in the patients dead of acute articular rheumatism resemble those seen in other acute infectious processes. The early changes in the heart valves, according to the investigations of Achalmé, are swelling and edema with the occurrence of mast cells in the tissue of the valve.

RHEUMATISM AND THE PREVENTION OF HEART COMPLICATIONS.

DR. JAMES J. WALSH, of New York City, thinks rheumatism includes a series of closely allied processes. It is possible that the acid reaction of the blood is a protective process on the part of nature. The disease is one of low mortality. The use of the salicylates has reduced the severity of the symptoms, but does not seem to lessen the frequency of the occurrence of heart complications. The salicylates are not specifics, and the German school holds that antipyrin lessens the frequency of the heart complications. Rest is the most important element both in the prevention and in the treatment of the cardiac complications. Potassium iodide has some influence for good

on the valvular lesions in their incipency. Endocarditis is one of the essential elements of the condition, not a true complication.

THE RELATIONS OF CHOREA AND RHEUMATISM.

DR. CHARLES W. BERR, of Philadelphia, read this paper. There is frequently a history of rheumatism in cases of chorea. More frequently there is a history of joint or of general pain. Rarely chorea occurs during an attack of acute rheumatism. Children who have had chorea are more apt, in adult life, to have acute rheumatic fever than those that have not had chorea. At autopsy in subjects dead of chorea the one lesion that is invariably found is valvulitis. Rheumatic angina frequently precedes chorea. The coincidence of the diseases is not so frequent as to justify saying that chorea is a rheumatic disease. Rheumatic affections may possibly predispose to chorea.

HEART IN RHEUMATISM.

DR. DELANCY ROCHESTER, of Buffalo, thinks rheumatism is undoubtedly an acute infectious process. Endocarditis is seen in 60 per cent. and pericarditis in 10 per cent. of all cases. Myocarditis occurs in all cases of pericarditis, often in cases of endocarditis, and is sometimes found to exist alone. In myocarditis complicating rheumatic affections the papillary muscles are the first structures to become involved. The soft systolic murmur heard at the apex and over the body of the ventricle and not transmitted very far toward the axilla is probably due to the involvement of the muscular papillares. The occurrence of endocarditis or of pericarditis is no contraindication to the salicylic-acid treatment.

PATHOGENESIS AND CLINICAL FEATURES OF ARTHRITIS DEFORMANS.

DR. A. O. J. KELLY, of Philadelphia, said the disease presents joint, muscle and constitutional lesions. The nervous and the bacterial theories are the most important and reasonable yet advanced to account for the symptoms, but neither entirely covers the case, although it is probable there is a germ of truth in each. Arthritis deformans is an infectious trophoneurosis. The bacteria, which probably possess a selective tendency to affect certain joints, become lodged there, producing local lesions and elaborating toxins that are taken up by the blood and produce the other symptoms of the disease. The acute cases of the disease are decidedly infectious in type clinically.

DR. F. A. PACKARD, of Philadelphia, said that rheumatism now covers many diagnostic sins, just as dropsy did at one time. Rheumatism is not a local disease. Arthritis, endocarditis, etc., are not rheumatism. Acute articular rheumatism is a well-defined series of signs and symptoms produced by an unknown etiologic factor, with a great tendency to attack the serous membranes, notably the endocardium. Arthritic diseases may be classified as (1) acute articular rheumatism; (2) acute infectious arthritis, seen in gonorrhœa and in scarlet fever; (3) chronic infective arthritis, seen in children; (4) rheumatoid arthritis; (5) the spinal arthropathies, and (6) the arthritis of gout. The endocarditis that presents growing pains in the history should not be called rheumatic endocarditis. The term rheumatic pleurisy is a mistake, since the condition is not always rheumatic. Rheumatism is not a nervous disease. The lactic-acid theory is not

tenable. Articular rheumatism is an infectious process that may be caused by one of various microorganisms entering the system, often from the throat.

Dr. JOHN H. MUSSER, of Philadelphia, said that acute articular rheumatism is undoubtedly an infectious process. Many joint cases are of toxic origin. In many cases skin lesions, which may be of gastrointestinal toxic origin, are associated with joint lesions.

Dr. J. M. ANDERS, of Philadelphia, said acute articular rheumatism is not an arthritic disease; it is unquestionably infectious. The cardiac complications are always infectious and will be found to be due to a toxin. Chorea and rheumatism are not etiologically related. The endocarditis of chorea is not necessarily rheumatic endocarditis. It is going too far to think that all murmurs in chorea are organic; they may be functional. If in the course of chorea a murmur develops accompanied by fever, he would say that that murmur was organic. Rheumatism is a febrile disease. Cases of secondary acute articular rheumatism are rare, and if such cases do occur, the primary affection should be carefully noted. The differentiation of acute articular rheumatism and osteomyelitis is important. To prevent the cardiac complications, he combines the salicylic acid and the alkaline treatments.

CHARLES G. STOCKTON, of Buffalo, considered acute articular rheumatism to be an infection. The infectious neurotrophic theory of arthritis deformans is very reasonable. There are undoubtedly inherent conditions in certain individuals that invite the localization of the disease process.

Dr. L. F. BISHOP, of New York City, believes that there is a disorder of the chemistry of the body, a disorder of the processes of nutrition, as well as an infectious aspect in the development of joint diseases. We obtain better results by classifying these diseases according to this system: (1) Infectious arthritis, as acute articular rheumatism; (2) arthritis due to chemic changes, as gouty; and (3) arthritis due to nutritional changes, as arthritis deformans. These three classes of changes may exist in the body coincidentally. Chorea has been too definitely defined; chorea major is a different disease from Sydenham's chorea. Very few of the murmurs of the cases of chorea that he has seen are organic. Chorea may be complicated by infectious processes and it is these cases with the infectious element that develop cardiac lesions.

Dr. H. B. FAVILL, of Chicago, said acute articular rheumatism has both a toxic and an infectious side. The confusion of classification is due to the endeavor to group different conditions under one head.

Dr. BURNIE, of Maryland, said that, in his experience, no drug had any influence on the course of acute articular rheumatism. Rest in bed, hygiene and nursing are the best methods for the prevention of cardiac complications. Potassium iodide and iron are useful.

Dr. McCASKEY, of Fort Wayne, Ind., considered rheumatoid arthritis to be a toxemia of unknown origin, possibly from the gastro-intestinal tract. He has used potassium iodide by cataphoresis with satisfactory symptomatic results. It may be more proper to use some antiseptic solution by cataphoresis.

Dr. S. SOLIS-COHEN, of Philadelphia, said acute cases of rheumatoid arthritis affect the large joints, while the chronic cases affect the small ones. In the

latter group of cases the joints may be spindle-shaped, or they may present lateral deformity. The infectious element is more probable in the acute than in the chronic forms. The definition advanced by Dr. Kelly would better be that the disease is a toxic trophoneurosis. The tincture of ferric chloride in arthritic cases may be combined with salicylic-acid preparations, and seems to prevent heart complications. Alkaline treatment is also valuable.

Dr. DAVID REISMAN said that he had used extension in rheumatoid arthritis to prevent the occurrence of deformity in the large joints. In acute articular rheumatism he uses a combination of salicylates and alkalies; gives a milk diet with lemonade, and has the patient sleep between blankets.

Dr. J. J. WALSH said that if the bacillus of rheumatism should be found to be aerobic, after passing through the lungs it would be more virulent, and thus the frequency of left-sided heart disease in the condition might be explained. He believes that in complicated cases the following is the course of events, — rheumatism first, then chorea from a lessened blood supply to the brain, then rheumatism again.

Dr. ROCHESTER said that the patient should be kept in bed for from six to eight weeks in every case. The bowels should be kept freely open by the use of rochelle salt. Large doses of sodium salicylate, frequently repeated, should be employed; 30 grains every three hours for three days has failed, in his hands, to produce a deleterious influence on the heart. Iron is of great importance in the treatment of the accompanying anemia. He advises the use of 30 minims of the tincture of ferric chloride or 15 grains of the pyrophosphate. He believes that no treatment by drugs will prevent the occurrence of cardiac complications. Strychnine is of great value.

Dr. KELLY referred to the use of superheated dry air during a long period of time as being beneficial in cases of rheumatoid arthritis. He thinks strontium salicylate better than sodium salicylate because it is less likely to upset the stomach. Pure salicylic acid is also a convenient and satisfactory form in which to administer the remedy.

A CASE OF MALIGNANT ENDOCARDITIS WITH RECOVERY.

Dr. N. S. DAVIS, JR., of Chicago, read this paper. The patient was a locomotive fireman, age twenty-five. The condition was at first diagnosed gastro-enteritis, then typhoid fever, and later malignant endocarditis. The latter diagnosis was made on account of the persistent cardiac murmur, the absence of the plasmodium malariae, the absence of the Widal reaction, the septic type of the fever with chills and sweats. The chronic gastritis may have been the portal of entrance for the infection. The diazo reaction was present. The author cited recorded cases of recovery from the disease.

(To be continued.)

APPOINTMENTS AT THE UNIVERSITY OF PENNSYLVANIA. — The following appointments have recently been made: Dr. J. William White, Rhea Barton Professor of Surgery; Drs. Edward Martin and C. H. Frazier, clinical professors of surgery; Dr. R. M. Pearce, of Boston, demonstrator of pathology; Drs. W. F. Hendrickson and F. H. Howard, assistant demonstrators of pathology.

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THREE NOTABLE VOLUMES.

MEDICAL teaching in America up to within a few years has occupied relatively so subordinate a place as compared with medical practice that few men of eminence are remembered because they have been primarily great teachers. It is one of the best possible signs of the times that a change in this respect is everywhere observable. We are coming to see that the teaching of medicine is as worthy a profession as teaching Latin or Greek or science in any of its special departments. The result of this changed attitude is that the medical teacher as an individual is coming more and more into prominence, because he is a teacher and not because he is successful merely on the practical side of his profession. Teaching in medicine, as in everything else, must be an end in itself, and not merely a means, if the dignity of medical instruction is to be maintained and enlarged. In certain sections of the country, at least, this fact is being clearly recognized, with the natural result that medical education is rapidly progressing toward that position of respect to which it should long ago have been elevated.

Germany, on the contrary, is a country where the teacher in medicine, as in other branches of learning, has for many years been accorded the greatest measure of respect. This has led to the public recognition of his services on the part of his students and colleagues in the so-called "jubilees," functions of much solemnity as well as hilarity. That this particular form of recognition could ever be transferred from German to American soil is doubtful, and even were it possible it is extremely questionable whether it would be desirable. The spirit, however, which animates such gatherings up to a pitch often of extreme enthusiasm, as in the "Fest Kommers" given Helmholtz and Virchow some years ago, is quite possible of reproduction here. If we have the men capable of calling out the enthusiasm of their colleagues, the particular form which that enthusiasm takes is a matter of small consequence.

It seems to us, therefore, of no little interest that very recently two men in America should so have impressed themselves upon their time and generation that almost simultaneously their student and associates should have planned to recognize publicly their services to the cause of medical progress. We refer, of course, to Prof. Wm. H. Welch, of Baltimore, and Prof. Abraham Jacobi, of New York, two men who in very different ways will stand pre-eminent in the history of American medicine. Dr. Welch typifies the teacher, a man whose devotion to the study of the problems of disease, both by his own researches and indirectly through his pupils, has done much to deepen our conceptions of the true significance of medical teaching. The recognition of this work has recently appeared in a memorial volume published by his students, which bears on its title-page the following words: "Contributions to the Science of Medicine, dedicated by his pupils to William Henry Welch, on the twenty-fifth anniversary of his Doctorate." There is no preface or introductory note; no doubt, a designed omission. The volume contains thirty-eight articles, by forty contributors, Dr. Welch's former and present pupils, on various subjects connected mainly with pathological anatomy, filling, with the index, 1,066 pages. Many of the papers are of great scientific value and none are trivial. The general appearance and workmanship of the book are quite beyond criticism. It is profusely illustrated, largely with heliotype plates, and, as its frontispiece, has an admirable heliotype of Dr. Welch. Perfect as the volume is as a specimen of the bookmaker's art, it goes without saying that its chief interest lies in the fact that it represents the influence of one man on the professional life of his time, and stands unique in America as a public recognition of the debt which students owe to a great teacher.

Almost coincidently with the formal exercises attending the presentation of this volume to Dr. Welch in Baltimore, a similar ceremony was taking place in New York in commemoration of the seventieth anniversary of the birth of Dr. Abraham Jacobi. We have, in a previous issue, referred at length to the complimentary dinner given Dr. Jacobi, and to the exercises of that occasion. As a more permanent memorial of the appreciation in which Dr. Jacobi is held by his colleagues a "Festschrift" has been prepared, somewhat less elaborate than the volume to Dr. Welch, but of hardly less interest. This volume was presented to Dr. Jacobi at the dinner given in his honor, May 7th. It contains papers from the pens of fifty contributors both in America and Europe, men eminent not only in pediatrics, but also in other departments of medical investigation. In a short preface the outline of Dr. Jacobi's eventful professional and political life is given, which is epitomized in the following words, which we quote: "Dr. Jacobi's fame does not rest alone upon his greatness as a teacher and writer. He has taken an active interest in all that is best in medicine and has, withal, been an active and public-spirited citizen. As author, practitioner, hospi-

tal physician and society worker, he has ever been in the harness. In all these various departments of professional endeavor, he has been a leader and has never been content to be a servile follower."

Within a few days still a third volume has come to our hands, which, while not precisely in the same category as those just mentioned, deserves much more than a passing notice. It is a volume of contributions from the William Pepper Laboratory of Clinical Medicine, University of Pennsylvania, in memoriam of the late William Pepper. The volume is in admirable taste, entirely in accord with the dignity of the object for which it is designed, and contains a number of papers of great scientific value.

The custom which has this year been so auspiciously inaugurated of recognizing in such substantial and appropriate ways the services of our distinguished medical men, we sincerely hope may continue to grow into a fixed custom of the country. Such recognition, always bestowed with care, can have no other effect than to elevate the dignity of the profession of medicine, by granting such honors where they justly belong, to those men only who have done their share in materially advancing the cause of medical education and research.

ALCOHOL IN THE TROPICS.

A STATEMENT recently made by a writer in one of our contemporaries¹ to the effect that the use of alcohol is a physiological requirement in the tropics appears to have attracted considerable attention in the lay press — far more than would seem to be warranted by the circumstances. No fact has been more definitely settled through the efforts of the white race to colonize the tropics than that the use of alcohol, always undesirable, is here a source of positive danger. Medical men of ability and long residence in hot climates are well agreed upon this point. This fact is so well known to the laity that much of the interest attaching to the statement mentioned above — outside of the opposition at once excited among the temperance element — is undoubtedly due to the audacity of the proposition to brush aside the results gained by bitter experience during the past centuries.

The writer above referred to makes little effort to sustain his views by the opinions of others, and it is more than doubtful if he could find scientific support for the attitude taken. He does, however, make the claim that "Experience has demonstrated that in a hot climate the moderate use of intoxicating drink is essential to health and efficiency." To this claim we take decided issue.

Beginning with the admirably conducted expedition against the Ashantis in 1873, the British soldier has rarely been allowed the ration of spirits when on campaign in the tropics to which he is entitled on field service in temperate climates. This deprivation was the result of earnest representations on the part

of observing officers, both line and medical; and the reports of the medical officers accompanying subsequent expeditions have been uniformly enthusiastic in favor of the substitution of tea for alcoholics. Their reports are, however, expressions of opinion merely, and it is extremely interesting to see how the position assumed by them is fortified by figures. The British army is stationed at points all over the world in the temperate zone and in the tropics. The medical statistics of the British Army are presumably accurate and the use of alcoholics by the British soldier, as he changes from station to station, is presumably the same. According to the article above referred to, the amount of drunkenness, death and constant inefficiency in the British Army due to the use of alcohol should be greater in the temperate zone than in the tropics. On referring to the British Army Medical Department Report for 1897 it is seen that quite the opposite is the case. The figures given for alcoholism and its results in this report are as follows:

Place.	Year 1897. Ratio per 1,000 strength.			Decade 1887-96. Ratio per 1,000 strength		
	Admissions to Hospital.	Deaths.	Constantly non-effec- tive.	Admissions to Hospital.	Deaths.	Constantly non-effec- tive.
England	1.7	.01	.06	2.3	.04	.08
Scotland	1.9	.04	.05	2.8		.06
Ireland	1.4	.04	.05	2.0	.02	.06
Canada	3.7		.07	3.2		.09
South Africa . . . . .	.4		.03	3.0	.03	.08
Gibraltar	8.9		.37	5.0	.02	.18
Bermuda	11.2		.30	9.1		.29
West Indies	15.6	.74	.32	7.8	.08	.19
Mauritius	14.5		1.82	20.0		1.20
Ceylon	4.5		.12	4.8	.08	.17
China	6.4		.34	3.2	.15	.16
Straits Settle- ments	3.0		.07	6.2	.08	.27
India	5.2	.03	.22	7.4	.07	.24

On averaging these figures together it is seen that for the five stations in the temperate zone — England, Scotland, Ireland, Canada and South Africa — the ratio of admissions for alcoholism in 1897, per one thousand strength, was 1.8; the death-rate from alcoholism was .018 and the constant inefficiency from the same cause was .052. For the stations in hot and tropical climates — Gibraltar, Bermuda, West Indies, Mauritius, Ceylon, China, India and Straits Settlements — the admission rate for alcoholism during the same year was 8.68 per thousand and the death-rate from the same cause was .09 and the constant non-efficiency was .445. For the decade 1887-96 the rates per thousand were: For cold climates 2.64, .016 and .072; for hot climates 7.93, .06 and .337. These results are extremely interesting, since they show that not only do four times as many British soldiers enter hospitals in the tropics for alcoholism as do in temperate climates, but also that the death-rate from alcoholism is more than four times as high in hot climates as in the temperate zone.

Full data as to the relative influence of alcohol in producing inefficiency among United States troops

¹ Philadelphia Medical Journal, April 7, 1900.

servicing in the tropics and at home stations are not as yet available; but the report of the Surgeon-General of the United States Army for 1899, which mentions deaths alone, shows that during the period May, 1898, to June, 1899, inclusive, the death-rate from alcoholism was .14 per thousand among troops serving in the United States and .296 for troops serving in Cuba, Puerto Rico and the Islands of the Pacific — or more than twice as large in the tropics as in temperate regions.

If it be objected that soldiers actually drink less in the tropics, then the above figures for the troops of Great Britain and the United States should obviously be increased to correspond with the deficiency in the alcohol used; if the soldier is said to drink more liquor in the tropics than in a cool climate, the evil results of such excessive drinking are shown by the above figures. In either instance the claim that the use of alcohol is desirable in the tropics is refuted beyond the possibility of discussion. In the light of such figures it is apparent that if the claim above mentioned possesses any value it is merely such as might attach to the personal opinion of a single observer.

It is furthermore to be borne in mind that under conditions of physical discomfort such as must prevail in the tropics, moderation in the use of alcohol is a matter of extreme difficulty. It is easy to conceive that a man temperate in a more northern region might easily fall into habits of extreme intemperance in the tropics, were he permitted to take the first step.

ADJUSTABLE SCHOOL FURNITURE.

At a meeting of the Boston Society for Medical Improvement held April 2d, the subject for consideration was, "The Proper Seating of School Children." The subject aroused an active discussion, and led to the appointment of a committee, consisting of Drs. John G. Blake, Chairman; Edward M. Hartwell, Wm. M. Couant, Myles Standish and Robert W. Lovett, to investigate and report upon the subject of adjustable school furniture. The following propositions were suggested by this committee and submitted to the Boston School Board:

(a) That it is desirable to have all the new school buildings provided with the most approved form of adjustable school furniture.

(b) That such children as are now in schools supplied with fixed furniture who are found, upon medical examination, to require adjustable furniture, shall be supplied with such desks and seats.

(c) That when it is necessary to replace the worn-out furniture of fixed pattern in the old schoolhouses it shall be done by adjustable furniture.

After careful examination of the seats submitted by the various manufacturers, which we believe comprised the best to be obtained, and comparison of the different varieties of seats, the Committee are unanimously of the opinion that the Miller chair combines more completely the

desirable features of a scientifically constructed chair than do any of the others.

With regard to the desk, the Committee are also unanimously of the opinion that the Boston School Desk with top adjustable for distances and height, made by the Chandler Company, possesses advantages for reading and writing not equalled by any other desk submitted to the Committee. Your Committee feel that the additional cost of eighty-five cents more for seat and desk combined, of the pattern mentioned above, is not worth taking into account in considering the great benefits which the pupils would derive from the use of these forms of school furniture. The small increase in the cost of the seat, fifty cents, is made possible by Professor Miller's refusal to patent his chair, for which he deserves and should receive the commendation of all school authorities as well as of the medical profession.

The Committee earnestly hope that the school authorities will give earnest, immediate and, if possible, favorable consideration to these recommendations.

The foregoing recommendations were referred to a sub-committee of the School Board on hygiene and physical training, which has recently reported on the matter. We quote the report in part, signed by S. H. Calderwood, Chairman:

The Committee on Hygiene and Physical Training, to whom was referred, May 22d, a communication from Dr. John G. Blake, chairman of a committee appointed by the Boston Society for Medical Improvement on the subject of adjustable school furniture, report that they have granted a hearing upon this matter, and have very carefully considered the recommendations and views expressed by those present, many of whom have devoted much time and thought to the question of providing scientifically constructed furniture for the use of school children. Your Committee believe that the time has arrived for the general adoption in the public schools in Boston of the most approved form of adjustable furniture, and that the old-style furniture of fixed pattern that is now in use should be gradually displaced as opportunity serves and means permit. Your Committee have also considered this matter in conjunction with the Committee on Schoolhouses and the joint Committee have given expression to their conclusions by recommending the passage of an order presented at this meeting of the Board. Your Committee desire to express their indebtedness to the Boston Society for Medical Improvement for its interest in this important matter and return their thanks for the valuable suggestions and recommendations which it has submitted.

It is much to be hoped that this most recent effort at reform may show some definite result in the near future. The matter was vigorously agitated a number of years ago by the medical profession without noticeable effect: in fact it is hard to see how physicians can do more than they have already done in impressing the importance of proper school furniture. The accomplishment of any far-reaching reform must naturally rest with the school authorities. The plan of a gradual substitution of new chairs of improved type as the need of them arises would certainly do much toward reducing the expense of such an innovation, and at the same time would gradually lead to the proper seating of all school children.

MEDICAL NOTES.

MEETING OF ASSOCIATION OF AMERICAN MEDICAL COLLEGES. — The Association of American Medical Colleges had an interesting and profitable meeting at Atlantic City, June 4th and 5th, at which several educational papers were read and vigorously discussed. Fifty-six colleges were represented. Such amendments as would exclude "Sun-down" medical colleges were adopted to take effect in July, 1901. Dr. Albert R. Baker, of Cleveland, was elected President; Thos. H. Hawkins, of Denver, First Vice-President; W. H. Earles, of Milwaukee, Second Vice-President. Drs. Parks Ritchie, W. W. Keen and J. M. Dodson were added to the Judicial Council. The Cooper Medical College, of San Francisco, the Medical Department of the University of Kansas and the American Medical Missionary College, of Chicago, were elected to membership. A committee was appointed at the request of the Federation of State Examining Boards to co-operate with a similar committee appointed by them to consider common interests. This committee consisted of Drs. W. J. Holland, Dudley S. Reynolds, Wm. E. Quine, W. J. Means and Parks Ritchie. The papers and proceedings of the Association are published in the *Bulletin of the American Academy of Medicine*.

DENTISTS AT THE INTERNATIONAL MEDICAL CONGRESS. — In response to numerous requests, the Executive Committee of the Thirteenth International Medical Congress has decided that dentists who are not doctors of medicine, but who have a State diploma either French or foreign, may be registered as members of the Congress in the Section on Stomatology. Names should be sent to the officers of the Congress, 21 Rue de l'École de Médecine, Paris.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 20, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 71, scarlatina 24, measles 121, typhoid fever 24.

BOSTON SOCIETY OF MEDICAL SCIENCES. — At the request of the President of the Massachusetts Medical Society, a meeting of the Society of Medical Sciences was held at the Harvard Medical School, on Tuesday, June 12, 1900, in connection with the Massachusetts Medical Society. Papers were read as follows: Dr. W. H. Robey, "Methods of Staining Flagella"; Dr. Franz Pfaff and Mr. Vejux-Tyrode, "On the Influence of Defibrination on the Secretion of the Kidney"; Dr. Eugene L. Opie (Johns Hopkins Hospital), "Pathological Changes Affecting the Islands of Langerhans"; Dr. Charles Harrington, "The Action of Drinking Water on Metals"; Mr. Ernest L. Walker, "A New Method for Distinguishing Human from other Mammalian Blood, in Medicolegal Cases."

LONG ISLAND TRAINING SCHOOL FOR NURSES. — The second class of nurses from the training school at

the Long Island Hospital, Boston Harbor, was graduated June 11th, with appropriate exercises. Remarks were made by the Chairman of the Board of Trustees and members of the visiting staff.

DEATH OF TWO PHYSICIANS FROM SEPTICEMIA. — It is reported that Dr. Elbridge K. Leonard, of Rockville, Conn., and Dr. Melancthon Storrs, of Hartford, have both died of septicemia resulting from infection at an operation on abscess of the liver.

NEW YORK.

MORTALITY STATISTICS. — The reports of the Bureau of Vital Statistics for the month of May show a gratifying decrease in the mortality of the city. For the four weeks ending June 2d, the mortality represents an annual death-rate of 18.83, against 22.87 for four weeks in April. This is still somewhat higher than the death-rate for the corresponding four weeks in 1899, but it is noticeable that the rate for the week ending June 2d is lower than that for the corresponding week of last year; the figures being respectively 16.63 and 17.67. This is the first time since the beginning of the present year that the death-rate has been lower than at the same period of 1899. The greatest reduction is in pneumonia, the weekly average of deaths from which was 215, against 359 for four weeks in April. The weekly average of deaths from influenza, aside from pneumonia, declined from 36.75 to 7.5; scarlet fever, from 16.75 to 11.5; measles, from 26.75 to 18.75; whooping cough, from 18.5 to 14.5; bronchitis, from 58 to 35.25, and pulmonary tuberculosis, from 193 to 174.5. It will be seen, however, that pneumonia is still causing considerably more deaths than phthisis. There is but little change in the mortality from diphtheria and from typhoid fever, the latter being, as usual, very small. There was one death from small-pox in April, as there was in May.

STATE HOSPITAL FOR CRIPPLED AND DEFORMED CHILDREN. — At a meeting of the Board of Managers of the New York State Hospital for the Care of Crippled and Deformed Children, created by the last Legislature, which was held at the residence of the President, Bishop Potter, on June 14th, the Committee on Site reported that it had leased a house and grounds at Tarrytown, on the Hudson, and that the changes required for equipping the premises for hospital use would be completed early in the autumn. The following were elected members of the consulting medical board: Drs. Francis Delafield, Robert F. Weir, N. Gilman Thompson, Joseph D. Bryant, Lewis A. Stimson, A. Alexander Smith and Reginald H. Sayre, of New York; Roswell Park, of Buffalo, and L. A. Weigel of Rochester.

COMMENCEMENT AT COLUMBIA UNIVERSITY. — At the one hundred and forty-sixth annual commencement of Columbia University, which was held on June 13th, the degree of M.D. was conferred upon 167 graduates, the largest class ever graduated from the College of Physicians and Surgeons. The degree of LL.D. was con-

ferred on Prof. Abraham Jacobi. The Stevens Triennial Prize for the best essay showing results of original research was awarded to Dr. James D. Voorhees, the Alumni Association Prize to Dr. David Boyaird, Jr., and the Alonzo Clark Scholarship to promote the discovery of new facts in medical science to Dr. Augustus J. Lartigau.

SMALL-POX IN COLUMBIA COUNTY.—An outbreak of small-pox has occurred among 500 negroes employed in brickyards at Stockport, Columbia County, and on June 15th it became necessary to call out the Hudson Company of militia to aid in enforcing the quarantine regulations of the State Board of Health against a number of laborers who refused to be vaccinated.

NEW COTTAGE HOSPITAL FOR INFANTS.—The corner-stone of the new cottage hospital for very ill infants, in connection with the Seaside Hospital of St. John's Guild at New Dorp, Staten Island, which is to be the gift of Mrs. Frederic Lewis, was laid on June 12th. One of the addresses on the occasion was made by Dr. Abraham Jacobi.

DEATH FROM CHLOROFORM ANESTHESIA.—It is reported from New York that a patient about to be operated upon for appendicitis died during the administration of the anesthetic, which was chloroform. The heart had shown no abnormality preceding the anesthesia.

Correspondence.

LITHIASIS PREPUTIALIS.

BOSTON, MASS., June 3, 1900.

MR. EDITOR:—In the *Allg. Wiener medicinische Zeitung*, September 12, 1899, is reported a case of lithiasis preputialis, first published in *La Grèce Médicale*, No. 7, 1899.

The case is communicated by Dr. Alex. Louis, of Velezza, Macedonia. I have made a translation of the article, and wish to add a similar case observed by myself. The case of Dr. Louis is as follows:

Lithiasis of the prepuce is extremely rare, and even in medical works only few cases are recorded. M. G., age forty-five years, is the father of three children. He concealed his condition from motives of false modesty, until his sufferings became so great that this was no longer possible, and forced him to seek medical aid. The condition had lasted seven years. At first the pain was slight, but has continually increased to the present time. After some hesitation he allowed an examination, in which the following condition was disclosed: The prepuce had externally the form of a pear, and the entire penis that of a clock pendulum. The circumference was 25 centimetres. The organ was painful to the touch, the feeling to the finger being that of a bag full of sand. From the preputial orifice issued a constant flow of a mucopurulent fluid of fetid ammoniacal odor. The urethral orifice was red, and barely visible at the bottom of the preputial opening. A sound introduced beneath the prepuce at once came in contact with a large deposit of stones, which it was impossible to remove on account of the phimosis. The prepuce was incised to the extent of four centimetres, and the stones removed and the glans and prepuce carefully cleansed. The glans was deeply indented from the pressure of the

calculi. Healing was rapid and complete. The number of stones, not reckoning the sandy detritus, was 119, of which 30 reached the size and diameter of a pea, the others diminishing to that of a grapeseed. It is of interest to note that the patient during the whole time of his disease fulfilled his marital duties until very shortly before the operation, when the increasing pain prevented coitus.

My own case: A. B. age twenty-two years, single, of neurotic ancestry on mother's side, and presenting certain stigmata of degeneration, consulted me on account of a condition which troubled and puzzled him. He has always led a strictly moral life. At the age of eighteen, he was placed in an asylum on account of an onset of *folie de doute* accompanying, or closely following, puberty. He recovered after some months and has since attended to business in a large commercial firm. After much hesitation and with great mental perturbation he told me his trouble and consented to an examination. There was extreme phimosis of a greatly elongated prepuce. It was quite impossible to retract the foreskin to such a degree as to expose any part of the glans penis. The entire organ was small in relation to the development of the patient, and its proximal portion presented nothing peculiar. Its distal portion, however, was greatly enlarged, elongated and pendulous, presenting roughly the appearance of a small pear, over which the prepuce was tightly extended, and at the end of which it was so contracted as to form only a narrow purse-like opening, perhaps half an inch in length. The opening was directed to one side, and on urination the stream was discharged at an angle from the penis, soiling the clothing of the patient. The swelling was very hard, unyielding, and pressure upon it caused much pain. A greenish, puriform discharge constantly issued from the opening, which was excoriated and painful. The discharge was ammoniacal and very offensive in odor. No cause could be assigned for the condition. The effect upon the patient was most depressing and was rapidly inducing threatening mental symptoms, similar to those for which he had been previously under my care. Operation was advised, and at once accepted by the patient. The prepuce was laid open upon a director, and disclosed a perfect collar around the base of the glans, filling the sulcus, except at the location of the frenum, and prolonged upon the surface of the glans toward the meatus. This calcareous collar was perfect at the time of operation, but was unfortunately broken in removal. A suitable portion of the stretched and redundant prepuce was removed on either side, the flaps sutured, and treated with antiseptic lotions. Healing was quite uneventful and perfect.

The rarity of this condition leads me to desire that this case should be placed on record.

Yours respectfully,

ALBERT N. BLODGETT, M.D.

THE RECENT MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY.

BOSTON, June 14, 1900.

MR. EDITOR:—The annual meeting of the Massachusetts Medical Society which this day marked the end of another year in the history of this ancient and honorable association will certainly take rank as one of the grandest and most successful events in the history of this Society. I think that the Society has never been so fully represented on such an occasion, and the quality of the work done has seldom been equalled. The provisions for the comfort and convenience of the members were ample, and though there was an unexpected increase in the number of those present at the banquet, all were amply cared for. I think the Society has been extremely fortunate in the selection of its Executive Committee, to whose efforts the excellent arrangements were due, and who have labored assiduously to ensure the successful accomplishment of their undertaking. The annual dinner was an especially attractive

feature, when more than a thousand members were assembled at table, and all were served with promptness and ease. It is easy to find fault upon an occasion of this kind, and to some extent this may be justified at times, but the arrangements for the meeting just ended were so judiciously made, and so perfectly carried out, that the thanks of the Society are certainly due to the committee in charge, for their unwearied and painstaking efforts.

Yours truly,
X. Y. Z.

EXPERIENCE WITH TUBERCULIN.

POMONA, CAL., June 7, 1900.

MR. EDITOR:—On June 23, 1898, I reported in your JOURNAL the use of Koch's new tuberculin on two consumptives. The conclusion drawn from its use was that the patients were benefited by it. About a year after its first use I again used it on these same patients with as near as may be the same results; their weight, strength and appetite were all increased. Subsequent events have, however, shown that they were not cured by it.

Truly yours,
C. D. NELSON, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 9, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York . . .	3,654,594	1148	388	20.16	14.08	1.28	3.84	1.68
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	409	114	22.80	9.84	1.44	4.08	2.64
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	215	67	23.46	15.18	1.38	2.76	.92
Baltimore . . .	506,389	151	44	22.44	9.24	3.30	.66	.66
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	102	47	27.72	10.89	5.94	1.98	5.94
Washington . . .	277,000	80	26	31.25	6.25	6.25	1.25	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	71	19	25.20	12.60	4.20	1.40	—
Nashville . . .	87,754	—	—	—	—	—	—	—
Charleston . . .	65,162	—	—	—	—	—	—	—
Worcester . . .	111,732	38	12	18.41	18.41	2.63	5.26	—
Fall River . . .	103,142	31	11	38.76	12.92	9.69	—	—
Cambridge . . .	92,520	20	7	30.00	10.00	—	10.00	—
Lowell . . .	90,114	31	11	12.92	9.69	9.69	—	—
New Bedford . . .	70,511	9	1	11.11	11.11	—	—	11.11
Lynn . . .	65,218	—	—	—	—	—	—	—
Somerville . . .	64,394	14	4	14.28	28.56	—	7.14	—
Lawrence . . .	59,072	22	4	8.30	4.15	—	4.15	—
Springfield . . .	58,266	17	3	—	—	—	—	—
Holyoke . . .	44,510	14	3	7.14	28.56	—	—	—
Brockton . . .	38,759	3	—	—	—	—	—	—
Salem . . .	37,723	13	7	—	—	—	—	—
Malden . . .	36,421	8	2	—	12.50	—	—	—
Chelsea . . .	34,235	7	3	—	—	—	—	—
Haverhill . . .	32,651	10	2	10.00	—	—	—	—
Glocester . . .	31,426	7	1	14.28	—	—	—	—
Elitchburg . . .	30,623	8	2	—	—	—	—	—
Newton . . .	30,461	9	2	—	11.11	—	—	—
Taunton . . .	28,527	10	3	20.00	20.00	—	—	—
Everett . . .	28,102	6	2	—	—	—	—	—
Quincy . . .	24,678	8	—	37.00	25.00	—	12.50	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	5	—	40.00	—	—	40.00	—
North Adams . . .	21,583	6	2	16.66	16.66	16.66	—	—
Chicopee . . .	18,316	7	4	28.56	14.28	—	—	14.28
Medford . . .	17,190	—	—	—	—	—	—	—
Newburyport . . .	15,036	1	—	—	—	—	—	—
Melrose . . .	14,721	4	1	—	—	—	—	—

Deaths reported 2,479; under five years of age 792; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 662, acute lung diseases 321, consumption 282, diphtheria and croup 85, diarrheal diseases 49, measles 44, typhoid fever 30, whooping-cough 25, scarlet fever 24, cerebrospinal meningitis 14, erysipelas 9.

From typhoid fever Philadelphia 9, New York and Washington 4 each, Boston, Baltimore and Pittsburg 3 each, Providence

2, Fall River and Brockton 1 each. From whooping-cough New York 10, Philadelphia 5, Baltimore 3, Pittsburg and Washington 2 each, Boston, Worcester and Fall River 1 each. From scarlet fever Boston 8, New York 7, Philadelphia 3, Pittsburg 2, Baltimore, Washington, Worcester and Cambridge 1 each. From cerebrospinal meningitis New York 8, Boston and Providence 2 each, Philadelphia and Brockton 1 each. From erysipelas New York 5, Philadelphia 2, Boston and Taunton 1 each.

METEOROLOGICAL RECORD

For the week ending June 9th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...3	30.01	62	70	53	94	92	93	N.E.	N.E.	15	18	O.	R.	.42
M...4	30.18	53	58	48	68	79	74	N.E.	N.E.	20	7	O.	C.	.01
T...5	30.09	60	74	46	70	56	63	W.	S.	6	10	O.	C.	—
W...6	30.11	68	81	56	57	65	61	W.	S.	1	9	C.	C.	—
T...7	29.95	66	77	56	64	78	71	S.W.	S.	8	13	C.	F.	—
F...8	29.75	69	80	58	81	89	85	S.W.	S.	12	9	F.	R.	.05
S...9	29.82	74	84	64	86	48	67	W.	N.	10	13	O.	C.	.04
☞	29.99	—	75	54	—	—	73	—	—	—	—	—	—	.52

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☞ Mean for week.

RECENT DEATH.

WILLIAM PIERSON, M.D., one of the most prominent physicians of New Jersey, died at his home in Orange, on June 12th. He was born in Orange in 1832, and was the eldest son of the late Dr. Wm. Pierson. He was graduated from the Medical Department of the University of City of New York in 1852. He was one of the founders of the New Jersey State Medical Society and for thirty years its secretary. Later he became its vice-president, and at its annual meeting held at Atlantic City the week before his death, he was elected president of the Society.

BOOKS AND PAMPHLETS RECEIVED.

- The Regeneration of the Crystalline Lens. By Robert L. Randolph, M.D. Reprint.
- Transactions of the Associated Physicians of Long Island, June, 1898, to January, 1900. Vol. I.
- The Present Status of Insanity in Virginia. By William Francis Drewry, M.D., Petersburg, Va. Reprint. 1900.
- University of Pennsylvania; Contributions from the William Pepper Laboratory of Clinical Medicine. Philadelphia. 1900.
- Pachymeningitis: Report of a Case and Autopsy. By Samuel E. Earp, M.S., M.D., and John T. Scott, M.D. Reprint. 1900.
- Advanced Professional Work in Hospitals for the Insane. Progress in Clinical Study of Psychiatry. By Edward Cowles, M.D. Reprints. 1898-99.
- A Study of the Blood in General Paralysis. By Joseph A. Capps, A.B., M.D. II. A Study of Leucocytosis Associated with Convulsions. By Fred Grant Burrows, A.M., M.D. Reprint. 1899.
- Epilepsy with Retrograde Amnesia: A Medico-Legal Study of the Case of Amos D. Palmer. By Edward Cowles, M.D. II. Stigmata of Degeneration: Case of Amos D. Palmer. By Walter Channing, M.D. Reprint. 1900.
- Gastrostomy for Traumatic Stricture of the Esophagus; Report of Case. Treatment of Cancer of the Cervix of the Uterus Complicated by Pregnancy. By George Ben Johnston, M.D., Richmond, Va. Reprints. 1899-1900.
- A Manual of Obstetrical Technique as Applied to Private Practice, with a chapter on Abortion, Premature Labor and Curettage. By Joseph Brown Cooke, M.D., New York. Philadelphia and London: J. B. Lippincott Co. 1900.
- Nerve-Cell Changes in Somatic Diseases: A Preliminary Communication. General Paralysis in Two Sisters, Commencing at the Age of Ten and Fifteen Respectively; Autopsy in One. On Changes in the Nerve Cells of the Cortex in a Case of Acute Delirium and a Case of Delirium Tremens. By August Hoch, M.D. Reprints.

Original Articles.

A STUDY OF TWENTY-FOUR CASES OF TYPHOID FEVER WITH SYMPTOMS OF PERITONEAL INFECTION; LAPAROTOMY.¹

SUMMARY.—SEVENTEEN CASES OF PERFORATION OF INTESTINE; TWO CASES OF PREPERFORATIVE NECROTIC AREAS; ONE CASE OF RUPTURED MESENTERIC GLAND; THREE CASES CAUSE OF SYMPTOMS UNDETERMINED, DIAGNOSIS NOT CONFIRMED.

GROUPING AND ANALYSIS OF CASES;

GENERAL CONCLUSIONS; DETAILED REPORT OF CASES.

REPORTED BY GEORGE B. SHATTUCK, M.D., J. COLLINS WARREN, M.D., FARRAR COBB, M.D.,

Committee of the Boston Society for Medical Improvement.

THE whole number of cases studied by this Committee is 27, all coming in the years between 1895 and 1900; 9 cases from the Massachusetts General Hospital; 16 cases from the Boston City Hospital; 1 case from St. Elizabeth's Hospital, and 1 case from the Boston Children's Hospital.

In the year 1895 there are 3 cases, but only one of them will bear analysis as a case of genuine typhoid fever; 1 case in 1896, 4 cases in 1897, 5 cases in 1898, and 14 cases in 1899.

This is a striking illustration of the increase in the operative tendency. The data from which this analytical report has been made are the complete medical, surgical and post-mortem records of the several hospitals, together with the summarized statements and opinions sent in by the physicians and surgeons in attendance. From this available material a concise view of each case has been made with reference to all the important points bearing in any way on the diagnosis and treatment of peritoneal infection in typhoid fever.

The Committee would deprecate its critical comments of to-day being interpreted as fault-finding with the practice of earlier years; neither does the Committee forget that the ideal is not always, or under all conditions, to be realized in practice. Doubtless a nearer approach to the ideal should be aimed at and would now be possible than is found in most of the cases here reported. And the Committee is still further quite aware that the ideal itself—for example, in regard to such a matter as the value and application of the white blood count—is subject to further changes; the value of pain as a warning symptom also merits further study.

Of the 27 cases A, B and C must be thrown out of our consideration, because of no proof that they were genuine cases of typhoid. Cases B and C were both cases of advanced general peritonitis when first seen, and in both of them there was no proof that typhoid was the origin of the peritonitis.

Case A was brought to the City Hospital in a moribund condition, and showed general peritonitis at the operation. Cultures from the interior of the gall-bladder showed the presence of the bacillus typhosus. This, however, cannot be accepted as conclusive proof that the case was one of typhoid peritonitis. Cultures from the peritoneal fluid showed only the staphylococcus albus. It is an accepted fact that typhoid bacilli can and do remain active in the gall-bladder for

months and years after an attack of typhoid fever. For example, Miller² has reported a case in which the bacillus typhosus was found in the gall-bladder seven years after an attack of typhoid fever. There is no proof, therefore, that the peritonitis in Case A might not have been of other origin than typhoid fever, and, therefore, it cannot be included in our list of cases for study. This series, then, embraces 24 cases, which are all undeniable cases of typhoid; there can be no controversy on this point.

Eighteen cases had a positive Widal serum reaction in addition to the evidence furnished by the clinical course of the case and the positive pathological evidence furnished by the operation or post-mortem examination. In 3 cases the Widal test was not made; in 3 cases the Widal test was negative. Two of the cases in which it was not made occurred in the years 1895 and 1896, a period of time before the use of the test.

Of the 6 cases in which the Widal test was not made or was negative there can be no doubt of the diagnosis of typhoid, because of the findings at the operation or the post-mortem which fully corroborated the clinical diagnosis. In 2 of the cases in which the Widal test was not made the diazo test was positive.

All of the 24 cases had symptoms upon which a diagnosis of intestinal perforation was made and for which an operation was performed.

Three of the cases (XXII, XXIII and XXIV) presented symptoms strongly suggestive of intra-abdominal infection, and accordingly were operated upon with a diagnosis of intestinal perforation, but at the operation no positive cause for the symptoms was found. Two cases recovered from this exploratory operation, and 1 died. These cases are of the greatest importance from the diagnostic point of view, and will be considered carefully when the subject of "Symptoms and Diagnosis" is taken up.

Case XIX had characteristic symptoms of acute sudden peritoneal infection, and operation discovered a general septic peritonitis, but did not determine the cause; therefore this case should not be classed with those in which the cause of the peritonitis is certain, although it certainly seems rational, on considering the history and the symptoms and the fact that several different thin places in the intestinal wall were found at operation, to consider it a case of perforation.

In Cases II and XVI the classic severe symptoms of perforation were simulated, but operation discovered the cause of the symptoms to be a general septic peritonitis originating in damaged and necrosed areas of peritoneum over the bases of one or more typhoid ulcers. These cases might be called cases of progressive peritoneal infection from threatened perforation.

In Case XXI the symptoms amply justified the diagnosis of intestinal perforation, but operation proved that the symptoms, which were identical with the usually accepted symptoms of perforation of the bowel, were due to a general septic peritonitis arising from a ruptured mesenteric gland.

So that out of the 24 cases of true typhoid only 17 were cases of peritoneal infection from actual perforation of the intestinal wall. Two cases were of general infection from threatened perforations or areas of necrotic peritoneum; 1 case of general infection from

¹ Report presented at a meeting of the Boston Society for Medical Improvement, April 16, 1900.

² Johns Hopkins Hospital Bulletin, May, 1898.

a ruptured mesenteric gland; 1 case of general infection from an unknown cause, presumably intestinal perforation; 3 cases had no certain cause for the symptoms which demanded operative interference.

Since it will be shown that in many cases no differentiation between the usually accepted symptoms of actual perforation and the symptoms of general septic peritonitis can be made, this series of 24 cases gives us, for further study, 21 cases of grave peritoneal infection in typhoid fever and 3 cases of mistaken diagnosis, but with symptoms of peritoneal infection.

Diagnostically and from the point of view of treatment all of these cases should go in under the head of acute peritoneal infection in the course of typhoid fever. It may be well, however, to analyze the two groups of cases separately, dividing the perforations from the other cases.

Of the 24 cases presenting acute abdominal symptoms, with or without discoverable cause, 18 were males and 6 were females. Of the 18 males 15 were under thirty years; 1 was forty-five years; 1 was thirty-eight years; 1 was thirty-two years; 14 cases were between the years of nineteen and thirty and 1 case was sixteen years. Of the females, 6 in number, 4 were between twenty and twenty-six years, 1 was forty years and 1 was sixteen years.

The total number of cases shows, therefore, that acute abdominal infection occurs most often in young adults between the ages of eighteen and thirty years; that it is most frequent in men; that it is rare in children. It is noteworthy that 2 of the cases presenting acute abdominal symptoms without discoverable cause occurred in young women, aged twenty and sixteen years, respectively.

These facts in regard to age and sex are in general accord with the investigations of Dr. R. H. Fitz and others, although the percentage of those under thirty years of age happens to be somewhat larger than in Dr. Fitz's tables.³

As to the question of typhoid perforation in children under twelve years of age, we have been able to find but 4 cases of operation for perforation in children under that age in all the cases reported in literature.

Cushing:⁴ Boy, nine years old, on which case 3 laparotomies were done; the case recovered. Three cases are given in Keen's⁵ tables of cases of operation for typhoid perforation.

All the cases but one were white in color. This proportion of blacks to whites would very likely be different in other parts of the country, where the proportion of the colored population to the white is greater.

In 18 of the 24 cases the clinical nature and course of the typhoid was mild, and in 15 of these 18 mild cases perforation or general septic peritonitis was present. The 3 cases which presented symptoms without certain cause were mild cases.

One case, XVII, was a "walking typhoid"; 6 cases, II, VI, VIII, XII, XIV and XX, were severely sick typhoids. All of these 6 cases had general septic peritonitis from actual or threatened perforation, and all died.

These facts are in accord with the hitherto accepted knowledge that intestinal perforation in typhoid fre-

quently occurs in those cases of a mild type, or, in other words, there is no relation between the severity of the course of the fever and the likelihood of intestinal perforation.

The difficulty of the diagnosis of the peritoneal infection in cases of the severe type will be touched upon later.

The sudden fulminating symptoms in the severely sick cases will be found in the majority of instances to be due to a general septic peritonitis, which was often unsuspected and had slowly progressed. On the other hand, a sudden, acute onset in the mild type more often meant sudden intestinal perforation with extravasation. In certain of the severely sick cases in this series it would seem as if a diagnosis of the onset of the peritoneal infection was practically impossible.

The organic complications were very few: Three cases had mitral regurgitation amply compensated; 1 case in which operation discovered no cause for the symptoms had an especially feeble heart, with mitral regurgitation, yet this case recovered from the exploration; in 9 cases intestinal hemorrhages are noted; in 2 cases it occurred three weeks before the severe symptoms of perforation appeared; in 2 cases it occurred forty-eight hours before the severe abdominal symptoms, but there was a distinctly comfortable period between the occurrence of these hemorrhages and the sudden onset of abdominal pain. In 3 cases intestinal hemorrhages preceded and coincided with the beginning of peritoneal infection. Case XIX had daily intestinal hemorrhages for three days before sudden abdominal symptoms. Case XII had a severe hemorrhage five days before the symptoms for which operation was done; but this case was so sick and stupid as to justify the supposition that perforation probably took place long before the foul and evidently long-established general peritonitis was diagnosed. Case VI had two severe hemorrhages just preceding and coincident with the perforation. In 2 cases intestinal hemorrhages are noted after the operation. In Case I a severe hemorrhage five days after the operation was undoubtedly the cause of death.

Intestinal hemorrhage, inasmuch as it must come through extensive ulceration of the intestinal wall, and since this may mean proximity to the peritoneal coat of the intestine, must be to a large extent a danger signal of perforation. The occurrence of intestinal hemorrhages, therefore, should properly demand a close watch for the symptoms of beginning peritoneal infection, frequent examination of the abdomen to detect tenderness or abnormal rigidity and muscular spasm, associated with frequent leucocyte counts. The occurrence of acute abdominal pain following and coincident with intestinal hemorrhage should lead to the suspicion of peritoneal infection.

THE WEEK IN THE DISEASE IN WHICH PERITONEAL INFECTION TOOK PLACE.

Of the cases in which perforation and general peritonitis existed the acute abdominal symptoms appeared at the following times: In 5 cases at the end of the second or first of the third week; 8 cases at the end of the third week; 1 case during the fourth week; 4 cases during the fifth week; 1 case during the sixth week; 1 case during the ninth week; 1 case during the eleventh week in a relapse.

Of the cases operated upon under a mistaken diag-

³ Transactions of the Association of American Physicians, vol. vi, p. 200.

⁴ Johns Hopkins Hospital Bulletin, 1898.

⁵ Surgical Complications and Sequels of Typhoid Fever.

nosis I was in the fourth week, I in the fifth week and I in the sixth week. The diagnostic symptoms of intestinal perforation in typhoid as they are usually understood, namely, sudden abdominal pain, fall of temperature, collapse, general abdominal rigidity and tenderness, with or without vomiting, anxious facies, coming on without warning, do not present themselves as a complete picture in any one of this series of cases. The majority of the cases show records of definite warning symptoms, or, in other words, present evidences of a gradual onset of peritoneal infection.

It is, in fact, rational to conclude from a study of the symptoms in these cases, together with the findings at operation, that the severe symptoms corresponding to the ordinary text-book picture of intestinal perforation in typhoid were, in the majority of cases, caused by the general septic peritonitis resulting from a perforation or a threatened perforation, the occurrence of which (the perforation or local area of infection) was indicated more or less plainly by symptoms of less severity, which antedated the severe or so-called diagnostic symptoms by a definite number of hours.

If it is one thing to operate for intestinal perforation, and a decidedly different thing to operate for a septic peritonitis resulting from a perforation, the fact should be thoroughly understood that the severe and usual diagnostic symptoms in this class of cases meant that septic peritonitis had already existed for some time, and that the perforation took place at a previous time and was evidenced by milder and more localized symptoms. It is a fact that in the majority of these cases definite premonitory symptoms are recorded at a time more or less remote from the severe symptoms which first led to the diagnosis, and for which the physician called the surgeon in consultation.

Seven cases of the 21 in which operation found cause for the symptoms, namely, I to VII, inclusive, presented a sudden, acute picture of grave abdominal infection without *any* premonitory symptoms. Of these 7 cases 5 (I, III, IV, V and VII) were mild typhoids, whose general and mental condition was favorable to the noting of abdominal pain. Two cases (II and VI) were very sick, stupid and semi-conscious; a class of cases in which the occurrence of considerable localized abdominal pain might not be noted. In Case II the symptoms, sudden though they were, were due to a general peritonitis from the damaged peritoneum over the base of one or more ulcers, and not due to a sudden perforation. In Case VI the sudden symptoms were caused by the presence of a general peritonitis which had extended from a localized abscess originating from the intestinal perforation which at its appearance had given no symptoms, so that of the 7 cases which presented fulminating symptoms and which most closely conformed to the hitherto established idea of the symptoms of intestinal perforation only 5 proved to be due to *actual sudden perforation*, while 1 was not a case of perforation at all, and in the other the perforation and progress of the localized peritonitis with abscess formation did not cause any symptoms.

The sudden onset in these 7 cases presents a different picture in the 5 cases in which the symptoms were proved to be due to actual perforation. In these cases we have the symptoms of sudden severe pain

coming on without warning, more or less localized in the right iliac region, accompanied by localized muscle spasm and tenderness, with the varying amount of shock. In the 2 cases in which the symptoms were due to general peritonitis, we have a picture suggesting general peritonitis, marked collapse, great distention, and general tenderness and rigidity. It might be concluded from a study of these 7 cases that in mild typhoids the appearance of sudden severe abdominal symptoms without any previous abdominal pain or tenderness may most often mean sudden intestinal perforation with extravasation into the general peritoneal cavity, and that the symptoms may vary, the chief symptoms being sudden pain, tenderness and muscular spasm localized, attended with more or less marked shock; but in very sick and lethargic cases the appearance of severe abdominal symptoms without warning most often means the presence of general septic peritonitis originating in some one of the possible sources of peritonitis in typhoid, the gradual onset of which it has been impossible to diagnose because of the sick and stupid condition of the patient.

It has been stated that in the above 7 cases there were no warning symptoms. By this is meant direct abdominal symptoms — pain, tenderness and muscular spasm. It should be stated, for the sake of completeness, that 3 cases had one or more intestinal hemorrhages on the two days preceding the acute abdominal symptoms. One case had several hard chills without hemorrhage during the twenty-four hours preceding the onset of the peritoneal symptoms. The occurrence of chills as a symptom of peritoneal infection in typhoid is probably rare. It can only be a symptom leading to suspicion of infection when it is unassociated with hemorrhage.

J. F. R. Gairdner⁶ states that rigor as an initial symptom of peritoneal infection in typhoid is uncommon. He noted it in only 2 cases out of 47 studied by him. It is noteworthy that in 1 of his cases and in the case of Jenner the peritonitis ushered in by rigors was due to the rupture of a softened mesenteric gland. In Case XXI, the only case of our series of peritonitis from the same cause, no chill occurred. In the absence of intestinal hemorrhage to account for rigors it might not be irrational to suppose that it might occasionally be present in the early stages of peritoneal infection.

In those 3 cases in which no cause for the symptoms was found at operation the onset of the same was gradual. These cases will be referred to again in the subject headed "Symptoms and Diagnosis."

We have 14 cases, namely, Cases VIII to XXI, inclusive, with more or less gradual onset of the abdominal symptoms. Eleven of these are cases of intestinal perforation and resultant general septic peritonitis; 2 are cases of general peritonitis without perforation; 1 a case of general septic peritonitis of unknown origin, though probably due to a perforation.

One of the perforative cases (Case XVII) was a "walking typhoid," and had probably had general peritonitis for at least thirty-six hours before entering the Massachusetts General Hospital.

In all of these 14 cases *distinct warning symptoms* antedated equally distinct severe and diagnostic symptoms. The milder symptoms, which we must conclude marked the beginning of the peritoneal infection, were chiefly various degrees of abdominal pain and

⁶ Glasgow Medical Journal, 1897, vol. xlvii, p. 103.

tenderness, either localized or general, complained of by the patient. All of these 14 cases were mild types except 4. In only 1 of the 14 cases was any complaint recorded of abdominal pain until the complaint ushering in the severe symptoms, and in the single exception to this the complaint of abdominal pain antedated the actual perforation by some weeks.

In 4 cases abdominal distention throughout the course of the fever is noted. In 9 cases there is no record of any abdominal complaint or abnormality until the peritoneal infection was under way. In every one of these cases recorded *complaint by the patient of abdominal pain* was followed by peritoneal infection. The severe symptoms followed these warning symptoms at various intervals in every case, and there can be little doubt that the severe symptoms, when they appeared, meant that the peritoneal infection had become general and alarming.

An analysis of these premonitory symptoms shows that in 6 cases the pain complained of was general abdominal pain; in 3 cases localized in the left iliac region; in 4 cases in the right iliac region; in 1 case in the lower abdomen; in 1 case general abdominal pain, and also pain in the rectum and bladder; in 1 case the pain began in the epigastrium and later became marked in the right iliac region. It is much to be regretted that the importance of this abdominal pain was apparently not appreciated, as shown by the case records.

In 3 cases *comparatively* complete physical examination is recorded as made at the time. In no case was there a record of as careful an examination of the patient in every detail as the importance of the symptoms demanded, so that our knowledge of the accompanying conditions of tenderness, muscular spasm, leucocytosis, pulse and temperature is insufficient.

In 2 cases the complaint of pain was preceded by vomiting. In only 2 cases was the record of a leucocyte count made, and in these cases it appears that the blood count was only done once. As will be shown under the head of "Leucocytosis as a Symptom," an isolated blood count is of little or no value. In 1 case general abdominal tenderness and rigidity were noted, and in 2 cases there was general tenderness. In 4 cases there is no record of any physical examination, but a record *that morphine was given*. In 3 cases it is noted that the pulse and temperature were rising. This warning abdominal pain preceded the severe symptoms by hours and days; it appeared in 1 case sixty hours before; 1 case forty-eight hours before; 1 case twenty-four hours before (Case XVII); 4 cases twelve to fifteen hours before; 4 cases eight hours before; 3 cases three to five hours before. It is noteworthy that the 2 cases in which no actual perforation but general peritonitis from other causes existed had equally marked advanced pain.

Cases XVI and XXI, where the severe symptoms followed just as in the cases of perforation, point plainly to the reasoning that the early pain in these cases was due to local peritoneal infection, and that the severe symptoms were due to the establishment of a general infection.

The severe abdominal symptoms in every case determined the diagnosis and the decision to operate. In general these symptoms were those of general septic peritonitis, namely, general abdominal pain, severe; general tenderness and rigidity, with distention, collapse, poor pulse and anxious facies.

In only 3 of the cases was there any vomiting. The classical sudden fall of temperature is not present in many of the cases. The temperature fell somewhat in a few cases. In 2 cases it fell to normal, and began at once to rise; in 1 case it fell to and remained subnormal; in 3 cases a slight drop of temperature is noted; in 6 cases there was no fall of temperature, and in 3 cases it is recorded as rising.

In 8 cases a leucocyte count was taken at a time corresponding to these severe symptoms; in 4 cases it showed leucocytosis; in 4 cases it showed no leucocytosis. The leucocyte counts are, however, of only relative value, as will be considered later under the heading of "Leucocytosis as a Symptom."

In only 2 cases was a record of obliterated liver dulness made.

The constant symptoms in every case are abdominal pain, general tenderness and rigidity, with distention, associated with collapse and rapid, feeble pulse.

A comparison of the severe abdominal symptoms in the two classes of cases—the 7 cases where warning symptoms were not present and the 14 cases with warning symptoms—shows *distinct differences* in the severe symptoms in those in which the sudden intestinal perforation and extravasation came on without warning. As has been stated, the severe pain, more or less localized, with shock and muscular spasm and tenderness, characterized the first set of cases, and the shock varied in the different cases. In 1 case the pulse was not over 100. There was no vomiting, no general abdominal tenderness or rigidity, and no distention in any case.

Contrasted with this first set of cases, the severe symptoms in the second set present a much graver picture. It is noteworthy that in the 2 cases in the first set, in which general peritonitis was the cause of the symptoms and not intestinal perforation, the picture corresponds to the severe picture in the second class of cases.

It should be noted that if the signs of actual perforation with extravasation are local to a great extent, as in the 5 cases of our first set, a careful examination of all cases at the warning complaint of pain might in many of them give us definite diagnostic signs, as in Case III, for example.

A comparison of these two sets of cases—the 7 with sudden symptoms without perforation and the 14 cases with severe symptoms following premonitory pain—bears out the point that in most of them no positive diagnosis of perforation was made, but only a diagnosis of the general peritonitis resulting from the perforation.

THE TIME OF OPERATION AFTER SYMPTOMS APPEARED.

In the 7 cases with no warning symptoms operation was done within twelve hours in every case; 1 case within an hour and a half; 3 cases within four hours; 1 case within seven hours; 1 case within eight hours; 1 case within twelve hours.

At the operation general septic peritonitis was not evident to the eye in Cases I, III and VII. In Case V it is noted as just beginning and not far advanced. In Case IV the perforation was protected by weak adhesions, and no general infection had taken place up to the date of operation. In Cases II and VI general peritonitis was farther advanced and was evidently the cause of the sudden symptoms, so that only 5

macroscopical signs of general peritonitis. Case I lived nearly a week, and died from intestinal hemorrhage, and the autopsy showed no general peritonitis. Cases III and VII both died within sixty hours, one with the symptoms of general peritonitis and the other without such symptoms. There were, however, no bacteriological studies of the peritoneal infection in these 3 cases at the time of operation. Two of the cases may very probably have died from a virulent infection, which did not cause any visible signs.

Vincent⁹ experimentally has called attention to the fact that a streptococcus peritoneal infection in typhoid is usually a fatal complication. Vincent's studies have been corroborated by Flexner and Fraenkel.¹⁰ Cushing¹¹ reports a case in which operation was done within an hour or two after perforation, and at the operation no visible signs of general peritonitis were present. Cultures and cover-slip preparations from the fecal fluid pouring out of the perforation in the intestinal wall showed large quantities of streptococci, and the case died of streptococcus peritonitis.

It is perfectly within reasonable bounds to believe that one or more of the supposedly favorable cases in our series may have had a streptococcus infection. Certainly we have no evidence to the contrary.

Cases II and V show a beginning general peritonitis, as evidenced by gas and serous fluid free in the abdominal cavity, but indicated no injection of the peritoneal coat of the intestines. Both of these cases, so far as the macroscopical appearance went, seemed favorable, yet both died. Cultures taken in Case V showed a pure infection of the bacillus typhosus.

Case IV had no general peritonitis, as has been stated. Case XVI was one of general peritonitis arising from the same cause as in Case II, namely, damaged peritoneum; yet in Case XVI peritonitis was much more extensive macroscopically than in Case II, being evidenced by seroturbid fluid with fibrin flakes and with green fibrin patches on the intestines. Case XVI recovered; Case II died. Although Case II was a more severe typhoid, presumably the general peritonitis in one case was caused by a virulent infection, and in the other by a non-virulent; yet no bacteriological proof is available in either case.

General septic peritonitis in typhoid arising from threatened intestinal perforation from the necrosed and damaged areas of peritoneum over the base of ulcers must be accepted as a not very uncommon occurrence. J. F. R. Gairdner¹² has reported 5 such cases.

To sum up in regard to our first class of cases, namely, 7 with sudden onset of symptoms, 3 had no general peritonitis evident to the eye; 1 case had limiting adhesions around the perforation, with no general peritonitis; 2 cases had slight evidence of general peritonitis. These are all of them the most favorable cases for operation, for it must be said of them that operation was actually directed against the infecting cause and not against the resulting general infection. The bacteriology was studied in only one of these cases, and in this one a pure culture of the typhoid bacillus was found.

It is a fact that the typhoid bacillus has been very rarely found in the peritonitis of typhoid fever, possibly because, through delayed operation, cultures

have not been taken until the typhoid bacillus was overgrown.

It is possible, and probable, that the others of these early and seemingly favorable cases for operation may have had a general virulent infection either with typhoid bacilli or streptococci. It is past controversy that fatal peritoneal infection can have taken place without causing visible macroscopical signs at operation or autopsy. Of the 14 cases of gradual onset or with early warning symptoms, in every one visible peritonitis was found at operation, and in the majority of cases it was evidently of comparatively long standing.

Comparing the two sets of cases, namely, the 7 cases with sudden onset and the 14 with gradual onset, we find that in operations done on the cases of sudden perforation within one to eight hours after the first symptoms there was found no general peritonitis, but at most a very slight beginning peritonitis; but operation done on those of gradual onset, within one to eight hours after the severe or diagnostic symptoms, found extensive general peritonitis—so extensive that in several cases the operator noted that this peritonitis must have existed many hours longer than the symptoms would lead one to suppose. The conclusion is plain that in these cases the perforation or the beginning peritoneal infection took place at a time more or less remote from the severe and diagnostic symptoms.

These 14 cases are cases of operation for general peritonitis which had existed for a longer or shorter time—in 1 case originating in a ruptured mesenteric gland; in another, threatened perforation; in 1 from an unknown cause; in 11 from intestinal perforation.

The prevailing type of peritonitis noted was the seropurulent, with fibrin flakes in the turbid fluid and adherent fibrin patches on the intestine. Nine cases are noted that had feces or fluid fecal matter in the intestinal cavity or fluid with a fecal odor. All of these cases were intestinal perforations. Two cases of intestinal perforation note a cloudy, turbid fluid without fecal odor.

Case XXI was a case of general seropurulent peritonitis originating in a ruptured mesenteric gland. Cultures showed this to be a pure infection of bacillus typhosus. In Case XVII punctate hemorrhages on the intestinal wall are noted, and brownish fluid in the peritoneal cavity without odor.

It is greatly to be regretted that in only 4 of these 14 cases were any bacterial cultures taken, and in certain of these the question arises as to their value, because of our incomplete knowledge as to how they were taken and because of incomplete reports of the differentiation of the various bacteria found. Flexner¹³ and Cushing¹⁴ dwell upon the necessity of making cover-slip preparations as well as plate cultures at the operation from the abdominal contents in cases of peritonitis, because of the well-known fact that the bacillus coli communis overgrows the other organisms in the mixed infection. Cushing says: "Undoubtedly the colon bacilli, being more in evidence, were frequently held responsible for peritoneal infection due to more virulent but culturally less active organisms."

Case XIV is recorded as showing an infection with colon bacilli and "other varieties of bacteria." Case

⁹ Annales de l'Institut Pasteur, vol. vii, p. 141.

¹⁰ Johns Hopkins Hospital Reports, 1895, vol. i.

¹¹ Philadelphia Medical Journal, March 3, 1900.

¹² Glasgow Medical Journal, vol. xlvii, p. 97.

¹³ Johns Hopkins Hospital Reports, 1895, vol. i.

¹⁴ Philadelphia Medical Journal, March 3, 1900.

XX is recorded as having turbid peritoneal fluid with fibrin flakes, infection with colon bacilli. Case XXI, resulting from a ruptured mesenteric gland, gave a pure culture of bacillus typhosus. Case XV is reported to have been a specially foul-appearing general peritonitis, in which the infection was colon bacilli, and "many others not differentiated." The 2 cases (Cases V and XXI) in which the peritonitis was found to be due to a pure infection of bacillus typhosus died—1 within twelve hours and 1 on the fourth day.

The finding of the bacillus typhosus as the infecting organism in cases of peritonitis is exceedingly rare. At most, but 5 cases, including the 2 cases reported in this series, have been published. It may be suspected, reasoning from the evidence furnished by Case V and Case XXI, that when it does occur it is probably virulent and fatal.

DIAGNOSIS.

The diagnosis of the peritoneal infection within a sufficiently reasonable time from its beginning is a question of the greatest importance to physicians and surgeons. So far, our study of these cases has shown us that the diagnosis in 14 cases out of 24 was apparently made later than it might have been, and in 7 cases only once was it made as soon as possible, and that in 3 cases a mistaken diagnosis was made.

It seems fair to suppose that the majority of cases of intestinal perforation present a slow intestinal infection or a gradual onset, or that actual perforation may take place without fulminating symptoms. Cushing has referred to what he calls a "preperforative stage," or a "pre-extravasation stage," and has attributed the early complaints of pain to a slight involvement of the serosa and possibly to omental adhesions. He understands by his "preperforative stage" the "whole period between the first involvement of the serosa, with the formation of customary adhesions at this point, until these adhesions (which may for a time constitute the floor of the ulcer after the serosa has given way) have themselves become broken down, and general peritonitis has taken place." This condition of things is well illustrated in our Case IV, which is a typical case of pre-extravasation, because of delicate protecting adhesions.

It would seem, however, from a study of our cases, that the formation of protecting adhesions in perforation or threatened perforation of the ileum is exceedingly rare. Monard and Van Verts¹⁵ state that in their study of this condition, adhesions, however slight, almost never occur when the perforation is situated in the ileum, and they further state that peritoneal infection is not always a rapid fulminating affair: that it may occur slowly from what they call "propagation"—that is, migration of the bacteria through the necrosed and damaged intestinal coats—and that this form of infection is no less worthy of consideration than the rapid infection from sudden intestinal rupture and extravasation of intestinal contents.

Intestinal ulcers certainly may have a preperforative stage, and by this we mean a stage of local peritoneal infection and bacterial involvement of the peritoneal coat—whether or not adhesions exist. This local infection may cause general infection without adhesion formation and without perforation. The

pre-extravasation stage properly means a period of time after local peritonitis has taken place in which there is no extravasation of intestinal contents, either because of the necrosed portion of the intestinal wall remaining in place without dropping out, as in Case XVI or in Case II of our series, or because of adhesions, as in Case IV of our series. Local infection of the peritoneum causes pain of greater or less severity. This pain may not be appreciated and complained of in very sick and stupid typhoids, but in mild cases may be just as prominent a feature as the pain from the local peritoneal infection of appendicitis before perforation has taken place.

Our series of cases shows that this early pain was absent in only 7 cases out of 21; 5 of these 7 cases were mild cases, in which sudden rupture of the serosa and extravasation took place; 2 cases with equally sudden symptoms had a septic peritonitis already under way, which cases were so sick and stupid that it was impossible to diagnose the beginning of the general infection.

Fourteen cases, as has been seen, had early warning pain, earlier by a definite number of hours than the severe symptoms, and all these cases were found to be far advanced in general peritonitis at the time of operation. These early symptoms undoubtedly meant beginning peritoneal infection, as is shown by the after development, and the severe symptoms meant general septic peritonitis then existing. Whether these early symptoms meant a necrosed serosa without perforation, or a pin-point perforation protected or not protected by delicate adhesions, it is positive that general septic peritoneal infection started at a time coincident with these early symptoms and not coincident with these severe ones.

It must be admitted that these 14 cases had advanced general peritonitis at the time of operation; that they had signs and symptoms antedating the symptoms of peritonitis; that the severe symptoms in the cases of actual perforation differed in no way from the severe symptoms in the cases of general peritonitis from other causes of infection; and if this statement is true, then the diagnosis of these cases should have been made before these severe symptoms set in, and, therefore, a decision as to what symptoms are of importance in making a sufficiently early diagnosis of peritoneal infection in these cases is of the utmost necessity.

From a study of these cases and also of the cases reported by Cushing it would seem that complaints of abdominal pain in any typhoid case, especially if localized, and especially in cases of mild type, should be regarded as serious danger signals. We have already seen that in our sick and septic cases the condition of the patient may be such that moderate pain may not be noted, and that therefore a complaint of abdominal pain on the part of such a sick case may mean an established general peritonitis. (See Cases II and VI.)

In the mild cases of typhoid complaint of abdominal pain should lead to a strong suspicion of beginning peritoneal infection through a preperforative stage, or of a slow peritoneal infection through perforation, with or without temporary adhesions; or of a beginning infection from some other source than the intestine, as in Case XXI. This plan may vary in severity and locality. It is most frequent in the right iliac region, and is most often associated with

¹⁵ Revue de Chirurgie, 1897, p. 169.

localized tenderness and spasm. To confirm the suspicion of beginning peritoneal infection a leucocytosis, steadily rising, during a few hourly counts, at least, should accompany this pain. Vomiting is rare. The temperature generally rises and the pulse also.

It cannot be too strongly emphasized that abdominal pain, especially if localized, complained of by the patient in the mild or moderately severe typhoids, is not a frequent occurrence unless it means peritoneal infection, localized or general. By pain we do not mean the discomfort or uneasiness accompanying meteorism or distention by gas.

We have made a study, bearing upon this point, of 70 cases of typhoid fever at the Massachusetts General Hospital occurring in the last two years, and have found, according to the records, that in the majority of cases of the mild and moderately severe typhoid no genuine abdominal pain whatever was complained of, even in the presence of distention, diarrhea and hemorrhage. Seventy cases: 20 severe typhoids and 50 mild; 7 cases died. In only 8 cases was any abdominal pain recorded as a complaint (11.4 per cent.), and 4 of these cases died (1 case with probable certain perforation or peritonitis, 1 of pneumonia, and 2 cases with suspicious symptoms of peritonitis). The other 4 cases had slight and transient abdominal pain, and recovered. Abdominal distention of more or less extent was noted in 10 cases, without any pain. Intestinal hemorrhages are noted in 8 cases, but pain accompanied these in only 1 case. Diarrhea is recorded as marked in 3 cases, but in only 1 was any pain, and in this slight.

With reference to this same point the records of the Boston City Hospital have been gone over for a year. Pain is recorded as complained of in 22 cases out of a total of 160 cases; of these 22 cases 5 are included among those operated on, which leaves 17 cases with pain, or about 10.6 per cent. of the total.

Localized muscular spasm and localized tenderness are diagnostic signs of the utmost importance associated with pain and leucocytosis.

The question as to whether the site of the perforation or the region of the beginning peritoneal infection materially affects the prognosis both of unoperated and operated cases is one that needs discussion. The fact that the appendix may be the seat of the typhoid perforation was first noted by Dr. R. H. Fitz, and the relation of this fact to the prognosis in cases of typhoid perforation was thus stated by him: "The probability of its occurrence (perforative appendicitis) furnishes the best solution to the prognosis of intestinal perforation in the latter disease (typhoid fever). Most cases of recovery from symptoms of perforation of the bowel in typhoid fever are those in which an attack of appendicitis is most closely simulated, while the fatal cases of perforation of the bowel in typhoid fever are, in the great majority of instances, those in which other parts of the bowel than the appendix are the seat of the perforation."

This set of cases does not furnish any case in which the perforation was appendicular. Fitz found this variety of perforation in 2 per cent. of 167 cases. In a series of cases operated upon—that is, our own set, 24; Cushing's, 8, and Finney's, 3; 35 in all—no instance occurs. Gairdner's¹⁶ 47 cases included only one of *perforated appendix*. Perforation in the appendix can only have a more favorable prognosis

because of its occurrence in a fixed portion of the bowel in a remote region where the chances of the peritoneal infection being shut up by protecting and life-saving adhesions prevail.

It is certainly misleading to state that most cases of recovery from symptoms of perforation are those in which an attack of appendicitis is closely simulated, because—as can be plainly seen from a study of our list of cases—many of them had beginning symptoms which suggested appendicitis, and yet the perforation was in the ileum, and the peritoneal infection became general and fatal. It is imperative that we should not be prevailed upon to wait operation in the hope that the perforation may be in the appendix, considering that the chance of localizing the infection by delay offers more hope to the patient than speedy operation, because the attack began with right iliac pain and tenderness and muscular spasm. The better teaching is that perforation of the appendix may occur in typhoid, although *rarely*; that when it does occur the infection may be localized, as in any cases of perforating appendicitis; but the great majority of cases of perforation of the bowel in typhoid fever may simulate an acute appendicitis.

A study of our whole list of 27 cases shows the following: Eleven cases had initial symptoms referred to the right iliac region, with one or more of the symptoms of localized pain, tenderness and spasm. Any one of these cases might have been suspected as the appendicular variety, and delay counselled because of the apparent localization of the signs; but 9 cases were perforations of the ileum, followed in all but 1 by general infection, and 2 had no cause for symptoms. In only 3 cases pain and tenderness, etc., were initial in the left iliac region. One was a case of general peritonitis from a suppurating gland, and the other 2 cases were very sick cases, in which the peritonitis had become extensive and general before any symptoms were noted. In 7 cases the pain and tenderness with rigidity were general. In 1 case locality of pain is not given. Therefore, we may conclude that the majority of cases of perforation have initial symptoms referred to the right iliac region; that in a very small percentage of all such cases is the perforation in the appendix; that general abdominal pain and symptoms, or symptoms and signs referred to the left side, point to the existence of a general peritonitis, the onset of which has been gradual and not definitely noted.

LEUCOCYTOSIS AS A DIAGNOSTIC SYMPTOM.

A careful comparative white blood count at frequent intervals in the presence of abdominal pain in typhoid may furnish the most valuable evidence of beginning peritoneal infection. A full and complete knowledge of leucocytosis in typhoid peritonitis has not been reached. Thayer, in 1892, first showed that in typhoid fever the white blood corpuscles are less than normal, or, in other words, that a condition of hypoleucocytosis exists, and that the smallest number of leucocytes is usually found at a period of time corresponding to the height of the fever. Cabot, in 1897, reiterated these facts and pointed out that a low leucocyte count in typhoid meant freedom from septic complications. Our study of 70 typhoid cases at the Massachusetts General Hospital is merely corroborative of the statements of Cabot and Thayer. The majority of cases at entrance had a hypoleucocytosis

¹⁶ Glasgow Medical Journal, 1897, vol. xlvii.

of about 4,000; the lowest count in an uncomplicated case was 1,800. Septic complications, as phlebitis and otitis media, caused a leucocytosis. In nearly all the cases, however, only one white count—the one at entrance—is recorded; and even when this early count was high—over 9,000—no other record is available. Certainly more frequent counts should be made in the future. The fact that leucocytosis in typhoid means inflammatory complications in the majority of instances, and that leucocytosis was present in peritoneal infection, was noted by Cabot (1897); and Finney, in his paper on "Typhoid Perforation" (1897), considered the most important symptoms of perforating typhoid ulcer to be "marked increase in the number of white blood corpuscles in association with continued abdominal pain." It does not appear that a full realization of the importance of a falling leucocyte count or the absence of leucocytosis in general peritoneal infection is held by a majority of medical men. Cabot stated that certain cases of general peritonitis would show no leucocytosis because of their being too sick to react against the infection.

Cushing, in his two papers on this subject, seems to have most carefully studied leucocytosis as a symptom, and his work strongly suggests that a white blood count, steadily rising from the first complaint of abdominal pain (which is confessedly the first warning of local or general infection), with certain fluctuations, reaches a maximum point, and then as steadily falls. This he aptly calls the wave of leucocytosis, and raises the question as to whether a falling count or an absence of leucocytosis (other symptoms being present) may not be diagnostic of a well-established general septic peritonitis. He considered it rational to suppose that the enormous migration of leucocytes to enter into the seropurulent exudation was a sufficient reason for the falling or deficient white blood count in general peritonitis. This point is a very important one to settle, for diagnostic reasons. Cushing's conclusions from a careful study of leucocytosis in his cases are here given:

"If this septic complication, namely, complication causing leucocytosis, is a peritonitis which remains localized, associated possibly with a preperforative stage of ulceration or with a circumscribed, slowly forming peritonitis after a perforation, it may be and usually is signalized by an increase of leucocytes in the peripheral circulation. If, however, a general septic peritonitis follows, the leucocytosis may be transitory and overlooked, as it disappears concomitantly with the great outpouring of leucocytes into the general peritoneal cavity.

"In order that the white blood count be of any diagnostic value whatever in the presence of abdominal symptoms it is essential that, for the purpose of comparison, previous counts have been made. An individual count at such a critical time may be misleading—in the first place, because a condition of hypoleucocytosis often is a characteristic of the fever, and a count comparatively within normal limits, of from 8,000 to 10,000, may actually represent a double increase in the number. Secondly, because by a single count the transient wave of leucocytosis may entirely escape notice.

"The flood-tide of this increase is a transient affair, lasting but a few hours in some cases, and may in consequence entirely escape observation, since there

ordinarily is a following rapid diminution in number, corresponding to the spread of peritoneal infection. In some instances, when the process for the time remains localized, and in cases in which the preperforative stage exists, the leucocytosis may be of longer duration, the condition being analogous to that associated with acute appendicitis (typhoid or otherwise) before perforative peritonitis has occurred. Suppurative complications of typhoid, here or in other situations where they remain localized processes, have ordinarily a persisting leucocytosis, as is well known."

These conclusions of Cushing are reinforced by careful observations, and seem to give the best interpretation of leucocytosis in this class of cases. Whether absence of leucocytosis in the face of symptoms of peritonitis means well-advanced general peritonitis in every case has not been proven absolutely. Certainly one sure thing is that a single isolated blood count on the appearance of abdominal symptoms may be of little or no value. In one of Cushing's cases of perforation an hourly blood count showed that the white corpuscles rose in two hours from 4,800 to 10,400, and in an hour and a half later dropped to 7,000. In another of Cushing's cases of intestinal perforation a drop of 20,000 in three hours after the probable time of perforation is noted. The appearance of leucocytosis in the presence of abdominal pain may, however, be misleading as a diagnostic symptom of peritoneal infection.

As is well known, the existence of a septic focus, an abscess, or a septic phlebitis elsewhere might furnish cause for the leucocytosis coincident with abdominal symptoms. One or more cases have been reported in which the symptoms of peritoneal infection, including leucocytosis, led to an exploratory laparotomy, with negative findings. Cushing has had such a case. Case XXIII in our series is also such a one. Finney has been led to an exploratory laparotomy in which the symptoms suggesting intestinal perforation, including a leucocytosis, were probably due to an iliac thrombophlebitis. This case recovered. It has been found by Cushing that a post-operative leucocytosis occurs after all abdominal operations.

With these facts and theories in mind as representing the latest opinions in regard to leucocytosis as a symptom, reference to our series of cases with a view to find corroboration of these facts furnishes very little of value because of the lack of comparative counts. In almost all of the cases only one blood count was made.

To take our cases in detail, the leucocyte count is only recorded in 11 cases of the 21 in which perforation or peritonitis was found. In the first set of cases, namely, those without warning symptoms, the leucocyte count is recorded in 4 cases. In Case IV (the case of perforation protected by local adhesions) a leucocytosis of 14,300 was found at an unknown number of hours after the onset of abdominal symptoms. No other count is recorded. In Case V one count at the onset of symptoms showed 6,000; no other count. Case VI showed a leucocytosis of 13,200. This case was one in which perforation and localized abscess formation took place without any diagnostic symptoms at a time probably remotely preceding the severe symptoms which demanded operation. Occasional comparative leucocyte counts as a matter of medical routine might have led to the suspicion of a septic complication. Case VII showed a white count of 8,600 at the onset

of the symptoms; no other count is recorded. The other 3 cases of our first set have no record of any leucocyte count.

Taking our second set of cases, namely the 14 in which premonitory symptoms existed, as we have seen, it would have been of the *greatest importance diagnostically* to have known what the white blood count had been for several days before the symptoms, and also to have known what the white blood count at early intervals after the occurrence of abdominal pain was; yet in only 2 cases was there any leucocyte count taken at this time, and then only one isolated count in each case is recorded.

Case XVI had a white blood count of 6,900 two days before he complained of abdominal pain; at the first complaint of pain a count of 8,000. Then no further leucocyte count was taken for twenty-four hours; but when severe symptoms (which meant general peritonitis) set in a white count equalled 17,200. Certainly in this case frequent and comparative blood counts might have contributed much to our knowledge of a rising and falling count. Case XV, seen after the warning complaint of pain, had a white blood count of 31,000. Twenty-four hours after, when general peritonitis had set in, the white count had dropped to 23,000 and 17,000. Only these three counts are recorded.

It is much to be regretted that in this series of cases in which 14 had premonitory symptoms, such slight knowledge in regard to the diagnostic value of the white blood count is available. In Case XIV the blood count at the time of the first abdominal symptoms showed 10,000 whites, but no other count was taken. Six cases of the 14 record no blood count at the occurrence of either mild or severe symptoms. In 6 cases the only blood count was made when severe symptoms appeared. In Case XII, a case of extensive peritonitis at operation, the white cells were 3,800. In Case XIII, also a case of extensive peritonitis, the white cells were 5,400. In Case VIII, also a case of general peritonitis, the white cells were 7,300. In Case II they were 8,000 just before operation.

Here are 4 cases in which an isolated blood count, taken when peritonitis had become general, showed no leucocytosis. Whether a previous leucocytosis had existed, and whether the absence of leucocytosis in the presence of general peritonitis is a diagnostic sign, cannot be determined because of the absence of comparative counts in all of these cases.

Case IX had a leucocytosis of 16,000 after general peritonitis was evident. Ten days before the count was 14,000. No interval counts are recorded.

Case X had a white count of 14,000 with the symptoms of general peritonitis. At entrance to the hospital, ten days before, his white count was 6,500. No other counts are noted.

It is not possible to establish anything new and valuable in regard to leucocytosis as a symptom from the study of these cases, because of the lack of sufficient data. The one conclusion is that the leucocyte counts in typhoid cases should be sufficiently frequent to be of comparative value; that any complaint of abdominal pain or the appearance of abdominal symptoms demand frequent counts.

The question of diagnosis and the relative value of abdominal symptoms and leucocytosis as deciding for operation is illustrated in a negative way in Cases

XXII, XXIII and XXIV. Cases XXII and XXIII were mild or moderately severe typhoids, practically convalescent in the fourth and sixth weeks of the disease. Case XXII had no leucocyte count, and it seems questionable whether it would be justifiable to operate upon a case with such abdominal symptoms without the corroborative evidence of a leucocyte count. It has been done, however, in other cases (the case reported by Herrington and Bowlby¹⁷). Case XXIII had practically the same abdominal signs and symptoms as Case XXII, except that there is no record of the temperature at this time, which in Case XXII was rising from a normal curve, and Case XXIII had also a leucocytosis of 12,000 one hour before the operation. While this leucocytosis is not large, the white count had risen from 9,000 twelve hours before the operation. Neither of these 2 cases seems to have been very sick or to have had any great amount of shock. Case XXIV seems to have been a case of typhoid septicemia, in which no certain cause for the abdominal symptoms was found. No leucocyte count and no bacteriological cultures are recorded in this case. Probably he died from typhoid fever, although the presence of a green, necrotic fibrin patch found on a loop of the intestines at the operation leaves room for the thought that the abdominal symptoms and death may have been caused by a virulent peritoneal infection.

RESULTS.

Of the 21 cases in which the local or general peritoneal infection was found at operation 3 cases recovered absolutely — that is, 14.3 per cent. recovered. In Case IV — a case of operation in the pre-extravasation stage — it is noted by Dr. F. S. Watson that the protecting adhesions were very slight and delicate, and that in Dr. Watson's opinion they would not have long resisted fecal extravasation.

The 2 other cases which completely recovered are Cases XVI and XVII, both cases of general septic peritonitis. Together with Abbe's¹⁸ case they prove that it is not impossible to save cases of general peritonitis in typhoid fever. The bacterial infection, however, in both of these cases, as well as in the case of Abbe's, was not determined.

Case I properly should be classed as a recovery from an operation for intestinal perforation in typhoid, for death occurred from intestinal hemorrhage five days after the operation, and the autopsy showed the suture tight and no general peritonitis. If this case can be classed as a recovery, we have four recoveries from operation from acute peritoneal infection in typhoid, or 19 per cent.

Case IX cannot be considered as recovering, but it is a case of death caused by giving way of the intestinal sutures put in at the first operation.

Taking our 24 cases of typhoid fever which were operated on, 21 with abdominal infection and 3 with no infection found at operation, we have 6 cases of recovery from laparotomy in typhoid fever, or 25 per cent.

Cases XXII and XXIII are noteworthy as showing that the mere abdominal operation in a slight or moderately severe typhoid is not a very fatal thing when no peritoneal infection is present. Case XXIII was also not a very favorable subject for any opera-

¹⁷ Medico-Chirurgical Transactions, London, vol. lxxx, p. 127.

¹⁸ Medical Record, 1895, vol. xlvii, p. 1.

tion, because of cardiac and renal complications, yet both these cases made uneventful recoveries from the operation. In Case XXII an appendectomy was done for an old chronic process in the appendix. In Case XXIII the operation was simply exploratory. Two of Cushing's reported cases further show that an exploratory laparotomy or a simple appendectomy in a mild or moderate typhoid is usually well borne. We have seen that the 5 cases (Cases I, III, IV, V and VII) were especially favorable cases for operation. Three of these died, and they were all cases that could have stood laparotomy just as well as Case XXII or Case XXIII had it not been for the peritoneal infection, the nature of which was undetermined in 2 cases and found to be the bacillus typhosus in 1. These 3 fatal favorable cases point to the fact that a fatal peritonitis may set in within from one to two hours after perforation. Of these 3 cases Case III died on the third day, Case V on the fourth day and Case VII on the second day.

Of the 14 cases in our second set, in all of which operation found more or less extensive peritonitis, and in regard to which it may be said that the operation was directed against the peritonitis primarily, 12 died; 1 lived eight days and died from secondary extravasation. All the others died within fifty hours after the operation; 2 within six hours, 7 within thirty-six hours, and 1 on the operating-table.

If we grant, for the sake of argument, that the sick typhoids, 6 in number, might have died from their typhoidal condition complicated by an abdominal operation, even if peritonitis had not been present, we still have 8 mild cases in which the cause of death was probably a peritoneal infection, and not the operation itself.

Calculating statistics of the operative treatment of general peritonitis from any cause is foolish business. The chances for success in such treatment depend on so many factors: the amount and virulence of the infection, the condition and resisting powers of the patient, the differing operative technique of different men, the time of operation, the kind and amount of anesthetic used, etc. In trying to find out why some of these cases lived and some died it would be well to take only the 15 mild cases, throwing out for the time being the 6 severely sick typhoids as doubtful cases for standing the shock of the abdominal operation, leaving ourselves 15 mild typhoids for consideration. Of these, 5 had perforation without any warning symptoms, and were operated upon very speedily thereafter; 2 recovered, 1 because the operation was done in the pre-extravasation stage—a rare event; 3 died from peritoneal infection from the intestinal extravasation, although no macroscopical signs—or, at most, slight signs—of general peritonitis were present at the operation. Ten of these mild cases had general septic peritonitis at the time of operation; 2 recovered.

When we consider the reasons for the recovery of 2 of these cases and the death of 8 we are brought face to face again with insufficient recorded data. The time of operation is recorded in only 3 of the fatal cases: 1 case, thirty minutes; 1 case, thirty-five minutes; 1 case, one and a half hours.

The time of operation in the cases that recovered is not noted. The kind of bacterial infection in the cases that recovered is unknown. In 1 case that died it was an infection of bacillus typhosus; in 1 case infection of the colon bacillus and other doubtful bacteria.

Ether was the anesthetic in every case; but the amount given, and the time the patient was kept under it, and the effect on the pulse are in no case recorded.

Cushing has enthusiastically endorsed the use of cocaine anesthesia in exploratory laparotomies in acute abdominal infection in typhoid. He has not, however, proved in his article that the majority of his cases were any better off than the cases operated upon under ether. It is not the feeling of this Committee that operation under cocaine anesthesia is advisable in cases of mild typhoid whose general condition of mind and body is fairly good, because rationally the shock to the mental and physical organism from an abdominal operation, with all its attendant manipulation, to a conscious patient must be greater than the judicious administration of ether. In certain cases of advanced peritonitis in which the patient is sick or nearly moribund, stupid and unintelligent, the use of local anesthesia may be advantageous.

Irrigation of the peritoneal cavity with hot salt solution or hot sterile water was practised in every case of general peritonitis but 1, namely, Case XVI. In this case careful wiping out of the cavity with gauze was done. Drainage with gauze or with tube and gauze was used in every case but 2, both of which died. It does not appear from available data that these variations in technique affected the result. The surgical opinion is practically unanimous the world over, that the operation for septic peritonitis must include free incisions, careful cleaning of the abdominal cavity by wiping, irrigation and free drainage.

It is impossible to work out by percentages the chances of recovery in cases of intestinal perforation and peritoneal infection in typhoid fever. It is a question of peritoneal infection (kind, amount and virulence), together with the condition and resisting powers of the patient, who has already contended with another disease. It is not the mere fact of operating in these cases that kills them, and it cannot be said that the typhoidal condition forbids an operation. It has been shown that a majority of the cases of perforation and infection are mild typhoids, and it has also been shown that abdominal operation in the absence of infection is not necessarily fatal, but, on the contrary, is well borne. The peritoneal infection is the thing that kills in the majority of cases.

A peritonitis from a perforation of the intestine in typhoid may be caused by virulent or non-virulent organisms just as in any other perforation of the bowel. Most of the typhoid perforations operated upon in this series of cases and all cases hitherto published have had a general peritonitis that would kill a majority of the men who had contracted it from other causes than typhoid, namely, perforated appendix or wounds. General peritonitis of the intestinal variety in a strong man, without typhoid fever, is a very fatal affair, and the chances of a recovery from operation in any case cannot be established by statistics except in a general way.

CONCLUSIONS.

This series, unfortunately, leaves much to be desired in the way of accurate and carefully reported study of many of the cases in the light of the most recent experience; but from the foregoing analysis of the material we can definitely conclude that:

(1) In many very sick typhoids perforation or

peritoneal infection cannot be diagnosed until the results are already widespread and of fatal extent. The chances of a fatal issue from an abdominal operation in such cases are overwhelming.

(2) In mild typhoids of fair general condition an abdominal operation is readily borne, provided no peritoneal infection is present.

(3) A small number of mild typhoids may have sudden perforation with free extravasation. In these the symptoms are fulminant, but localized to a great extent, and in these

(4) Operation must be done at once, for general infection may become past relief in from one to five hours, and walling off of the perforation by protecting adhesions is so rare as not to be counted upon.

(5) In the majority of mild cases, beginning infection (whether from perforation or not) is marked by comparatively slight symptoms—local pain, tenderness, spasm and leucocytosis. The severe following symptoms mean general peritonitis.

(6) These warning symptoms demand serious consideration and study, but in many cases are either not rightly understood or not acted upon.

(7) Complaint of abdominal pain in a case of typhoid should always lead to a suspicion of beginning peritoneal infection.

(8) Frequent leucocyte counts are needed in every case of typhoid. In the presence of abdominal pain an hourly count is necessary.

(9) Pain associated with local tenderness and muscular spasm and a rising white blood count points in most cases to an operation; in all cases to a surgical consultation.

(10) In not a few of this series of cases operation was imperative a varying number of hours before it was done.

If it can be appreciated that the severe symptoms more often mean general peritonitis, it must be understood that the milder and earlier symptoms are the important ones.

REPORT OF CASES.

CASE I. Seelcy, male, age thirty-two years, white. Drs. Bowditch and Thorndike, Boston City Hospital, September, 1899. Sudden perforation. Operation within three hours from first symptoms. No general peritonitis. Death five days after from intestinal hemorrhage. Uneventful until the sudden abdominal symptoms. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. Not a sick man. End of sixth week, forty-second day, operation. Ether. Time not known. Incision, right iliac. Irrigation. Gauze drainage. Sudden intense abdominal pain, not localized. Marked shock. Pulse 150. Temperature 102.6°. No leucocyte count recorded. No fall of temperature. No vomiting. Operation three hours after. No general peritonitis. Intestinal contents in abdominal cavity; fluid fecal matter. Perforation in ileum, two feet from cecum. Closed with silk. No cultures. Excellent result for five days. Operation for the perforation successful. Five days after, excessive intestinal hemorrhage causing death. The autopsy showed that the operation was a success. No general peritonitis. The suture was intact and protected by adherent intestines with slight local peritonitis, from which the colon bacillus and staphylococcus albus were grown. Cultures from rest of abdominal cavity negative.

CASE II. Bowler, male, age twenty-five years, negro. Drs. G. B. Shattuck and F. B. Lund. Boston City Hospital, October, 1899. A case of general septic peritonitis from necrosed patches of peritoneum, *without perforation*. Symptoms of perforation, however. Moribund at opera-

tion. Death. Severe course. Widal positive. Diazo (?). Abdominal pain constant. Fourth week, twenty-second day. Operation. Ether. Time (?). Incision, right iliac. Irrigation and drainage. Very sick case. Temperature high. Delirious. Abdominal pain and tympanites at frequent intervals. Two intestinal hemorrhages before operation (two days before). Sudden chill, shock, collapse, rising temperature and pulse. Distention. No vomiting. Operated on seven hours after, when in moribund condition. No leucocyte count. No perforation. Two necrosed patches in wall of ileum over ulcers. General peritonitis. No cultures made. Gas and serous fluid escaped. Intestines clean and not injected. Several necrotic areas. Necrosed places, inverted with silk. Death in eighteen hours. Cause, peritoneal infection and typhoidal state. Compare this case to Case XVI. This case had sudden severe symptoms from peritonitis without perforation. An unfavorable case from all points of view. Peritoneal infection from necrosed patches, probably virulent, whereas in Scappacci's case infection from necrosed patches probably non-purulent, with the abdominal pain and distention marked. Specially associated with hemorrhages. Careful white blood count at frequent intervals might have been suggestive.

CASE III. McCann, male, age thirty years, white. Dr. F. C. Shattuck and Dr. Warren. Massachusetts General Hospital, January, 1899. Sudden perforation without warning. Operation within two hours. Death in three days. Mild course. Widal positive. Diazo positive. Bronchitis. No abdominal complaints. Fifth week, thirtieth day, incision, right iliac. Irrigation. Drainage, gauze. Ether. Time of operation (?). Mild fever complicated by hemorrhagic bronchitis. Intestinal hemorrhage two days before perforation. No warning. Patient comfortable, when sudden sharp pain in right iliac region with great tenderness and muscular spasm. No white count at this time. White count two days before 3,800. White count at entrance, ten days earlier, 10,000. No vomiting. Temperature subnormal, but began soon to rise. Pulse below 100. Operation one and a half hours after. Perforation in ileum, site not mentioned. No general peritonitis. Some free fluid. No bacteriology. Death on third day, in sixty hours, with symptoms of general peritonitis. No autopsy.

CASE IV. Scott, male, age twenty-eight years, white. Drs. Withington and Watson. August and September, 1895. Perforation. Localized peritonitis. Operation in pre-extravasation stage. Recovery. Mild course. No Widal test made. Diazo positive. Rose spots. Eleventh week in a relapse. Operation. Ether. Time (?). Incision right iliac over induration. No irrigation. No drainage. Long course, one or two relapses. No special complications. Twenty-three days before perforation, two or three hemorrhages. No abdominal pain recorded, but some tympanites. Without warning sudden severe pain in right iliac region at 2 A. M. Temperature did not fall, but rose. Pain steadily worse. Pulse rapid and weak. Some cyanosis and prostration. Muscle spasm on right side of abdomen. Dulness and indurated feeling to right of umbilicus, "size of hand." No distention. No vomiting. "The symptoms of local pain and rigidity increased while patient's general condition improved." Leucocytosis 14,350. Operation twelve hours after first pain. A loop of ileum adherent to parietal peritoneum around a perforation size of a dime; well-defined area of local peritonitis. Limiting adhesions delicate. "Every probability that these adhesions would not have resisted fecal extravasation long and that a general peritonitis would have resulted if case was left to itself." (Watson.) Perforation closed. Recovery uneventful. No cultures.

CASE V. Dolan, female, age twenty-five years, white. Drs. George B. Shattuck and Lund. Boston City Hospital, November, 1899. Perforation. Beginning general infection with typhoid bacillus. No definite warning symptoms. Death. Mild course. Widal positive. No complications. No abdominal complaints. In second week, twelfth day. Operation. Ether. Time, thirty min-

utes. Incision, median. Irrigation. Drainage. Uneventful till twenty-six hours before operation, then hard chill (no other record at this time). Next A. M. (twelve hours after) several chills. Twenty-two hours after first chill and four hours before operation abdominal pain above pubes. Tenderness and spasm (more on right). Temperature fell to 98°, but rose at once. No distention. Pulse 120. No vomiting. Nausea. Leucocyte count, recorded as taken when pain complained of, 6,000. No other count. Perforation eight inches from cecum in ileum. Gas and turbid fluid in general abdominal cavity. General peritonitis not far advanced. Infection, pure typhoid bacillus. Perforation closed with silk, also two thin places enfolded. Death on fourth day, with symptoms of general peritonitis. Perforated coil of intestine was lying low down in pelvis. (Note locality of pain above pubes.) Perforation probably when pain was first noted. Operation reasonably soon. Typhoid infection, probably a virulent one. The general peritonitis was not far advanced at operation, yet was undeniably a general infection.

CASE VI. Devlin, male, age twenty-four years, white. Drs. F. H. Williams and Munro. Boston City Hospital, November, 1899. Perforation and local abscess formation, with no diagnostic symptoms, followed by general peritonitis with severe symptoms. Death. Severe course. Widal negative. Rose spots. Large spleen. No complications. In fourth week, twenty-sixth day, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage. Case stupid and sick. Fever high. No abdominal complaints till special ones. Two severe intestinal hemorrhages on day before in A. M. and P. M., accompanied by hard chill and collapse. Very near death at this time. Unconscious twenty-four hours after this. Abdominal pain. Tenderness, mainly right iliac. Distention. Rigidity. No vomiting. Leucocytes 13,200. Temperature (?). Operation twenty-eight hours after hemorrhage. Operation four hours after pain, etc. General peritonitis with cloudy fluid; pus and feces in left pelvis free. In right iliac region an abscess cavity walled off by fairly strong adhesions, filled with pus, blood and feces; large ragged hole in ileum near cecum. No cultures recorded. Perforation closed. Death in forty-eight hours from general peritonitis. No autopsy. This case was one of perforation and forming of a walled-off abscess with no symptoms complained of by a very stupid, sick man. Time of extension to a general peritoneal infection doubtful. No cultures from general peritoneal fluid, as well as from local abscess, were taken.

CASE VII. Marchiono, male, age thirty years, white. Drs. Henry Jackson and Munro. Boston City Hospital, July, 1898. Perforation. Sudden onset. Peritoneal infection not known. Quick operation. Death. Mild case. Widal positive. Diazo (?). No complications. No abdominal complaints. In third week, twentieth day, operation. Ether. Time, one-half hour. Incision, right iliac. Irrigation. Drainage. Ten A. M. pain complained of in abdomen, with no special tenderness, nothing localized. No spasm. Leucocyte count then 8,640, not taken again (?); 1.30 P. M. severe pain and chill, collapse. Abdomen everywhere tender and rigid, but especially on right side. Fall of temperature recorded to 98°, rising soon to 105°. No vomiting. Operation eight hours after first pain, five hours after collapse. One perforation in ileum ten inches from cecum. No free fluid. "No extensive signs of peritonitis." Perforation closed. No cultures recorded. Death in forty-eight hours without symptoms of peritonitis. Partial autopsy through wound. Slight microscopic signs of general peritonitis, but no bacteriology. Cause of death (?). Infection not known. In this case quick operation after first symptoms. Beginning peritonitis.

CASE VIII. Schick, male, age sixteen years, white. Dr. Gannett and Dr. Mixter. Massachusetts General Hospital, August, 1897. Case of perforation. Symptoms of peritonitis. Perforation probably took place some hours before first symptoms. Death. Severe course. Widal positive. Diazo positive. End of third week, twen-

ty-first day, operation. Ether. Time (?). Incision, median. Irrigation. Drainage, gauze. Albumin, a trace in urine. Mitral regurgitation. Compensated. White count on entrance 4,000. High temperature and great abdominal distention all the time in the hospital, but no pain till August 20th (the day before severe symptoms) — that is, twenty hours before operation sharp pain in the left iliac region. No white count. Temperature falling gradually to 99.4° the following evening. No record of close watch of case. Next A. M. severe symptoms. Very great pain. Great distention, "board-like abdomen, most tenderness left iliac," bad pulse, anxious facies, no vomiting. White count 7,300. Perforation eight inches from cecum in ileum. Virulent general peritonitis, pus and feces. Intestines covered with fibrin. No cultures. "Peritonitis of longer standing than twenty hours." Death in fifty hours. Peritonitis, spreading from a local area of infection or from perforation which took place without being noted. Small leucocyte count, possibly due to extensive purulent peritonitis. No comparative counts except one at entrance.

CASE IX. Hanahan, male, age twenty-seven years, white. Drs. Fitz and Beach. Massachusetts General Hospital, November, 1897. Perforation. General peritonitis. Operation. "Second perforation" or giving way of sutured area eight days after second operation. Death. Mild course. Widal positive. Diazo positive. First of third week, operation. Ether. Time, thirty minutes. Incision, median. Irrigation. No drainage. Slight bronchitis. Trace of albumin and hyaline and granular casts in the urine. Nothing pointing to the abdomen save a little distention. No intestinal hemorrhages till after the first operation. December 6th, distention and tenderness to the right of the umbilicus. Temperature rising, pulse steady, no white count then. Leucocytosis at entrance, November 27th, 14,100; November 29th, 14,200; December 8th, 16,000. December 7th, tenderness increasing and temperature rising. No white count. December 8th, gradually falling temperature and great increase in tenderness and distention of abdomen. Liver dullness obliterated. White count 16,000. General tenderness, pulse 130, temperature 104°. No vomiting. No complaint of pain. Operation next day (December 9th), about sixty hours after first warnings and after twenty-four hours after symptoms of general peritonitis. The infection was a slowly spreading one; the severe symptoms on December 8th were probably due to the general peritonitis. The condition on December 6th and 7th strongly suggests a pre-extravasation stage, but comparative blood counts are not recorded. Operation would certainly would have been justified by these symptoms of peritonitis fully fifteen hours before it was actually performed. Perforation one-eighth inch in diameter, one inch from cecum in ileum (Beach). Closed. Foul gas and fecal fluid in belly. Yellow fibrin on intestines. No bacteriology. Did well after operation save for the continuation of typhoid temperature, averaging 102°, and three or four moderate intestinal hemorrhages. Some distention. Eight days after first operation pain all over belly, followed in three hours by collapse. Second operation found large necrotic area and ragged hole in the cecum which was, for a great space around ulcer, soft and gangrenous — "shows patches of necrosis." Peritoneal cavity contained much dark fluid, feces and blood. Died five hours after. Autopsy: Much foul fluid in the peritoneal cavity. Many ulcers in last three feet of ileum and in ascending colon. In cecum large necrotic areas, two small perforations, and two ragged large openings. In ileum no ulcer through to peritoneal coat, and no sutures found. Although this case has been considered a case of second perforation after recovery from the first perforation, the facts do not permit this view of it. The first perforation was said to be one inch from the cecum; the second operation and the autopsy found great necrotic softening and ragged holes in the cecum, and the autopsy found no ulcers in the ileum which were through to the peritoneal coat, and no trace of the silk sutures. The localities are practically coincident. It seems just to add that the case did well after the first operation until the

extensive necrotic changes in the cecum involving the sutured area caused giving way of sutures and second extravasation. Certainly eight days is too short a time in which a sutured ulcer could heal and vanish, and the silk sutures would not have disappeared.

CASE X. Hoyt, male, age nineteen years, white. Drs. F. C. Shattuck and C. B. Porter. Massachusetts General Hospital, October, 1896. Perforation. General peritonitis. No full study of early and warning symptoms recorded. Death. Mild course. No Widal test made. Diazo. No complications. No abdominal complaints. Thirteenth day, last of second week, operation. Ether. Time (?). Incision, median. No irrigation. Wiping. Gauze drains. No hemorrhages. Uneventful till October 26th. Pain in abdomen growing steadily worse. No collapse, no fall in temperature then. Pain steadily increasing. Legs drawn up. No records of any examination for spasm, etc., but records of morphine given. No white count. Eight hours after pain first noted symptoms of general peritonitis. Pulse 112, sweating, temperature down somewhat, pinched face, belly rigid, tenderness general. Liver dulness not obscured. No vomiting. White count 14,700. Operation eleven hours after first symptoms. Perforation in ileum "near cecum." This is called in record "a sloughing area from which gas was escaping, but no fecal matter." General peritonitis, seroturbid fluid of fecal odor. No bacteriology. Perforation infolded with two rows of sutures. Death in thirty-six hours after great distention with obstinate vomiting. The autopsy raises a speculation as to the cause of death — whether due to obstruction from too much infolding of intestines by the two rows of sutures. The lumen of intestine at the point of suture admitted the little finger-tip, but was obstructed by a hard, impacted mass of feces. Whites at entrance 6500. Eight hours after first pain 14,700.

CASE XI. Bresnahan, female, age forty years, white. Dr. C. A. Porter and Dr. Thompson. St. Elizabeth's Hospital, August, 1899. Perforation. Definite early symptoms, which were not considered important. Operation six hours after severe symptoms. Death. Mild type and course. No Widal test made. No diazo. Rose spots, etc. No complications. No abdominal complaints. In third week, operation. Ether. Thirty-five minutes. Incision, right. No second incision. Irrigation. Drained with gauze. Uneventful case. No intestinal hemorrhages. Twenty hours before operation, pain in abdomen with some tenderness. No white count. No examination through the day. Six and one-half hours before operation pain severe, pulse 135. Three and one-half hours before operation — that is, sixteen and one-half hours after first complaint of pain — symptoms of collapse (general peritonitis). Temperature 106°. Muscle spasm and tenderness in right iliac region. No vomiting. Leucocytes 8,000. One perforation six inches from cecum in ileum. V-shaped resection, silk sutures, one thin plate inverted. General peritonitis. Free fluid of fecal odor. Injected intestines, with fibrin flakes. No cultures taken. Infection unknown. Death thirty-seven hours after. Partial autopsy through wound. Existence of other perforations unknown. Cause of death, peritoneal infection. Beginning infection probably when first pain, twenty hours before operation. No importance attached to early symptoms. Severe symptoms due to general peritoneal infection.

CASE XII. McDonald, female, age twenty-six years, white. Drs. Buckingham and Munro. Boston City Hospital, September, 1899. Case of perforation with excessive general peritonitis. Perforation and peritonitis much earlier than diagnosed. No symptoms save of general peritonitis. Death. Severe course. Widal positive. Diazo (?). No complications. No abdominal complaint. First of fifth week, thirtieth day, operation. Ether. Time of operation (?). Incision (?). Entered the Boston City Hospital in the fourth week. Two intestinal hemorrhages five days before "perforation." After these very sick, stupid. Pulse and temperature high. Some abdominal distention. No abdominal pain until the morning of September 18th, then pain and tenderness, requiring mor-

phine. Four hours after this great distention, general tenderness, chill, collapse, poor pulse, temperature fell to normal, but began at once to rise. No vomiting. Leucocytes 3,800 (note, general peritonitis with excess of fluid). No other count recorded, and no time of this given. Operation six hours after pain, two after collapse. Case "moribund" at operation. Perforation site not recorded. "Excessive general peritonitis, evidently of long standing; appearance of intestines and abdominal cavity showed general peritonitis of much longer standing than six hours" (Munro). No bacteriology. Death on operating table. No post-mortem. This case was "stupid" and sick, and illustrates that perforation and general peritonitis may be gradual, and in a sick and stupid patient unnoticed until extreme septic infection.

CASE XIII. Starnar, male, age twenty-five years, white. Drs. Gannett and C. B. Porter. Massachusetts General Hospital, October, 1899. Perforation gradual. General peritonitis of long duration. No very definite diagnostic symptoms. Death in two hours. Mild case. Widal positive. Diazo positive. No complications. First of fourth week or end of third, operation. Ether. Time, one and one-half hours. Incision, median. Irrigation. No drainage. In the hospital ten days before operation. Abdomen distended most of the time, but no pain. Patient dull and stupid. Temperature high, pulse good. Four A. M. intense pain, abdominal distention. No examination. Eight A. M., September 13th, sudden vomiting. No pain complained of, but abdomen much distended and knees drawn up, face anxious, general rigidity, abdominal and general tenderness. No fall of temperature recorded. White count, 8.30 A. M., 5,400; 10 A. M., 4,400; 2 P. M., 6,300. Operation twelve hours after first pain. General peritonitis, cloudy fluid, gas in large amounts. Intestines much injected, distended, covered with fibrin. Perforation just above ileocecal valve in ileum, "pin-head," closed. No culture. "Condition on leaving table very bad." Death in two hours. No autopsy.

CASE XIV. McKenna, male, age thirty-eight years, white. Drs. George B. Shattuck and F. B. Lund. Boston City Hospital, December, 1898. Perforation. General peritonitis. Definite warning symptoms. Death. Severe course. Widal positive. Diazo (?). No complications. No abdominal complaints. End of third week, twenty-first day. Ether. Time (?). First incision in right iliac, second in left. Irrigation. Drainage, gauze and tubes. Seven P. M. of the day before operation general abdominal pain, also pain in rectum and bladder. General abdominal tenderness and rigidity. No change in pulse and temperature. Leucocyte count 10,000. Query as to why this was not repeated. No record of any observation of case till next day. The next morning (twelve hours after warning) symptoms of peritonitis recorded, namely, distention, anxious facies, vomiting, no fall of temperature, pulse rising to 120. Operation fifteen hours after first symptom. Perforation in ileum one foot from cecum. Closed. Seropurulent general peritonitis, pus and feces, fibrin. Infection, colon bacillus and other bacteria. Death in forty-two hours. Autopsy showed general peritonitis. No other perforations. Beginning of infection when first pain, fifteen hours before operation. Definite warning. No record of case for twelve hours. Leucocyte count day before, when suggestive symptoms appeared.

CASE XV. Mahr, male, age thirty years, white. Drs. Bowditch and Watson. Boston City Hospital, February, 1898. Perforations. General peritonitis. Early symptoms definite. Operation delayed forty-eight hours. Death. Mild course. No Widal. No diazo. Post-mortem proof. End of third week, operation. Ether. Time (?). Incision, median, and two counter incisions in flanks. Irrigation. Drainage tubes and gauze. No special complications. Temperature normal for two days. No abdominal complaints till last. September 15th, A. M., vomited and complained of sudden pain, first in epigastrium, then all over abdomen and shooting into testicle. Tenderness in abdomen general but most marked in right lower region and in epigastrium. "Shock not marked." Temperature

rose from normal to 102°. Pulse 150. In a few hours rigidity of abdomen and tympanites. Leucocytes on September 15th, 31,550; next day, 17,000 to 23,000 (September 16th). In spite of these marked warning symptoms no operation for forty-eight hours. Then symptoms of fatal peritonitis, case nearly moribund, temperature subnormal, cold extremities, marked prostration, cyanosis, marked distention and rigidity. Operation found perforation in ileum near cecum, size of "split pea." Found general peritonitis, pus, fecal fluid, dirty-gray lymph, coils adherent, pelvis full of turbid fluid, perforated coil fastened in abdominal wound. Infection, colon bacillus and great variety of other bacteria (?). Death in six hours. Autopsy: Numerous typhoid ulcers in lower ileum. A second perforation (pin-point) close to valve. General peritonitis. A repeated white count in this might have contributed much to the knowledge of a falling count in peritonitis.

CASE XVI. Scappacci, male, age nineteen years, white. Drs. Cutler and Elliot. Massachusetts General Hospital, June, 1899. General peritoneal infection from a necrosed and gangrenous patch over an ulcer. Threatened perforation. Definite warning symptoms of infection. Recovered. Mild course. Widal positive. No complications. No abdominal complaints. Last of second week, operation. Ether. Time (?). Incision, median. No irrigation, but wiping. Gauze drainage. Uneventful till June 4th, then pain in lower abdomen with general tenderness. Leucocytes June 2d, 6,900; June 4th, 8,000. No complaints or examination recorded for June 5th. June 6th, severe pain, abdomen tender and rigid, but more on right side; tympany, anxious facies, pulse 120, fall of temperature. Leucocytes 12,200. No vomiting. Operation two days after first abdominal pain. Four hours after, symptoms severe. Four feet from cecum a necrotic patch of peritonem, the base of intestinal ulcer. General peritonitis, seroturbid, purulent fluid and fibrin flakes. Intestines injected, with green fibrin patches occasional. No cultures. Patch inverted. Recovery after relapse of typhoid. Infection not determined. A case of perineal infection from ulcer not yet perforated. Symptoms of perforation all present. Infection probably non-virulent (?). Compare Case XXI.

CASE XVII. Bloom, male, age forty-five years, white. Dr. Brooks. Massachusetts General Hospital, September, 1898. Extensive general peritonitis from perforation in walking typhoid. Infection not determined. Recovery. Widal positive. Ambulatory case. In second week, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage, gauze. Case of typhoid as shown by Widal and by finding of typical ulcer indurations in ileum. Had been sick for a week or ten days, with pains in abdomen. Up and about out of bed most of time (walking typhoid). Brought to accident-room 3 A. M. in bad condition. Temperature 103.4°, pulse 134, respiration 60. History of pain in region of appendix, severe for two days, with nausea. Operation found brown, purulent fluid in general peritoneal cavity, with no odor; portions of small intestine covered with hemorrhagic spots, "size head of tack." Perforation found one foot from cecum. "Indurated area, size of quarter, in centre of which pin-point opening." The appendix removed, incidentally, for old thickening. No active process in it. Perforation took place two days at least (?) before entrance. No white count. Recovered. No return of typhoid state, though Widal positive after operation. Discharged, well, in six weeks. No bacteriology.

CASE XVIII. McCarron, male, age thirty years, white. Drs. Bowditch and Thorndike. Boston City Hospital, October, 1899. Perforation. Beginning general peritonitis. Operation eight hours after first symptoms. Death. Mild course. Widal positive. Diazo (?). No abdominal complaints. In the fifth week, thirty-third day, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage, tubes and gauze. Cardiac murmur, systolic, not affecting compensation. No other complications. Early warning symptoms: 2 A. M., sudden, sharp pain in right iliac

region. No fall of temperature, good pulse. Vomited. No blood count in this case. Seven A. M. (five hours after) severe symptoms. General severe abdominal pain and rigidity, especially right iliac. Pulse 120. Vomiting. Operation eight hours after first pain. Operation three hours after severe symptoms. Perforation in ileum three feet from cecum. Perforation closed with silk. Straw-colored fluid and fecal matter in abdominal cavity. Intestines injected and fibrin flaked — that is, beginning general peritonitis. No cultures recorded. Death eighteen hours after. No autopsy. This case perforated eight hours before operation, when pain noted. If the case had been carefully watched with hourly blood counts between the hours of 2 A. M. and 7 A. M. operation possibly could have been decided on three or four hours sooner. Severe symptoms at 7 A. M. due to general spreading infection.

CASE XIX. Ellam, female, age twenty-one years, white. Drs. Townsend and Burrell. Children's Hospital, October, 1899. General peritonitis. No perforation found. Symptoms of perforation or of peritonitis. Warning pain sudden and not reported. Death. Moderately severe. Widal positive. No complications. No abdominal complaints. Fifth week, thirtieth day, incision, right iliac region. Irrigation. Gauze and tube drainage. Intestinal hemorrhages daily from three days preceding severe symptoms. No abdominal pain with them. Sudden sharp abdominal pain in the middle of the night; no examination. At 9 A. M. (eight hours after) severe pain, abdominal tenderness and resistance, marked in right upper quadrant, slight distention. No leucocyte count recorded. No vomiting. Pulse 130. No fall in temperature noted, but rise to 104° at 9 A. M. May have fallen in the night. Operation eleven and one-half hours after pain. General peritonitis. Injected fibrin flaked intestines. No perforation found. "Thin place," but not necrosed; turned in. "Condition forbade search" for cause of peritonitis. No bacteriology. Death in twelve hours. No autopsy. This case could have been operated sooner. Severe symptoms came suddenly and were not reported for seven or eight hours.

CASE XX. Buckley, male, age thirty-four years, white. Drs. Jackson and Munro. Boston City Hospital, September, 1899. Signs suggestive of perforation in third week. Very sick after this. Perforations in ninth week. General peritonitis. Early warning symptoms. Death. Severe course. No Widal. No diazo. Rose spots. Cardiac enlargement. Systolic murmur. In ninth week, fifty-ninth day, operation. Ether. Time (?). Two incisions, first median; second right flank. Irrigation. Drainage, gauze and tube. In the third week, while pulse and temperature were high, sudden fall of temperature. Collapsed. Distended abdomen. Operation advised and refused. Leucocyte count then 6,800. No other count recorded. From this attack very sick until ninth week. Abdomen distended. Pulse and temperature high. One small intestinal hemorrhage in fourth week. Twenty-four hours before operation abdominal pain, especially on left side. Pulse and temperature rising still higher. Twelve to fifteen hours after pain general and severe. Vomiting. Temperature subnormal. Two perforations in ileum three inches apart (where?). Also in ileum (site?). "Recent scar, possibly healed perforation of third week." Perforations closed. General peritonitis, cloudy fluid with fibrin flakes. Infection, colon bacillus. Death ten days after. No autopsy. A frequent leucocyte count would have been very valuable.

CASE XXI. Powell, male, age twenty-seven years, white. Drs. Ames and Munro. Boston City Hospital, September, 1899. No perforation. General peritonitis from ruptured mesenteric glands. Symptoms of perforation exactly simulated. Infection, pure typhoid bacillus. Death. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. Last of third week, twenty-first day, operation. Ether. Time (?). Incision, median. Irrigation. Drainage. Pain, abdominal, more on left side at 11 P. M. This required morphine. No further record till 7.30 A. M. (eight and one-half hours later), when collapse, anxious facies, tympanites, general

abdominal tenderness, and rigidity. Temperature rising. (Temperature had been normal for twenty-four hours.) No vomiting. No leucocyte count. Operation twelve hours after pain. No perforations. Two suspicious thin places of inflamed peritoneum over ulcers. Seropurulent general peritonitis. Infection, pure typhoid bacillus. Death in twelve hours. Autopsy: No perforations. General peritonitis from two softened and ruptured mesenteric glands. This case strongly suggests the idea that symptoms of general peritonitis are identical with the "supposed symptoms" of perforation, and suggests the virulence of bacillus typhosus in peritonitis.

CASE XXII. Sawyer, female, age sixteen years, white. Drs. G. B. Shattuck and Watson. Boston City Hospital, December, 1897. No perforation. Nothing to account for symptoms of infection. Leucocyte count not taken. Recovered. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. In sixth week, thirty-sixth day, operation. Ether. Time (?). Incision, right iliac. No irrigation. No drainage. Uneventful case. Temperature falling steadily. At no time especially sick. The afternoon before operation, severe abdominal pain and tenderness in right iliac. Temperature rising to 104°. Pain local in "lower abdomen," gradually increasing, not sudden. Next morning pain and tenderness general, but more on right side. Temperature 102°, pulse 128. No vomiting. Abdominal muscles rigid. No distention. No leucocyte count. "Absence of marked shock." Operation seventeen to eighteen hours after first symptoms. No perforations. No peritonitis. Appendix not actively inflamed, but bound by old adhesions; removed. Recovery uneventful. Important case from diagnostic side. Pain, tenderness, rigidity, rise in temperature and pulse. No great shock. No vomiting. The leucocyte count is all important, but is not recorded.

CASE XXIII. Eagles, female, age twenty years, white. Drs. Vickery and Mixer. Massachusetts General Hospital, August, 1898. No perforation found at operation. No cause for symptoms of perforation, which were definite. Recovered. Moderately severe. Widal positive. Complications, cardiac and renal. Abdominal complaints frequent. Fourth week, operation. Ether. Time (?). Incision. No irrigation. No drainage. Moderately severe case. Complicated by mitral regurgitation, with poor compensation and by acute renal congestion. Both cardiac and renal complications improved in hospital. Frequent complaints of moderate abdominal pain, which was due to retention of urine and relieved by catheter. Probably cystitis. Temperature lower and sitting up in bed in fourth week, when pain in abdomen complained of; white count at this time 9,200. Leucocyte count at entrance 4,200; twelve hours before operation 9,200, when pain first complained of; one hour before operation 12,000. Twelve hours before operation, pain, abdominal tenderness and spasm, mainly on the right side; slight distention; pulse 118. Temperature (?) No vomiting. Operation twenty-four hours after pain first noted. Nothing found. Recovery. Symptoms of gradual perforation, including some leucocytosis. No marked shock recorded. Query as to how to account for leucocyte count. Compare this case with Sawyer, Case XXII. Same symptoms, but in Sawyer's case no leucocyte count. The comparative value of leucocyte count in this case is questionable.

CASE XXIV. Seile, male, age twenty-seven years, white. Dr. Balch. Massachusetts General Hospital, September, 1897. Symptoms of peritonitis of gradual onset. Operation found necrosed patch, but no microscopic general peritonitis. No leucocyte count. No cultures. Death. Mild course. Widal positive. No complications. Fifth week, operation. Ether. Time (?). Incision, median. Irrigation. No drainage. Slight intestinal hemorrhages at intervals for three weeks before operation. Ten days before, abdominal distention, but no pain or rigidity. Temperature rising. Distention only transient, none two days before operation. September 25th, at noon, pulse 140; some sweating in the afternoon. Pain below and to left of umbilicus. Abdomen distended (spasm,

vomiting and white count not recorded). (Temperature not recorded.) September 26th, picture of peritonitis, anxious face, pain, restlessness. Liver dullness obliterated. Operation twenty-four hours after first symptoms. No perforation, one Peyer's patch, one and one-half feet from cecum, threatening perforation, with fibrin area on intestine, "green, necrotic area," this inverted. No extravasation in peritoneal cavity. No bacteriology. Death in ten hours. Autopsy showed no general peritonitis. Only local necrotic patch. Death from typhoid.

CASE A. Eladed, male, age fifteen years, white. Drs. Bowditch and Munro. 1899. Case of general peritonitis. No perforations. Gall-bladder infected with typhoid bacilli. Cause of peritonitis unknown. Sick case. Widal negative. Diazo negative. Large spleen. Sick for four weeks. Came into hospital with general peritonitis. "Nearly moribund at entrance" (Bowditch). Delirious; distended belly; distended, rigid muscles; temperature 104°; pulse 120. Leucocytes 5,200 (note, purulent peritonitis of long standing). No symptoms of perforation. At operation for general peritonitis no perforations found. Gall-bladder opened, but no evidence of origin of peritonitis. Cultures of free peritoneal fluid, staphylococcus albus. Cultures from gall-bladder, bacillus typhosus. Exploration only half satisfactory (Munro). No anatomical evidence of typhoid found. Death in twenty-four hours. No autopsy. No conclusive proof that this was a case of general peritonitis during typhoid. Moribund case of general peritonitis, cause of which doubtful. Should not be counted with other cases.

CASE B. Collins, male, age twenty-five years, white. Drs. Jackson and Gavin. Boston City Hospital, September, 1895. Case of general peritonitis. No evidence of typhoid fever. No Widal. No rose spots. No spleen. Case of no value. This case had general peritonitis, was operated on and died. No reason to call it typhoid. No post-mortem. Leucocytes 32,000 before operation.

CASE C. James, male, age (?). Dr. Munro. Boston City Hospital, 1895. Case of general peritonitis. No evidence of typhoid or of perforation. Case of no value. Case entered the Boston City Hospital with general peritonitis. Operated on and died. No cause for peritonitis found. No autopsy.

SEPARATION OF THE EPIPHYSIS OF THE OLECRANON.

BY F. J. COTTON, M.D., BOSTON.

SEPARATION of the epiphysis of the olecranon is classified as one of the rarest of the epiphyseal separations. Poland, in his recent book, gives no instance of this separation save as a complication of other injuries of the elbow, unless one accepts a doubtful case by Bryant, and a case of Hamilton's where he produced the injury by forced flexion in attempting to reduce an old dislocation of the elbow. Nor has the writer, in a short search of the literature, found any case recorded where this separation occurred without other injury.

There is experimental evidence enough (Poland, Gueretin and Salmon) to show the possibility and ease of separating this epiphysis, but curiously enough, all the experimenters seem to have used forced hyperextension to produce it. Muscular action in resisting flexion, the apparent cause in the following cases, cannot, of course, readily be imitated on the cadaver.

Both the cases here reported came under the care of the writer while he was acting out-patient surgeon to the City Hospital.

The first case was in a naval apprentice, a lad of sixteen years. He gave a history of having had a fall on the hand without any blow on the elbow.

This fall had been followed by marked disability of the arm, and Dr. Saunders, the ship surgeon, recognizing an injury to the olecranon, had put the arm up on a straight splint.

When the boy was referred to the hospital, about two months later, he was still wearing a short splint. The arm showed no disturbance in the relation of the bony landmarks, save a loss of prominence of the tip of the olecranon. On careful palpation a fragment could be felt just above what seemed to be the end of the ulna; this was, as nearly as could be estimated, one-half to three-fourths inch in either diameter, and not over one-fourth to one-third inch in thickness, perhaps less. It was freely movable over a short range laterally but not movable, to an appreciable extent, vertically. The displacement was upward and forward, the interval of separation about one-third inch. A skiagraph was taken, and showed above the outline of the olecranon an outline evidently representing the cap of the separated epiphysis, displaced upward and for-

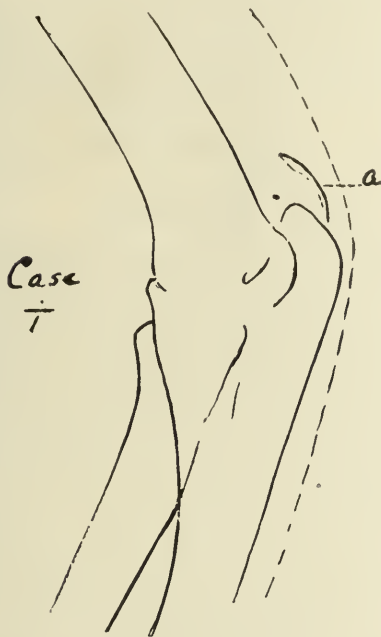


FIG. 1. (a) Posterior line of olecranon epiphysis.

ward. The gap we should expect to see left in the place of the epiphysis is not obvious in the skiagraph, but on palpation, comparing the two arms at a like angle of flexion, the shortening of the olecranon was very definite, though not great.

The comparatively slight showing of the shadow of the epiphysis, despite the patient's age (sixteen years), will be referred to later.

When first seen the elbow could be flexed only about 20 degrees. There was no sign of union of the epiphysis to the ulnar shaft, but on the other hand there was in flexion no apparent tendency of the triceps to cause further separation. A week later the fragment was less movable. Massage was then begun. After another week or ten days fibrous union of the fragment to the olecranon could be clearly made out; the interval of separation was now one-third to one-half inch. The joint was freely movable from an angle of 135 degrees to one of 170 degrees (that is, within 10 degrees of the straight line). The arm

was still kept on a short obtuse-angled splint and massaged regularly three times a week, with very gentle passive motion.

At the end of six weeks, union of the fragment being firm, the splint was omitted and the arm simply put in a sling so as to allow of partial flexion. Flexion of about 60 degrees was then possible, and the range of motion was slowly but steadily increasing. The arm was painless and was already useful to some extent. From this point on the patient was not seen again, but he is said to have shipped later on a merchant liner, so presumably the arm is doing good service.¹

The second case was in a boy of eleven years. Here again there was a definite history of a fall on the hand without direct violence to the elbow. The patient had been dressed in the accident-room soon after the injury and came in wearing a splint which fixed the arm at a very obtuse angle. There was at this time some swelling and a slight ecchymosis on the outer side of the arm above the elbow. The bony landmarks of the elbow were in normal relation, but on careful palpation a small mass was to be felt, apparently about one-half inch in diameter either way, and about one-quarter inch in thickness vertically. This was separated from the ulna by an interval of not over one-eighth inch; the slight displacement was upward and forward. The fragment was loose and could readily be rocked under the fingers, but was movable only from side to side, and that very slightly. On attempted flexion there was only a very slight increase in the distance of the separation.

The x-ray taken in this case shows a distinct and typical nucleus of ossification at the site of the epiphysis; the displacement is not notable in this view; the ossified bone is intact.

The arm was put up on a splint at an angle of 15 or 20 degrees less than full extension.

Three weeks later the fragment was still movable, but there was no tendency to an increase of the interval of separation; massage and cautious passive motion were begun. Five days later motion was possible from an angle of 135 degrees to within 10 degrees of full extension. A month from the time of the injury the splint was omitted. There was then a possible flexion of only 40 degrees and the fragment was not yet firmly fixed in place on the ulna, but there was no increase of the separation interval.

Three months from the date of the accident the elbow was examined again. The epiphysis was then very slightly displaced forward and was no longer movable. The motions of the elbow were all normal save for a 10- or 15-degree limitation of extreme flexion. There was no pain and the joint was functionally perfect.

It would seem that both these cases were separations of the olecranon epiphysis from muscular action alone. The insertion of the triceps is largely on the epiphysis, but it is undoubtedly due to the fact that the insertion and the tendinous expansions run beyond the epiphyseal line that there was no more considerable separation in these cases; evidently the triceps fibres running beyond the epiphyseal junction withstood the strain after the junction itself had given way. The same thing may occur, according to Stimson, in

¹ Since the above was written the patient was seen again. Function is normal, deformity trifling. Flexion still about 20 degrees, extension 25 degrees short of normal, but still improving.

fractures of the olecranon from muscular violence. In a younger child, where the epiphysis is relatively larger, this safeguard against separation would probably not hold good, but, on the other hand, in such young children sufficiently vigorous muscular action to wrench off the epiphysis in this way would hardly be possible.

Why the separation of this epiphysis should not occur clinically as a result of violent hyperextension, in the way that it has been produced experimentally, is not clear; perhaps the cases are not recognized, though this seems hardly likely.

In regard to treatment in these cases probably the second, rather than the first of the two reported, approximates the period of fixation and the treatment which should ordinarily suffice for good results, though some allowance would have to be made for the difference in age of the patients. At all events, given a short interval of separation, six or seven weeks, at most, of fixation in partial extension with

scale at the posterior angle of the olecranon. No. 457, age seventeen years, partly united, seems to show a similar line of junction, and in still another (an unnumbered specimen without data, but apparently from a child of about nine or ten years) the same form of epiphysis is to be seen; the epiphysis is thicker, but the line of junction runs upward and forward and none of the articular surface is formed by the epiphysis.

It would seem, then, that there is more than one form for this epiphysis. The first of the foregoing cases seems, from the evidence of the skiagraph and the examination, to represent this thinner, scale-like form of epiphysis just described, while the second presents the more usual form, an epiphysis of some thickness with a centre of ossification of some considerable size.

As to the clinical importance of these separations of the olecranon epiphysis, it seems noteworthy only that the separation may occur without other injury, apparently from muscular action; that little reaction in the joint results from the injury; that the separated epiphysis does not tend to become widely separated, and that union with the shaft and entire restoration of function are to be aimed at, seemingly with some confidence of success.

New Instrument.

A MODIFICATION OF THE SPHYGMOGRAPH.¹

BY ROBERT T. EDES, M.D., BOSTON.

THE sphygmograph is an instrument which, I believe, has never been held in high respect by the physiologists. It is unnecessary to analyze all its defects and inaccuracies in the various forms in which it has appeared. This has been very thoroughly done by Baumgarten in "Wood's Reference Handbook." But notwithstanding these it has always had a certain attraction for the clinician because it gives a record more compact and less subject to personal error, if not more delicate, than even the well-trained finger. It is useless to expect from it pathognomonic indications of valvular disease, but, with care, it can be made to show certain conditions of the blood pressure that are, if not more easily detectable, at least more easily demonstrable in this way and which are very useful in studying and recording diseases, disorders and the action of remedies, especially such as involve the vasomotor system.

A clinical sphygmograph must be convenient and not require a tedious adjustment of pads, straps and support, and it is this virtue which has made the "Pond" instrument, when used without the arm rest, so popular in this country. But it is defective in the following points. The resistance to the tension of the artery should be, so far as possible, by a spring and not by weight, because the error due to *vis inertiae* is less, and also because unless the instrument is held exactly upright, which is not always easy at the bedside, the levers are not working at all times under the same conditions. The spring should be a metal one. Rubber springs are constantly changing by time and readjustment. The pressure used

¹ Read in abstract at the Association of American Physicians, May 3, 1900.

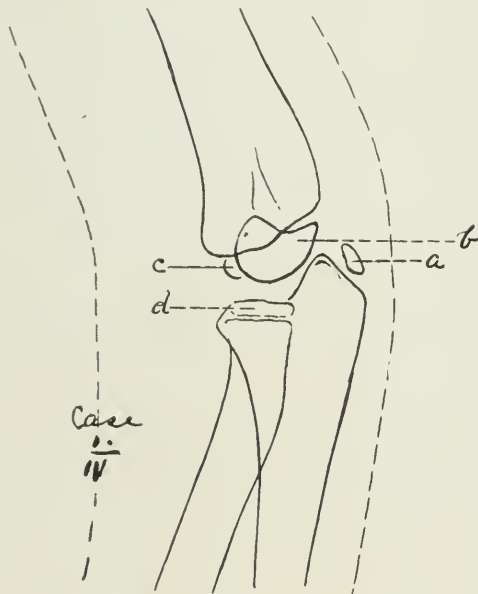
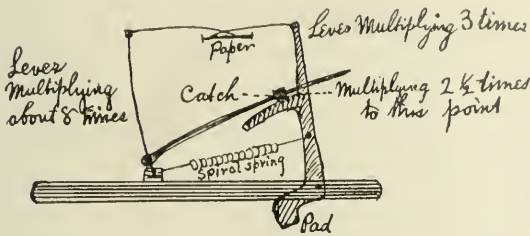


FIG. 2. (a) Epiphysis of olecranon; (b) of capitellum; (c) of trochlea; (d) of radial head.

massage, followed by cautious passive and active motion, would seem to be the indication. In the second case consolidation began early and it was possible to shorten the period of treatment.

One point in relation to the diagnosis of such cases, especially by means of the skiagraph, should be brought out, and that is the different forms presented by the olecranon epiphysis in different individuals. According to Poland, the epiphysis at ten years includes about a third of the olecranon, at fourteen and one-half years it is about three-eighths inch in vertical diameter, and at fifteen years it includes one-third of the articular surface and but one-fourth inch of the posterior surface. This does not seem to apply to all cases. There is, for instance, one specimen in the Warren Museum (No. 537, age fifteen years) which corresponds to this description, as do others (553, 334 and an unnumbered specimen) of seven, eight and ten years, but in specimen No. 417, age eighteen, the epiphysis, still distinct, is not much more than a

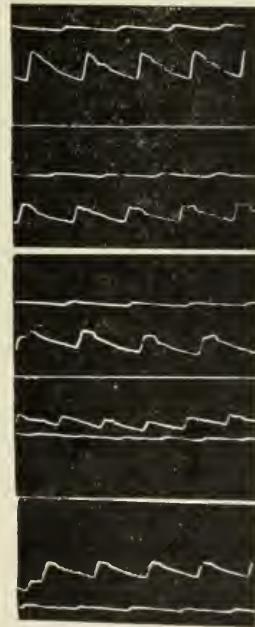
should be simply the pressure of the pad on the artery, or as nearly so as possible and not the pressure of the base of the instrument on the adjacent tissues. Of course no sphygmograph to be used on the human subject can be free from the modifying effects of the tissues superjacent to the artery which may, equally of course, vary a good deal with the elasticity of the skin and the amount of connective tissue present. The base of the "Pond" is so broad that when the little metal disk within the rubber cap is pressed down on to the radial, the graduation on its stem indicates not the pressure over the artery but that of the metal cap upon the edge of the radius, the flexor carpi radialis, or both. It is also very desirable that the tracing should itself be a record of the pressure at which it is made. This roughly made instrument indicates, I think, how some of these defects can be remedied.



Some years ago I made and published a short account of a sphygmograph with a single lever, in which the tracing taken, which of course was only slightly multiplied, could be further enlarged by the use of a cylindrical lens.² As one might say, the amplification usually accomplished by a second lever is here done by a beam of light. The objection to this was that the tracing could not be used for demonstration without the lens and could not easily be recorded for convenient use. This slightly magnified tracing, however (only two and a half or three times), when taken on the same slip with the usual more highly magnified one is useful for comparison with it. It throws out a certain amount of instrumental error dependent on looseness of joints and on acquired velocity of the most rapidly moving parts. A too delicate action of rapidly moving levers carries the writing point beyond its proper mark in each direction. A very beautifully constructed instrument shown me some years ago by Dr. Hopkins, of Buffalo, was open to this objection in the highest degree and gave tracings which indicated an amplitude of movement considerably beyond that of the arterial wall. Elasticity and want of rigidity in the levers have very much the same effect. If a very long lever multiplying the necessary number of times (say twenty) could be made absolutely rigid and extremely light, then a sphygmograph of only one lever, but using a slip of paper wide enough to register all pressures, would be the ideal.

In the modification which I now present I have endeavored to combine these essential points: magnification sufficient to be read without a glass, the easy and convenient applicability of the "Pond," the observation and recording of actual pressure over the artery alone, and the diminution of some instrumental errors. It consists of a bent lever of which one end rests on the artery and the other carries a writing needle. It

is held by a spiral spring. Pressure upon the artery is made and changed simply by the amount of force employed by the hand which holds the instrument, the pressure upon the other tissues of the wrist having no effect upon the tracing except through the lever. The sphygmograph is held between the thumb and first two fingers, the other two or edge of the hand supporting themselves on the wrist. This slightly magnified trace indicates by its position on the slip the amount of pressure on the end of the lever placed upon the artery; and the amount of movement is sufficient to allow the amplitude of the wave to be estimated, and the best pressure for development to be selected. It can be made more distinct by the use of the cylindrical glass. The range of pressures with the spring now on the instrument, on a slip of the usual width, is from 75 to 250 grammes. The second lever, multiplying considerably more, does not have a fixed connection with the first, but by means of a notched arm is attached to it when the degree of pressure at which the tracing is to be taken has been determined. The pressure can be varied a little even after the two levers are connected, without throwing the writing point off the smoked slip. We have, then, on the slip two tracings, one magnified three times, showing exactly the pressure and the amplitude at that pressure and free from exaggeration; and the second corresponding to the only one given by the usual form of sphygmograph which brings out the milder peculiarities of the pulse wave.



As I am now presenting this combination rather as a suggestion than as a finished instrument, I can speak of some points which might be improved in the hands of a better workman than I am. I overheard a hardware salesman say with considerable emphasis to a customer who thought he could buy a spring to suit him ready made, "Making a spring is an art." It is one which I do not possess either in theory or practice. Although the spiral spring which I have here covers, I think, most ordinary ranges of pressure, yet I presume it would be possible to temper a steel

² Journal American Medical Association.

spring so as to do much better and make a paper of the ordinary width record a range from nearer zero to a considerably higher point than this. But that which I found most difficult to arrange satisfactorily looks at first sight so exceedingly simple that it seems almost silly to speak of it; that is, the catch between the two levers, which should be very light, very easy and quick of adjustment, without any slip, and on the other hand without friction or stiffness.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting Monday, April 16, 1900, Dr. E. H. BRADFORD in the chair.

DR. G. B. SHATTUCK presented a paper entitled

A STUDY OF TWENTY-FOUR CASES OF TYPHOID FEVER WITH SYMPTOMS OF PERITONEAL INFECTION; LAPAROTOMY.¹

Before the presentation of the report itself I will make in behalf of the Committee a very brief statement. This is a report upon the cases and such discussion as there was at a preceding meeting of this Society. I would like to say that a great deal of labor has been expended upon the report. The report itself is divided into two parts: The concise presentation of each case, which is the result of as careful an investigation of each case as it was possible to make; this is preceded by an analysis of the cases from different points of view and the general remarks and conclusions which the Committee derive therefrom. I do not know whether all the gentlemen who have submitted cases will agree with all our statements in regard to the cases themselves, or whether they will agree with regard to all our conclusions, but whether they agree or do not agree, whether they should be right and we should be wrong, it will not be because we have not given the utmost pains and taken much time in order to be right. The general results may be summed up in a word as far as we draw conclusions from these cases, that they point to the importance of an early diagnosis, and we state what considerations we think are especially important in order that this early diagnosis may be made; especial stress is laid upon the recognition of *pain*—not mere discomfort—and upon the question of the use of the white blood count and its proper use in aiding in this early diagnosis. Then the other point around which the conclusions turn is the character of the infection, which undoubtedly varies in different cases, and emphasis is laid upon the point that the perforation is one thing and the later peritoneal infection is another thing. These should be kept distinct. As I have said, a great deal of work has been expended upon the report; much of this work has been done by Dr. Farrar Cobb, and the Committee desire that he should read the paper.

DR. FITZ: It seems to me the Committee deserve the highest credit for the work they have done and the thoroughness with which the results have been

prepared and the force and vigor with which they have been presented. Certainly the paper is the most intelligent, careful and comprehensive consideration of the subject that I know of. The Committee wish the paper to be criticised, but it is impossible for any attempt to be made to carefully criticise it at such short notice. One simply admires and that is about all there is to be said. The one general thought that came to my mind as the paper was being read was that what was needed in the first instance was control with a larger series of cases than is here collected. For instance, with reference to the question of pain, it may be that the next 100 cases, more or less, will show a still higher percentage of pain, proving to be insignificant so far as its relation to perforation is concerned.

The next thought that occurred to me was that the report suggested very emphatically the kind of work that had to be done, and that so far as hopefulness from the experience of the past is concerned, we were not after all very much better off with regard to the results of operation in this most modern time than we have been for some time previous, and that in cases even with no evidence of peritonitis and with appearances at the time of the operation suggesting that a favorable result was likely to follow, it is evident that the prognosis must still be held in abeyance and the probability is that the patient will die whatever is done for him.

There is only one word I have to say in what might be called self-defence and that is with reference to the question of the prognosis being the more favorable the more the condition resembles that of appendicitis. It was not my thought in making that observation to suggest that cases of appendicitis were common in typhoid fever. The point was that the simulation of appendicitis meant a more circumscribed peritonitis and the more circumscribed the inflammatory process at the time of the operation the more likely the latter was to prove successful. This statement was based on an analysis of operations done years before and seemed to be confirmed by evidence collected at the time, but I do not undertake at present to defend very warmly a paper written seven or eight years ago upon a subject which is so rapidly growing in interest, and in which experience is constantly increasing.

DR. MUNRO: I have nothing special to say except to heartily endorse everything that I could grasp in hearing the paper read to-night. It establishes a much better basis for the treatment of these cases than we have had heretofore. I am sure, in the cases I have watched in my own practice and in the practice of others, that one finds as serious a condition from necrosis without actual perforation as from actual perforation. In almost all the cases that came under my own care I found by careful questioning that there had been antedating symptoms of a preperforative stage which had escaped the observation of the medical house officer. This was so fixed in my mind that I had previously spoken of it to several of my colleagues. As to the question of an anesthetic, I am positive that Cushing, of Baltimore, lays too much stress on the value of cocaine. I am positive as I can be of anything in surgery that ether properly given, given certainly as we give it at the City Hospital, in the cases of typhoid perforation that have not developed acute general peritonitis, does no harm, and that the operation can be done more rapidly and safely

¹ See page 677 of the Journal.

than under local anesthesia. I lost, to be sure, one case on the table where the patient vomited into her own trachea, an unpardonable accident. It was, however, a case of operation in collapse and was offered only as a last resort. Setting aside those severe cases as you set aside the severe cases of strangulated hernia or general peritonitis from other causes, I am sure that ether is harmless in early cases of perforation or in the preperforative stage. The operation also, I believe, is well borne except in cases of acute general purulent peritonitis. There is practically no shock, when the operation is done in twenty to thirty minutes, certainly not shock enough to warrant delay or hesitation. When, on the other hand, the abdomen is the seat of an acute purulent peritonitis, any operation is serious or fatal, and it is to avoid operating at this stage that we must use every available means, not least of which is the light given us by this invaluable paper read to-night.

DR. ELLIOT: I think this most admirable paper deserves some discussion. The thing that has occurred to me in listening to the paper is that a very sharp line is drawn between the operations that were done for the perforation itself and those done for the septic general peritonitis. It seems to me that while theoretically that may be a good point to make, practically the vast majority of operations must be done for a more or less extensive septic peritonitis. A few years ago there was a great deal of talk about whether an appendix had been perforated or not, but after we had had a little more experience, we found it did not make any difference whether it was perforated or not; there was apt to be septic peritonitis around the appendix before it was perforated. It seems to me these preperforative cases of ulcer suggest the key to the situation. The report would maintain this point by saying that in certain cases the ulcer sloughs out suddenly and leaves a hole, but the chance of successfully closing such a hole would be very rare indeed. We know that actual fecal extravasation is very fatal in spite of early operations. I think, as is maintained in the latter part of the paper, we must watch for beginning septic peritonitis. That is the only chance we have for saving these cases. Such a peritonitis as comes just before the ulcer perforates, or from an ulcer partly closed by adhesions, will give a fair chance for operation. And apropos of the leucocytosis, although I should not like to give or assume to have an opinion on leucocytosis above scientific men, yet I think this account of these cases is a pretty strong argument against leucocytosis being of any great value in operating. In the first place, the only man who has a theory which would account for the varying leucocytosis is Cushing, and Cushing and Finney have both done operations, according to this account, on the basis that leucocytosis was a diagnostic symptom where they found no perforation. That in itself is a pretty severe setback for the leucocytosis theory. Then, in the reader's cases where the leucocytosis was given there appears to be no certainty that the white corpuscles are increased. At a meeting of the Surgical Section we went over all the cases of peritonitis in which the leucocytosis was given in the hospital records. In half the cases there was leucocytosis and in half the cases there was not leucocytosis, and the same variation appears in this report. I think at present it is clear we cannot be guided by leucocytosis in the least in operating for general peri-

tonitis. It was said at that meeting that it is a great comfort if you are going to do an operation for general peritonitis to find there is a leucocytosis. It may be, but the crucial test is, would you operate if everything else was even; if you were in great doubt, would you let a leucocytosis lead you into an operation? I think I am not prepared to operate on a blood count from the evidence as given in the report before us.

DR. BEACH: I am grateful for the report of the Committee and appreciative of the formulae which the conclusions give as a working basis for future reference and operations. Upon the question of anesthesia, my conviction remains in favor of the advantages supplied by the judicious administration of ether, in the avoidance of shock and mental disturbance.

It is inevitable that some patients while conscious should suffer permanent damage from the unavoidable routine of an abdominal section, and true that others could be indifferent to it, although the pain in both classes should be wholly controlled by local anesthesia.

In patients whose vital forces have been already lowered by continued fever, hemorrhage or beginning peritonitis the question of adding the uncertain degree of nervous tension and excitement commonly associated with a considerable operation without anesthesia becomes serious and deserves careful consideration.

After-treatment.—For my own part, the results in these cases are so dependent upon the general treatment to which they are subject after any operation, that I hoped for its discussion in the masterly report of the Committee. It is not difficult to understand, however, that this side of the investigation could be better left for the accumulation of additional and important evidence, necessary for the establishment of safe and reliable methods.

Meantime the surgeon must admit that abdominal section will be required in cases, without the preparation by catharsis commonly employed before laparotomies. After operation, where the intestine is softened and much inflamed, the usual measures may provoke increased perforation and hemorrhage. On the other hand, an expectant treatment may be followed by intestinal obstruction, great distention with rupture of sutured ulcerations and fecal vomiting. The requirements of individual cases will modify more or less diet and remedies in satisfactory use at the time of operation.

DR. SHATTUCK: It seems to me the report covers one of the points made by Dr. Elliot. I think the report acknowledges a similarity of symptoms and conditions between the cases in which necrotic areas exist which are those of the preperforative stage and the cases of actual perforation with larger or less destruction of tissue.

As to the question of leucocytosis, the Committee thought it was extremely desirable to find something which would ameliorate the difficulties of the physician in making an early diagnosis. The surgeons say: "We have done our best. If you cannot turn these cases in to us more promptly or in better condition, you can hardly ask more of us than you do now," and that is about what you come up against in considering this question. It was the extreme desire of the Committee to find something which would alleviate the hard position of what the report would call the diagnosing physician, and it was in hopes merely that the study of leucocytosis might offer some such help that the Committee went into it as much as they have. I think

that our position in regard to it is carefully guarded. We think that due justice has not been done in the past to its possibilities of usefulness; the future may change the views which are at present propounded, but these at least deserve more careful and extended application to practice. The indications of pain as a warning, especially in conjunction with spasm and tenderness and the white count, merit more careful attention.

DR. ELLIOT: My remarks were simply directed to the regrets expressed that we could not get at the ulcer when it first perforated and that we had to operate with peritonitis, and it seemed to me that such would always be the case. And also the report deplors that we had not more data on leucocytosis. It seems to me it was pretty well proven that leucocytosis is not of any very great value in these cases.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5-8, 1900.

SECTION ON SURGERY AND ANATOMY.

(Continued from No. 25, p. 668.)

FOURTH DAY.

THE TREATMENT OF TUBERCULOSIS OF THE KNEE-JOINT.

DR. WISNER TOWNSEND, of New York, read this paper. The treatment of tuberculosis should be both constitutional and local. The former is too generally neglected; it should consist in careful attention to diet, the use of creosote and general tonics, out-of-door life, and careful attention to the general health. Rest is indicated if the exercise gives no benefit. In the local treatment the joint should be protected from every slight jar. This is best accomplished by the use of the Thomas knee-splint with a high-soled shoe for the opposite side. Plaster of Paris or silicate of soda may be sometimes used. In any measures to overcome deformity, force should be avoided. Excision in children should not be performed if any other treatment can be substituted on account of the interference with the normal growth of the limb; in adults excision should be performed in the majority of cases. Complicating abscesses should be evacuated and sinuses dissected out or treated by stimulating injections. The limb should be given complete protection for at least two years.

DR. OCHSNER, of Chicago, considers constitutional treatment of great importance. After operating on patients who come from a part of Chicago known as "Little Hell," if they return to that section of the city to live the disease often recurs in some part of the body, while if their residence is changed to "Lake View," another part of the city, which is high and dry, though also inhabited by working people, the patient usually recovers permanently.

DR. BULLITT, of Louisville, Ky., believes that protective treatment gives better results than operations in these cases.

DR. SULLIVAN, of Chicago, emphasized the importance of early diagnosis. If an early diagnosis is made and suitable general and local treatment instituted, excision will be required in but few cases.

FRACTURES OF THE PATELLA,

by DR. J. M. BARTON, of Philadelphia. The results of the methods of treatment of fracture of the patella which have been in vogue in the past are far from satisfactory, and surgeons now generally prefer to operate in case of this injury. Operation is usually deferred to the tenth day after injury on account of the lessened danger of infection, and it may well be undertaken much later. The prepatellar tissues generally get interposed between the bony fragments and it is this that gives rise to non-union. Asepsis is the point of greatest importance in successful operation; after opening the joint the prepatellar tissues are removed from between the bony fragments, clots are removed and the joint cavity is irrigated with sterile water, never with an antiseptic solution. The fragments are then united with silver wire, drainage is inserted for twenty-four hours, and a fixation dressing is applied. Rapid bony union follows.

UNREDUCED AND IRREDUCIBLE DISLOCATIONS.

DR. ARTHUR D. BEVAN, of Chicago, based his paper on three dislocations of the elbow-joint, one dislocation of the ulna at the wrist, one dorsal dislocation of the hip-joint, and three others not operated upon, and one dislocation of the astragalus. In two of the cases of backward dislocation of the elbow a fragment of bone was found in the joint, which prevented reduction. In the third case no such bony fragment was found. From his observation of these cases Bevan concludes that operation for reduction of irreducible dislocations of the elbow-joint are justifiable if carried out aseptically; there is generally a fragment of bone in the joint. He prefers double lateral incisions with no drainage; he dresses in a semiflexed position and uses passive motion early. The mortality is less than five per cent. In some very old cases it is possibly best to remove the lower end of the humerus. Within the past year, Bevan has had five cases of irreducible dislocations of the hip under observation; three of these were accompanied with fracture of the edge of the acetabulum. He considers the avoidance of drainage very important, and in one case he got union by first intention. In another case an engineer was thrown from his cab, injuring his ankle; the astragalus was twisted to an angle of ninety degrees, and remained so for three weeks; operation was performed, and a useful joint resulted. Points especially emphasized were: The necessity for the use of the x-rays in diagnosis, the frequency of accompanying fracture, and the importance of not using drainage.

DR. McLEAN, of Detroit, called attention to the great changes which had been recently made in our methods of treating fractures and dislocations. It is a matter of small importance whether a fracture or dislocation is compound or not as long as the wound of operation is aseptic.

DR. BLAKE, of Baltimore, agrees with Barton as to the necessity for perfect asepsis in operations for suture of the patella. He prefers not to use drainage and not to use the finger in the wound.

DR. TINKER, of Philadelphia, called attention to the aluminium bronze as a material for wiring the patella. This was introduced by German operators, and is now in almost universal use in Germany instead of silver wire. The advantage of this material is that it is gradually absorbed, the aluminium being acted upon

by the normal body fluids. It is composed of aluminium with a small proportion of copper to give it sufficient tensile strength. X-ray pictures have shown that the wire remains for at least a year, but German operators claim that it is eventually absorbed.

DR. OCHSNER, of Chicago, prefers to operate immediately, as the patient thus avoids loss of time. He prefers a transverse incision, and uses chromicized gut as a suture material. The patients are able to walk about three weeks after operation.

DR. MEANS, of Columbus, O., has operated upon nine cases of fracture of the patella by wiring and has had complete recoveries in all of them.

DR. WINSLOW, of Baltimore, has found it necessary to divide the triceps tendon in several cases in order to reduce dislocation of the elbow-joint; perhaps this might be avoided by using double lateral incisions, as Bevan suggested.

DR. HART, of China, has performed a number of operations for wiring the patella and for reducing dislocations. He described the difficulties encountered in restraining the unintelligent Chinese patients.

DR. MCFARLAND, of Pittsburg, does not agree that all cases of fracture of the patella should be treated by wiring.

DR. BARTON, in closing, stated that as he wears rubber gloves there can be no great disadvantage in introducing the finger into the wound. He prefers to use non-absorbable suture material, for in many cases the joint is used before complete bony union has occurred.

DR. BEVAN, in closing, stated that he does not usually advise operation for fracture of the patella, for he has obtained good results without it. In two cases treated by conservative methods the x-rays demonstrated that bony union had occurred with a functionally perfect result. He has seen one death and several cases of sepsis following this operation, and believes that no man in general practice should open any joint.

TETANUS TREATED WITH ANTITETANIC SERUM.

DR. J. D. BLAKE, of Baltimore, believes that the essentials in the treatment of tetanus are seeing patients early and using the serum freely. He has treated five consecutive cases with but one death, much better results than he formerly obtained by other methods of treatment. The amount of serum used was 50, 60 and 70 centimetres in the cases which recovered, and 40 centimetres in a case that died. The specific organism was found in but two cases.

DR. WHITMORE, of New York, mentioned nine cases which were treated at the Roosevelt Hospital by trephining and injecting the serum, with seven deaths.

DR. BLAKE, in closing, expressed his belief that the unfavorable results are usually due to the fact that the serum is not used early enough.

GROWTHS IN THE FRONTAL SINUS,

by DR. W. D. HAMILTON, of Columbus, O. The diagnosis of these cases is difficult and usually impossible until late; a mortality of 33 per cent has been given. Dr. Hamilton reported two cases of osteoma, which he removed from the frontal sinuses. In one case the bony growth removed weighed four and one-half ounces, and was exceedingly dense. The second osteoma was considerably softer and was complicated by extensive empyema.

DR. DAWBARN, of New York, advises the use of a round sewing needle, as an aid in the early diagnosis of bony growths. Malignant disease causes softening and decalcification, and in these cases the needle can be pushed in easily, which is not the case in ordinary bone tissue. It is best not to crush through the septum into the sinuses for drainage; by curving a probe a drainage tube can be inserted through the natural passages.

INJURIES OF THE SKULL AND ITS CONTENTS.

DR. W. H. EARLES, of Milwaukee, quoted Sir Ashley Cooper that "no injury to the skull is too slight to be despised or too severe to be despaired of." He believes that intervention is more frequently indicated than is generally believed in the cases of fracture of the skull, and specially if there is laceration of the soft tissues and the depression, operation is justifiable.

LAMINECTOMY FOR DISEASES AND INJURIES OF THE SPINAL CORD.

DR. SAMUEL LLOYD, of New York, reports 15 cases in which he has operated for paraplegia resulting from Pott's disease of the spine. In all, 118 operations have been performed. Operation of itself is not so dangerous, but death usually results later from the tuberculous process. In advanced cases operation is of little advantage unless the abscess is located posteriorly. Non-operative treatment should be thoroughly tried, and if not successful, operation should be performed early without waiting for ascending or descending myelitis. Pressure is usually caused by tuberculous debris. Operations in the lower part of the spine show the most favorable results. Chipault has collected 22 laminectomies for tumors, with 16 recoveries. Permanent cure is generally not to be expected, because the growths are usually malignant. In case of fracture there is no hope if the function of the cord is destroyed by pulpification. Obliteration of the deep reflexes generally contraindicates operation. We should wait until shock is passed and then operate if there is not complete destruction; if hemorrhage is producing extension of the symptoms; if there is improvement at first and the symptoms become worse later; or if there is full recovery, with paraplegia and symptoms developing later, probably from the formation of callus. The mortality of operation is now about 50 per cent., but we should give the patients what little chance there is of recovery.

DR. DAWBARN, of New York City, had no criticism to make, but only desired to emphasize the importance of early operation. He mentioned the case of a girl who fell from a window, breaking her back; two hours later operation was performed and a spicule of bone was removed, which was sticking into the cord from in front. Terrific hemorrhage was controlled by gauze packing, and good recovery resulted; he urges that these cases are in the same category as fracture of the skull, and we should not wait for operation.

DR. HOUGH, of New Bedford, Mass., reported a case in which he removed the laminae of the sixth and seventh cerebral vertebrae for injury. A slight paralysis of the right arm persists, otherwise recovery is perfect.

DR. LLOYD, in closing, emphasized the importance of early operation. We should not cease removing bone until the cord pulsates; if the dura is cyanotic

from the presence of blood clot it should be opened and evacuated.

OPERATIONS FOR INJURIES OF THE MEDIAN AND ULNAR NERVES.

Dr. B. B. EADS, of Chicago, reported one case in which he operated to free the ulnar nerves from a cicatrix and four cases in which he performed nerve suture. The results of these operations are encouraging.

RESULT OF SURGERY IN THE AGED.

Dr. J. P. TUTTLE, of New York, read this paper. Old people stand operations better than is generally supposed; Dr. Tuttle has operated on 133 patients over sixty years of age; the average age was sixty-nine. There were only three deaths, all following operations for hernia; two resulted from pneumonia and in the third case operation was performed by mistake on a patient with contracted kidney. Most of the operations were major ones; 38 of them were for hernias, 36 for hemorrhoids. Ether was used as an anesthetic in the majority of cases, chloroform was used in 13 cases and cocaine in 30 cases. Albumin in the urine is not a contraindication to operation unless there be fatty or epithelial casts. Celerity in operating is important; the mortality is less than three per cent.

Dr. DAWBARN, of New York, believes that the greatest danger is from sepsis in such operations. Old people do not fight suppurative processes well.

Dr. HART, of China, finds that a man of seventy-five in China is as old as a man of ninety-five in America. The lower classes of Chinese stand operations well, probably as a result of their simple methods of living; aristocrats do not bear operation well.

Dr. TUTTLE, in closing, stated that he agreed with Dr. Dawbarn's suggestion that the old do not bear suppurative processes well; in his cases those which suppurated required a long time for recovery.

Dr. C. VAN ZWALENBERG, of Riverside, Cal., read a paper entitled

SARCOMA OF THE INTESTINES.

Of 13,000 necropsies at the German University of Prague during fifteen years there were only 13 cases of sarcoma of the intestine, showing that the condition is relatively very rare. He reports a case in a boy of five, both of whose parents had died from carcinoma. There was a history of abdominal injury followed by declining health with no discernible cause but digestive symptoms. A rapidly growing tumor was soon felt in the abdomen; a grave prognosis was given, but exploratory operation was advised. On opening the abdomen two growths were found involving ileum and colon near the ileocecal valve; there was intussusception of three or four inches of intestine. The ascending colon, which was affected, and a part of the ileum were excised and end-to-end anastomosis by Murphy's button was performed; after twenty-four hours the patient's condition was good, and now six months later he is well and has gained seventeen pounds. A microscopic examination proved the growth a round-celled sarcoma. Dr. Zwahlenberg has tabulated 15 cases, all he was able to find in literature. Of these cases of intestinal sarcoma, 10 affected the small intestine; nine patients were males and five females; the ages ranged from one and a half to fifty-one years; he finds that stenosis of the intestine, which is com-

monly reported as a symptom of the affection, is rarely present; on the contrary there is general dilatation; the diagnosis is difficult and resection is the only proper treatment.

THE ADVANTAGES OF RETAINED CATHETER.

Dr. J. R. EASTMAN, of Indianapolis, Ind., finds retained catheter often the best method of dealing with cases of retention of urine, particularly if the urethra is sensitive. He advises using a large soft-rubber catheter, which is retained with remarkable tolerance. In one case of traumatic stricture of thirteen years' standing with urinary fistula the catheter was retained without disturbance; the fistula healed permanently in twelve days; in another case the catheter was retained seventeen days; in a third case of perineal fistula it was retained sixty-five days with occasional removal and cleansing. The dangers of cystitis from retained catheter have been much overestimated.

Dr. E. W. HOLMES, of Philadelphia, agrees with Dr. Eastman as to the value of retained catheter. He reported a case of suprapubic cystotomy for the removal of vesical calculus in which a soft catheter was retained for twenty-one days.

Dr. LORD, of Omaha, Neb., believes that the retained catheter is contraindicated in case infective processes are present.

Dr. GUTERAS, of New York, always uses the retained catheter for a few days after external urethrotomy if the urethra is tortuous. He has used the catheter in such cases as long as two weeks. It may be used with advantage in case of spasmodic stricture, acute prostatitis, or seminal vesiculitis; it is also useful in cases in which the patient is being broken into catheter life if there is spasm of the urethra with resulting trauma on passing the catheter, but in these cases the catheter may be plugged until there is a feeling of distention of the bladder. He has also used retained catheter in severe febrile conditions.

Dr. EASTMAN, in closing, noted that it is often easy to pass a large catheter in cases where it is impossible to pass a small one.

NEPHRO-URETEROCYSTEOTOMY.

Dr. HOWARD A. KELLY, of Baltimore, reports a case of tuberculosis of the left kidney, ureter and the adjacent portion of the bladder, in which he removed kidney, ureter and the diseased part of the bladder wall; the specimen was demonstrated. The operation was performed through two incisions; one in the loin, the other median. The patient made a good recovery from the operation, but from a mistake of a house physician in charge, the bladder became distended and ruptured, causing fatal peritonitis. Dr. Kelly believes that it is possible to do far more extensive operations for tuberculous processes than has been supposed; removal of the entire disease is essential.

Dr. E. W. HOLMES, of Philadelphia, gave an abstract of a paper on the

ANATOMY OF HANGING,

which was reported in full to the Section on Neurology and Medical Jurisprudence.

Dr. McLEAN, of Detroit, expressed the belief that from a humanitarian standpoint we are not justified in executing fellow human beings, no matter what their crime may have been.

(To be continued).

Recent Literature.

The Diseases of Children, Medical and Surgical. By HENRY ASHBY, M.D. (Lond.), F.R.C.P., Physician to the General Hospital for Sick Children, Manchester; Lecturer and Examiner in Diseases of Children in the Victoria University; Lecturer in Physiology in the Owens College and in the Liverpool School of Medicine, and G. A. WRIGHT, B.A. and M.B. (Oxon.), F.R.C.S. (Eng.), Assistant Surgeon to the Manchester Royal Infirmary, and Surgeon to the Children's Hospital; Lecturer on Practical Surgery in the Owens College. Fourth edition. Edited for American students by WILLIAM PERRY NORTHROP, A.M., M.D., Professor of Pediatrics, the University and Bellevue Hospital Medical College; Attending Physician New York Foundling, William Parker and Presbyterian Hospitals. London and Bombay: Longmans, Green & Co. 1900.

This now deservedly well-known work on children has, in its fourth edition, added to its text about 60 pages; 25 new photographs and 14 plates have also been added. The surgical part of the work has been made still more attractive by a number of excellent skiagrams. It would seem that in the differential diagnosis of meningitis mention should at least be made of lumbar puncture, but we fail to find such mention anywhere. It would seem that the Widal reaction should deserve more than the very incomplete reference which is made to it. The American editor, Dr. William P. Northrop, has thought best to leave the body of the book intact, stating that the same disease differs but little in its course in America and England. He, therefore, notes such differences in theory and in treatment as would seem to bring the book into accord with the present American practice. He has done this by means of the appendix, carefully referring supplementary matter to its proper connection in the main work by page reference and by additions to the index. The formula on page 865 have been entirely rewritten to conform to the United States Pharmacopœia.

Our Baby. For Mothers and Nurses. By MRS. LANGTON HEWER, diplomée Obstetrical Society. London: late hospital ward sister; author of "Antiseptics: a Hand-Book for Nurses." Sixth edition, revised. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1899.

Although this book has been carefully written it might be one which would do a great deal of harm in the hands of an inexperienced person. Thus it is manifest that the treatment of diarrhea and vomiting should not be placed in the hands of a nurse or mother, nor should such drugs as calomel and bromide of potash be ordered by any one but a physician. These are only instances of what may be met with throughout the whole book.

FOREST SANATORIUMS FOR THE TUBERCULOUS.—According to the *Philadelphia Medical Journal*, the Commissioner of Forestry of Pennsylvania is in favor of throwing open to consumptives the forest lands owned by the State. They are the property of the people and were pledged to the maintenance of public health.

THE BOSTON
Medical and Surgical Journal.

THURSDAY, JUNE 28, 1900.

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THE SCIENTIFIC PHYSICIAN.

THE development of medicine in America has been erratic in many respects, but in none more so than in the peculiar stress laid from time to time on certain phases of progress. Without entering into details regarding this sufficiently self-evident fact, it is clear that the present wave of enthusiasm is concerning itself with what is popularly known as "scientific research." This is due, no doubt, in great measure to natural and inevitable tendencies, and also to the influence of certain men of strong intellect and fixed convictions, who have consistently maintained that the laboratory side of medical science must be cultivated as a foundation for the whole superstructure of more or less empirical clinical facts. As we have repeatedly found occasion to say in these columns, this tendency, which is now definitely materialized in the form of innumerable laboratories, stands as the most important advance of the past few years. Upon its continuance and growth must depend the future of medicine as a science worthy of cultivation by intelligent men. This general proposition has been discussed at length by Dr. A. T. Cabot in his annual address before the Massachusetts Medical Society, recently published in this JOURNAL.

It is of interest to an unprejudiced onlooker to observe the effect of this zeal for accurate observation and experiment on the practice of medicine at large. In the first place, it has unquestionably tended toward the establishment of more systematic methods throughout the whole field of medical practice. Each and every man who now practises medicine is feeling the effects of the general movement, however far removed he may be from the centres of laboratory research, and however little he may himself have employed so-called laboratory methods. In the second place, and it is to this that we desire to call special attention, the laboratory, and particularly the use of the word "scientific" in a narrow sense as applied to laboratory work, has done much to arouse prejudice and establish false standards. By degrees there has grown up a distinction, which is now heard on every hand, be-

tween what is termed "scientific medicine," and "practical medicine," naturally with the implication that practical medicine as personified in the practitioner is not scientific. In other words "scientific" as popularly used in medical writing and discourse demands a laboratory and the accessories which a laboratory implies, whereas the man who is examining his patients from day to day in most painstaking and accurate fashion is looked upon perhaps as a faithful and conscientious practitioner, but not as a scientific investigator. So deeply has the laboratory impressed itself upon the uncritical thought of the time, that he who often aimlessly looks through a microscope, or with narrow vision describes a lesion, is placed upon a pedestal as a man of "scientific" tendencies, while his colleague who faithfully describes a symptom is denied any such distinction.

The reason for this anomalous state of affairs is certainly not far to seek. It lies in the fact that accuracy and hence knowledge have, in great measure, come by way of the laboratory. The insistence on the necessity of exact observation and description has certainly not had its origin with any one set of investigators in the general field of medicine. The laboratory worker deals with problems of the most complex sort, and on the other hand with facts which may be easily and accurately described. His claim to distinction as a scientific man does not, however, lie in his description of isolated facts, but wholly upon his attitude toward the problems, the solution of which depends upon the proper interpretation of those facts. Certainly nothing is simpler than to go into a laboratory and to describe at any length what one sees under a microscope. This is, however, not science, however often the results may masquerade as such, nor does the mere accomplishment of such work constitute a scientific man. But to go into a laboratory, to study facts laboriously, and then to appreciate clearly the meaning of those facts for the sum total of knowledge and to make generalizations therefrom is, properly speaking, "scientific." Men who do this are rare, whether within or without laboratories. When we turn to the great mass of empirical facts which constitute the body of what we speak of as clinical medicine we see why progress has been slow. Until the laboratory came to the rescue there was no adequate standard of classification; the facts themselves were extremely difficult of interpretation, and in consequence a certain superficiality of observation was developed, which is still the bane of much of the work on the observation of clinical phenomena. This the laboratory, with its peculiar methods, has certainly gone far to rectify, and the natural result has been that in the popular mind all that is accurate and "scientific" has come to be regarded as a product of laboratory methods. Hence has arisen the unfortunate distinction, which has at times created a certain amount of personal feeling between men equally earnest in the pursuit of truth, between "scientific" and "practical" medicine. Clearly the difficulty is one

of words merely, arising from a too narrow conception of the significance of the term "scientific." The kind of facts with which we deal evidently has nothing to do with the definition. A cell, as seen under a microscope, is no more an object of scientific investigation than a cough or a chill. Whether we are properly to be called scientific or not depends wholly upon the methods of investigation we employ. What we need to do is to cultivate the scientific method whether our work lies in the laboratory or in the observation of the most commonplace diseases. If this be faithfully done we may be sure that the distinction now so often and so superficially made between the scientific and the practical physician will be laid at rest forever. The first definition of "scientific" as given in the Century Dictionary is: "Concerned with the acquisition of accurate and systematic knowledge of principles by observation and deduction: as *scientific* investigation." Evidently the laboratory can claim no exclusive privilege in the acquisition of knowledge by this means, however much it may have furthered the general principle involved.

In Dr. Wm. H. Welch's recent brief remarks at the annual dinner of the Massachusetts Medical Society, he laid stress upon the fact that the time had come when the same intellectual pleasure might be obtained from study at the bedside as from study in the laboratory, that the solidarity of the whole medical profession towards the one aim of the prevention and cure of disease was much to be desired, and that the present distinction between the scientific and practical physician was wholly false. It is certainly very much to be hoped that the superficial lines of demarcation which the progress of medicine in this country have temporarily rendered inevitable may in the near future be merged in a more reasonable conception which will clearly recognize the fact that the "scientific" physician is he who observes facts in a scientific manner, under whatever form those facts may be presented, and not he alone who observes a special series of facts in a special way. Unquestionably the next advance will be, as Dr. Welch suggested, a united body of men all working toward the same end by the same exact methods, whether the field of investigation be such as appeals to the laboratory worker or to the practitioner. The clinician will come to respect more and more the work of the laboratory, and the laboratory student will likewise come to see that the clinician is using precisely the same methods that he employs, and to similar ends. Petty antagonisms will then, no doubt, give place to an attitude of complete mutual helpfulness.

ADJUSTABLE FURNITURE FOR SCHOOLS.

In our issue of June 21, we commented editorially on the recent agitation regarding improved furniture for Boston's schools. We at that time made the statement that the accomplishment of any far-reaching reform must rest with the school authorities. There has just come

into our hands an order, signed by the Secretary of the Boston School Committee, which reads: "Ordered, that hereafter all school furniture purchased for new permanent schoolhouses shall be adjustable." This evidently does not imply that desks and chairs now in use will be removed to make way for those of improved pattern, but it nevertheless meets the chief requirement that as the school system expands in the future new buildings will be properly equipped. This reform has been long in coming, but now that it has come it is not likely that it will fail of execution, and the medical profession may well take to itself a goodly share of the credit for its ultimate accomplishment.

MEDICAL NOTES.

RECENT DEATHS IN EUROPE. — The following well-known physicians have recently died: George Edward Williamson, F.R.C.S. He had for many years devoted himself to ophthalmology, and was held in high esteem by his colleagues. Thomas Fitz-Patrick, M.D., M.A. (Dublin), M.D. (Cantab.), M.R.C.P. (Lond.). He practised medicine in London, and beyond his talent as a physician was a man of unusual general culture. Julius Althaus, M.D. (Berlin), M.R.C.P. (Lond.). Dr. Althaus was a voluminous writer, chiefly on electrical treatment and disorders of the nervous system. Dr. Heinrich Laudahn, director of the Lindenburg Asylum, Cologne. Dr. Leopold Grossmann, the *doyen* of Hungarian ophthalmologists, at the age of seventy-nine years. Dr. Korsakoff, professor of mental diseases in the University of Moscow.

PLAGUE LABORATORIES IN GERMANY. — The Government of Baden, it is stated by the *British Medical Journal* proposes to establish plague laboratories at Freiburg and Heidelberg for the diagnosis of any suspicious cases, and for the prosecution of researches as to the cause of the disease. The laboratories are to be in connection with the hygienic institutions of both the universities. The cost of each is estimated at 10,000 marks and the equipment at 8,000 marks.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 27, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 79, scarlatina 37, measles 63, typhoid fever 22.

WM. H. WELCH, M.D., LL.D. — The honorary degree of LL.D. was conferred upon Prof. William H. Welch, of the Johns Hopkins University, by Harvard University at its Annual Commencement, on June 27th. The degree was conferred by President Eliot with the following words: "William Henry Welch, professor of pathology in Johns Hopkins University, who holds first place in the medical profession of the United States as teacher, pathologist, and organizer of medical progress."

APPOINTMENT OF DR. FRANKLIN DEXTER. — Franklin Dexter, M.D., has been appointed associate professor of anatomy at Harvard Medical School.

NEW YORK.

OFFICERS OF THE NEW YORK COUNTY MEDICAL ASSOCIATION. — At the annual election of the New York County Medical Association, held June 18th, the following officers were elected: President, Dr. Parker Syms; First Vice-President, Dr. J. Riddle Goffe; Second Vice-President, Dr. Emil Mayer; Recording Secretary, Dr. Ogden C. Ludlow; Corresponding and Statistical Secretary, Dr. J. W. Draper Maury; Treasurer, Dr. Charles E. Denison; Member of the Executive Committee, Dr. F. H. Wiggin.

REINSTATEMENT OF DR. FRANCIS M. BANTA. — Dr. Francis M. Banta has resumed duty as a medical officer of the Fire Department. Dr. Banta, who was appointed by the Republican Fire Board, in place of a physician appointed by the previous Democratic Board, was in turn removed by the present Fire Commissioner, Scamell. He applied to the courts, and the Supreme Court ordered his reinstatement. An appeal was taken, and the Appellate Division of the court affirmed the finding of the lower tribunal.

CHRISTIAN SCIENTISTS AS AN INSURANCE RISK. — At Buffalo recently the Supreme Lodge of the Knights of Honor, one of the largest of the mutual benefit societies, which has branches in many parts of the country, decided after a full discussion that Christian Scientists and other faith curists, because of their rejection of the aid of medical science when ill, are the most dangerous of risks from an insurance standpoint, and that hereafter they shall not be admitted to membership in the order.

A GIFT TO THE PRESBYTERIAN HOSPITAL. — At the last meeting of the Board of Managers of the Presbyterian Hospital it was announced that a gift of \$200,000 had been received from a donor who desired his name withheld, for the erection of a new building for the accommodation of the house staff and nurses. By this arrangement room will be made for one hundred additional beds in the present buildings, thus increasing the capacity of the hospital one-third.

INSANITY AND MURDER. — Mrs. Grace Ramsey, who murdered her husband by cutting his throat while he was asleep in bed a year ago, and who was acquitted on the ground of insanity and sent to the State Hospital for Insane Criminals at Matteawan, has now been declared sane and set at liberty. Her insanity was regarded as being due to pregnancy, and during her confinement in the hospital she gave birth to a child.

ALUMNI ASSOCIATION OF ST. VINCENT'S HOSPITAL. — The Alumni Association of St. Vincent's Hospital was organized on June 18th. The officers chosen were: President, Dr. Charles H. Lewis; Vice-President, Dr. Charles L. Weeks; Secretary, Dr. Joseph A. Dillon.

Obituary.

BENJAMIN DOUGLAS HOWARD, M.D.

DR. BENJAMIN DOUGLAS HOWARD died at the summer residence of Dr. Andrew H. Smith, at Elberon, N. J., on June 21st, at the age of sixty-three. He was born in England, and was graduated from the College of Physicians and Surgeons, New York, in 1858. He served with distinction in the Medical Department of the United States Army during a considerable portion of the Civil War, and was especially identified with the antiseptic treatment of gunshot wounds of the chest by hermetical sealing. He also invented an army ambulance wagon which was awarded the first prize at the Paris International Exposition. After studying for some time abroad he returned to New York to practise, and was appointed professor of operative surgery in the Medical Department of the University of the City of New York. At various times he also held the position of professor of surgery in the Long Island College Hospital, the University of Vermont, and the Medical College at Cincinnati. He was also a Fellow of the Royal College of Surgeons, London. The last years of his life were spent in prison investigation. Drs. Andrew H. Smith and D. B. St. John Roosa are his literary executors.

From typhoid fever New York 12, Boston, Baltimore, Pittsburgh, Providence and Charleston 2 each, Fall River and Lawrence 1 each. From whooping-cough New York 10, Boston 4, Baltimore 3, Washington 2, Pittsburg and Fall River 1 each. From scarlet fever New York 9, Boston and Salem 2 each, Worcester 1. From cerebrospinal meningitis New York 4, Worcester 3, Baltimore, Lynn and Gloucester 1 each. From erysipelas New York 7, Boston 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 2d, the death-rate was 17.7. Deaths reported 3,951; acute diseases of the respiratory organs (London) 266, measles 142, whooping-cough 115, diphtheria 77, diarrhea 34, scarlet fever 29, fever 26.

The death-rates ranged from 11.0 in Gateshead to 25.5 in Plymouth: Birmingham 19.3, Bradford 18.4, Cardiff 15.6, Hull 14.6, Leeds 19.1, Liverpool 21.4, London 17.0, Manchester 21.5, Newcastle-on-Tyne 17.6, Nottingham 15.3, Portsmouth 14.2, Salford 21.0, Sheffield 21.7. Sunderland 18.0, West Ham 15.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 9th, the death-rate was 16.8. Deaths reported 3,748; acute diseases of the respiratory organs (London) 268, measles 128, whooping-cough 111, diphtheria 65, scarlet fever 30, diarrhea 27, fever 24, small-pox (Oldham) 1.

The death-rates ranged from 8.0 in Birkenhead to 24.8 in Liverpool: Bradford 15.9, Cardiff 15.0, Gateshead 15.3, Huddersfield 17.5, Leeds 18.0, London 15.9, Manchester 23.1, Newcastle-on-Tyne 17.8, Nottingham 18.3, Portsmouth 13.4, Sheffield 19.9, Swansea 11.4, West Ham 14.1.

METEOROLOGICAL RECORD

For the week ending June 16th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JUNE 16, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.	
New York . . .	3,651,594	1193	432	26.48	13.60	4.56	3.84	1.36	
Chicago . . .	1,619,226	—	—	—	—	—	—	—	
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—	
St. Louis . . .	623,000	—	—	—	—	—	—	—	
Boston . . .	539,416	178	56	25.83	17.60	4.40	4.95	1.65	
Baltimore . . .	506,389	169	44	17.70	10.62	4.13	.59	—	
Cincinnati . . .	405,000	—	—	—	—	—	—	—	
Cleveland . . .	359,000	—	—	—	—	—	—	—	
Pittsburg . . .	305,000	102	50	27.90	5.40	9.60	—	6.30	
Washington . . .	277,000	121	59	25.73	7.47	12.45	2.19	1.66	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	53	9	22.00	16.00	2.00	—	—	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Charleston . . .	65,165	37	11	27.00	—	5.40	—	—	
Worcester . . .	111,732	23	15	39.15	30.45	—	—	—	
Fall River . . .	103,142	33	13	31.30	9.09	12.12	—	—	
Cambridge . . .	92,520	17	5	47.04	11.76	—	—	11.76	
Lowell . . .	90,114	24	8	24.96	4.16	8.32	—	—	
New Bedford . . .	70,511	19	6	5.26	5.26	—	—	—	
Lynn . . .	68,218	19	4	18.78	10.52	—	—	5.26	
Somerville . . .	64,394	17	4	17.64	17.64	—	—	—	
Lawrence . . .	59,972	16	7	31.25	18.75	—	6.25	—	
Springfield . . .	58,266	15	7	13.33	13.33	—	—	6.66	
Holyoke . . .	44,510	9	6	33.33	11.11	22.22	—	—	
Brockton . . .	38,759	1	1	—	—	—	—	—	
Salem . . .	37,723	14	8	28.56	7.14	7.14	7.14	—	
Malden . . .	36,421	6	2	16.66	33.33	—	—	16.66	
Chelsea . . .	34,235	10	1	—	—	—	—	—	
Haverhill . . .	32,651	7	—	—	14.28	—	—	—	
Gloucester . . .	31,426	10	2	40.00	—	—	10.00	—	
Fitchburg . . .	30,523	7	1	14.28	—	—	—	—	
Newton . . .	30,461	5	1	20.00	—	—	20.00	—	
Taunton . . .	28,527	9	1	—	11.11	—	—	—	
Everett . . .	28,102	5	2	—	—	—	—	—	
Quincy . . .	24,578	—	—	—	—	—	—	—	
Pittsfield . . .	23,421	—	—	—	—	—	—	—	
Waltham . . .	22,791	5	1	40.00	—	20.00	—	—	
North Adams . . .	21,583	5	2	—	20.00	—	—	—	
Chicopee . . .	18,376	7	3	11.24	—	14.28	—	—	
Medford . . .	17,190	3	1	—	—	—	—	—	
Newburyport . . .	15,636	6	2	—	16.66	—	—	—	
Melrose . . .	14,721	3	2	—	33.33	—	—	—	

Deaths reported 2,160; under five years of age 749; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 512, acute lung diseases 329, consumption 262, diarrheal diseases 112, diphtheria and croup 78, measles 32, typhoid fever 24, whooping-cough 21, scarlet fever 14, cerebrospinal meningitis 10, erysipelas 8.

Date.	Barometer	Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
M..10	30.18	63	70	56	79	45	62	N.E.	S.	10	9	C.	C.
M..11	29.96	68	81	53	74	71	72	S.W.	S.W.	12	11	C.	C.
T..12	30.09	72	78	65	75	50	62	N.W.	S.E.	11	4	P.	C.
W..13	30.21	62	68	57	72	69	70	E.	S.E.	5	7	C.	C.
T..14	30.00	66	75	56	87	85	85	S.W.	W.	7	10	O.	.07
F..15	30.01	70	79	62	65	33	49	N.W.	N.	14	10	P.	C.
S..16	29.96	70	83	57	67	39	48	W.	W.	6	4	C.	O.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

APPOINTMENTS.

The following appointments in the Tufts College Medical School have been made by the Trustees: JOHN L. HILDRETH, M.D., LL.D., professor of clinical medicine, emeritus; HORACE D. ARNOLD, A.B., M.D., professor of clinical medicine; GEORGE VAN NESS DEARBORN, A.B., Ph.D., M.D., assistant professor of physiology; HOWARD S. DEARING, A.M., M.D., assistant professor of clinical medicine; HERBERT WARREN WHITE, M.D., assistant professor of theory and practice of medicine; E. CHANNING STOWELL, A.B., M.D., assistant professor of children's diseases; GEORGE W. KAAH, M.D., assistant professor of clinical gynecology.

RECENT DEATH.

WILLIAM FRANCIS HOWARD, M.D., M.M.S.S., died in Lawrence, June 15, 1900, aged thirty-one years.

BOOKS AND PAMPHLETS RECEIVED.

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Original Articles.

REMARKS ON THE SURGERY OF UTERINE FIBROIDS, WITH ESPECIAL REFERENCE TO THE IMPORTANCE OF EARLY REMOVAL IN THE YOUNG.¹

BY MAURICE H. RICHARDSON, M.D., BOSTON.

THE subject of uterine fibroids has, with broadening experience, acquired for me a renewed importance and interest. It has seemed more important because I have become convinced that the gravity of the tumor is generally underestimated; more interesting because I have become impressed by the splendid results of early operation under our present methods of dissection and of asepsis. The uterine fibroid is commonly regarded as an unimportant lesion, unless it impairs health or threatens life, or unless by its rapid growth it is likely soon to do so.

I have thus far relied upon hemorrhage, pain, pressure or rapid growth to justify the dangers and disadvantages of surgical measures, for until recent years the dangers and disadvantages have been great. Intervention has been a remedy for harm already done—the substitution of a lesser for a greater evil. Has not the time come when, by early operation, we may avoid the one and, at the same time, diminish the other? Can we not, in a word, operate before the tumor has become a great evil—at a time when the operation is comparatively devoid of risk? Ought we not to remove from young women fibroids which cause no trouble, or very little, at a time when unimpaired vitality may permit enucleation without sacrifice of either uterus or ovaries?

Though the fibroid may have given rise to neither disability nor danger, it may, nevertheless, suddenly cause symptoms of such grave importance as to demand operation at a time when the prognosis will be unfavorable. Even if the appearance of grave symptoms is gradual, the patient too often is brought to a realization of their gravity only after the loss of precious time; for she is only too much inclined to rely upon that opinion, expressed perhaps early in the history of her case, that no surgical treatment is necessary or likely to become necessary.

I have seen many cases of this kind. Patients having small fibroids which, though perhaps low in the pelvis, caused no symptoms, have been advised to await later symptoms, and have not only waited for them to appear, but have waited until they have become actually threatening to life. Others, having comparatively large fibroids which, high out of the pelvis, have caused little if any trouble—they, too, have waited far beyond the period of safe extirpation. In not a few cases the symptoms seriously threatening health and life have arisen with comparative suddenness, and have demanded relief at a time when that relief was possible only at a considerable danger to life.

Among the emergencies that I have seen are the sudden first occurrence of severe hemorrhage, symptoms of incarceration, of twisted pedicle, of suppuration, of localized peritonitis, of sloughing.

Until recently the great success of surgical intervention has not been widely known. The dangers of the operation have been greatly overestimated, and its disadvantages greatly exaggerated. Moreover, the

feasibility of saving ovaries in practically all cases and the possibility of saving the uterus in many have been overlooked.

The tendency has been on the one hand toward a fuller realization of the possibilities of danger in the uterine fibroid; on the other, toward extraordinary success in early intervention. The inevitable result of such observations is to make the observer radical rather than conservative in the treatment of fibroids.

Furthermore, with increased experience in the exploration of supposed fibroids, one cannot but become impressed by the frequent errors in diagnosis. The observer is too often confounded by finding on exploration that supposed fibroids have been tumors of the most insidious and lethal nature—malignant adenomata of the uterus, dermoid cysts of the ovary, ovarian adenocarcinomata, ovarian tumors with twisted pedicles, and even extra-uterine pregnancies.

Such errors in diagnosis may be uncommon,—they are uncommon,—but no man, however experienced and skilful, can always avoid them. I have already reported such errors in diagnosis in papers published upon extra-uterine pregnancy, upon ovarian tumors and upon other subjects. Though I have in many cases been mistaken as to the exact diagnosis, the symptoms have not called in vain for relief, and exploration, based upon the arguments herewith advanced, has revealed the truth in time for complete success.

On the other hand, it must be said that errors in diagnosis may lead one into an unnecessary operation—the error, for instance, of calling a simple, unoffending fibroid an extra-uterine pregnancy, and of exploring the abdomen or the uterus; the error of mistaking a simple pregnancy for a fibroid uterus or an extra-uterine pregnancy, and of making an exploration which, if justifiable, is certainly untimely; the error of calling a simple pregnant uterus a diffused fibroid. A few such errors lead one to extreme care in performing operations whenever there is the least question of pregnancy. And yet the surgeon must be just as careful lest he overlook, in fear of pregnancy, a lesion which, for the safety of the patient, must be repaired at the earliest possible moment—such a lesion, for example, as a malignant adenoma of the uterine body, or even an ectopic gestation.

These remarks suggest themselves to me in introducing my subject because they illustrate the extreme difficulties that sometimes arise in connection with it. They are difficulties, moreover, which can be appreciated only by those who have encountered them, and one may encounter them for the first time after so long an experience with fortunate cases that he may have been led to believe the dangers fancied rather than real.

There is a time in the history of all fibroids when mistakes are the least likely to be made, and when all means of differentiation are safe. That time is when no question of pregnancy prevents examination of the uterine cavity, and when the most thorough examinations, under ether, can be made without danger of causing abortion.

Even at such a time the diagnosis may be difficult, or it may be wrong. In one instance the most painstaking examination, under ether, by three men experienced in such things, resulted in the unanimous diagnosis of an unoffending uterine fibroid. A large

¹ Read before the Obstetrical Society of Boston, February 20, 1900.

dermoid cyst of the ovary was later removed by a more accurate diagnostician!

The beauty of operations for the removal of fibroids has long impressed me. Though the operation is, in my opinion, one of the greatest in surgery, inseparable as it ever must be from possibilities of grave disaster, yet it is now one of the most successful. Its success is dependent upon rapid, accurate and intelligent dissection, upon preliminary aseptic details, upon absolute operative aseptis, and upon perfect avoidance of wound contamination from the vagina and from the uterine canal.

The results seem about as perfect as those of any operation can be. With my present methods — which I do not intend here to discuss — the removal of uterine fibromata in patients not reduced by prolonged hemorrhage, and not suffering from other diseases, is attended by a success which ten or even five years ago seemed too much to hope for. Excepting such unavoidable complications as pulmonary embolism, uremia, and the like, it really seems as if the time had come when this great life-saving operation, skilfully performed upon the strong, is practically devoid of risk.

Yet the experience upon which this optimistic view is based does not include only the selected and favorable cases; it includes also the cases in which the patients have been forced to operations in the face of admittedly grave dangers, operations which have been performed in many instances as a last resort — patients who by prolonged suffering have been brought to choose the lesser of two great evils. This experience has included some deplorable cases, but those cases have not been without their lesson. My mortality has been gradually reduced, by the elimination of avoidable sepsis, to a point where, excluding the complications already mentioned, it is practically nothing. With such an experience, it is perhaps but natural for one to become more radical in the treatment of fibroids, seeing as he does that the chief danger lies in the lateness of the operation, rather than in the dangers of the operation itself.

One is led, therefore, to consider other questions than those of technical methods, operative skill, mortality, and the like, — questions of the preservation of sex, of the possibilities of child-bearing, and of the powers of enjoying life. The preservation of these things, it must be admitted, cannot but emphasize the importance of the early treatment of uterine fibroids in the young.

My attention was directed particularly to this question by the following case:

I first saw Miss — March 10, 1898. There had always been great irregularity in the periods, four months often intervening. The flow would at times be excessive, though not enough to produce a lasting anemia. In April, 1898, she had noticed a hardness in the abdomen. There was little if any pain, and that was of an indefinite general character. Though she was somewhat pale, her general appearance was that of a well-nourished and strong girl. There had been no loss of weight. Under ether I discovered a fibroma of the uterus about as large as a coconut. The tumor was smooth, spherical, symmetrical and movable. I advised her to present herself frequently to her physician for observation, with a view to operation if her symptoms should increase enough to demand it. At this time the symptoms were indefinite

the flow was not excessive, there was no discomfort from pressure. It was uncertain whether the tumor was growing rapidly. The patient's circumstances permitted everything necessary. It seemed best, therefore, to watch the tumor carefully, to get an idea of the rapidity of its growth, to try the effect of rest and hygiene.

The patient went south for a time, and then abroad. For six months there was no menstruation, and then a profuse flow began and lasted some six weeks. She became excessively exsanguinated; she was pale, chlorotic and "frightfully out of breath." The tumor rapidly increased in size. There was still no pain.

On November 1, 1899, I found her absolutely without color. The lips were blue and the respirations rapid, though she had not flowed for some weeks. The tumor had risen to the umbilicus. It was, as before, symmetrical and smooth. The ovaries could be felt on its sides. The patient's condition was alarming; it was clear that she could not long survive the great drain from her veins. I sent her home to remain in bed as long as there should be no flowing; to be nourished and stimulated; in a word, to gain all the blood and strength possible in preparation for the operation.

By December 6, 1899, she had gained enough in blood and strength to justify operation. There was no doubt as to the urgency of intervention. So severe had been the exsanguination that it would not have been surprising if she had succumbed to any additional loss of blood, small though it might be. We were ready, however, to operate at the very first appearance of hemorrhage. In the meantime she was kept in bed, absolutely quiet, and was strengthened in every possible way.

On December 6th I opened the abdomen and delivered the tumor. Her condition was then much better than on November 1st, but it was not even then good enough to make the prognosis anything but serious. Though the tumor was evidently a submucous one, enucleation was technically possible. In a strong, full-blooded girl it could, I am sure, have been successfully performed. Such an operation, however, would have been a bloody one, for the venous sinuses were abundant and large, and simple incision down to the tumor could not have been accomplished without a considerable hemorrhage. Enucleation seemed so desirable in this case, and, moreover, it seemed so feasible, that I made a short incision through the uterine wall to see how it would probably work. The hemorrhage which immediately started from the short incision was so severe that I was glad to be able to close it immediately by hemostatic forceps, and to go on to a bloodless hysterectomy. None who were present doubted that enucleation — no matter how rapidly performed — would have been fatal. The uterus was amputated from the cervix without loss of blood, and the patient made a most satisfactory recovery.

The possibility of myomectomy was demonstrated upon the tumor. Separation was comparatively easy, but many and large sinuses were opened in making it.

The point which I wish to emphasize in this case is that an early operation would have enabled me to remove the tumor without sacrificing the uterus.

Without going into details of similar operations performed under the stress of impending death, I would mention the comparative frequency of such cases. I would at the same time lay stress upon the fact that

it is among such cases that the mortality of hysterectomy lies. Since January 1, 1899, I have had 2 deaths in my private operations for uterine fibroid; the recoveries have been 26. The first fatal case was in a woman of forty-four, with a history of one year's tumor, accompanied by excessive flowing. The growth of the tumor was rapid, the flowing excessive, the pain and distress unbearable. The tumor was large and multiple; it was sessile and attached to everything in the pelvis and to the large intestine. The blood supply was extensive and the vessels large. I was tempted to abandon the operation when I realized its extent, dangers and difficulties, but enucleation, once begun, had to be finished, though the difficulties seemed really insurmountable. By removal of the tumor broad areas of oozing capillaries were left uncovered by peritonium. Hemorrhage was controlled only by abundant gauze packing. The patient rallied from the operation, but died of exhaustion at the end of one week.

In this case operation was undertaken at a comparatively early period, but not until the tumor was very large. There was the strongest indication for operation at the time it was performed; but there had been for many months sufficiently strong indications. Who can deny that the chances of recovery in this case were compromised by delay? Had the tumor been removed when first discovered, there is every reason to believe that the operation would have been successful.

So in the case of Mrs. C., age fifty, a patient of Dr. Crocker, of Cambridge. She had had for two years excessive flowing and had been advised to submit to operation for a uterine fibroid the size of an orange. She had become white and waxy with repeated hemorrhages. She had been tamponed and curetted with temporary benefit. She finally was driven to operation by increasing flow and failing strength. The operation was bloodless, convalescence had become well established and all anxiety was over, when she died instantly from a pulmonary embolism starting from the superior vena cava. The pelvic field was perfect.

Death from pulmonary embolism must always be considered in serious lesions, whether medical or surgical. Yet, as I have observed it, it is more likely to occur after extensive operations upon the bloodless, in whose veins hemostatic clots are rapid of formation but easy of detachment. I can recall one other sudden death from this cause after hysterectomy, the patient falling dead while being fitted with an abdominal supporter.

In all my other operations for fibroid in 1899, and so far in 1900 (26 cases), there has been a rapid and satisfactory recovery, though many have presented great technical difficulties. In the whole list there has not been a simple, easy operation. Indeed, I have not included trivial myomectomies performed during operations for other abdominal conditions. The patients, before consulting me, have in most instances waited until they were driven to it by hemorrhage, discomfort, pain, or rapid increase in the size of the tumor. It seems to me safe to say that, when performed early, myomectomy or hysterectomy has a very low mortality.

The chief point of my paper is the advisability of early operations in the young, in order that the uterus may be saved by limiting the operation to removal of

the tumor itself. I have shown — at least to my own satisfaction — that early operations permit the enucleation of small fibromata in a large percentage of cases; indeed, that this operation is often possible in large fibromata. Moreover, I am convinced that the dangers of myomectomy, when it is feasible, are even less than those of hysterectomy, for all my myomectomies have recovered. Many have been for comparatively small tumors, but many have been for very large ones. In all myomectomies one important and unavoidable source of sepsis is eliminated — that of cutting across the uterine canal. The dangers of infection from this source are great, as Homans has always maintained. In at least one case of the past year cultures of the streptococcus pyogenes were obtained from the uterine canal. This danger seems to be overcome by the use of the cautery in cutting across the cervical canal, for I have had no infections since using this method. It seems also clear to me that the smaller the tumor and the easier the operation, the less the risk.

The only objection to early operation in fibroids which possess little pathological significance is that they are not at the time necessary. But can it be said that even the most insignificant fibroid will not at some time assume attributes of grave significance? It certainly cannot. If the tumor can be controlled, so to speak, if it can be kept under frequent and intelligent observation, little can be said in favor of universal extirpation; but every observer knows that the patient once dismissed with the assurance that there is no need of operation is but too likely to keep her tumor to herself until perhaps the period of easy and safe extirpation is long passed. She presents herself again only when she is compelled to do so by the strongest symptoms of suffering or of danger.

Even when under intelligent observation, however, the fibroid may suddenly assume grave attributes. The first hemorrhage may bring the patient to death's door, as in the first case mentioned. Such instances are by no means infrequent. Furthermore, it is by no means unheard of for fibroids to suppurate, to be associated with a pelvic peritonitis, or even with abscess, — a complication of the gravest nature, which demands a heavy toll in disaster.

When the fibroids are extramural, with long pedicles, the pedicles may become twisted. Among the insidious complications must be mentioned the gradual effect of pressure upon the ureters and consequent hydronephrosis. In a word, the fibroid, though often innocuous, possesses possibilities of danger to life and health which I am convinced are underestimated.

On the other hand, the dangers of intervention must not be underestimated. Though my mortality in favorable cases has been so small, yet it is possible that the next series of cases may include some of those disasters which occur so inexplicably. Even in the class under consideration operation should not be performed without the most careful study; and it should be proposed only in those cases in which situation, size, rapidity of growth, or hemorrhage, indicate the possibility of future trouble.

If the truth of these remarks is admitted with reference to fibroids in general, the importance of them seems especially great with reference to young women, for to them early operations mean not only the removal of a fibroid, which if not actually offending may become so, but the possibility of preserving the uterus itself and the power of bearing children.

THE USE OF THE ANGIOTRIBE.¹

BY F. H. DAVENPORT, M.D., BOSTON,
Assistant Professor of Gynecology, Harvard Medical School.

ANY new procedure in surgery has to pass through a period of trial before it is accepted by the profession as an advance. The angiotribe is now passing through such a critical period, and it is with the idea of giving my experience with it that I present this paper.

The angiotribe, as its name implies, is an instrument devised to control hemorrhage by powerfully compressing the blood-vessels, and its chief object is to do away with the use of clamps and ligatures for this purpose. Its use was first advocated, as far as I can learn, by Doyen, of Paris, and was followed by Thumin, of Berlin, who modified Doyen's original instrument. Later Tuffier, of Paris, brought out a new instrument, which is the one I show here to-night. A little more than a year ago it began to be used in New York by Cleveland, and independently by Newman, of Chicago, and it has since then found a wider field in the hands of a good many surgeons. At the meeting of the American Gynecological Society in Philadelphia in May, 1899, Cleveland reported 26 cases, Newman 16, and Stone, of Washington, 11, where this instrument had been used most satisfactorily.

It is essentially a powerful clamp, consisting of two heavy blades, which are approximated by pressure produced by means of a screw which is worked by a wheel. With this instrument it is claimed that a pressure of three thousand pounds to the square inch can be obtained. The broad surfaces of the blades are roughened, and there is a longitudinal groove down the centre of each. A small pin at the end of one blade fits into a corresponding depression in the other, as an additional guard against any possible slipping.

In vaginal hysterectomy, the operation in which the use of this instrument seems peculiarly indicated, my mode of procedure is as follows: Having seized the cervix with the vulsellum I divide the tissues in the posterior cul-de-sac at the junction of the vaginal wall with the cervix, with the Paquelin cautery heated to a red heat. The point of the blade is kept close to the tissues, and the whole breadth of the cul-de-sac is divided. The same is done on the anterior surface of the cervix, and the vagina is divided in the lateral cul-de-sacs as well, but to a moderate depth only. The tissues are then pushed up front and back with the fingers, separating the attachments between the uterus, and the bladder and rectum, until the peritoneum is reached. If there are no adhesions and the uterus is small, the peritoneum is then opened and the anterior and posterior surfaces of the uterus freed.

The blades of the angiotribe are then introduced on the left side under the guidance of the fingers, including as much of the broad ligament as they will grasp and close to the uterus. Care should be taken that the ends of the blades do not include bowel or omentum. The blades are then screwed together tightly, and the clamp allowed to remain for two minutes. The tissues are then divided on the uterine side, leaving a little margin of tissue on the outside of the clamp. When the clamp is carefully removed the edge of the broad ligament will be seen to be a flat ribbon as thin as paper, which is completely dry. The

same is then done on the other side. If the uterus is small the fundus may be turned out anteriorly, and the upper part of one broad ligament, including the tube and round ligament and the ovarian artery clamped from above, compressed for two minutes, then severed, the same done on the other side, and the uterus removed. In case of a large uterus, after the uterine arteries have been compressed, the uterus may be bisected and each half removed separately. A plug of gauze is then inserted between the stumps of the broad ligaments and the operation is complete.

The operation as done with the aid of this instrument is very satisfactory. It is as near bloodless as it can be made. The use of the cautery limits bleeding from the edges of the vaginal opening, and there is practically no loss of blood from the stumps of the broad ligament. The necessary manipulation during the later stages of the operation does not start up any oozing. It also shortens the time of the operation. I had long ago given up ligatures, both from the difficulty of applying them and because if silk is used they become infected and keep up a discharge until they come away, often only after an interval of months.

Leaving a number of clamps from twenty-four to forty-eight hours is very painful for the patient, as is also their removal. Following the use of the angiotribe there is almost no pain, practically no bleeding, and the convalescence is easy and rapid.

In abdominal operations the results are equally satisfactory, though the advantages from using the angiotribe are less obvious. It can with perfect safety be used for clamping off the appendages. In two classes of cases it seems to me indicated: first, in septic cases where there is danger of any ligatures becoming infected, and for cases of secondary operation where there have been disturbances from the stump left after a primary operation. Here it would seem to me to lessen the chance of subsequent irritation if no ligatures were used.

From my experience in 5 cases (a limited number to be sure, but embracing both abdominal and vaginal), I consider the angiotribe an advance in technique. Some objection has been made to the size of the instrument and its apparent clumsiness, but I have not found that a practical objection. It can be adjusted in a narrow vagina, and after having been used is removed, and the field of operation is not obstructed, as is the case when clamps are left on. I understand a somewhat lighter instrument has been devised by Dr. Bissell, of New York, which is giving satisfaction. If sufficient pressure can be secured with a smaller instrument, it might be an advantage in the way of being more easily kept absolutely still while exerting the pressure. Dragging on, or twisting the angiotribe while it is clamped, might possibly interfere with perfect hemostasis.

The compressed tissues are not devitalized. The course of the convalescence in the abdominal cases is uneventful, and in the vaginal cases there is comparatively little discharge. The effect upon the tissues has been studied microscopically by Thumin, of Berlin, who says: "The result was, that, contrary to what might have been expected from such a complete thinning out, the tissues were by no means bruised out of shape. The effect of the instrument is nothing more than a complete compression of the interstitial connective tissue, with all its lymph spaces. All the other

¹ Read before the Obstetrical Society of Boston, February 20, 1900.

elements, muscle cells and elastic fibres are pressed close to each other, and show by their coloration and retained shape that their injury is slight."

Similar investigations by Bissell, of New York, show how complete is the hemostasis. A clot forms on the side of the clamp where the artery enters, and a second one in the central groove of the blades. If a little tissue is left next to the blade when cutting the uterus away, there is a third barrier. Microscopically he has shown that the muscular coats of the arteries are cut and retract and curl inwards, adding to the efficacy of the blood stasis. From this it will be seen that the danger of secondary hemorrhage is slight, and the reports of cases corroborate this view.

My conclusion with regard to the angiotribe, therefore, is that it is a safe and efficient means of controlling hemorrhage, renders the operation easier for the operator and much more comfortable for the patient, and is distinctly an advance, and has come to stay.

Clinical Department.

A CASE OF MORBID FEAR.

BY J. W. COURTNEY, M.D., BOSTON,
From the Nervous Clinic of the Boston City Hospital.

OF all the varied and widely diversified symptoms that arise in connection with that adynamic condition of the nervous system which we designate neurasthenia, none are more interesting than the morbid fears which are prone to fasten upon its victims. It is not in the least surprising that a nervously weak person should be assailed by fears — since fear is the almost inevitable outcome of weakness — but the curious forms which such fears at times invest and the psychopathic effects to which they may give rise are always worthy of serious attention.

An attempt has been made to give certain forms of these fears specific names, but the result of this attempt is undesirable for two reasons: (1) Because it leads us to suppose that all of these forms are intrinsically different from one another; and (2) because the designations selected are, for the most part, of the usual polysyllabic type with which the nomenclature of nervous diseases is already sadly overburdened.

Exactly what to call the variety under which the case to be reported comes is somewhat puzzling. As its basis was a fear of death, it may be considered, primarily, one of "thanatophobia." In its evolution, however, its primary identity became so much encroached upon by other morbid factors that the term selected cannot be said ultimately to entirely cover the condition. At all events, call the case what we may, it was certainly the most difficult, of the kind, to treat that has ever come under my observation, and I doubt seriously my ability to give in words even the faintest idea of the horrible mental torture endured by the patient.

The case was that of an unmarried woman of twenty-two years, American-born, of mixed Yankee and Irish stock. Her father was distinctly neuropathic and finally died suddenly, near sixty, of coronary sclerosis. Her mother is alive and well, but of nervous temperament. Her eldest brother is nervous and high-strung and at one time was prevented from pursuing his business for an entire year through fear of heart disease.

Another brother, younger than the other, is now under my care with very marked neurasthenia, and suffers severely from numerous imperative concepts. There are three other children in the family, all of whom are of nervous temperament and of marked nosophobic tendency.

The previous history of this patient contains nothing worthy of special note. Her present complaint dated back to her father's death some seven years ago. This, as I have said, occurred suddenly, and immediately afterward the patient suffered from severe nervous chills, which persisted for upwards of a month. Recovering from these, she remained in a more or less nervous condition — which had no definite mental expression — up to a year ago last spring, when two other deaths occurred — one in her own family — which completely upset her. The fear of death then took complete possession of her and she began to imagine every one she knew in caskets. She also became very emotional and cried a good deal of the time. She feared death from typhoid, from lightning-stroke, from heart disease and from surgical operation. Her visualizing powers developed to a high degree and she could see herself in the agony, with the family, the nurse and the doctor standing at the bedside. To this general picture the finer details of her demise were finally added with torturing vividness, and she could see herself drawing her last breath and her eyes closing. In addition she could actually *feel* the death chill creep over her. Among other things in reference to her taking off she worried as to whether this should occur on a hot or cold day, a stormy or a fair one.

All this time she was doing her work — that of a stenographer — in a purely mechanical but satisfactory way, and insisted to me that she did not in the least foster the above ideas and fears, but that they surged through her brain at all times and under all circumstances. Her entire family were kept in a continual state of anxiety over her condition and were naturally fearful as to the ultimate results upon her mental stability.

On my first examination, about a year and a half ago, her physical condition, except for some impoverishment of the blood, was found to be good, the only physical signs being a slight hemic murmur over the pulmonic area of the heart and a trifling inequality of the pupils. The eyes had been examined by an oculist and no refractive error made out.

The question of treatment presented exceptional difficulties, as may readily be imagined. The patient was already goaded to desperation by solicitous friends and others who insisted that her sufferings were controllable and urged her to busy herself with various things which would enable her — they thought — to forget them. She insisted that no one could possibly form any idea of how hard and how variously she had struggled to rid herself of her morbidness, but without the slightest avail.

The course of treatment I pursued was somewhat as follows: I began by explaining to the patient in some detail — she was intelligent, had had a high school education — the nature of the general nervous condition upon which the mental symptoms were based, and showed her how necessary I considered it to direct our combined attention to the nervous system in general, without regard primarily to such specific manifestations as the fears. To accomplish this the

only *drug* used was iron. For the rest I insisted upon forced feeding, graduated exercises done in class work, and moderate bicycling, which she had formerly enjoyed.

For a long time it was terribly discouraging for both of us. She returned at intervals, and always with the story that she was worse. In addition, she complained that her stomach had gone back on her and that she had a constant "bad feeling" extending from the left hypochondrium to the umbilicus. To account for this she expressed the fear that there were probably finger-nails in her stomach—she was an inveterate nail-biter—which she had swallowed; she had heard of a girl dying from such a cause.

I insisted that the prescribed treatment should be rigidly adhered to in every particular, and within three months she gained sixteen pounds. I then began to use suggestion without hypnosis, going, however, through the manoeuvres which are ordinarily employed to produce the first stage of the latter. This was done, at first, as often as three times a week. My only success was in substituting a different—though no more desirable—mental condition. Everything began to seem strange to her. As she herself said: "It seems queer to think of living; of having definite work to accomplish; to hear people planning to do things at some future time." The most commonplace acts of life assumed a character hitherto undreamed of by her, and she grew so discouraged at her condition and her impotency to rid herself of her horrid incubus that she threatened on two occasions to drown herself.

I continued my pseudohypnotic séances and set her definite tasks—such as memorizing passages from prose and poetic works, which was not congenial and consequently required considerable mental concentration—to do in the interim between visits. I also used the static breeze to the head, but merely to aid the suggestive measures. I never allowed her to abandon her work for even a day at a time and was finally rewarded—after many relapses—with what may practically be termed a complete cure. She now does not care to have the old fears or the queer thoughts mentioned at all. If they are spoken of, she changes color and turns the conversation into other channels.

COLOSTOMY FOR OBSTRUCTION DUE TO MALIGNANT DISEASE.

BY J. B. BLAKE, M.D., BOSTON.

THE abdominal viscera from a case of extensive malignant disease were recently shown at the Surgical Section. The case seemed of sufficient interest to warrant a description. The patient was an Italian woman, age fifty. She had irregular and profuse menstruation until four months before entrance. Since then flowing had ceased, but the abdomen had increased steadily in size. In bed five weeks before coming to hospital. During this period her bowels moved only six times. She entered March 26, 1900. She was poorly nourished and cachectic. No nodules in breast, but some in left supraclavicular region. Abdomen considerably distended and tympanitic, except in right iliac region. Intestinal peristalsis visible. Uterus fixed in pelvis, and an ulcerated crater replaced the os. Rectal examination showed anteriorly a hard,

nodular, immovable tumor mass. Enemata gave but little results. No radical operation was advisable.

Operation.—A left inguinal colostomy was advised and accepted. After opening the abdomen in the usual position it was impossible to find either the sigmoid flexure or the lower descending colon. After some trouble the splenic flexure was found and brought into the wound, and opened seven hours later. A small amount of feces escaped, and the patient was relieved for a few hours only. She died four days later.

Autopsy.—Nothing of importance in head. Peritoneal cavity: Small intestines and stomach greatly distended; adjacent coils bound together by an almost black, sticky, mucoid-like material. Portion of intestine forming the borders of the surfaces in juxtaposition injected. No free fluid in peritoneum. Surface of intestine pale except the lines of injection along the contiguous surfaces. In splenic flexure is an opening 5 centimetres in size, edges swollen, reddened; surrounding mucosa dark. There is an adjacent pedunculated mass of fat, deep red, moist. Descending colon passes directly backward from splenic flexure for a distance of 12 centimetres. In the remainder of its course it is firmly bound down to the posterior wall of the abdomen. The pelvis is filled with a dense, firm mass; the anterior portion of the superior surface being formed by the wall of the bladder, which is covered with hard, irregular, grayish-white, opaque nodules 1 centimetre and more in size. A coil of small intestine is firmly bound down to this pelvic mass, and the sigmoid flexure is lost in it. Anatomical landmarks are completely obliterated in the pelvis. In the right posterior portion is a small, thin-walled cyst resembling in appearance a simple ovarian cyst, but no other evidence of the tubes or ovaries or of the outlines of the uterus can be discerned. The lumen of the loop of small intestine appears constricted, although its distal as well as its proximal end of the U-shaped figure is dilated. The cecum is bound down to the pelvic mass and the lumen of the ileum near the ileocecal valve appears occluded. The intestine here is bound down posteriorly and is apparently converted into a large cord. Beyond this point the intestine is collapsed. No trace of appendix is found. It is evidently buried in the mass of fibrous tissue about the cecum. Here and there over the serosa of the intestine and mesentery are firm, granular appearing, whitish nodules, .5 centimetre to 1 centimetre in size. Only three or four of these bodies were found. Similar nodular masses bound the sigmoid flexure to the pelvic wall. Gall-bladder distended; united to hepatic flexure by fibrous bands. Diaphragm fifth interspace left side; fourth space right side. In the upper part of the anterior mediastinum the tissue is indurated and a small dense area found, which on section shows a fibrous structure beset with white opaque spots, giving it a rough, granular appearance.

Anatomical diagnosis.—Cancer of bladder and vagina with direct extension into pelvic organs. Metastases in retroperitoneal, bronchial and mediastinal lymph nodes. Stricture of ureters; hydronephrosis of right kidney; obstruction of intestine at ileocecal valve; edema of lungs; chronic fibrous peritonitis; chronic fibrous pleurisy.

The case offers two points of interest: (1) The remarkable extent of the growth and the rapidity of its development; (2) an unusual complication in the

comparatively simple operation of inguinal colostomy. The distended small intestine bulged into the wound and was returned to the abdominal cavity with difficulty. The apparent absence of descending colon was very puzzling for some time and the presence of the omentum at the splenic flexure made it more difficult to bring the intestine properly into the wound. The operation gave no permanent relief, because the small intestine was occluded at the ileocecal valve. In palliative operations, therefore, for the relief of more or less complete intestinal obstruction due to intra-abdominal malignant growths, it is well to bear in mind that the right as well as the left inguinal region may be the seat of the stricture; and it is possible that in these cases a median incision and an exploratory operation, as a preliminary, would be advisable. If the condition of the case demanded, an artificial anus might be made at this opening. There was no indication of the hydronephrosis before death.

Reports of Societies.

AMERICAN DERMATOLOGICAL ASSOCIATION.

TWENTY-FOURTH ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY, 1, 2 AND 3, 1900.

FIRST DAY. — MORNING SESSION.

THE President, DR. HENRY W. STELWAGON, of Philadelphia, read the

ANNUAL ADDRESS.

Our ultimate aim, he said, is the diminution of suffering and the cure of disease. It is well to remember that this end is not attained by the clinician alone, nor by the therapist alone, nor by the pathologist, nor by the bacteriologist, but by these investigators going hand in hand, each having an important and necessary share in the final result. Bacteriology especially must be persistently cultivated. At the same time, the hereditary receptivity, the family vulnerability, the environment, and the state of the general health, are factors of moment in many cases, and their removal or modification by hygienic and constitutional treatment will often render the microbial invasion less calamitous, and be of aid in removing the disease.

The reader referred to the teaching of dermatology in the medical colleges, and the increased importance attached thereto and the great advances therein. He spoke of leprosy as a disease which must as yet be considered from the standpoint of prevention, and the necessity that the matter should be handled by the national authorities.

BULLOUS DERMATITIS (DERMATITIS HERPETIFORMIS) IN CHILDREN.

Dr. J. T. BOWEN, of Boston, detailed 5 cases following vaccination and exhibited photographs. He referred to the ease and frequency with which the laity ascribe any succeeding ill to vaccination. Of these 5 cases, in 3 the eruption appeared within two weeks after vaccination, in 1 within a week, while in another it did not show itself until after the lapse of a month. In 4 of the cases there appeared to be ground for the assumption that the vaccination in

some way influenced the appearance of the eruption. In attempting to classify the cases, certain characteristics that have not been emphasized as usual features of dermatitis herpetiformis force themselves upon our notice. The localization of the lesions was striking, as there was a marked tendency to grouping about the mouth, chin, nose and ears, and upon the backs of the hands and feet. Besides this, the extensor aspects of the extremities were in general more prominently affected. In all the cases the trunk was affected but slightly as compared with the other regions of the body. The itching was not very pronounced. In the present state of our knowledge of the bullous dermatoses it is wise to go slowly and imprudent to draw deductions from any but a large number of carefully reported cases.

Dr. GEORGE T. JACKSON, of New York, read a paper on

LOSS OF HAIR.

This was a study of 300 private cases. Elaborate statistical tables were presented. His conclusions were as follows: Loss of hair is far more frequent among men than among women. Neither the unmarried nor the married state exerts any influence on the hair. Intellectual occupations and worry and strain are predisposing causes. Sixty-six per cent. of the cases begin before thirty years of age. In women general thinning of the hair is the most common form, while the receding forehead is uncommon. In men the whole top of the head is most often affected, and the receding temple is common. The great predisposing cause of loss of hair is heredity. Most of the women who lose their hair show a well-marked history on the maternal side; the men show it on the paternal side. All disorders of the general nutrition of the body are predisposing causes. The greatest exciting cause is dandruff, a term used to include seborrhea sicca, pityriasis, seborrheal eczema or dermatitis. As to treatment, the best drugs are sulphur, resorcin and the mercurials. The only stimulant worth mentioning is massage, and this should not be employed until the dandruff is checked.

The paper was generally discussed by Dr. A. Ravogli, Dr. Isadore Dyer, Dr. J. N. Hyde, Dr. Joseph Zeisler, Dr. T. C. Gilchrist, Dr. Wm. A. Hardaway, Dr. Samuel Sherwell, Dr. Joseph Grindon, Dr. Henry W. Stelwagon, and Dr. George Thomas Jackson.

AN UNUSUAL PHENOMENON OF SYPHILIS: OTHEMATOMA.

Dr. JOSEPH ZEISLER, of Chicago, read this paper. Othematoma consists in a rather suddenly appearing effusion of blood between the cartilage of the auricle and the perichondrium, separating this latter from the former. It is situated on the upper half of the anterior aspect of the organ, and the swelling is considerable. The chief occurrence of othematoma after traumatism is well established. The writer carefully searched the authorities as to the possible connection of othematoma with syphilis, and the only reference he could find to it was by Bouvier, in 1889.¹ Dr. Zeisler's attention was called to this possibility by the following case: Dr. X, about forty years old, had a small wart-like lesion on his right thumb, which was removed by excision and cauterization with nitric acid.

¹ Archive for Dermatology and Syphilis, vol. xx, 1890.

The glands of the axilla became much enlarged. Six weeks after the operation on the thumb, a generalized, copious roseola made its appearance. Mercurial injections, inunctions, etc., were given. About a year later an othematoma appeared on the right auricle. Under a liberal administration of iodide of potassium the othematoma promptly disappeared, never to return again. The most natural explanation of the case is on the basis of perichondritis due to syphilis.

EVENING SESSION.

A CASE OF BROcq'S ERYTHRODERMIE PITYRIASIQUE EN PLAQUES DISSEMINÉES.

Dr. J. C. WHITE, of Boston, reported this case. The patient was a healthy Irishman, with a negative family history, who about twelve years ago noticed red spots of considerable size on his lower leg which disappeared in the spring, and reappeared each autumn, invading more and more the general surface until the entire surface was almost covered. They showed themselves every year at the beginning of cold weather, remained unchanged throughout the winter, and vanished in April. They had never given rise to any subjective symptoms. On inspection his face and neck were largely occupied by bright red areas of irregularly circular outline, varying in size from one-half inch to two inches in diameter. They were mostly smooth, not at all elevated even at the margin, and were not thicker than the normal skin.

Another case was seen about the same time by Dr. Charles J. White, in a young German, age twenty-six. The two cases bore a strong resemblance to each other in the general appearances, but were far from identical, the second one covering much larger individual areas uniformly and being more scaly, as in Brocq's case. It also lacked the peculiar brownish tint of the first case.

Dr. PRINCE A. MORROW, of New York, read a paper entitled

THE PROPHYLAXIS AND CONTROL OF LEPROSY IN THIS COUNTRY.

The reader referred to the growing likelihood of contagion from our recently acquired possessions in the Philippines and Hawaii, and the necessity for national action in order to prevent the spread of the disease. He suggested the employment of skilled experts as quarantine inspectors. He deprecated the medieval conception of the horror and virulence of the disease, which is now known to be no more contagious than tuberculosis. Isolation or segregation undoubtedly are the most effective means known to sanitary science for the control of this and other contagious diseases. Homes or asylums with suitable hygienic surroundings should be provided by the national government for the care and maintenance of lepers. Such asylums should be made comfortable and attractive and arranged with especial adaptation to the requirements and peculiar needs of its inmates. In view of the chronicity of the disease, lepers should not be condemned to close confinement in inactivity, but should be provided with interests, means of employment and recreation. As a large proportion of lepers are able to engage in some kind of industry, such institutions might be made partly or wholly self-sustaining from the proceeds of these industries.

THE PREVALENCE OF PARASITIC DISEASES OF THE SKIN AND MEASURES NECESSARY TO LIMIT THEIR SPREAD.

Dr. WILLIAM THOMAS CORLETT, of Cleveland, read this paper. The frequency of diseases of the skin due to animal and vegetable parasites as reported by this association show that, next to eczema, epizoic dermatoses are the most prevalent of all skin affections in this country, being met with 95 times in 1,000 cases of skin disease, or 9.529%. Favus in this country is almost wholly an imported disease. The frequency as well as the severity of ringworm differs in different countries: in lowlands it thrives and is virulent. The principal sources of infection are asylums and similar institutions where children are often accepted and congregated without due regard to their contagious condition; kindergartens and schools; the poor or slum districts where children are crowded together in uncleanly tenement houses, and domestic animals, especially horses, cows, dogs and possibly poultry. The habit of using the same barber's utensils without previous cleansing for different persons should not be tolerated. The hanging of roller towels in hotels is a dangerous custom. Barber shops should be under the supervision of boards of health. Treatment of parasitic dermatoses should be prolonged until the disease is wholly eradicated, and a certificate to this effect given by the medical attendant before the person is admitted in close communion with others.

Dr. HENRY W. STELWAGON, Philadelphia, reported

TWO CASES OF PERSISTENT EXFOLIATION OF THE LIPS.

The first case was in a young woman, about eighteen. The urine showed considerable deposit of urates. The condition was limited to the vermilion of the lips, neither overstepping the mucous portion of the mouth nor the cutaneous integument. The lips when free from the scale or crust formation appeared normal, at times showing scattered points of superficial abrasion. The first stage in the formation of an exfoliating film consisted of slight but scarcely perceptible thickening. In a short time, from two to five days, the affected parts would break up into plaques, by a breaking through of the film, and the edges of the plaques would gradually become everted, and slowly loosen and detach themselves. If pulled off or forcibly detached the lips would be red, slightly abraded and somewhat tender. The exfoliative process went on unceasingly. The disease is still persistent but no longer under the reader's care. The second case was in a woman aged thirty. The patient was profoundly neurasthenic. Both lips were to a great extent involved, although the central parts were most markedly affected. There was slight seborrhea capitis in both cases. The reader was inclined to consider the disease as allied to eczema seborrheicum.

THE ETIOLOGY AND PATHOLOGY OF CUTANEOUS CANCER.

Dr. A. RAVOGLI, Cincinnati, who read this paper, said that from the greatest antiquity the clinical conception of cancer has been an ulcer, especially of the skin and glands, with exuberant growth of granula-

tions, which when removed has a tendency to relapse, gradually spreading and under marantic conditions causing death. The true etiology was first given by Billroth, who considered as carcinoma only those new growths which result from epithelial production, together with an infiltration in the connective tissues. It is quite natural that the masses of epithelial cells, crowding themselves into the midst of the connective tissues, must produce an irritation which causes a proliferation of the connective-tissue corpuscles. These corpuscles, which have the task of providing for the nutrition of the connective-tissue fibres, are greatly developed in the embryonic stage. In adult life they are very much smaller, but on account of some inflammatory exudation, they return to their embryonic stage; increasing in their volume, their nuclei proliferate, they increase in quantity, producing hypertrophy of the connective tissues, until they reach the form of papillary growths. In carcinoma the presence of sharp epithelial cells crowding down upon the delicate structure of the connective-tissue fibres, causes the connective-tissue corpuscles to take part in the proliferation, hence carcinoma is a malignant production consisting of masses of epithelial cells imbedded in a connective-tissue structure, inflamed and infiltrated.

SECOND DAY. — MORNING SESSION.

The general subject discussed at the meeting was

MALIGNANT DISEASES OF THE SKIN.

(a) THEIR CLASSIFICATION AND CLINICAL FEATURES.

DR. E. B. BRONSON read this paper. The import of the epithet malignant as applied to disease varies according to the circumstances under which it is employed. As most generally used the term implies a rapid, destructive course, tending to a fatal issue. It is thus used to designate certain forms or varieties of a disease of a severe and dangerous type, in contradistinction to other forms of the same disease that pursue a relatively milder or "benigner" course. Thus we have malignant and benign form of syphilis and tuberculosis. Pernicious cell growths may originate either in the epithelial structures or in the connective tissue. In the one case the resulting disease is carcinoma, in the other sarcoma. All known "malignant" growths pertain to one or the other of these two diseases. An epithelioma, though, in the common acceptation of the term, a skin cancer, is not necessarily a malignant growth, only potentially so. A promising field for the study of malignancy in diseases of the skin and of the conditions relating to it is found in those diseases that, beginning as an inflammation or simple perversion of growth, end in malignant cancer. The epitheliomas that develop on old syphilitic lesions, on lupus, or from some indifferent local irritation of the skin, are common instances.

DR. M. B. HARTZELL spoke on

(b) THEIR ETIOLOGY AND PATHOLOGY.

Heredity, age, traumatism and long-continued slight irritations have long been considered as predisposing, in greater or less degree, to the occurrence of cancer. While heredity is no longer believed to play the important rôle formerly attributed to it, yet it is apparently well settled that cancer is apt to occur in suc-

cessive generations of some families, due, as is now believed, not to the inheritance of the disease, but to an inherited susceptibility. The influence of age upon the appearance of carcinoma is so very evident that it is no longer a matter for debate; in the great majority of cases the patient with cancer is past forty years of age, the exceptions to this rule being in most cases examples of rodent ulcer. Ribbert produced numerous tumors in the abdomen, uterus, diaphragm and pleura of an animal (a rabbit) by allowing free epithelial cells to diffuse through the peritoneal cavity. Cancer possesses a considerable number of features, clinical and pathological, which suggest the possibility of its being an infection, although other explanations are not absolutely precluded. We may regard it fairly well demonstrated that this neoplasm results from a profound and more or less permanent alteration of the mechanism of cell division. This alteration may result from long-continued irritation of a mechanical or chemical kind. The immediate causes are therefore multiple. In cases of xeroderma pigmentosum it may be assumed that some inborn defect of the skin exists.

DR. F. J. SHEPHERD, of Montreal, considered

(c) THEIR TREATMENT.

As a surgeon who had to treat all kinds of malignant disease, wherever situated, excision of the growth and the adjacent lymphatic channels and glands seemed the most scientific procedure in the majority of cases. He said that all now believed in the local origin of cancer, and also that whenever found it should be quickly and completely removed. The disease being local, only local treatment was curative. Constitutional treatment was of no avail.

There are two forms of local treatment, removal by knife and removal by caustics. Surgeons favor the former and dermatologists the latter. The weak point in the treatment of malignant disease of the skin by caustics is that it postponed the removal of the neighboring lymphatic tissue and glands. Dr. Shepherd held that there may be malignant disease of the glands and yet they cannot be always told, as in the axilla and submaxillary region. Even the microscope would fail to detect the disease in the glands, the cancer cells in the very early stage being so few and far between. He instanced the magnificent results of the removal of mammary cancer by modern methods of very extensive operations. In Paget's disease of the nipple he advocated removal of the whole breast. In cancer of the lips, scrotum, penis, vulva and whenever the skin was loose, removal by excision was advocated. Certain malignant ulcerations of the skin he admitted might be successfully treated by caustics, especially rodent ulcer and those slow-growing forms of epithelioma situated in regions somewhat removed from glands, as the nose, forehead, temples, cheeks, hands and where the glands are not early affected. He had successfully employed free curetting and the after application of caustics in such cases. The best caustics were arsenic, chloride of zinc and caustic potash. Some hold that arsenic has a selective action: that is, an inflammation may be produced which will destroy cancer cells but not normal tissue. Before employing arsenic the ulceration should be curetted, or the epidermis over it should be destroyed by caustic potash. Several other methods of treatment were alluded to, such as the parenchymatous injections of alcohol, nitrate of silver, chloride of zinc, electrolysis, aniline

dyes and the injection of toxins. Coley's treatment is more suited to sarcoma than carcinoma. In sarcoma of the skin early and complete removal was the best treatment if the growth were local. When general, some cases have been successfully treated by the injection of a solution of arsenic. The injection of toxins had not proved successful in Dr. Shepherd's hands.

DR. POLLITZER, of New York, read a paper on
A CASE OF NEVUS CANCER; METASTASIS; OPERATION; CURE.

The patient was thirty years old when a small, slightly pigmented mole on the back, about an inch to the left of the eighth dorsal vertebra, began to ulcerate. During six years of treatment the ulcer never healed, and finally began to exceed the limits of the original mole. It was then excised, the skin stitched up, and the wound healed well, producing a linear scar. Six months later the skin in the neighborhood of the scar became raised, red, glistening over an irregular area about two inches in diameter, and broke down at two points, producing small ulcers. Soon after the patient consulted the writer. There was then, in addition to the condition described, a small, hard, round tumor clearly below the skin, and an inch and a half from the edge of the red, glistening patch.

The patch, including the scar and a large extent of healthy skin, was excised, the subcutaneous tumor was found within the substance of the trapezius muscle, and the latter was stripped up from its attachments to the spines of the ninth to twelfth dorsal vertebrae and cut out to an extent that included the tumor. Microscopic examination showed the cutis throughout the red, glistening area to be filled with round, oval and irregular tracts of cancer cells, without connection with the surface epithelium. Examination of the tumor in the muscle showed it to be made up of large nests of cancer cells separated by dense masses of connective tissue, which had replaced the muscle fibres.

Six years have elapsed since the operation, and the patient is entirely free from any sign of a recurrence.

Cases of nevus cancer are usually of such striking malignancy that the favorable result in this case, in which a metastatic deposit had already occurred, makes it worthy of record.

SYPHILITIC LESIONS OF THE "WHEEL" TYPE.

DR. H. G. KLOTZ, of New York, described an unusual eruption observed during the early period of secondary syphilis, and quoted similar descriptions from Taylor and Langehert. The lesions resemble wheals, except for the absence of itching and other sensory symptoms, and for their long duration. Nevertheless he believes it justifiable to accept the lesions as wheals, especially as the conditions found in the wheal of urticaria by several authors would fully account for the clinical features. Dr. Klotz called attention to the want of actual knowledge in regard to angioneurosis, and mentioned a recent paper by Brillippsoro, which attempts to establish the origin of the so-called angioneurosis from embolism.

DR. JOSEPH ZEISLER said he had never had his attention called to this distinct syphiloderm as an independent form, but he had seen a case much like that described by Dr. Klotz.

DR. JAMES NEVINS HYDE, of Chicago, saw no reason why the introduction of a poison such as syph-

ilis into the system should not bring about a series of changes in the skin.

DR. JOSEPH GRINDON, of St. Louis, said we should expect, reasoning *a priori*, to see such eruptions in syphilis.

DR. KLOTZ stated that he was inclined to consider it a syphilitic eruption, different from the erythema and similar affections.

ENDOTHELIOMA OF THE SKIN DEVELOPING IN THE SCAR TISSUE OF LUPUS VULGARIS; ANGIOSARCOMA OF THE SKIN.

DR. JOHN A. FORDYCE reported the case of a patient, the subject for a number of years of a lupus vulgaris of the forearm. A nodular growth developed in the scar tissue which followed various operative procedures on the lupous tissue. The tumor was excised and proved microscopically to be an endothelioma, probably starting in the perivascular lymph spaces surrounding the smaller vessels. From the size and appearance of the cells alone, as well as from the general conformation of the cell collections in the connective-tissue spaces, it would be impossible to differentiate the growth in question from a small-celled epithelioma. The grouping of the cells about the dilated blood spaces, together with the absence of other possible points of origin, enabled a diagnosis of endothelioma to be made. Although epitheliomas springing from lupous tissues have not infrequently been reported, the writer believed the case in question to be a unique one in which an endothelioma has been found in such a connection.

Several instances of angiosarcoma were referred to in which single tumors had been found which were identical in structure with the so-called idiopathic pigmented sarcoma of Kaposi. These growths start from the connective-tissue covering of the vessels and are histologically to be differentiated from the true endotheliomas.

TWO CASES OF RHINOSCLEROMA.

DR. C. W. ALLEN, of New York, presented with colored drawings and photographs 2 cases of rhinoscleroma, one of which had been under his observation since 1889, the other for about three months. Both are already known to literature. In the first case the portion of the growth involving the centre of the upper lip, gum and inferior portions of the nose broke down in a gangrenous suppuration, and within the period of a fortnight was completely thrown off, leaving the bones denuded. These subsequently became covered over with a reproduction of the new growth, so that eating, breathing, sleeping, etc., became more natural and life was prolonged after it had been despaired of. In the case of the man, whose affection had existed for nineteen years at least, there was enormous enlargement of the external nose, dilatation of the nostrils, which were also practically occluded. For nine years a tracheotomy tube had alone made breathing possible, and the stenosis extended the whole length of the pharynx, shutting off the posterior nares by bands and masses of fibrous tissue. Despite the severity of the condition present in both cases, there had been recent improvement in the general health.

AN UNUSUAL FORM OF TUMOR OF THE SCALP.

DR. ALLEN presented a colored painting, gross specimen and microscopic preparation. The tumor,

which had been of slow growth upon the scalp of a woman advanced in years, had been widely excited after the diagnosis of probable carcinoma was made. The chief clinical feature of the tumor was its extreme hardness, almost like that of ivory. This was due to a central encapsulated mass which had undergone hyaline or colloid degeneration. Sections made by Dr. Martin Ware, to whom the reporter is indebted for a description of the appearances, showed an alveolar arrangement of polyhedral cells, growing in a very atypical manner. These cells are arranged about a central canal, indicating that the growth emanates from glandular structure, either sebaceous or sweat gland. The cells do not take the hematoxylin and eosin stain well, because of the degeneration they have undergone.

DRS. S. SHERWELL and J. C. JOHNSTON reported A CASE OF XANTHOMA TUBERCULATUM DIABETICORUM, SHOWING RAPID DISAPPEARANCE OF LESIONS UNDER ANTIDIABETIC REGIMEN AND TREATMENT.

As long ago as 1890 Dr. Sherwell sent one of these cases to Dr. A. R. Robinson. The patient in the present case was a woman, age forty, somewhat plethoric, apparently well nourished, who was first seen on January 8, 1900. The urine was full of sugar. The lesions were first noticed between five and six years ago, most marked on the arms, elbows, knees and nates, and are less noticeable during the summer months. Last winter the symptoms became so distressing that she could obtain no relief by night or day. It would seem that from the first she had had classic symptoms of glycosuria. The appearance was such that, roughly speaking, at the distance of the width of a room the eruption might have been taken for a case of variola at the height of the pustular and confluent stage. She was put upon antidiabetic regimen and diet, together with mild laxative alkaline treatment, and rapidly improved. The papular and tubercular masses flattened, the inflammatory halos entirely disappeared. At present there is scarcely even a pigmented spot to mark where the original lesions existed. The glycosuria is quite slight. So far only about 30 such cases have been reported.

DR. JAMES CLARK WHITE inquired whether the blood had been examined.

DR. JAMES NEVINS HYDE said he had seen at least 2 such cases.

DR. SHERWELL, replying to Dr. White, stated that the blood had not been examined. The lesions were not compressible, looking almost like a pus formation or a conical furuncle. The patient felt as if there were crumbs in the bed.

BLASTOMYCETIC DERMATITIS AND ITS RELATION TO YAWS.

DR. ISADORE DYER, of New Orleans, read this paper. In many particulars the case fulfilled the clinical characteristics of yaws. Dr. Dyer examined specimens and confirmed the diagnosis of blastomycetic dermatitis. Under the iodide treatment the improvement was rapid, the lesions flattened, the exudate diminished. Finally mercurial plasters were applied to all of the lesions, successfully reducing the granulations. At the present time the face shows a smooth, glossy area, marked here and there by a fibrous tab, and with a large, branching, somewhat keloidal scar

in the lower part of the area. Over all there is a fine linear network of scars, soft but marked.

THREE CASES OF BLASTOMYCETIC INFECTION OF THE SKIN, ONE OF THEM PRODUCING A "TUMOR" OF THE LOWER LIP.

DR. F. H. MONTGOMERY and DR. H. T. RICKETS reported these cases.

DR. J. N. HYDE, of Chicago, gave

A REVIEW OF THE SUBJECT OF BLASTOMYCETIC INFECTION OF THE SKIN, WITH A REPORT OF TWO NEW CASES.

The subject of blastomycetes was discussed by Dr. James C. White, Boston; Dr. William A. Pusey, Chicago; Dr. John T. Bowen, Boston; Dr. H. G. Klotz, New York; Dr. Samuel Sherwell, Brooklyn; Dr. M. B. Hartzell, Philadelphia; Dr. Joseph Zeisler, Chicago; Dr. John A. Fordyce, New York; Dr. James C. Johnston, New York; Dr. T. C. Gilchrist, Baltimore; Dr. Frank Hugh Montgomery, Chicago; and Dr. James Nevins Hyde, Chicago.

A CASE OF ERYTHEMA ELEVATUM DIUTINUM (?) was reported by Dr. T. C. GILCHRIST, of Baltimore, who said that the case did not recall the diagnosis of lichen planus, and did not at all resemble Galloway's case of ringed eruption.

DR. J. N. HYDE said he had seen a case which was almost identical with Galloway's case.

A vote of thanks was tendered to the retiring president, Dr. Henry W. Stelwagon, of Philadelphia, and Dr. Francis John Shepherd, of Montreal, the newly-elected president of the association, was inducted into his office. This was followed by adjournment.

THE OBSTETRICAL SOCIETY OF BOSTON.

MEETING of February 20, 1900, the President, DR. A. WORCESTER, in the chair.

DR. F. H. DAVENPORT read a paper entitled

THE USE OF THE ANGIOTRIBE.¹

DR. G. W. WASHBURN: I am rather impressed by the apparent clumsiness of the instrument, and would fear that there would be more or less dragging upon the tissues. The danger of secondary hemorrhage is not, it seems, as great as one would fear.

DR. W. L. BURRAGE: I have seen the instrument used in only one case, and was not especially impressed with it then, as it seemed clumsy and heavy. A separate assistant is needed on account of the danger of dragging upon the tissues. I have noticed that some men after using the angiotribe cauterize as well, as if suspicious of the absolute safety of the instrument, which seems to me rather a return to methods discarded years ago. I have been fairly well satisfied with the use of animal ligatures in abdominal work, and would not feel inclined to use it there. Its best field would be in vaginal hysterectomies, where vaginal ligatures are apt to become infected and clamps are greatly in the way. Its clumsiness seems to me rather a disadvantage for use within the abdominal cavity. The feeling of lack of security of which I have spoken makes me feel rather sceptical as regards its use in the future.

¹ See page 4 of the Journal.

DR. J. G. BLAKE: Theoretically vaginal hysterectomy would seem to offer a very good field for the instrument. It is a great disadvantage to obstruct the view with many clamps, which are also very annoying to the patient afterwards, for forty-eight hours very likely. If this instrument can be modified so as to become lighter and yet retain its crushing power I should regard it as a great addition to our armamentarium.

DR. J. C. MUNRO: I should like to ask how many cases of intermediary hemorrhage have been reported where this instrument was used?

DR. DAVENPORT: I could not find a single case out of the 200 or so I examined in which any such hemorrhage was due to the instrument. In one case there was a hemorrhage, but it was thought to be due to an improperly made instrument, the edges of the blades being too sharp. Another case of supposed secondary hemorrhage was in reality bleeding from the cut edges of the vagina and not from the tissues crushed by the angiotribe.

DR. MUNRO: Though this instrument may be of use in the vagina I am sure that in the abdominal cavity I should stick to silk or some such approved method.

DR. DAVENPORT: Dr. Burrage has spoken of some operators using the cautery after the angiotribe. I hardly think it was used so much with the idea of cauterization and so preventing a hemorrhage as to avoid adhesions. Skene showed here some two years ago his electrical clamp, which cooked the parts between its blades. The objection to that is that it requires special apparatus, and can hardly be used at private operations away from a large hospital.

I agree with the speakers that the main use of the instrument will be in vaginal work. In abdominal work I would limit it to septic cases or others where I wished to avoid ligatures. In the case in which I used it in the abdominal cavity I was doing a secondary laparotomy to relieve a tender stump, caused, it was thought, by an infected ligature. Here the use of the angiotribe was very satisfactory. I think if a smaller instrument doing the same work has been perfected it may be an advantage, but this one is not practically nearly as clumsy as it looks.

DR. M. H. RICHARDSON read a paper entitled

REMARKS ON THE SURGERY OF UTERINE FIBROIDS, WITH ESPECIAL REFERENCE TO THE IMPORTANCE OF EARLY REMOVAL IN THE YOUNG.²

DR. F. B. HARRINGTON: The many cases I have seen in which enucleation was quite easy and satisfactory make me feel more and more the importance of saving the uterus when it can be done. I still feel that hysterectomy is almost the most serious operation with which I am called to deal, and I still have a certain hesitation about advising an operation in cases in which the symptoms are not severe, especially cases where I have a chance to watch the patient myself, or where I know she is in good hands. Possibly thinking over this paper will convince me of the need of earlier operation, but at present I am inclined not to be too hasty about urging it.

DR. W. F. WHITNEY: There are many points of interest from a pathologist's stand, bearing upon the views advanced by Dr. Richardson.

Against enucleation, the fact of the frequent multi-

plicity of small growths which cannot be detected in the thickened wall and may subsequently develop into large and dangerous ones must be borne in mind. More precise knowledge is needed on the subsequent history of those that are left behind—whether their growth is accelerated or retarded by enucleation of some of them.

Another question which has yet to be answered is whether enucleation will restore the atrophied or hypertrophied mucosa to its normal condition again, and so prevent recurrence of hemorrhage.

The suppuration is due to infection supervening upon the anemic necrosis to which these growths are very liable. But if this does not happen partial absorption and calcification may be looked for as a favorable result, which, with the associated shrinkage, may account for some of the cases of spontaneous cure.

I have never seen a case of a direct change of a fibroid into a malignant growth; but have frequently seen associated malignant disease, usually cancer, and once or twice sarcoma.

DR. W. L. BURRAGE: I agree with Dr. Richardson in early diagnosis and operation. Many cases are allowed to go on too far, especially the hemorrhagic ones. There is one method of investigation that is too often neglected, that of using the finger within the uterine cavity. Submucous fibroids can be made out in this way and often removed without sacrificing the uterus; if necessary, the uterus can be split in the median line and then closed again after removing the tumor. A large amount of the uterus can be removed and yet enough mucous membrane left to line the cavity. The hemorrhage in this operation can be controlled very easily by an assistant grasping the uterus from above. I would always leave the uterus in young women when possible. As to the danger of the development of other tumors after enucleation we can warn the woman of the possibility, and then operate a second time if necessary, but the chances of such a recurrence are very small. Preserve the organ if you can. Diagnose early and operate early and many women will be saved from later disaster. I agree most cordially with what has been said by Dr. Richardson about the importance of careful preparation. Every drop of blood is of importance. In some cases the patient should be kept in bed for a long time before the operation, and given ergot or hydrastis or stypticin, etc.

I am glad that Dr. Richardson has taken this ground about the importance of the early removal of fibroids. It is time that this teaching should be preached.

DR. BLAKE: In the course of the last thirty years I have had a chance to watch the change in the views held by the profession as to the proper treatment of fibroids and am not yet ready to accept the doctrine of indiscriminate operation. Of course we have all known many cases of women carrying for years large fibroids in comparative comfort, and we also have all had cases in which the hysterectomy we urged was followed by untoward results and cut short lives that might otherwise have continued for years. Colored people are especially apt to have fibroids, as we know, yet many of them get along perfectly well without much suffering. We should in every case consider very carefully whether the gravity of the symptoms justifies so serious an operation.

DR. DAVENPORT: I feel strongly the importance of early operation. The dangers a tumor is liable to

² See page 1 of the Journal.

give rise to are numerous and must not be forgotten. As regards the development of other tumors after one has been enucleated, I hardly feel that we can so lightly say another operation can then be done. Myomectomy is so serious an operation that I think we ought to lay the possibility before the patient and let her decide for herself, whether she wants to run the risk or not of a secondary operation. The question of operation would also be determined for me by my relations with the patient. If the patient were one that I could follow or was under the care of some one in whom I had confidence I might wait. It is surprising how large a tumor can be enucleated yet the uterus be but little mutilated. I am getting more and more inclined to remove small tumors and in my eyes the whole question hinges upon the comparative safety of the operation as now done. A fibroid is a pathological condition and operation in the early stages is almost always successful. The patient has the right to be relieved of possible future danger. As to building up, the method I have found best to avoid loss of blood is whenever the patient is bleeding to pack the vagina tightly, changing the packing whenever needed. This method may be kept up for weeks or months and is much more effective than any drugs.

DR. J. L. HILDRETH: In the past I have many times asked myself what the prognosis was to be in a given case, and now I know no better way of telling than I did then. I wish we could have some tangible principles to work upon, but there are none as far as I know.

DR. G. J. ENGELMANN: I do not think it is as rare to see these tumors disappear as would seem to be the case from what has been said here to-night. The man in general practice is more apt to see such cases than the surgeon, who very likely sees the patient only when she is brought to him to be operated upon. I have five such cases vividly in mind, cases with large, easily bleeding tumors which disappeared in time. Years ago in post-mortem work I saw many cases in which unsuspected fibroids were discovered. I have also seen many cases where treatment has succeeded in keeping the patient along in good health. The question of operation all depends upon the conditions present, whether we can keep the patient under close observation or not. My feeling is to wait till symptoms develop and then operate only when other methods have failed. Rapid growth would indicate operation. I see no way to determine in a given case what the future is to bring forth. I have seen cases where puncture seemed to hasten changes for the worse. Preservation rather than removal is the spirit of modern surgery. I do not believe in the principle of early operation if that means the removal of small tumors before there are any symptoms.

DR. MALCOLM STORER: If symptoms are waited for it will often be found that operation presents many difficulties. The removal of a small fibroid by enucleation before there have been any inflammatory processes to complicate matters is so simple an operation that to me its dangers are far less than those coming from the practice of waiting for symptoms to develop.

DR. RICHARDSON: I would reply to all that has been said by various members about not operating until other treatment is exhausted by quoting from my paper that if the tumor can be controlled we should not operate. I confess to a certain scepticism as to the disappearance of fibroids without operation. All

that I have seen disappear have been through the activity of some surgeon. Of course I have under my care, as has every man, more or less fibroids that I do not operate upon but keep under observation. These cases are quite different from cases seen as I see them at the hospital.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5-8, 1900.

SECTION ON THE PRACTICE OF MEDICINE.

(Concluded from Vol. CXLII, No. 25, p. 670.)

DR. SOLOMON SOLIS-COHEN, of Philadelphia, read a paper entitled

THE RELATIVE IMPORTANCE OF VALVULAR AND MUSCULAR LESIONS OF THE HEART.

The exact site and nature of the valvular lesions are of less importance therapeutically and prognostically than the state of the cardiac muscle. Mitral stenosis with great narrowing is an exception to this general rule. Aconite is often used in this condition to reduce the excessive muscular effort. The symptoms and physical signs of cardiac myopathy are inconstant, and in the early history of the case may be slight. In the absence of valvular lesions, intermittence or irregularities of the pulse or apex beat, disturbance of rate or rhythm by slight causes, and recurrent pain referred to the pericardium in non-hysterical and non-neurasthenic subjects, are the principal local symptoms calling attention to the disease of the cardiac muscle. Tinnitus, vertigo, dyspnea, venous ectases, visceral congestion, edema and other evidences of circulatory disturbance may be slight and escape attention until sought for. There is usually impurity or weakness of the first sound of the heart, with approximation of the two sounds in quality or relative accentuation of the second sound; later embryocardia and gallop-rhythm may develop. Gout, syphilis, alcohol and tobacco, lead-poisoning, tea and coffee, sexual excesses, mental strain and physical overwork, either in serious pursuits or sports, are among the chief provocatives of disease of the myocardium, apart from those lesions secondary to the acute infections or consecutive to nephritis or valvular disease. Among the acute infections, influenza is a frequent cause of cardiac muscle disease. The diagnosis between neurasthenia of the heart and disease of the myocardium may be difficult. The chief importance of the subject lies in the avoidance of error in the prognosis and treatment of valvular disease, which may be overtreated or undertreated through failure to estimate properly the condition of the muscle; in the recognition of serious lesion of the muscular structure of the heart in cases that have been supposed to be normal because of the absence of valvular murmurs; in the distinction between organic and muscular lesions and functional disturbance, and in the realization of the fact that the latter may lead to the former. In treatment, judicious regulation of diet, rest and exercise, avoidance of exciting causes, and excesses of any kind, the good functional condition of the skin and eliminative organs are of the first importance. Warm, saline, carbonated baths, and, in some cases, gentle massage and resistance exercises carefully adapted to the individual case are of great

benefit. Nitroglycerin is the most useful single agent of the materia medica. Strychnine, digitalis, adonis, cactus, strophanthus and spartein have their usefulness in individual cases. Arsenic, gold and sodium chloride and iron are useful tonics. Potassium iodide and mercurials sometimes have special indication. Venesection should be made promptly and sufficiently early in the case of sudden and urgent symptoms of cardiac failure.

A CLINICAL STUDY OF MYOCARDITIS.

DR. LOUIS FAUGÈRES BISHOP, of New York City, read this paper. Valvular and arterial disease are modified appreciably by myocarditis. The myocardium is as important as the endocardium or the pericardium in cardiac disease. Myocarditis is eminently a clinical disease. Syphilitic cases are the most acute and often result fatally in young persons. There are two clinical groups of the disease: (1) Myocarditis due to infectious diseases and (2) myocarditis due to disease of the blood-vessels. The significance of pain in the left shoulder and left breast is difficult to determine, but in persons past middle life it should lead one to suspect myocardial disease. The chief symptom of the condition is the lack of power of the heart to respond to extra work. The earliest symptom is irregularity in the force and rhythm of the pulse. The disease is very common in the negro race, probably owing to the tendency of mixed races to degenerative changes. Complete physical rest is important in the treatment of cases of myocarditis. It may be caused by the intemperate use of alcohol, disuse of the muscular system in general, overwork, worry and infectious diseases.

A PLEA FOR A MORE RATIONAL PROGNOSIS IN CARDIAC AFFECTIONS,

by DR. J. J. MORRISSEY, of New York City. Diagnosis should not be based solely upon physical signs, but on a consideration of the cardiac efficiency, the presence of hypertrophy and of the condition of organs far removed from the thoracic cavity, whose relations, while not intimate, yet are closely affiliated with the results arising from an interference with the circulatory system, in consequence of the cardiac disease. Obtain an accurate and comprehensive history of the causation. Closely consider any special features characterizing the case. When a heart murmur is discovered, do not give a gloomy prognosis upon that fact alone; consider the condition of the cardiac walls, the probable length of time the lesion has existed, the presence of dilatation or hypertrophy, or both combined. The occupation and temperament of the patient are very essential factors in the prognosis. Murmurs do not invariably mean endocarditis, and a prognosis based simply on the presence of a murmur would be rank injustice to the patient, and demonstrate incapacity upon the part of the physician. A presystolic murmur does not always indicate a mitral stenosis, nor has a so-called musical apex murmur any particular significance in prognosis, indicating, as it does, the passage of a stream of blood through a small aperture in the segment of a valve. From the standpoint of longevity aortic stenosis is a favorable lesion. It is usually found in that period when a man should be at the highest point of physical capability, between thirty and fifty. It is frequently present as a part of a general decay, and then develops in consequence of

atheromatous changes taking place throughout the system, but it is more frequently present than has hitherto been suspected without such pathological manifestations being present. Do not inform a young man between eighteen and twenty-five that he has heart disease, because you discover some hypertrophy, with no complication, the result in most instances of active exercise. Never hesitate to ask a patient to return for further examination, as the condition then may be entirely different from the original investigation. There are more snap "diagnoses" made in the realm of cardiac affections than in the study of diseases in any other portion of the body.

DR. FRANK BILLINGS, of Chicago, said that acute ulcerative endocarditis might result in sudden death. In atypical cases it may not present the classic symptoms; emboli may or may not be present. It is difficult to diagnose; but among the symptoms of importance are low blood pressure and anemia. Myocarditis frequently is due to chronic toxemias. The disease gives rise to nervous symptoms; gastro-intestinal symptoms may arise; then dyspnea and oppression supervene, the pulse changes in character and there is evidence of malnutrition. Myocarditis requires early attention.

DR. DELANCEY ROCHESTER said that acute ulcerative endocarditis is very difficult to recognize. Leucocytosis is often very marked, and when there is no evidence of a localized collection of pus the occurrence of this phenomenon should lead to a suspicion of the disease. He spoke of a case in which the ulcerative process had perforated the interventricular septum without producing a murmur. The changes in myocarditis are the most serious of any heart lesions and are frequently overlooked. Of the valvular lesions, aortic insufficiency is most dangerous. The presystolic murmur is of less serious prognostic import in cases of mitral obstruction than the diastolic murmur. The condition of the general circulation is very important, since changes in the arteries of the body indicate changes in the coronary arteries. The disappearance of a murmur that has existed for a number of years is serious, because it indicates marked changes in the muscle.

DR. JAMES B. HERRICK, of Chicago, said that the present tendency was to lay more stress on the heart muscle than on the valve. The time has passed when a diagnosis of a cardiac condition can be made merely from the presence of a murmur. Besides making a definite diagnosis of a valvular lesion we must go farther and determine the condition of the muscle, because patients with valvular disease can live a long time if the muscle is intact. In cases of acute articular rheumatism it is difficult to speak of the condition of the myocardium. The significance of a murmur appearing in the course of rheumatism is doubtful; it may indicate myocarditis, endocarditis, or hemic change. In the treatment of myocarditis rest is of the greatest importance. When dilatation has occurred and death is imminent, bleeding is of value.

DR. JUDSON DALAND, of Philadelphia, spoke of a case of acute ulcerative endocarditis in which there was leucocytosis and said he thought that the sign was of no great value. He spoke of a second case in which antistreptococcus serum was used, and in which alarming symptoms developed in consequence.

DR. HOWARD M. FUSSELL, of Philadelphia, spoke of the importance of other signs than murmurs in

making the diagnosis of the condition of a heart. He spoke of loud systolic murmurs at the base of the heart that were transmitted into the vessels of the neck that were not necessarily indicative of aortic stenosis. Heart lesions, on the other hand, may exist without the appearance of a murmur. The treatment should be based on the condition of the pulse, the size of the heart, the character of the first sound, and the absent or feeble apex beat. He does not think that the costal fringe is a sign of great importance in cardiac disease.

DR. BABCOCK, of Denver, said that myocardial changes in rheumatism in children were common. He thinks that the myocardium is the most important factor in the prognosis of a heart lesion.

DR. WITHERSPOON, of Nashville, Tenn., said that in his experience death in cases of aortic stenosis was due to the condition of the blood-vessels, particularly those of the brain. A heart that is compensated needs no treatment.

DR. S. SOLIS-COHEN said that the costal fringe is an evidence that myocardial change is possible if not probable. Organic murmurs do not solely mean valvular disease, but may indicate disease of the papillary muscles, etc. Hemic murmurs should be differentiated; they may be vascular or muscular as well as hemic. He is an advocate of venesection in cases of threatened cardiac collapse.

DR. L. F. BISHOP said that loud murmurs are often due to dilatation of the heart.

DR. MORRISSEY said that he thinks that tachycardia and bradycardia are not distinct entities. It is difficult to diagnose between dilatation, fatty degeneration and myocarditis.

IN WHAT RELATION DOES OCCUPATION STAND TO TUBERCULOSIS?

DR. W. FREUDENTHAL, of New York City, read this paper. In 1,500 cases of tuberculosis tailors were the most frequently affected, those who work in sweat-shops and who live in dark, unventilated rooms particularly. Tuberculosis is a trophoneurosis combined with a vascular insufficiency which produces a favorable seat for the growth of the micro-organism. Such favorable soil is frequently produced in the retropharyngeal space.

DR. J. M. ANDERS, of Philadelphia, read a paper entitled

DIAGNOSIS AND TREATMENT OF THE PREBACILLARY STAGE OF PULMONARY TUBERCULOSIS.

The prebacillary stage is of long duration and signifies the entire time before the bacilli are found in the sputum. During this period the diagnosis is to be made by (1) the use of the x-rays, (2) the application of the tuberculin test, (3) a careful study of history, symptoms and physical signs; among the most important of the symptoms is a two-hour temperature record. This will show an elevation of temperature at a given time daily.

THE IMPORTANCE OF REST IN PULMONARY TUBERCULOSIS,

by DR. CARROLL E. EDSON, of Denver, Col. The indications for rest in pulmonary tuberculosis are the same as those for rest in joint and bone tuberculosis. Local tissue rest is very essential, although the obtaining of absolute rest of the lung is difficult. When the

body is at rest the respiratory and cardiac action is lessened and temperature is lowered. The rest may be taken in the open air and should be continued for a long time.

PULMONARY TUBERCULOSIS; PRESENT CONDITION OF CASES TREATED DURING 1898 AND REPORTED LAST YEAR AT THE COLUMBIAN MEETING,

by DR. C. P. AMLER. Cases of pulmonary tuberculosis should not be reported cured until a long time had elapsed. Of 46 cases called class "A," 35 were apparently cured, nine were greatly improved, and one was stationary. Of 28 cases called class "B," six were apparently cured, 13 were greatly improved, eight were improved, and one died. Of 32 cases called class "C," nine were greatly improved, five were improved, six were stationary, 11 were worse, and one died. The treatment was (1) by hygienic supervision, (2) by climatic influences, (3) by medication, (4) by serum therapy. Cases apparently cured under serum therapy are less liable to relapse.

TUBERCULOSIS OF THE LUNGS.

DR. A. F. LEMKE, of Chicago, said tuberculous lesions probably never heal by resolution—always by cicatrization; hence in attacking them it is rational to further the natural tendency to cicatrization. Healing of a focus of tuberculosis in the lung is probably always altogether the result of tissue changes which diminish or inhibit the absorption of proteins derived from the bodies of tubercle bacilli. Good effects of compression, locally, are brought about by the limitation of areas of disease already existing by favoring fibrosis in and about these areas; by occluding the avenues of dissemination of the virus, and by compressing cavities to enable them to heal mechanically. Other effects of compression are due to rest to the organ as a whole, emptying of secretions, prevention or diminution of absorption of toxic bodies, prevention of secondary infections, and the diminished tendency to hemorrhage. There is no evidence that fresh tubercles can develop in a compressed lung. The average quantity of nitrogen which may be introduced into a pleural cavity without untoward effects is 120 cubic inches. Healthy lung tissue may be compressed for a year or more and retain its capacity for expansion upon the removal of pressure. Uses of intrapleural injections of nitrogen: (1) Curative in pulmonary tuberculosis; (2) palliative—to prolong life for weeks or months, though the disease be too extensive to make recovery probable; to diminish fever and expectoration; (3) to check pulmonary hemorrhage; (4) to compress cavities, tuberculous and others, and establish mechanical conditions that will permit their healing, and (5) to compress the lung just prior to surgical operations.

DR. THOMAS J. MAYS, of Philadelphia, read a paper entitled

SILVER INJECTION TREATMENT OF PULMONARY CONSUMPTION.

In discussion DR. VICTOR C. VAUGHAN, of Ann Arbor, Mich., said that tuberculosis should be diagnosed in the prebacillary stage, if possible, if anything is to be accomplished in the way of treatment. He believes that the temperature of tuberculosis is more characteristic than that of typhoid fever; but many things cause it to vary. Rest is one of the great benefits of sanatorium treatment. When the temperature

is not high a moderate amount of outdoor exercise may be indulged in. Many patients suffering from argyria as a result of the use of silver in the treatment of epilepsy developed tuberculosis.

DR. DELANCEY ROCHESTER, of Buffalo, thinks that the spread of the disease may be in a measure accounted for by the habit that tailors and sewing women have of wetting the thread that they use in the making of clothes.

DR. S. SOLIS-COHEN, of Philadelphia, said that there is a disease before the bacillus gets into the tissues; when the bacillus arrives there is a certain toxemia set up, and then there follows a secondary infection with pus cocci. In tuberculous patients between 12 noon and 2 p. m. is the time of highest temperature in the incipient cases, except in those cases of inverse temperatures. In cases of reported recovery it is essential to state the time that has elapsed since the cessation of symptoms.

DR. KNOPP, of New York City, is glad to know that the idea of a specific climate for tuberculosis had been abandoned. A class of persons almost as frequently affected with tuberculosis as the tailors is that class that are engaged in assorting the soiled clothes in laundries and those that assort rags. The rest cure should be alternated with gentle exercise or with massage. In order to improve and lessen the number of tuberculous cases it is necessary to improve the housing of the poor by doing away with the present class of tenement houses and replacing them by sanitary dwellings. It is necessary to have special hospitals in every city for the consumptive poor, so that to their tuberculosis they may not have nostalgia added by being sent away from home.

DR. NEWTON, of New Jersey, cited a case that seemed to show that certain cases of anemia presented an evening rise of temperature, similar to that seen in tuberculosis.

FOURTH DAY.

CONTINUATION OF THE DISCUSSION ON TUBERCULOSIS.

DR. C. P. AMBLER said that he was not connected with any sanitarium and that the cases that he reported were cases in private practice.

DR. MAYS said that he thought that the doses of silver nitrate that he uses would not produce argyria. He has never seen toxic effects. He believes that no tuberculous patient would throw off the liability to the disease no matter how long he should live, but if a tuberculous patient is relieved of his symptoms for a year he is practically well.

DR. LEMKE said cases of pneumothorax end fatally either because too large an amount of air is forced into the pleural cavity or because there is an infection.

DIAGNOSIS OF DIABETES.

DR. JAMES B. HERRICK, of Chicago, said the crucial test for the existence of diabetes is the finding of sugar in the urine and determination of the permanence or transitory nature of the glycosuria. He spoke of certain symptoms that would lead one to suppose that sugar would be found in the urine. Impotence and psychic disturbance are often early symptoms. Cases are overlooked because there is an error in the technic; the urine may not be examined for sugar, or the sugar may not be present. Casts are frequently found in diabetic urine and usually indicate the development

of coma. Such a condition may lead to the diagnosis of uremia. Urines of low specific gravity may contain sugar, and, consequently, every specimen should be examined for glucose. It is important to recognize the form of the diabetes. A convenient classification is into (1) mild, (2) severe, and (3) malignant.

MORTALITY FROM DIABETES MELLITUS IN THE CITY OF NEW YORK DURING THE DECADE 1889-99.

DR. HEINRICH STERN, of New York: In 1860, of the deaths from diabetes, nearly 50 were in females. The number of deaths from diabetes has been increasing since 1894. The mortality from diabetes is greatest in October and least in November. The greatest mortality is between the forty-fifth and fifty-fourth years. The mortality in females, 64, after the forty-fifth year, is possibly explained by the degenerative changes following the menopause. In childhood and adolescence diabetes is rare. In the colored population during this period there were only 15 deaths.

CUTANEOUS DISEASES ACCOMPANYING DIABETES.

DR. MILTON B. HARTZELL, of Philadelphia, called attention to the fact that in many instances the skin presents pathologic changes accompanying diabetes. The greater number of skin lesions are inflammatory in character. There may be desquamation from deficient secretion of sweat and serum, accompanied by changes in the hair and nails, and by pruritus. Erythema, urticaria, eczema of the genitalia, acne cachecticorum, crops of boils, carbuncle, papillomatosis diabetica, gangrene of the skin, bullous serpiginous gangrene and exanthema diabetorum are common lesions. Psoriasis dermatitis herpetiformis, abnormal deposits of pigment and purpura are rare. Local treatment is the same as that of similar conditions in non-diabetics, but the treatment of the underlying cause is the most important.

DR. S. SOLIS-COHEN, of Philadelphia, dwelt upon the importance of examination of the urine in every case; but every case of glycosuria is not diabetes. A usually unrecognized symptom of diabetes mellitus is bilateral sciatica.

DR. JAMES J. WALSH, of New York City, called attention to the fact that diseases that were formerly considered rare are in reality more frequent. The common occurrence of tuberculosis and nephritis in such cases often leads to an error in diagnosis.

DR. WATKINS, of New York City, spoke of the increase of the biconcavity of the red blood corpuscles in advanced cases of diabetes.

DR. MORRISSEY, of New York City, said that it was necessary to treat the patient and not the disease. In life insurance examinations he finds a large number of alimentary glycosurias. Opium is still the standby in the treatment.

DR. WAHRER, of Iowa, said that it was easier to diagnose the disease than to treat it. He does not believe in a rigid diet without sugar.

DR. A. E. ROUSSELL, of Philadelphia, said glycosuria is sometimes an indication of myxedema, which would be benefited by thyroid treatment. He is of the opinion that the diets as laid down are too rigid.

DR. OSBORNE, of New Haven, Conn., called attention to the relation between pancreatic disease, myxedema, nervous disease, exophthalmic goitre and dia-

betes. He also thinks the diet should not be too rigid.

DR. HERRICK said that the apparent immunity of the colored race might be due to the manner of living of that race. He called attention to the rarity of the disease in hospital patients and its frequency in private practice as confirmatory evidence of this influence of living on the disease. He does not believe in the too rigid enforcement of diet.

DR. STERN said 70 per cent. of deaths from diabetes occurred in the tenement houses, 15 per cent. in hospitals, and 15 per cent. in private practice. It is common in the Irish population. He divides the disease into the preglycosuric stage, the stage called diabetes mellitus, and the postglycosuric stage. Diabetes is a plasmolysis; he recognizes it by an increased output of nitrogen in addition to the glucose. The oxybutyric acid is the result of a diet of fat and meat. The existence of Kussmaul's breathing is necessary to the diagnosis of diabetic coma.

EXOPHTHALMIC GOITRE.

DR. O. T. OSBORNE, of New Haven, Conn., is of the opinion that the name is a misnomer and suggests the name of Graves's thyroid disease. Of the cases 80 per cent. occur in women during the most acute period of their sexual life. He believes that the symptoms are due to hypersecretion of the thyroid body. The course of the disease is divided into (1) prethyroid period; (2) period of incipient symptoms; (3) period of active symptoms; (4) defervescence or stage of complications resulting in death. The treatment should be such as to lessen the secretion of the gland. He recommends absolute rest in bed. There is no question of the advisability of removing parts of the gland when pathologic conditions are present. He doubts the value of suprarenal extract, but thinks that thymus gland extract is better.

DR. JAMES B. HERRICK, of Chicago, said that there were undoubtedly many patients that have the symptoms of the disease before they consult a physician and before the symptoms fully develop. He is of the opinion that he has seen a patient that was benefited by the increase of fibroids of the gland following the opening of a cyst of the thyroid.

DR. S. SOLIS-COHEN, of Philadelphia, believes that there is something more than hyperthyroidism in the etiology of this disease. After rest he believes that the best treatment is by extract of suprarenal body. Digitalis is not to be given in every case. Good results have followed the use of $\frac{1}{800}$ grains of hyoscin hydrobromate over long periods of time and $\frac{3}{16}$ or $\frac{1}{16}$ grain of picrotoxin. Ergot has been found useful.

DR. OSBORNE said that the affection properly belonged under the head of functional disturbance.

TREATMENT OF TYPHOID FEVER WITH BACTERIAL IN CONNECTION WITH OTHER AGENTS.

DR. JAMES M. PECK, of Arlington, Ky., thinks that in private practice the nearer that the physician can reach the conditions of the Brand method the better will be the results. He uses calomel and chlorine, followed by washing the bowel with sterile water. He believes that intestinal antiseptics strengthens the wall of the bowel and prevents sloughing. He reported 77 cases in which the treatment was used, with recovery in every case.

DR. EUGENE WARDIN, of the United States Marine-Hospital Corps, said that it was undoubtedly a fact that the bacillus of Eberth caused the disease. Typhoid fever is no more a local disease of the intestines than small-pox is a local disease of the skin. All the acute infectious diseases are produced by agents that are toxic on the one hand and septic on the other hand. Between these extremes there are all gradations. The typhoid bacillus has little toxicity but is extremely septic, and typhoid fever is a septicemia. He believes that the portal of entry of the typhoid infection is, in the majority of cases, through the respiratory tract.

LESIONS OF THE CAUDA EQUINA AND CONUS MEDULLARIS,

by DR. BERTRAM W. SIPPY, of Chicago. When lesions of the conus medullaris exist sensation will be impaired in the integument of the pelvis, the dorsal surface of the scrotum, the perineum, the anus, the inner aspect of the buttocks, the posterior surface of the thighs. He reported 7 cases, of which 1 came to autopsy. He called attention to slipper anesthesia as an indication of these lesions.

MOVABLE KIDNEY FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.

DR. A. MARCY, JR., of Riverton, N. J., read this paper.

The most important etiologic factor in the production of movable kidney is the absorption of the perirenal fat. He prefers to examine for this condition when the patient is in the upright position. The ideal treatment is surgical and nephrorrhaphy in his experience is the most satisfactory operation.

DR. CLEVELAND, of Cincinnati said that in his experience movable kidney is almost always associated with enteroptosis or gastroptosis and should be classed as a general abdominal condition. He thought that operation would hardly be efficient.

THE ANTISEPTIC TREATMENT OF DIPHTHERIA.

DR. D. BENJAMIN, of Camden, who read this paper, advocates the local application of antiseptics to the false membrane in the throat.

DR. WM. M. WELCH, of Philadelphia, said that it is well known that local applications do not kill the organisms in the false membrane.

THE CLIMATOLOGY OF ARIZONA.

DR. WILLIAM DUFFIELD, of Phoenix, said that Arizona is a territory 400 by 350 miles in extent containing almost every physical feature and variety of climate known. The mean temperature varies from 50.7° to 64° in the different parts of the State. There is very little vegetation except in the irrigated districts. On the plain the mean temperature is 70°; total precipitation is 5.19 inches; mean relative humidity 49 per cent. There were 245 clear days in an average year. The climate has a maximum of sunshine, a minimum of humidity and a possibility of constant outdoor life.

DR. HOWARD S. ANDERS, of Philadelphia, read a paper entitled

CERTAIN CLINICAL FEATURES OF INFLUENZA RECENTLY EPIDEMIC.

The paper was based on a study of 128 cases.

Recent Literature.

The Treatment of Diseases of the Nervous System.
By JOSEPH COLLINS, M.D. 8vo. Pp. xiv, 602,
with 23 illustrations. New York: William Wood
and Co. 1900.

In view of the fact that many of the methods of treatment employed in nervous affections are of a special and somewhat technical character, it is somewhat singular that we have had to wait so long for a comprehensive treatise on the whole subject, giving a full account of these various methods and assigning to each its relative position more justly than the hand-books devoted to any single method are apt to do. The need of such a treatise has been apparent to all save those who still believe that diagnosis and not therapeutics is the goal of all neurological study. The volume before us meets that need in admirable fashion. It treats the subject thoroughly and completely, it recognizes the limits of our therapeutic resources, but it presents those resources in abundant detail and it is in the main a judicious and trustworthy guide to the practitioner. The first part of the work deals with the causes, origin and prevention of diseases of the nervous system; chapters of marked interest which may be read with profit by every physician. Of the various causes, more stress is laid upon syphilis than any other, and the writer, recognizing that syphilitic lesions in the nervous system may do irreparable damage before treatment can modify them, and that treatment is often ineffective when syphilis involves the nervous system, urges energetic and persistent treatment of the disease as soon as it is recognized, even in its "primary" stage—advice which must commend itself to all who are familiar with the course of syphilitic nervous affections. In dealing with other important questions in the causation and prophylaxis of nervous disease, education, temperance, sexual indulgence, the marriage of the neurotic and the like, he takes in the main safe and conservative ground. In the second part the author discusses various methods of treatment—drugs, hydrotherapy, electrotherapy, massage, exercise, rest, occupation, diet and psychotherapy. Certain of these methods have in the past been somewhat unduly extolled as panaceas by unwise advocates. In the present volume they are given their just position, the technique of their use is fully described, and the physician can learn just what benefit is likely to be derived from them. The main portion of the book deals with the treatment of various diseases and morbid states. Of necessity each chapter begins with a brief account of the causes and symptoms of the disease of which it treats, and this is followed by a detailed account of the methods to be employed in the treatment. Of this part we can but repeat our previous commendation, that the author in the main is a safe guide. In many instances, of course, there is room for differences of opinion in regard to treatment, based upon the differences of individual belief and experience; for example, certain distressing cases of the morphine habit forbid us to accept his dictum that there is no danger of forming a habit by using morphine in the crises of tabes; we believe that he undervalues the efficacy of large doses of potassic iodide in the treatment of non-syphilitic tic douloureux; and his hope of benefit from trephining in traumatic epilepsy and cerebral tumor seems un-

duly exaggerated. One important omission is to be noted. The author deals all too briefly with the subject of laminectomy, and in dealing with spinal injuries sums up by stating that "fracture of a vertebra followed by symptoms of compression requires exploratory trepanation (*sic*) in every instance." Although, in the strict sense of the words, this is true, yet to the ordinary reader it would seem to recommend laminectomy in nearly every case of fracture. In the vast majority of cases, however, the fracture is attended with contusion or crushing of the cord instead of simple compression, which is only in the rarest instances the result of fracture. In such cases of crush laminectomy is, of course, unwarranted, and the author ought to have made the distinction clear. Certain over-statements as to the relative frequency of cerebral abscess, multiple sclerosis, etc., impair the value of the book by exciting an unwarranted suspicion of inaccuracy. A certain over-emphasis of statement in regard to various subjects, as, for instance, in his justifiable condemnation of operations for so-called "reflex" disturbances, such as needless gynecological interference in hysteria, tends to weaken the force of his criticism and thus unfairly to depreciate a most excellent work.

Le Lesioni Traumatiche dei Centri Nervosi. By SALVATORE SALINARI. 8vo. Pp. iv, 320. Rome: Press of the Giornale Medico del Regio Esercito. 1900.

This monograph on the traumatic lesions of the nervous centres was awarded the Riberi prize in 1898. The work is divided into two parts, the first treating of traumatic lesions of the brain and its membranes, and the second the lesions of the cord. The direct traumatic lesions of the brain are classed as commotion, compression, contusions and wounds. Commotion is retained as a convenient clinical term for the cases of rapid and complete suspension of all the cerebral functions, from which the patient may rapidly or slowly recover, or which may prove fatal without discoverable lesion of the brain. These latter cases, however, the writer admits might be more properly classed as cases of contusion, since minute hemorrhages are sometimes found. Indeed the writer hardly goes far enough in this regard, for he does not lay sufficient stress upon the fact that fatal cases of cerebral injury without discoverable lesion are for the most part of ancient date and that modern authorities like Phelps refuse to consider them. In cases of compression he inclines toward operative removal of the compressing substance in every case. The distinction between compression and contusion, however, is not easy; he lays most stress upon the presence or absence of general symptoms of pressure, but he recognizes that both conditions may co-exist. In the majority of cases of open wounds and bullet wounds, he advises against operative interference. As complications of the original lesion, he considers foreign bodies, blood clots, meningo-encephalitis, hernia and abscess. Serous meningitis and edema are not considered. Chapters on the localization of symptoms and on the technique of operations conclude this part. The question of the seat and nature of the lesion is first considered in dealing with injuries of the spinal cord. This chapter is far from satisfactory; the importance of the syringomyelic dissociation of sensibility (that is, the loss of sensibility to

pain and temperature, with retained sensibility to touch) is ignored, and the sensory and motor areas of the different spinal segments, so essential in localization, are not well described. He admits the existence of a spinal as well as a cerebral commotion, but his illustrative case of the severer type showed positive signs of hemorrhage at the autopsy. In cases of compression and contusion, which are of course very difficult to differentiate, and for the possible differentiation of which he omits certain important symptoms, such as syringomyelic dissociation, he inclines strongly toward operative interference. The prognosis in open wounds of the spine is of course much more serious, and operative interference seldom affords much chance of relief. The late effects of injury, tabes, multiple sclerosis, progressive muscular atrophy, epilepsy and the traumatic neuroses are very briefly touched upon, and a chapter on surgical technique concludes the work. The work, as a whole, is a careful study of the subject, from the standpoint of the military surgeon, but the benefits of operative interference are viewed somewhat too optimistically, and in pathology and symptomatology the results of more recent work are not sufficiently taken into account.

Diseases of Children. By GEORGE M. TUTTLE, M.D., Attending Physician, St. Luke's Hospital; Martha Parsons Hospital for Children, and Bethesda Foundling Asylum, St. Louis. Lea's Series of Pocket Text-Books. Series edited by BERN B. GALLAUDET, M.D. Illustrated with five plates in colors and monochrome. Philadelphia and New York: Lea Brothers & Co. 1899.

The author states that in preparing this manual for publication he especially has in view the requirements of the beginner in the study of pediatrics. He has endeavored to cover the subject fully, yet in a concise form, and does not profess that there is any originality in his work, but makes free reference to the standard text-books on pediatrics. In the early part of the work, where he is dealing with the anatomy and physiology of the infant, the statements are in the main correct and to be depended upon, but when he approaches the subject of feeding he shows a lack of proper appreciation of the vital principles of this important subject, namely, in the small amount of space which is given to it. The difficulty in writing a book of this kind is that the writer is so apt to misinterpret what he is practically copying out of the larger text-books, and that in attempting to condense the statements of other authors the real opinion of these authors on different subjects is lost sight of. The part of the book which is devoted to gastro-enteric diseases is insufficient for practical purposes, even if a treatise of this kind is desired, and in some parts a student, or one who was not actually familiar with the disease which is spoken of, might do much harm by following the treatment indicated. Thus, in speaking of the treatment of intussusception, the danger of both inflation and hydrostatic pressure is not sufficiently emphasized. In reviewing a work of this kind, however, we should consider exactly what is intended to be accomplished in such a small space, and certainly in comparison with other books which have dealt in this way with so large a subject as pediatrics this book of Dr. Tuttle's can be spoken of favorably. It would be well, however, if the author had been a little more careful in regard to what he

says about the contagious disease, as, for instance, where he speaks of one attack of measles regularly protecting from a subsequent one. This is well known not to be the case, as undoubted attacks of measles occur in the same individual twice, and even oftener. The prodromal symptoms which are given in measles are not such as are usually seen in that disease, the headache, vomiting and prostration being more significant of scarlet fever than of measles.

Nervous and Mental Diseases. A Manual for Students and Practitioners. By CHARLES S. POTTS, M.D. Small 8vo. Pp. 455, with 88 engravings. Philadelphia: Lea Brothers & Co. 1900.

Brief manuals, written to order as part of a series, are seldom of value and still less frequently of interest. If they present the main facts of a subject clearly and correctly they fulfil their mission. The present volume, in a series of pocket text-books edited by Dr. Gallaudet, is unusually successful in this respect and is far superior to the ordinary work of its class. The author has succeeded in the opening chapters in impressing the broad outlines of the structure and functions of the nervous system so simply and so comprehensively, with the aid of a few well-selected diagrams, as to make it comparatively easy for the student to understand the essential plan of his future study. The succeeding chapters on the various diseases, although exceedingly condensed, are reasonably accurate and up to date, and give in a few words the most important facts. The grouping of the various systemic diseases into one chapter as an introduction to the chapters on the general diseases of the brain and cord is a useful innovation and is well calculated to help the beginner by emphasizing again the importance of the chief tracts in the projection system. The section on mental diseases is put by itself and not incorporated with the other diseases of the brain. It follows the conventional and somewhat antiquated lines of the average treatises in English, paying slight attention to the more modern views of mental disease.

The Nervous System of the Child; its Growth and Health in Education. By FRANCIS WARNER, M.D., F.R.C.P. 12mo. Pp. xvii, 233, with one plate. New York: The Macmillan Co. 1900.

The present volume is addressed rather to the teacher than to the physician. It presents the rudiments of cerebral physiology and the development of the mental faculties in a simple way, with clear directions for observing the normal and abnormal phenomena of speech and action manifested by the child in his early years. For the physician the treatment is too elementary and too incomplete, although he may occasionally find some useful suggestions in it. For the teacher, however, it forms a useful and fairly trustworthy introduction to the study of the mental development of the child and his proper education.

A WHOOPING-COUGH PARTY. — A little girl of Huntington, S. I., recently gave a "whooping-cough party." She was a sufferer from whooping-cough at the time of her birthday, when she was accustomed to entertain her young friends, and her mother solved the difficulty by inviting only such children as were known to have the disease, which was prevalent in the village, or to have recently recovered from it.

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THE POLLUTION OF WATER SUPPLIES.

WITH our continually increasing knowledge of the sources of disease and the means of their dissemination has come a corresponding ability to prevent their spread. At the same time, if the efforts of health boards are at times fruitless, it must be always borne in mind that the problem of prophylaxis is becoming constantly more complex, as the evils to be contended against grow with the increase of population and the multiplication of industries in localities menacing the public health. We refer particularly to the pollution of water supplies, the danger of which evidently increases in proportion to the proximity of man. The question, therefore, of the prevention of certain forms of disease, notably typhoid fever, is resolving itself into a far-reaching scrutiny of all water used by communities of considerable size.

We are in receipt of an interesting discussion on methods of filtration, and on the pollution of streams and the purification of public water supplies, from the pen of Prof. George M. Kober, of Washington, D. C. Rivers are always purer nearer their source. It is stated, for example, that the Mississippi River at Minneapolis contains only 18.6 total solids per 100,000, whereas at St. Louis it contains 244.3 per 100,000. It is to be borne in mind that water containing a relatively large amount of mineral matter is unfit for drinking purposes because of its irritating effect upon the intestinal tract. Refuse discharged into a river is also to be considered; for example, one paper mill discharges into the Potomac River over 100,000 gallons of liquid each day, heavily laden with sulphuric and tannic acids. Important as such pollutions may be in certain cases, they are of less interest than pollution with organic matter, especially sewage contamination derived largely from surface drainage. This applies with force to the Potomac River, in connection with which Dr. Kober has made special studies, although the conditions described are not to be regarded as peculiar to that river. An investigation for bacteria made by various observers revealed the facts that in-

testinal organisms were found in over 90 per cent. of the samples. The number of bacteria varied from 150 to 20,000 per cubic centimetre, with an average of something over 1,000. More recent examinations show a minimum per cubic centimetre of 48 in July and a maximum of 51,000 for January, 1900, with an average of 3,761 per cubic centimetre. Of the specimens taken on about two hundred different days, 50 per cent., or one-half, revealed the presence of the bacillus coli communis. It has likewise been shown by Theobald Smith and others that the turbidity of Potomac water is accompanied by an increased amount of organic matter and bacteria and that fecal matter and turbidity are coincident. If intestinal bacteria are found, it is evidence that there has been pollution by fecal matter of man or animals, and suggests the possibility of infection with typhoid bacilli. Judging from an epidemic of typhoid fever some years ago which occurred at a distance of one hundred and thirty-four miles from Washington, Dr. Kober concludes that a simultaneous outbreak of the disease in Washington was due to Potomac River pollution, the infection having been carried that distance without loss of virulence.

Dr Kober goes on to say: "What has been said of the Potomac River is equally applicable to the Ohio, Mississippi, Merrimac, Connecticut, Missouri and other American rivers, because they are the sewers and at the same time the source of water supply for nearly all the cities located upon their banks, and these cities, as shown by the statistics collected by the Marine-Hospital Service, show, moreover, a marked prevalence of typhoid fever, thus confirming what has been observed over and over again, that this disease, as also cholera, dysentery and diarrheal diseases, can be carried from one town or city to another by means of a watercourse. About three years ago Surgeon-General Wyman estimated, from statistics received in his office, that every year there are no fewer than 45,000 deaths caused by typhoid fever alone throughout the United States. This number has now reached, very likely, 50,000, and, based upon an estimated mortality of 10 per cent., it is within reason to assume a yearly prevalence of 500,000 cases of this disease."

Dr. Kober scouts the idea that rivers can purify themselves, as was at one time maintained. What is true of typhoid fever applies equally to cholera, dysentery, diarrheal disorders and various parasitic diseases. The cholera epidemic of 1892 in Hamburg is quoted, which resulted in 17,020 cases, with 8,605 deaths. It was caused by a band of gypsies camped on the banks of the River Elbe, and the discharges of one of its members suffering from cholera were emptied into the river, which at that time was served to the inhabitants of Hamburg without filtration. The epidemic spared the adjoining city of Altona, which derives its water from the same river after receiving the sewage of Hamburg, with its 800,000 people, but Altona filtered its water and Hamburg did not.

From these various facts it becomes evident that

the study of river pollution is a matter of great and growing importance, and that it is essential that adequate means of purification be found, since the source of contamination can never be absolutely controlled. A system which has been in use in certain European cities for many years is the utilization of sewage and noxious waste water for irrigation on so-called sewage farms, the purified water being returned to the stream. Within the past ten or twelve years over one hundred communities in the United States have established plants for the disposal of sewage. A possible danger to which attention has of late been called is the pollution even of rivers affected by tide waters. Oysters, for example, may retain typhoid-fever germs in a viable state from fourteen to thirty days.

It is Dr. Kober's opinion that the disposal of sewage by means of irrigation alone should not be relied upon, and that the prevention of the evil effects of river pollution should be supplemented by filtration of the water supply on a large scale. The English method by sand filtration he regards as decidedly the most efficacious, as shown by statistics, both in America and Europe. As we stated at the outset, the whole matter is one of growing importance, and it is to be hoped that the near future will see all precautions taken tending to ensure exemption from this decided menace to public health.

THE BOSTON FLOATING HOSPITAL.

WE are glad to call attention to the fact that an institution now well known in Boston, the Floating Hospital, is about to resume the work which has been so successfully carried on in previous years. There can be no question that this hospital fulfils a very definite need during the summer months, and it is a gratification to note that year by year there is an expansion of the work which renders possible the treatment of a constantly increasing number of permanent patients. However valuable a trip down the harbor may be to young children and to their mothers, it is evident that the real development of this charity on a hospital basis demands a more permanent care than is permitted by one or several days' harbor excursion. This fact the management has clearly recognized, and has, in consequence, developed what may be termed the "permanent department." In this department there are now available three wards, with a capacity of forty-five beds. In addition to these patients, it will also be possible to care for all the day patients that may be sent. The Chairman of the Board of Managers urges upon physicians the necessity of safeguarding the hospital against contagious diseases, by using every precaution in sending patients for treatment. It is clear that a neglect of this advice might result in a serious crippling of the summer's work. Physicians are also warned to caution mothers of day patients against taking any food, since an ample noon meal is provided for the mothers and modified milk for the children. The trips will be made down the harbor

daily, provided the weather is favorable, excepting Sunday, from July 5th to September 1st, inclusive. Admission cards are printed and will be sent to physicians on application to Rufus B. Tobey, chairman, 178 Devonshire Street. We would refer our readers to another column, page 22, for further details regarding the hospital, the terms of admission and the place of sailing of the boat. As we have previously taken occasion to say, we regard this as one of the most beneficent and reasonable of the summer charities, and sincerely wish for it another season of complete success.

THE FOURTH OF JULY AND TETANUS.

THE patriotism which finds expression in noise has no doubt seemed as active this year as in all preceding years. Nevertheless there has been a difference, for Fire Commissioner Russell has, we learn, forbidden the sale of cannon crackers, which has had the double advantage of reducing the amount of noise to a certain limited extent, and, more important, has, we may be sure, prevented some cases of that most dreaded accompaniment of the Fourth of July, tetanus. Experience has, however, shown that there are other means than cannon crackers, which after all are usually beyond the resources of the ordinary small boy, by which tetanus may be acquired. Last week four deaths from tetanus are reported to have occurred in Boston in young men and boys, all traceable to the patriotic enthusiasm inculcated by the 17th of June. One of these deaths resulted from the careless discharge of a cannon cracker, and the others from blank cartridges, which are even a greater source of danger. In each of these cases the wound was made on the hand. It is much to be desired that the toy pistol may go the way of the cannon cracker, for to it, if we are not misinformed, the greater number of deaths from tetanus are due. A certain sacrifice of life must, no doubt, always occur on these occasions of national rejoicing, but it is clearly the duty of those in authority to reduce this death-rate to the lowest possible limit, however unpopular the enforcement of the regulations may be.

MEDICAL NOTES.

PROGRAMME OF ENTERTAINMENTS TO MEMBERS OF THE INTERNATIONAL MEDICAL CONGRESS.— On August 2d, the day of opening of the congress, an evening entertainment will be given by the president of the council in the name of the French Government. August 3d an evening entertainment, by invitation, will be given by the president of the congress. August 5th an evening reception to members of the congress by the President of France at the Palais de l'Élysée. August 8th an evening entertainment in the Palais du Sénat and the Luxembourg Garden, given to members of the congress by the bureau and

the committees of organization of the congress. The Municipal Council of Paris will give an entertainment at the Hôtel de Ville on the evening of August 7th. In addition, special entertainments will be organized by the various sections. Women are invited to all the festivities. A committee of women has been organized for the reception of the families of members under the presidency of Madame Lannelongue and Madame Brouardel.

APPENDIX TO THE INTERNATIONAL DIRECTORY OF LARYNGOLOGISTS AND OTOLOGISTS. — An appendix to the International Directory of Laryngologists and Otolologists, compiled by Mr. Richard Lake, is in course of preparation, under the auspices of the *Journal of Laryngology, Rhinology and Otolology*. It is hoped that all engaged in the practice of laryngology, rhinology and otology will assist as far as possible in making the index complete, by sending their names and addresses to the editor, International Directory of Laryngologists and Otolologists, 129 Shaftesbury Ave., London, W. C.

THE "GOUTTE DE LAIT" SOCIETY. — The new "Goutte de Lait" Society, according to the *Medical Record*, is an organization established recently at Rouen, France, with the object of furthering a rational infant feeding. Every effort is made to induce mothers to nurse their own infants, but when this is impossible, the society furnishes a specially prepared and sterilized milk in suitable quantity for one or two sours a day.

COLLEGE OF PHYSICIANS OF PHILADELPHIA. — At a meeting held June 18th, Dr W. W. Keen announced the completion of the \$50,000 library endowment fund.

HONORARY DEGREES FOR SIR WM. MACCORMAC. — Sir William MacCormac has received the degrees of M.D., M.Ch., honoris causa, in the University of Dublin.

BUBONIC PLAGUE. — It is reported that 74 cases of bubonic plague occurred in Ceylon, with 64 deaths, during one week in the early part of June.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the six days ending at noon, July 3, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 52, scarlatina 22, measles 43, typhoid fever 14.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending at noon June 30 was 156, against 193 the corresponding week last year, showing a decrease of 37 deaths, and making the death-rate for the week 14.66. Of this number 73 were males and 83 were females; 149 were white and 7 colored; 93 were born in the United States, 59 in foreign countries, and 4 unknown; 28 were of American parentage, 111 of foreign parentage and 17 unknown. There were 13 deaths from violent causes. The number of children

who died under one year was 27, the number under five years 41. The number of persons who died over sixty years of age was 28. The deaths in public institutions were 44. There were also 2 deaths on account of the heat.

THE BOSTON FLOATING HOSPITAL. — By the courtesy of the authorities the Floating Hospital is to have the privileges of the City Wharf at Eastern Avenue, foot of Fleet Street (South Ferry). The boat will start at 9 A.M., and returning will land day patients at the same place at 4 P.M. Throughout the rest of the twenty-four hours and on Sunday it will be moored at the wharf of L. Pickert & Co., near the North Ferry, East Boston. Day patients will be received for the trips between 8 and 9 A.M. Permanent patients will be received at any hour, when the boat is at either City Wharf or Pickert's Wharf, East Boston. The age of patients is limited to six years. The demonstrations in sterilization of milk, the preparation of food and the hygiene of children will be continued.

C. S. MINOT, LL.D., PRESIDENT OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. — At the recent meeting of the American Association for the Advancement of Science, Prof. C. S. Minot, of the Harvard Medical School, was elected president of the association.

A CENTENARIAN. — Mrs. Almira Milligan, of Alford, Mass., died June 23d, at the age of one hundred and two years.

NEW YORK.

APPROPRIATION FOR THE BOARD OF HEALTH. — The Board of Estimate and Apportionment, at a meeting held June 27th, appropriated the sum of \$20,000 for the use of the Board of Health, under the provisions of the emergency law of 1895. The money is to be devoted to improving the sanitary condition of the city and increasing the resources of the Health Department in case of the possible appearance of bubonic plague, Asiatic cholera, or other serious infectious disease during the summer. It is said that a considerable portion of the appropriation will be used in the more thorough equipment of the hospitals for contagious diseases, the North Brother Island, the Willard Parker, and the Kingston Avenue, Brooklyn, Hospitals, and that some of it will also be expended on the study and development of bubonic plague cultures in the bacteriological laboratory of the department.

SUICIDE AND LIFE INSURANCE. — In the suit of the administrator of Frank M. Brady against the Equitable Life Assurance Society to recover \$100,000, the amount of an insurance policy on the life of Brady, taken out by him a month before his death by suicide last autumn, a jury in the Supreme Court, Brooklyn, on June 27th handed in a verdict in favor of the defendant. The latter contended that no payment should be had on the policy, as there was a clause in it to the effect that if Brady should commit suicide, whether sane or insane, within one year after it

was taken out, the beneficiary should not receive the money. The plaintiff contended that the burden of proof was on the defendant to show that Brady really committed suicide, and this was apparently done to the satisfaction of the jury.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The American Association for the Advancement of Science, which is composed of sixteen affiliated societies, held its forty-ninth annual meeting at Columbia University during the past week. About 500 of the 1,835 members of the association were in attendance, and on the recommendation of the council, a section on physiology and experimental medicine was established.

DAMAGES FOR PERSONAL INJURIES.—The Central Railroad of New Jersey has paid H. B. Park, a student at one of the New York medical colleges, \$10,000 in settlement for injuries sustained by him at the Plainfield station of the company in January last. Young Park, having alighted from a local train, was crossing the tracks to the depot, when he was struck by an express train running at a high rate of speed and seriously injured.

NEW YORK SCHOOL OF CLINICAL MEDICINE TO BE CLOSED.—At a meeting of the corps of teachers of the New York School of Clinical Medicine, held at the Academy of Medicine, June 21, 1900, it was decided to wind up the affairs of the school and close it permanently. This action was taken in consequence of friction between the staff and the lay board of trustees in the management of the affairs of the school.

LEWIS A. STIMSON, LL.D.—At the recent Commencement of Yale University, the degree of LL.D. was conferred on Dr. Lewis A. Stimson, professor of surgery in the Cornell Medical School.

Miscellany.

CHOREA AS A PYOGENIC DISEASE.

A TENDENCY has arisen of late to consider chorea as a infectious disease, although such evidence as exists in favor of this view is circumstantial, rather than direct, and the chain is yet incomplete. A point to which some significance can be attached is the probability that acute rheumatism, with which chorea exhibits certain relations, is also of infectious, though perhaps of multiple, origin. In support of the infectious origin of chorea is the report by Westphal, Wassermann and Malkoff¹ of a case of acute articular rheumatism, followed by chorea, and complicated by endocarditis and nephritis, in which they succeeded in isolating from the blood, the brain and the endocardial vegetation a streptococcus capable of inducing polyarthritis in lower animals. The pyogenic nature of both polyarticular rheumatism and chorea had previously been suggested by other observers, one of whom, Mircoli,² now reviews his earlier investigations

¹ Berliner klinische Wochenschrift, 1899, No. 29.
² Loc. cit., 1900, No. 14, p. 303.

on this subject. Among 17 cases of rheumatic chorea, pyogenic cocci were found in the joints in 14, staphylococci preponderating, while in 3 the diplococcus lanceolatus was present as the etiological agent. From a number of considerations, acute rheumatism is looked upon as a variety of pyemia, but without suppuration; and chorea as a manifestation of the cerebral localization of the pathogenic agency.—*Medical Record.*

Correspondence.

METHOD OF STAINING THE ELASTIC FIBRES OF THE SKIN.

VIENNA, June 15, 1900.

MR. EDITOR:—The majority of the staining methods used for the demonstration of the elastic fibres of the skin are extremely complicated and require a great expenditure of time. It has been my desire in performing this work to find a method which would combine three desirable things, simplicity, rapidity and certainty of results.

In considering former methods, one naturally thinks of Taenzer's; he used the following solution:¹

Orcin	0.5
Aqua dest.	20.0
Spirit.	40.0
Acid nit.	gtt xx

The section remains in this solution for from twelve to twenty-four hours, and then is decolorized with alcohol. A great deal of time is required for this method, which Unna attempted to obviate in the following manner, by using²

Orcin	1.0
Acid hydrochloric	1.0
Alcohol abs.	100.0

The section remains about fifteen minutes in this solution and is heated to about 30°. He claims that by doing this the solution becomes more concentrated. If this is the case, one might suggest that a stronger solution of orcein might be used in the first place.

In the case of very thin sections the heating of the orcein affects them seriously, in thicker sections the connection between the individual tissues becomes loosened, and in any and all cases, with a little too much or too little heat, the desired result is not obtained.

Gutentag's method gives no advantage over former ones.³

Weigert's method gives very good results, but, like the others, it is also complicated and requires a great deal of time.

I have experimented with a large number of coloring materials, thinking to find one to replace orcein, but the results were all unsatisfactory, orcein, in fact, being the only one which acted on the fibres in a directly specific manner.

After having arrived at this conclusion, I attempted to modify the application of the orcein, that the result might be obtained more quickly. I found that if one allows H₂O₂ to work on the section, the elastic fibres become plainly visible, without the remaining tissues being in the slightest degree injured. That caustic potash has a similar effect need not be emphasized here.⁴

Balzer recommends it for the demonstration of elastic fibres of the skin after staining with eosin, but by doing this the rest of the tissue swells up intensely; even by the application of a very diluted solution, an alteration of the

¹ Unna: Notiz betreffend die Taenzerchen Methode. Monatschrift für praktische Dermatologie, Bd. II, 1890, pp. 366-70.
² Unna: Monatschrift für praktische Dermatologie, Bd. xix, 1894, p. 597.
³ Gutentag: Ueber das Verhalten der Elastischen Fasern in den Hautnarben. Archiv für Dermatologie und Syphilis, Bd. xxvii, H. 2, 1894.
⁴ Balzer: Recherches techniques sur le tissu elastique. Archives de Physiologie, 14, ix, 1882.

remaining tissues cannot be avoided. This is by no means the case with H₂O₂. Various concentrations of alcohol, orcein and H₂O₂ were tried and the following solution proved to be the best :

Orcein	.....	3.0
Alcohol abs.	.....	200.0
H ₂ O ₂	.....	40.0

The sections came directly out of strong alcohol into this solution. If a thin section is used three minutes suffices for staining; the whole then appears a brownish red, the elastic fibres being considerably darker than the rest of the tissue, so that they distinctly contrast with the Kollagane even in the case of low power. For differentiation, the same solution is used that the orcein was dissolved in,

Alcohol	.....	100.0
H ₂ O ₂	.....	40.0

For thin sections one minute suffices; the elastic fibres are then shown very clearly, while the rest of the tissue is lightly stained.

If somewhat thicker sections are used, the orcein is allowed to work for about five minutes, differentiating for from two to three minutes; absolute alcohol may be used for differentiation and requires no longer than the above-mentioned solution.

Truly yours,
EDITH R. MEEK, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 23, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Measles.
New York	3,654,594	1153	446	25.02	15.67	5.13	.81	1.26
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	380	139	24.30	7.56	4.48	1.40	.56
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	178	50	50.40	14.56	1.68	—	1.12
Baltimore	506,389	178	78	30.24	7.28	14.00	1.68	1.12
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	119	53	25.50	4.25	6.80	1.70	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	53	18	24.51	5.67	9.45	3.78	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	37	10	45.10	16.20	5.40	—	—
Worcester	111,732	33	11	24.24	9.09	3.03	—	—
Fall River	103,142	15	—	66.66	13.33	60.00	—	—
Cambridge	92,520	18	3	22.22	5.55	5.55	—	—
Lowell	90,114	28	5	9.81	6.54	—	3.27	—
New Bedford	70,511	17	7	5.88	11.76	—	—	—
Lynn	68,218	—	—	—	—	—	—	—
Somerville	64,394	10	5	20.00	—	10.00	—	—
Lawrence	59,072	20	11	40.00	5.00	—	—	10.00
Springfield	58,266	22	7	29.05	8.30	—	—	—
Holyoke	44,510	14	7	14.28	14.28	—	—	—
Brookton	38,750	—	—	—	—	—	—	—
Salem	37,723	6	3	66.66	—	—	—	—
Malden	36,421	7	—	57.12	—	—	—	—
Chelsea	34,235	7	2	—	—	—	—	—
Haverhill	32,651	8	2	62.50	—	—	—	—
Gloucester	31,426	9	2	22.22	11.11	—	—	—
Fitchburg	30,523	8	2	—	12.50	—	—	—
Newton	30,461	12	2	—	16.66	—	—	—
Taunton	28,527	13	6	15.48	—	—	—	—
Everett	28,102	8	3	25.00	12.50	—	—	—
Quincy	24,578	2	—	50.00	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	5	1	20.00	20.00	—	—	—
North Adams	21,583	5	1	—	20.00	—	—	—
Chicopee	18,316	9	4	22.22	11.11	11.11	—	—
Melrose	17,190	6	2	—	—	—	—	—
Newburyport	15,936	—	—	—	—	—	—	—
Melrose	14,721	—	—	—	—	—	—	—

Deaths reported 2,391; under five years of age 881; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 592, acute lung diseases 163, consumption 276, diarrheal diseases 137, diphtheria and croup 76, measles 30, typhoid fever 24, whooping-cough 16, cerebrospinal meningitis 13, scarlet fever 11, erysipelas 8.

From whooping-cough New York 8, Washington 3, Boston 2,

Worcester, Waltham and Gloucester 1 each. From cerebrospinal meningitis New York 6, Worcester 3, Boston 2, Baltimore and Everett 1 each. From scarlet fever New York 8, Philadelphia 3. From erysipelas New York 7, Baltimore 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 16th, the death-rate was 18.0. Deaths reported 4,004: acute diseases of the respiratory organs (London) 257, measles 138, whooping-cough 108, diphtheria 65, diarrhea 61, scarlet fever 26, fever 29.

The death-rates ranged from 9.4 in Cardiff to 25.2 in Manchester; Birmingham 19.8, Bradford 13.4, Gateshead 17.2, Huddersfield 22.0, Hull 17.5, Leeds 20.4, Liverpool 23.7, London 17.4, Newcastle-on-Tyne 15.8, Nottingham 12.0, Sheffield 22.9, Swansea 14.3, West Ham 13.9.

RECENT DEATH.

PHILEMON EVELETH, M.D., M.M.S.S., died at Marblehead, Mass., May 14th, at the age of fifty-four years.

BOOKS AND PAMPHLETS RECEIVED.

The Missile and the Weapon. By A. L. Hall, M.D., Fulton, N. Y. Reprint. 1900.

Fliegenlarven als gelegentliche Parasiten des Menschen. Von Dr. Erich Peiper. Mit 41 Abbildungen. Berlin. 1900.

Twenty-third Annual Report of the Board of Health of the State of New Jersey, and Report of the Bureau of Vital Statistics. Trenton, N. J. 1899.

A Manual of Operative Surgery. By Lewis A. Stimson, B.A., M.D., and John Rogers, Jr., B.A., M.D. Fourth and revised edition. Philadelphia: Lea Brothers & Co. 1900.

Forty Years in the Medical Profession, 1858-1898. By John Janvier Black, M.D., Member of College of Physicians of Philadelphia, etc. Philadelphia: J. B. Lippincott Co. 1900.

Dermato-histologische Technik, ein Leitfaden für Ärzte und Studenten. Von Dr. Max Joseph und Dr. Georg Loewenbach. Zweite vermehrte und verbesserte Auflage. Berlin. 1900.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Vol. IV, January, 1900. Edited by Andrew J. McCosh, M.D., and W. Gilman Thompson, M.D. New York. 1900.

Lectures on Clinical Medicine. Delivered in the Glasgow Royal Infirmary by John Lindsay Stevens, M.D., Physician to Glasgow Royal Infirmary, etc. Illustrated. Glasgow: Alex. Macdougall. 1900.

A Treatise on Appendicitis. By John B. Deaver, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. Second edition, revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Tuberculosis: Its Nature, Prevention and Treatment, with Special Reference to the Open Air Treatment of Phthisis. By Alfred Hillier, B.A., M.D., C.M. Illustrated. London, Paris, New York and Melbourne: Cassell & Co., Ltd. 1900.

Pure Food Legislation. Speech of Hon. William E. Mason, Upon the Evils Arising from Adulterations in Food, their Extent and the Legislation Necessary to Prevent the Use in Food of Alum, Sulphuric Acid, Copper Salts, Zinc and other Poisonous Substances, in the Senate, Wednesday, May 2, 1900.

Diseases of the Eye. By Edward Nettleship, F.R.C.S. Revised and edited by Wm. Campbell Posey, A.B., M.D. Sixth American from the sixth English edition. With supplement on Examinations for Color-Blindness and Acuity of Vision and Hearing by Wm. Thomson, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

Medical and Surgical Nursing: A Treatise of Modern Nursing from the Physician's and Surgeon's Standpoint, for the Guidance of Graduate and Student Nurses, together with Practical Instruction in the Art of Cooking for the Sick. Edited by H. J. O'Brien, M.D. New York: G. P. Putnam's Sons. London: The Knickerbocker Press. 1900.

Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by Charles Adams Holder, M.D. Vol. II, June, 1900. Surgery of the Abdomen, including Hernia; Gynecology; Diseases of the Blood; Diathetic and Metabolic Diseases; Diseases of the Glandular and Lymphatic System; Ophthalmology. Philadelphia and New York: Lea Brothers & Co. 1900.

Ligatures and Sutures in Abdominal Surgery. A Clinical and Pathological Report of Two Cases of Genital Tuberculosis. A Case of Submucous Myoma. The Normal Position of the Uterus in the Pelvis Considered in Relation to Its Physiologic Mobility. The Results of Modern Aseptic Surgical Technique, as Demonstrated by a Series of One Hundred and Fourteen Consecutive, Unselected Abdominal Sections without a Death; with Clinical and Pathological Reports. By Hunter Robb, M.D., Cleveland, O. Reprints. 1899-1900.

Address.

A REVIEW OF RECENT STUDIES ON THE NATURE AND ORIGIN OF CANCER.¹

BY J. COLLINS WALKER, M.D., LL.D., BOSTON.

IN selecting a subject upon which to address you this evening, I felt I could not choose one of greater interest to practising physicians, who have in your hands the health of a large and important section of the country, than that which dealt with an inquiry into the nature of cancer.

This is a disease the ravages of which are constantly spreading into a wider circle and before which, in the majority of cases, in spite of the wonderful advances of surgery, we still feel ourselves almost powerless.

The knife has undoubtedly accomplished much for which we are to be thankful, and the number of those who have been rescued from what was at one time supposed to be an incurable disease is constantly growing. These successes should not, however, lull us into a sense of security, but should rather stimulate us to further effort; for, although we do not now look upon every case as hopeless, as our fathers did, there seems to be but little doubt that the disease is on the increase, and that it still remains — as it has ever been — one of the scourges of the human race.

It is hardly necessary to remind you that we are living in a wonderful period of progress in medical science, and that this branch of medicine, still perhaps looked upon as theoretical by many of you, has accomplished tasks of the highest practical value not only to the physician and surgeon in his practice, but for the well-being of civilized communities.

I have intimated that this disease is on the increase, and one of the first questions which naturally presents itself to the inquirer relates to the accuracy of this statement. I will, therefore, take the liberty of calling your attention to the study of the geographical distribution of cancer, and to the probabilities of the disease having increased in frequency in some of its favorite localities. Unlike tuberculosis, which seems to be spread pretty evenly throughout the globe, sparing no races, cancer appears to be confined to certain tolerably well-defined regions of the earth's surface.

It appears to be almost unknown in the far north, including the northern coast line of Europe and Asia, and in the tropics it is also exceedingly rare.

The disease appears to abound and to be pretty evenly distributed throughout the larger part of middle and southern Europe. The northern border of this region extends as far north as Norway, where we find that in 1893 6.39 deaths occurred to 10,000 living persons; and Sweden, where in 1894 the rate was 8.5 deaths to 10,000 living persons. Coming farther south to Denmark, we find the rate computed for five years (1890-95) as 11.9 to 10,000. In Holland it is said to be as high as in any country of Europe. The above figures give what was probably the average of deaths from cancer in middle Europe from this disease during the last decade.

On the other hand, in Greenland, Iceland, the Faroes, Hebrides and Shetland, it is an extremely rare disease. Lange saw no cancer in Greenland, and Panum had but one case to report in the Faroe Islands.

Again, in parts of southern Europe, such as Greece, and particularly Turkey, we hear little of cancer. The commonest forms of cancer, such as those of the uterus and breast, are very rare in the latter country. A female physician having an extensive practice in Constantinople during nine years saw but 20 cases of uterine cancer, and 31 of cancer of the breast. In the other portions of southern Europe, such as Spain and Italy, it maintains a high average.

In northern Asia, in Siberia, according to Behla, cancer is almost unknown and only observed sporadically in southern Asia. Thus we find it rare in Persia, Arabia and India, except in the western and southern portions of the latter country. In northern China and Japan the disease is more on a par with that in Europe. In southern China, and in fact in the greater part of that country, the inhabitants do not appear to be susceptible to the disease, although those who come to this country are said to lose this immunity.

Turning to Africa, we find Egypt and Abyssinia almost exempt. In Algiers and in Madeira the disease is more frequent. In western and central Africa, according to Livingstone, the disease was in his time almost unknown.

I need hardly tell you that cancer is common in Great Britain, though the mortality appears to be lower in Ireland than in other parts of the United Kingdom. Coming west to North America, we find the disease is found all over the United States and Canada, but in the more northern portions of the continent, such as Alaska and the most northerly parts of British North America, the disease is rare.

In New York State in 1895 there were 5.3 deaths to 10,000 inhabitants, and in Massachusetts the rate was 6.4 to 10,000 inhabitants; and in San Francisco it is quoted as high as 7.9 to 10,000 inhabitants. In the tropics of America it is absent, and it is little known in the lowlands of Mexico; but in the high tablelands of that country it is common. In South America it is said to be most common in Peru, but in Brazil and the more southern portions it is said to be extraordinarily rare.

In Australia the disease is said to be quite common, in Queensland in 1891 the rate was 2.60 to 10,000 living persons, and in 1895 this rate had risen to 3.67. In New South Wales in 1896 it took third place in the mortality list. In New Zealand the rate in 1895 was 5.53 to 10,000 (Behla).

Bearing these data in mind, a glance at the map of the Eastern Hemisphere will show a dark belt extending across Europe and Asia from the Atlantic to the Pacific. This belt is widest at its western end, taking in as it does the whole of the Atlantic coast line of Europe. It gradually narrows towards its eastern extremity, which includes Japan. The breadth of the cancer belt in the Western Hemisphere is somewhat greater than the average of that of Europe; but, like the latter, it is situated in the temperate zone. This does not hold true of the Southern Hemisphere, however, for we find it there encroaching more extensively upon the tropics. Much, however, remains to be worked out as to the geography of the disease in this region of the world.

In connection with mention of the tropics it is worth noting that malaria and cancer are said to be in an inverse ratio to one another; where malaria is common, as in Jamaica and the east coast of Africa,

¹ Read at the Annual Meeting of the Maine Medical Association, June 14, 1900.

cancer is rare. On the other hand, in Holland malaria and cancer are both common, and—as we shall see presently—cancer is often found in low-lying marshy districts where one would expect to find malaria.

This brings us to the study of localities in different countries, and we find that certain portions of many countries are much more favored by the disease than others. Haviland's work has been much quoted, but is worth repeating in this connection. A glance at his map shows that the southwest portion of England and Wales is a region where there is a low mortality from cancer. This section belongs geologically to the oldest formations, silurian and carboniferous, and includes the highest and best drained mountainous districts of the country. He found a low mortality from this disease in the chalk hills and the red sandstone districts; in other words, in the elevated districts of England which form the sources of the rivers which drain the country. The high mortality, on the other hand, is to be found near those portions of the rivers where they have reached their full formation in the low-lying level districts and regions liable to serious floods; and these regions are composed of more recent geological formations in which clays of different ages predominate. In a certain region where the river frequently overflows its banks, the mortality for women rose as high as 8.1 to every 10,000 living. In Liverpool the cancer death-rate at the same time was only 4.1 to every 10,000 females living. In Norway, on the other hand, the disease is more frequent on the highlands and less on the coast.

Coming now to the condition of certain localities, we find a state of things which might almost justify one in the assumption that cancer was endemic. D'Arcy Power describes a district in England, the condition of soil being identical with those described by Haviland, a flat country covering 60 square miles and consisting of gravel overlaying boulder clay. It has many streams and fens. The population is about 12,000. From 1872 to 1898 there were 173 cases of cancer under observation of the local physicians. In a village of 1,036 inhabitants in this district there were 42 cases of cancer during the same period. Many used water from the same well, but in many cases there was no common source of contagion of this kind. Seventy-one cases were cancers of the alimentary canal or organs suggesting water as an infecting agent. Behla, a practising physician for twenty-two and one-half years in Luckau, a town in Germany of 5,000 inhabitants, describes a remarkable increase of cancer in one of the suburbs of this town containing about 1,000 inhabitants, while in the adjacent district of the same size there was hardly a case of the disease. From October 1, 1875, to April 1, 1898, there were 663 deaths, of which 73 were cancer (mostly of the stomach and liver); that is, 1 in 9 deaths were from cancer; whereas in Prussia in general the rate is only 1 in 40 deaths. The majority of the houses in this district had had cancer cases in them, and on a certain side of a certain street every house had been infected, and in certain houses 3 or 4 cases of cancer had occurred. In a little over one year's time 10 men died of cancer in this district. Such a region seems fairly to have earned the name of "Cancer Village." In many of the neighboring villages there had been no deaths from cancer for

twenty-five years. Similar experiences are cited by Behrens, Pfeiffer and others in different parts of Germany; Espine reporting that in the canton of Geneva in Switzerland there are villages where cancer is extraordinarily prevalent, particularly cancer of the stomach.

I have already mentioned an example of a cancer street. Amaudet describes such a street in Corncilles in Normandy, in which out of fifty-four houses seventeen had contained cases of the disease. These houses are near the middle of the street, and occupied both sides; many of them having 2 cases.

Examples of "cancer houses" could be given in great number, but one or two will suffice. The following case reported by Power, is perhaps as striking as any:

Mrs. A., forty-five years of age, lived in a certain house for thirteen years, and then died of cancer of the stomach. Mrs. B., forty-seven years of age, succeeded to her place, and occupied her bedroom. She lived in the house for twenty years and died of cancer of the liver. Mrs. C., sixty-seven years old, who had lived in the house for eight years, succeeded to the position previously held by the other two women, and to their bedroom, and died of cancer of the breast eight years after the death of Mrs. B.

Webb reports in the *Birmingham Medical Review*,² several cases of cancer houses in the village near his residence. In two houses built as one building there were 6 cases following one another at regular intervals during a period of twenty-six years. None of the individuals were blood relations. Two were cases of cancer of the rectum; 2, cancer of the stomach; 1, cancer of the uterus, and 1, cancer of the breast. The drain and water supply were common to both. In another group of cottages there were 9 cases in fifteen years. All the inhabitants used water from a certain pump by the roadside and close to a very filthy hovel.

Mollier reports 4 cases of cancer occurring in ten years' time in a house in Lyons on the banks of the Saône. Three of these were cases of cancer of the stomach.

Fissinger lays stress upon solitude. A house near a wood with bushes and swamps near the banks of a river are conditions which appear to be favorable for the development of the disease. Noel calls attention to the fact that excise officers in England, whose duty it is to traverse the woods, often suffer from cancer, as do also the country laborers who work in the woods.

Coming now to the question of the increase of cancer, we find a pretty general expression of opinion that there has been a marked increase in the amount of the disease during the past fifty years, a period of time during which sufficiently careful statistics have been kept to enable an accurate estimate to be made.

It is true that some have objected, like Payne and Neusholme, two able English observers, that these observations were fallacious. Payne attributes the increase of cancer to the diminished mortality from phthisis and other infectious diseases; a larger number of persons therefore surviving to become the victims of cancer later. Neusholme regards the increased figure as due to more accurate diagnosis and careful autopsy records. Andrews, of Chicago, shares these

² No. 32, 1892, p. 342.

views. Nevertheless, the mass of evidence seems strongly to favor a serious increase of cancer during the period mentioned. For instance, Neusholme himself shows that in the period 1866 to 1868, there were in England and Wales 25,567 deaths from cancer, and in the period 1894 to 1896 there were 67,888 deaths from the disease. In other words, during twenty years the deaths from cancer had more than doubled. Cancer is no new disease or one which has been set aside from a more comprehensive one, as appendicitis from peritonitis, so that increased accuracy of diagnosis would probably eliminate as much as it added. Many cases of tuberculosis and syphilis formerly supposed to be cancer are now recognized not to be such, and would offset the additional cases of cancer now handed in in the reports of more accurate diagnosticians and pathologists.

The more recent studies of Haviland in Great Britain show an enormous increase of cancer in that country. In the period of 1857 to 1860 the death rate of England and Wales for males was 1.94 to 10,000 living, and for females 4.33 to 10,000. In 1881 to 1890, the death-rate for males was 4.30, and for females 7.38. In other words, during an interval of a little over twenty years, the rate has more than doubled for males, and not quite doubled for females.

Taking now two specimen low mortality areas, such as York and Gloucester, we find that the low mortality groups are still found in the same districts, although the standard death-rate has been raised from 4.3 to 7.4. The same may be said of the high mortality groups. In the Thames Valley district the death-rate for females above thirty-five years of age from 1851 to 1860 was 13, and from 1881 to 1890 was 23 to 10,000 living persons.

In other words, cancer is still comparatively low and still comparatively high under the conditions which existed in 1851 to 1860, but the rate in all these districts has been increased after the interval of twenty years.

In Ireland in 1864 there were 1,498 deaths from cancer with a population of 5,678,307. In Ireland in 1884 there were 1,947 deaths with a population of 4,962,693. In Scotland in 1864 there were 1,300 deaths from cancer with a population of 3,118,701. In Scotland in 1884 there were 2,110 cases of cancer with a slight increase in population.

Finkelburg, in 1894, shows from a careful study of the distribution and frequency of cancer in Prussia that there has been a considerable increase in the mortality of carcinoma, although the general mortality rate was lowered during that period. The mortality was much greater in the cities than in the country, in large and well-cared-for cities especially. In Berlin the death-rate for cancer was 62.3 per 100,000 living persons. This increased mortality in the cities is attributed to the increased mortality among women.

Although Andrews doubts the accuracy of our population figures, Massey claims that our statistics are sufficiently accurate to show that the ratio of deaths from cancer to 100,000 living persons in the United States is on the increase. Massey's interesting tables arranged for seven of our principal cities show also the ratio of deaths from cancer to each 1,000 of all deaths in each city. He points out that, while it is evident that a lessened number of deaths from

preventable diseases of early life will give rise to an artificial increase in the proportion of disease of later life which has not been prevented or cured, the charts do not show the result which should be expected from this line of reasoning. If this argument were correct, the ratio of cancer deaths to the total deaths ought to be greater than that compared with the living population, whereas the charts show this ratio is less in all cases. The conviction is warranted, he says, that there is a widespread increase in the causes of this disease throughout the country.

The greatest increase has occurred in San Francisco. Here the ratio has crept from 1866 to 1898 from 16.5 to 103.6 cases to 100,000. Here we have the enormous increase of more than sixfold in thirty-two years. In Boston the ratio has almost trebled between 1863 and 1887. After the latter date there was a temporary decrease followed by a tendency to increase up to the present time. In seven American cities in 1870 there were 999 deaths from cancer, or 35.4 per 100,000 living persons. In 1898 the death-rate was 66.4 per 100,000. The ratio has therefore almost doubled in twenty-eight years. At this rate in 1900 there would be an average of 80 deaths in each city to every 100,000 living persons. Massey calculates that there must have been about 49,800 deaths from cancer in the United States in 1898, and that there must be at the present time 100,000 victims of the disease within our borders. These figures give color to the startling statement made by Roswell Park a year or two ago that in 1909 there will probably be more deaths in the United States from cancer than from consumption, small-pox and typhoid fever combined. This author shows that in New York State cancer is the only disease tabulated which shows a progressive and steady increment. In 1887 there were 2,363 deaths from cancer, and 11,609 deaths from consumption. In 1898 there were 4,456 deaths from cancer and 12,552 deaths from consumption. In Roswell Park's own city and neighborhood the deaths from this disease exceed in ratio that of almost any other section of the country. It is, as he justly says, a veritable "Tropic of Cancer." It is difficult, under these circumstances, to avoid asking one's self the question whether cancer is or is not an infectious disease.

The endemic character of cancer and the steady increase of the disease, and the fact that in certain localities there is a sudden invasion of this disease, all suggest strongly a local cause. To search for this requires special knowledge of the most diverse character. As Park suggests, a combination of the zoölogist and the botanist and the veterinarian is needed for such an investigation.

The work of Behla again merits notice in this connection. After a careful study of the meteorological condition of his native town, of its water and other possible sources of infection, he turned his attention to the food supply — practically those forms which were eaten uncooked. The gardens containing lettuce, radishes, berries, apples, etc., were watered with water from the trench which surrounded the district. The water remaining in this trench was very foul and contained quantities of vegetable and animal organisms. The fresh lettuce was rinsed out in these dirty pools, and the water was also used to wash the kitchen utensils and the towels. This stream did not touch any other portion of the town. In many other

villages of Germany where cancer prevails Behla was able to obtain the same history of the use of foul water for domestic purposes.

Foul and stagnant water, sluggish streams with wooded banks which are often overflowed appear thus to be favorable conditions. It is well known that trees are subject to xylomata, or wood tumors, which are destructive. These affections of trees appear to be contagious, as neighboring trees are usually affected. A form of ameba (plasmiodiophora Wassica) grows on certain cabbages and other vegetables, forming large tumors. It is possible that the seeds of disease shed from trees or plants may float upon the water used for washing and drinking purposes, and thus be conveyed to the human organism. Pfeiffer has suggested that the micro organisms may be conveyed by an intermediate host, and has carefully studied the sporozoa and other protozoa forms found in insects with the hope of discovering the cause of the disease. We have but recently been made familiar with the mosquito as an active agent in the spread of malaria, and in a like manner wasps have been suggested as the carriers of disease from tree to tree and plant to plant, as on these insects both protozoa and fungi abound, and perhaps also to human food. It can readily be seen that if such articles of food and drink were infectious, they would, if handled by man, convey the poison to the nose, lips or tongue, and if swallowed could transport the disease to the stomach, intestines or internal organs. We can easily imagine that a micro-organism could, under the circumstances, attach itself to a break in the epidermal or epithelial coverings of the body, or when these cells were by age or a blow or chronic irritation rendered less resistant to morbid influences. In this way a single cell may become the point of entrance of the disease into the body. Behla suggests that summer is the season of the year when infection is more likely to occur, but unfortunately there is no known period to guide us. It is interesting to note in this connection that the dog, an animal which comes in contact with earth and water so freely, does not have cancer in the regions so often found diseased in man, but more upon the surface of the body, as on the ears, the tail, the scrotum, prepuce, vulva and anus. Observations on the food of man have not as yet brought out any suggestive data. Beneke has noted that cancer is rare in prisons where animal food is not freely furnished and work is hard. Certain monk orders are said to be exempt from cancer, but there are no facts to show that vegetarians as a class are less liable than meat eaters, although Paget thinks that meat eaters are more liable.

In Normandy the cider made from very foul water has been blamed for the increase of cancer. Those addicted to alcohol have been said to be more liable. These are probably only predisposing causes which favor irritation of the stomach or intestines.

A study of the health of a locality before and after the introduction of a pure water supply might throw light upon this question.

So far as animals are concerned, the disease is found in herbivorous as well as carnivorous. It is more common among mammals and is rare in birds. In cold-blooded animals it is not seen. The disease is rare in the digestive tract, but, as we have already seen, is more common on the outer skin and urogenital tracts. Cancer is not observed in dogs under two

years of age, and it is well to remember that if animals should be used for experimental purposes they should be taken at an age when they are more liable to cancer.

Of 49 cases of carcinoma collected by Fadyean, 25 were in the horse, 16 in the dog, 5 in the ox, 2 in the cat and 1 in the sheep. It appears to be extremely rare in pigs. Several cases of cancer of the stomach in horses are reported by this writer, although this is a very rare seat of the disease in animals. There are no statistics to show whether animals have cancer in the specially infected districts. One observer has stated that cattle in low-lying pastures are more liable to cancer than those in higher and drier grazing country.

The data which have thus far been brought forward are in some cases strongly suggestive of the communicability of cancer from one individual to another. Is there any clinical evidence bearing upon this point?

Cancer of the base of the tongue is reported by Scott in American trout transported to New Zealand.

Roswell Park cites a number of interesting cases collected from literature. Thus Kuhn reports the case of a woman contracting an encephaloid cancer of the finger while caring for a cancerous cow. Jürgens reports the inoculation of an epithelioma from a fowl to the thumb. Budd reports the case of a pet dog contracting cancer of the tongue from licking the cancerous lip of his master. A London surgeon was affected with cancer of the tongue after having taken into his mouth some of the discharge from a cancerous breast. A physician inoculated an acne pustule on his face while scraping a cancerous uterus. Budd mentions five French hospital surgeons who have died of cancer, one eight months after receiving a wound while operating on a cancerous patient.

The situation of cancer in the human body certainly is suggestive of inoculation. Thus Andrews has studied the locality of 7,881 cases of cancer and endeavors to show that primary cancer is more common on exposed surfaces, such as the lip, the face and the hands, and in such situations in the digestive tract where a microbe would lodge easily and not be swept away. Estimating according to area and placing the intestine, which has a large area but small percentage of cancer, as one, we find the lip stands at the head of the list; the other portions of the digestive tract follow in the order we might expect, as the tongue, the stomach, rectum, mouth, esophagus, etc.

Now that attention is being brought to the possibility of contagion, practitioners will doubtless begin to report examples which they have observed in their practice. We all remember how improbable the theory of the contagiousness of tubercle seemed when it was first brought forward. In my own experience, particularly with cancer of the breast, I have noticed of late years the frequency with which the husband is affected with keratosis semilis or the early stages of rodent ulcer. The milder forms of this affection often pass unnoticed, but may be none the less a possible source of contagion. Coming as they do on exposed parts of the body, they could easily be communicated from husband to wife and find a lodgment in an organ which is susceptible to the disease.

Cases of inoculation are so striking when they do occur as not to pass unnoticed. I have seen cancer of the prepuce clearly communicated from the glans penis by contact and not by extension. In the same way

cancer has been known to jump from the tongue to the cheek. Cancer has followed the track of the trocar, the punch, or of the exploratory operating wound. It is my habit in operations for cancer of the breast to avoid touching the disease with the knife-blade and to keep all portions of the wound carefully protected with gauze held in place by catch forceps until the last trace of cancer has been removed.

Coming now to experimental inoculation, we find that well authenticated cases are exceedingly rare even in animals. Cornil reports a case of sarcoma of the breast in which the surgeons inserted a small fragment of the growth beneath the skin of the breast of the opposite side. The small wound healed by first intention, but two months later a nodule of sarcoma formed at the site of the inoculation. Hahn reports a similar case. Bosc cites 3 cases of inoculation of cancer from man to man. Alibert, who derided the theory of contagion, is said to have inoculated himself with cancer juice and subsequently to have died of carcinoma.

Inoculations have been made into dogs, cats and rats from carcinoma of man; various organs have been inoculated, and also the peritoneum and the circulating blood. In very few cases has there been any result, and these have been regarded rather as transplantations and independent growths of the inoculated or grafted tissues rather than as growths of the local tissue as the result of an infection.

This does not prove by any means that the cancer germ, if there be such, is not inoculable. Doubtless nature fails continually to infect the human organism. It is possible that there may be a certain stage in the life history of the micro-organism in which it is capable of being inoculated and other periods in which it is inert.

One of the earliest of the modern attempts at experimental inoculation was by Langenbeck, who made an emulsion of an encephaloid cancer and mixed it with the defibrinated blood of a dog and injected it into the femoral vein of a dog. Two months later nodules were found in the lung. In 1888 Hanan transplanted into the tunica vaginalis of the testicle of two rats materials derived from non-ulcerated metastatic glands following a cancer of the vulva. One of the rats died seven weeks later with nodular cancer involving the peritoneum. As the inguinal canal in the rat is not obliterated, this appears to be a direct extension of the disease from the point of inoculation. The inoculation was also successful in the second rat and material taken from this rat and inoculated into a third rat also proved to be successful.

Inoculation from animals into animals of the same species seems to be more successful than into animals of a different species.

Wehr has implanted malignant tumors of the prepuce and vagina of dogs and has succeeded in producing a fatal carcinomatosis. Klencke has also succeeded in transmitting melanosarcomata of horses. In this connection the most interesting experiment of Lock cannot be passed by. This investigator believes that cancer is due to the entrance of normal epithelium into the lymph vessels with continuation of growth. Hence he opened the peritoneum of a rabbit and scraped the epithelium of the ovaries. The animal was killed after fourteen months. The animal showed cancerous nodules in the mesentery; white areas in the liver; a small mass on the wall of the uterus and

an infiltration of the diaphragm. Cancer is an extremely rare disease in rabbits; hence Lock concluded that his operation produced the disease.

Moran was able to transmit cancer in white mice in 8 out of 10 cases. He also performed an experiment which is interesting as suggesting the possibility of the theory of an intermediate host as the carrier of the virus. Placing healthy mice in cages over a vapor of turpentine and camphor to protect them from insects, they remained in perfect health. In other cages he placed mice with bed bugs taken from the cages of cancerous mice, and observed after a few months that all the animals infested by these insects were suffering from cancer.

Irritation seems to play an important rôle in the production of cancer; cancer of the breast, lip and scrotum often have a history which suggests irritation or a traumatic origin, but attempts to produce cancer by trauma in animals have not succeeded.

The question of heredity, as a factor in the causation of the disease, is one about which statisticians differ greatly; it has been placed below 10% by some and as high as 30% by others. How often do we hear a patient exclaim, when informed of the diagnosis, that they have never heard of an instance of the disease in the family for generations. Yet, in some instances, we hear of very striking examples of family susceptibility to the disease. Space does not permit me to cite more than one, which I have selected as showing at the same time a remarkable susceptibility of a certain organ. Power³ reports a case of cancer of the breast with the following family history: The father died at forty-six with cancer of the breast; a brother died at sixty-five with cancer of the throat; a second brother died at twenty-five with cancer under left arm. First sister died at sixty-three with cancer of the breast; second sister died at forty-six with cancer of both breasts; third sister died at forty with cancer of both breasts; fourth sister died at fifty-four with cancer of breast; fifth and sixth sisters now living with cancer of the breast.

A consideration of the so-called parasites of cancer brings us to a new and the latest phase of the question of the nature and origin of carcinoma.

When the anatomical nature of the disease was better understood and the scientific world realized the active part played in the development of the growth of epithelial cells, attempts were made to recognize a specific cell, by Lebert and others, which could be regarded as the typical cancer cell. The attention of investigators being concentrated on the behavior of the epithelium brought out theories like those of Tiersch and Conheim. Tiersch assumed that an antagonism was brought about between the epithelium and the surrounding connective tissue and, the resisting power of the latter having been weakened, an ingrowth of epithelium had to follow.

Conheim's ingenious theory of the isolation of fragments of embryonic tissue, which for a time remained latent and subsequently developed into tumors, aroused great interest by the skillful manner in which it was presented. It accounted, undoubtedly, for certain forms of growth, but did not succeed in maintaining its ground as a potent factor in the development of cancer. Rippert believes that the first change takes place in the connective tissue as the result of some chronic inflammatory process, and

³ British Medical Journal, 1898, vol. i, p. 154.

a portion of the epithelial tissue is thus isolated from its surroundings. When thus put under abnormal conditions the epithelial cell acquires great productive power, which is characteristic of cancer.

Hausemann's theory places the primary change in the epithelium itself. As a result of this new influence the epithelium undergoes a change known as anaplasia, or an increase in reproductive and regenerative power and a loss of differentiation for the function for which it was originally intended. It is a change backward toward the embryonic state.

Many of these theories receive an apparent justification in the experiment of Lock in the epithelium of the ovary above described.

Virchow was the first to call attention to the change in the interior of the cell and the presence of bodies having a well-defined outline; he called them physalides. It was in 1889 that Thoma first ascribed a parasitic origin to the nucleated bodies found in cancer. Darier also about this time observed organisms in a disease described simultaneously by Podwysoski as psorosperme folliculaire vegetante, and by White as keratosis follicularis, and assumed that they belonged to the family of coccidia. This organism consists of a granular mass of protoplasm, with a nucleus not easily seen and without an enveloping membrane during its period of growth, while it inhabits an epithelial cell. It finally breaks away from its host and segmentation and sporulation take place. These organisms are very common in the livers of rabbits—an animal, by the way, in which cancer is extremely rare. A more careful study of these cell inclusions with fuchsin gave to Russell the suggestion that they might be vegetable organisms belonging to the family of yeasts, but the general opinion prevailing at that time was that they were some form of protozoa. Opinion has now veered round to the view that they are vegetable rather than animal organisms and belong to a class of fungi, known as blastomyces, or a variety of yeast. It was not then known that this plant produced lesions very similar to the so-called protozoa; that is, that it produced inflammatory reaction in the tissues into which cultures of this organism were injected. When examined under suitable staining all these so-called protozoa forms can be simulated by the blastomyces. When inoculated into guinea-pigs this organism has its proper membrane, which is filled with protoplasm and contains a body resembling a nucleus. The cell averages 8 to 10 μ in diameter. It grows by budding and in the process the parent cell may give rise to several buds. Under certain circumstances spore formation may also take place. It grows in strongly acid media and can thus be separated from many of the forms of bacteria.

The parasitic bodies seen in the tissues and cells of a growing carcinoma are thus described by Plimmer: They are from .004 to .04 millimetre in diameter. There is a central portion which represents a nucleus, around which is a protoplasm surrounded by a capsule. The nucleus differs in its reaction from the ordinary cell nucleus. The protoplasm is generally homogeneous and the capsule is very strongly marked in outline. It multiplies by division into two by budding, or the nucleus divides first and the protoplasm afterwards undergoes segmentation. These organisms stain usually with protoplasm and not with nuclear stains and thus distinguish themselves from

ordinary cell formations seen in neoplasms. I quote Plimmer's description, as he has studied them with Ruffer and has reported having examined 1,278 cases of cancer and found these bodies in 1,130. He found them at the growing edge and not in the degenerated parts. In ordinary cancers they are found only in small numbers, but in very malignant growths they are exceedingly numerous. Ruffer and Plimmer believe that the parasite can be seen alive if teased in salt solution, and changes in the shape of the nucleus have been observed. They are now generally recognized as a frequent occurrence in the cells of a growing carcinoma. Dean, however, shows that they sometimes take a nuclear stain, which he thinks throws some doubt upon the parasitic theory. When kept under cover-glass their reproduction by budding has been observed. These structures have none of the reaction of any known degeneration. The organism, as it appears in culture, differs materially from that observed in the tissues. Many of these appearances are simply degenerated forms of the organism and it is undoubtedly the case that other cell degenerations have been mistaken for it, thus giving rise to much confusion.

I have endeavored to describe these organisms under the varying conditions under which they are examined by the pathologist, as they seem to have the property shared by many bacteria, to which they stand next in the scale of plant life, of changing their character in accordance with the nutrient material in which they happen to grow, and this may account for the varying appearance in cell inclusions which we find in carcinoma. They have a chemistry of their own and they are capable, though harmless at first, of being raised in virulence by cultivation from one animal to another until they become extremely pathogenic to the same species of animal. Their classification is quite unsettled, some, apparently, being only stages in the life history of higher fungi.

Busse was one of the first observers to recognize the blastomyces as a pathogenic organism and succeeded in obtaining a culture of it from the sarcoma of the tibia in a woman. Romer, in 1891, first studied experimentally its pathogenic qualities. Attempts were now made by Sanfelice, Plimmer and others to obtain cultures from human cancers, but great difficulty has been found in accomplishing this.

Kahane obtained the organism from a cancer of the uterus. Curtis obtained it from a tumor of the back. Corselli and Frioco isolated blastomyces and found the organisms thus obtained pathogenic in animals. Bonomé cultivated the organisms 7 times from malignant growths, in 1 case of sarcoma and 6 cases of cancer, out of 26 cases.

Sanfelice succeeded in isolating an organism, but could make it live but a short time, and got no satisfactory pathogenic action in animals. He then took an organism obtained from the skin of a lemon, cultivated it on vegetable culture media, and succeeded in obtaining a distinctly pathogenic action in guinea-pigs and other animals. He was able to produce inflammatory reaction in the shape of tumor-like growths and infection of the lymphatic glands. Busse and other investigators have also succeeded in producing these inflammatory growths and even septicemia. Investigations now began to follow two general lines. Systematic attempts were made to isolate and culti-

vate from cancer in man an organism which when injected into animals would produce typical cancer. Inoculation of blastomyces were also made into suitable animals in order to produce a tumor in structure and development similar to cancer.

The *saccharomyces neoformans*, as Sanfelice calls it, occurs in two forms: in one it possesses a capsule and can be cultivated in artificial media; in the other it has no capsule and resembles the fuchsin bodies of Russell, and cannot be cultivated in artificial media. This second form is only observed when the parasite has been in the organism for a long time. Sanfelice found that in order to make these organisms grow in the media, they must be obtained in the form usually found in infections running a rapid course, and that in those running a more prolonged course it could but seldom be obtained. He was able to pass the actively growing organisms through several animals by introducing it into the peritoneal cavity, and recovering it from the lymph glands. By repeated inoculations in this way into guinea-pigs the faculty of further growth in artificial culture media was lost, but at the same time the organism appeared to have changed its character, and was now capable, not of continuing to cause inflammatory foci, but of producing a malignant growth.

This diminishing power of being cultivated which exists in the organism after going in inoculated animals is suggestive of the difficulty of obtaining cultures from human cancer, and may be due to some change in its physical structure as I have just indicated.

Sanfelice's inoculations were made on guinea-pigs, mice, rats, rabbits and hens. The organisms were obtained either from original cultures of blastomyces or from carcinomata. Local reaction of an inflammatory nature followed in all cases, but in from six to twelve months a "tumor" formation occurred at this point. Although this growth was accompanied by alteration of the adjacent lymph glands, and some of the tumors bore a resemblance to sarcoma, they appeared to consist histologically of inflammatory tissue, and, as a rule, eventually disappeared. These granulation tumors, as they might fairly be called, contained the blastomyces, although there was a decided change in its appearance from that observed in the cultures, and this seemed to be constant, the organisms in these artificially produced growths resembling those seen in the cells of cancer.

Up to 1898 Sanfelice had inoculated 59 dogs, but in only 3 cases was there a result which resembled a malignant growth. In the first of these the appearance was that of "sarcoma," to which I have already referred. The second was that of a bitch whose breast gland had been inoculated with one of the cultures passed through several animals. There followed a local reaction for a few days, which disappeared. After a month's interval signs of a growth were observed. There was a gradual increase in the size of the gland, with cachexia and death in ten months, and at the autopsy a tumor was observed, about one-half the size of an egg, in the left posterior milk gland; the nipple was retracted and the skin adherent; the glands in the groin were enlarged. Sections of the tumor and of the adjacent glands showed them to be adenocarcinoma. Cultures were negative. The organisms were found in the sections studied. The third positive result was in a dog inoculated with the *saccharomyces neoformans* passed through several animals. The testi-

cle was the part inoculated, and five months later several nodules were found in the organ, and in six months the animal died, apparently from some accidental cause. An adenocarcinoma was found in the testicle, but not in the adjacent glands. Blastomyces bodies were numerous. Inoculation of dogs and cats in the veins produced only connective-tissue proliferation.

Plimmer's experiments were made into a culture medium obtained from a cancer of the breast. Small fragments of the growth were placed in this and were subjected to anaërobic conditions. Organisms were obtained by him in this way, and were used for inoculations of animals. In some cases the result was negative, but in others a new growth was obtained. A rabbit cornea thus treated showed masses of epithelial cells between the layers of the cornea. In guinea-pigs, which die in from thirteen to thirty days, Plimmer found small, transparent nodules, which he describes as endothelial growths surrounded by round-cell infiltration. In one case the growth resembled the growing edges of a human cancer. The inoculations were made intraperitoneally and subcutaneously.

Among the numerous experiments in this direction we may mention Podwysoski, who inoculated animals with fragments of a parasitic tumor-like growth on cabbage and similar plants. The resulting growths resembled sarcoma. Spores of the parasite were found in the cells of the new formation. These growths were, however, evanescent.

Nils Sjöbring obtained cultures from a cancer in an ascitic fluid and pepton gelatine. In a hanging drop he found ameboid, rhizopodal and involution forms of the organism. He produced in animals several tumors having epithelial structures in them, and one which had the appearance of a cylinder-cell carcinoma. There was, however, no metastasis.

A review of this subject would not be complete without reference to the rôle played by these organisms in certain forms of skin disease. Protozoa have been seen in herpes zoster, varicella, psorospermosis follicularis and molluscum contagiosum.

Cases of blastomyces dermatitis have been reported recently by Rixford, Hessler, Wells, Gilchrist and Hektoen. Some of these cases resembled scrofuloderma of a severe type, and were characterized by extensive inflammatory infiltrations of the skin, with ulceration. One case died of what might be called an "acute protozoan infection." Another case resembled clinically chronic pyæmia.

It is interesting to observe that some of these forms of dermatitis, particularly one described by Hektoen, was characterized by a marked epithelial hyperplasia; but the dominating feature was inflammatory and sometimes even suppurative. Cultures were obtained from these lesions, and carefully studied by Hektoen, and found to be pathogenic to animals; but a comparison of the different cases of this blastomycetic dermatitis shows that it may be produced by organisms which differ so much in certain cultural and pathogenic characteristics that they must be regarded as separate though closely allied varieties.

I have thus endeavored to place before you a review of the literature of this question as it stands today. From a statistical and clinical point of view there is much that is suggestive. The attention of the profession has been aroused to a new study of cancer. There are many data accumulated that would

seem to throw a new light upon this problem. There seems to be but little doubt that cancer is increasing. Although many good authorities attribute the apparent change to better sanitation for the young, and improved diagnosis, it seems highly improbable that the statistics of Massey, Haviland and others are wholly fallacious. The histories of villages, streets and even houses are—to say the least—strongly suggestive; and purely clinical evidence, when it shall have been accumulated in a more convincing mass, will, I think, tend only to strengthen the feeling that carcinoma is an infectious disease.

We must remember, however, that Koch has laid down as a crucial test that certain conditions must be fulfilled before it can positively be asserted that a given organism is the specific cause of a disease. These are: It must be found in all cases of that disease; it must be found in no other disease; and it must appear in such quantity and be so distributed that symptoms can be accounted for by its presence; also, that the organism must be capable of being isolated from diseased tissues and be grown upon some artificial culture media, and when injected into an animal must be capable of reproducing the disease. As a corollary to this we may add that it should be possible to recover the organism in culture from the artificially produced disease. A glance only at the work of the leading investigators in this disease is sufficient to show that these conditions are still far from being complied with.

Of all the experimental work which I have quoted there are but two instances in which a genuine carcinoma has been produced by inoculating an animal with a culture of the so-called parasite of cancer, and in each of these the final requirement of the Koch law has not been met, namely, that cultures taken from these tumors should reproduce their kind.

Foulerton, of the Middlesex Hospital, London, says: "From evidence available, one can only say that it is not improbable that some, at any rate, of the cases which are now on clinical and histological grounds classified amongst sarcoma may prove to be really cases of yeast infection. But as to the exact causation of carcinoma we are still absolutely ignorant."

It is true that the organisms are found more frequently, as our histological technique has informed us, but it is not possible to bring under one heading and classification the numerous bodies which have been described, for it can hardly be impossible that all observers are describing the same organism. A glance only at a few of the sections which have been prepared by the best laboratory workers would convince one that either the organism is capable of assuming the most diverse appearance under varying conditions, or that we have here many different organisms with which to deal.

Interesting as the outlook is at present, and encouraging as is the situation, the facts at present brought forward by the highest authorities do not justify us in any better verdict than "not proven."

It is partly as an object lesson that I have brought this subject to your attention this evening, for no one who is conversant with the work that is now going on to solve this question can ignore the prominent part taken by Americans in the line of research. The organization of a laboratory at Buffalo by Roswell Park for the study of cancer, and its endowment by

the government of the State of New York, is not only a new departure from the American point of view, but is actually the first instance of an organization for this purpose in any country. Although as yet no official announcement has emanated from this source, I am in the position to state that investigations of the most scientific and accurate character have been carried on there during the past two years, and that much strongly confirmatory evidence has been produced to strengthen Sanfelice's statement. Through the benevolence and public spirit of a Boston lady, the Caroline Brewer Croft Fund has been bequeathed to the Surgical Department of Harvard University, and under the provisions of the bequest work has begun in the surgical laboratory of the Medical School. Under the supervision of Dr. E. H. Nichols, who has lately returned from a tour of inspection abroad, investigations are being carried on in a manner that ensures a critical analysis of all that has thus far been done along the various lines of investigation.

In planning the work for the future, we are endeavoring to approach this subject from every possible point of view. If a parasite exists, does it belong to the animal or vegetable kingdom? Will a study of the disease in animals—fishes, for example,—give us valuable information? Is it possible that the subject must be approached again from a bacteriological point of view? I have not even mentioned bacteria, as there is no evidence at the present time to show that bacteria play any part in the origin of the disease. It is possible, however, that the microbe of cancer exists, but that it is too small to be visible with our most powerful lenses. We know there are many diseases regarded as infective in which no bacteria have as yet been demonstrated, and yet we have proof of the material character of the organisms which produce them, for filters exist which are fine enough to prevent their passage.

It is only by long and patient research that we may hope to unlock the secret of this as well as many another enemy of our race, and it is a matter of congratulation that American teachers are now recognizing the value of scientific work as one of the proper functions of a medical school, and are prepared to take their place with those of other nations in the development of the future of medicine.

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ADDRESSES OF CONFEDERATE SURGEONS WANTED.

—We are requested to publish the following notice: All surgeons, assistant surgeons, acting assistant surgeons or contract surgeons, and hospital stewards, who served in the army or navy of the late Confederate States, will please send their post-office address to Deering J. Roberts, M.D., Secretary Surgeons' Association, C. S. A., Nashville, Tenn.

Original Article.

A CASE OF MURAL ENDOCARDITIS.

BY HAROLD WILLIAMS, M.D., BOSTON,
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WITH PATHOLOGICAL REPORT

BY T. LEARY, M.D., BOSTON,
Professor of Pathology, Tufts College Medical School.

THE following case is reported because of the rarity of the pathological lesion and because of the absence of murmurs in spite of the extensive disease of the mitral valve. The patient, a lady somewhat inclined to obesity, fifty-four years of age, the wife of a physician, was cared for by her husband; by Dr. R. H. Fitz, who saw her once or twice a week throughout her entire illness, and by me. The autopsy was made by Dr. Leary.

The first symptoms began on the 22d of December, when, after a short walk, she was seized with an attack of angina pectoris with dyspnea and with pain. She with difficulty reached her house and was put to bed, where she remained until her death, March 15th. I first saw her on the evening of February 9th. On this occasion she was in a condition of collapse, occurring after one of the attacks of dyspnea, from which she had suffered at intervals since December. This collapse was almost complete; the face was ashen, the temperature subnormal, the body bathed in sweat. No pulse could be felt at the wrist. The heart sounds were faintly audible. She was breathing in short gasps. She was taking ether by inhalation. A subcutaneous injection of morphia was given and reaction set in. On the following day a careful physical examination of the chest was made as follows: Patient was lying on her left side; no orthopnea; breathing was shallow and labored; there was retraction of intercostal spaces and also of interclavicular space. Percussion, flatness of both sides of chest, below sixth rib behind. Dulness over lower lobe of left lung. Auscultation, numerous sonorous and sibilant râles over entire back, subcrepitan râles over area of dulness at the left lower base.

Heart: Action feeble, apex pulsation not visible, no abnormal pulsation, no thrills. Percussion, cardiac area of dulness enlarged slightly to left. Auscultation, heart sounds feeble, rhythm disturbed, no murmurs, no accentuation of pulmonic second sound.

The subsequent history of the case was a history of frequently occurring attacks of dyspnea. These attacks were always without pain, and nearly always were predicted by patient. They began usually with a quickening of the pulse, which soon became trigeminal and weaker until it was lost at the wrist. The dyspnea was intense. It consisted of a rapid series of gasps accompanied by a rhythmical movement of the right arm. Consciousness was retained throughout the attack. The suffering in these attacks was intense; they were precipitated by the least movement; by examination of the chest; by conversation; by the most trifling emotional causes. They were but slightly amenable to the usual remedies, each drug relieving for a limited time, as if the reserve force aroused by its especial agency was quickly exhausted. Finally, the attacks became almost continuous; the decubitus changed from the left to the right side and the patient

succumbed March 15th. At no time were murmurs detected by any of the physicians in attendance. The apprehension of the patient and the supervention of paroxysms of dyspnea upon the least change of position precluded extended examination, but the diagnosis was made as follows: Fatty heart, with sclerosis of coronary arteries; hypostatic pneumonia, lower lobe of left lung; hydrothorax.

Autopsy.—The description of lesions in organs other than the heart, arteries and lungs is purposely omitted. The changes in other tissues were all dependent upon the cardiac lesion, and were in no way remarkable. Left pleural cavity contains a large amount of clear serous fluid. Lung everywhere compressed, particularly lower lobe, whose tissue is dense and contains no air. In upper anterior portion of lower lobe is a dark-red, wedge-shaped area of consolidation with its base 2 centimetres in diameter on the pleura. At its apex was found a firm, red clot filling a branch of pulmonary artery. Right pleural cavity contains a smaller amount of fluid, and lung shows no gross signs of compression. In upper lobe of lung is a consolidated area, which occupies the greater part of upper portion of lobe. This area is discolored dark blue and projects above surrounding lung substance. On section, lung shows a diffuse, very firm consolidation. Cut surface is bluish black and much blood may be scraped from it. At apex of consolidated area is found a long, firm, red clot, plugging one of the primary divisions of the branch of pulmonary artery supplying the lobe. Sections of left lung show edema and compression of alveoli. Some evidences of chronic passive congestion are shown by alveolar epithelial cells containing pigment granules, although the vessels of the alveolar walls do not in most cases contain blood. Sections of right lung at base show a condition of marked chronic, passive congestion with bronchopneumonia. No adhesions in either pleural cavity. Pericardium contains no fluid, surface smooth.

Heart, 405 grammes (normal 250) found in diastole. All cavities dilated contain recent clots and fluid blood. Heart muscle dark; cut surface dull. Left ventricle: The mitral orifice measured 10.5 centimetres (normal 10.4 centimetres). Valve flaps show slight diffuse thickening. The chordæ tendineæ were generally thickened and shortened in such a manner as to absolutely preclude closure of the mitral valves. The papillary muscles are thickened and opaque at their apices, and several of the chordæ tendineæ are interadherent. Attempts to fold back the walls of the ventricle in order to inspect the interior met with considerable resistance, on account of the tension of mitral segments. The endocardial surface of ventricular wall over triangular area, having for its base the posterior flap of the mitral and bounded by lines converging to the apex, is thickened, white and very opaque. On section into muscle, a superficial layer, varying in thickness from .1 to .3 centimetre, white, firm and fibrous, could be readily moved about on the underlying muscle substance, to which it was united by loose attachments. This layer, in places, includes one-half the thickness of heart wall. In the lower portion of this area are two small, firm, dry, dull-white clots, which are attached to the endocardium, filling folds between the columnæ. Elsewhere the endocardium is translucent and its outline cannot be distinguished on section of muscle. Ventricular

¹ Read before the American Climatological Society, Washington, D. C., May 3d.

wall: Left ventricle .8 to 1.3 cubic centimetres in thickness (normal 1.1 to 1.4). Under area of endocarditis varies from .4 to .6 centimetres. Right ventricle dilated. Tricuspid orifice 12.5 centimetres (normal 12 centimetres). Walls .2 to .4 centimetre thick (normal .5 to .7?). Endocardium smooth, translucent. Valves show nothing abnormal. Both auricles dilated and walls thickened. In right auricle are two old red clots in the folds of the pectinate muscle. The left coronary shows nodular projections throughout its course. Some of the areas are opaque, but none show calcification. The lumen of the right coronary at about 2.5 centimetres from its origin shows a sudden diminution in size, and is transformed into a fibrous chord, through which the canal could not be followed. This constriction extends for 1.2 centimetres and suddenly stops—the lumen of the vessel immediately beyond being larger than the proximal portion. Except for this area of constriction the vessel shows a less degree of sclerotic change than does the left coronary.

Microscopical examination of branches of the coronary arteries shows arteriosclerotic areas, many of which are in the proliferative stage, while most show degenerative changes in the new tissue. Microscopical examination of the affected area in wall of left ventricle shows a proliferative endomyocarditis. Most of the inner layer of heart muscle has been replaced by dense fibrous tissue, and the opaque endocardial layer described is made up of this tissue, with few islands of muscle substance. The muscle fibres show hyaline degeneration and many exhibit a separation of the primary fibrillæ. In the longitudinal sections segmentation of fibres, oftentimes with considerable displacement, is everywhere present. This change is more marked in the comparatively normal muscle fibres than in those imbedded in the inflammatory tissue. Sections of ventricular wall, from other areas, show a slight diffuse chronic myocarditis with muscular segmentation. Aorta shows nodular arteriosclerosis affecting principally the arch. Nodules are discrete and become fewer in number below the arch. One focus at commencement of thoracic aorta is covered with a calcareous plate. Vessel has lost little of its elasticity, judged by gross tests. Microscopical examination shows an arteriosclerosis, which in most nodules is in the late stage of proliferation, with hyaline degeneration of new tissue. Few patches show complete fatty metamorphosis beneath the endothelium. Splenic artery is tortuous and generally thickened, with no prominent nodules. Endothelial coat granular. Renal arteries show nodular thickenings; endothelium smooth.

CONCLUSIONS.

We have to do with a generalized arteriosclerosis, affecting vessels of medium and small size particularly.

The localization of the extreme process in a portion of the wall of left ventricle is undoubtedly dependent upon the obliteration of the right coronary artery, the area affected representing the distribution of the terminal branches of that vessel.

The muscular segmentation, which was found generally throughout heart muscle has rarely been described except in connection with acute diseases. It has always been a question whether the process was not a post-mortem change. In this case the autopsy

was performed only twenty hours post mortem and the tissues immediately placed in fixing fluids.

The absence of cardiac murmurs is remarkable, as, judging from the post-mortem picture, it would have been impossible for the flaps of the mitral valve to meet unless systole were accompanied by extreme distortion of the left ventricle. The absence of pain is also a remarkable feature.

Clinical Department.

CYSTS IN THE ABDOMINAL WALL STRUCTURALLY IDENTICAL WITH OVARIAN CYSTS.

BY JOHN HOMANS, M.D., BOSTON,
Lecturer in Harvard College on Ovarian Tumors.

I WAS much surprised while operating in June, 1899, on a very old-standing enormous adherent ovarian cyst, weighing 102 pounds, to find a large cyst in the abdominal walls in the epigastric regions, entirely distinct from the ovarian tumor but of the same character. The universal dense adhesions complicated the relations of the ovarian tumor so much that this independent cyst merely attracted my attention and surprise. I did not investigate the relations of the extraneous cyst, as the operation was a laborious and difficult one demanding my whole attention.

When, however, I saw the patient again in August, 1899, I was astonished to see various cysts, entirely independent of one another and of the abdominal contents, scattered about in the abdominal walls. This appearance was something entirely unique in my experience. There were at least four cysts in the abdominal parietics, varying in size from that of a horse chestnut to that of an orange. One of these cysts I cut out and sent to the pathological department of Harvard College and received the following report from Dr. R. B. Greenough, who was taking the place of Dr. W. F. Whitney: "Of abdominal walls, microscope shows a dense fibrous tissue and fat and muscle, with a small area of more cellular fibrous tissue in which there appear epithelial structures of the type of ovarian cystadenomata; a single layer of cylindrical cells forming irregular gland acini. Malignant cystadenomata of ovary." Olshausen¹ mentions a similar case in which the anatomical structure closely resembled a glandular ovarian cyst, and in his case, as in mine, the abdomen also contained an ovarian cyst.

The clinical features of the case, which are interesting from the enormous size of the tumor and its slow growth, are as follows: Mrs. G., thirty-nine years old, when she first consulted me on January 15, 1889, had a large ovarian tumor. By March 9, 1892, the tumor was still larger and her umbilical girth was 51 inches. I estimated the weight of the tumor at about 65 pounds. I saw her again November 20, 1895. Her umbilical girth was 53½ inches. She moved about easily, although somewhat embarrassed by the weight of the tumor. She had not emaciated notably in the clavicular, facial or lumeral regions. Her weight was 209 pounds, and she was much taller than the average woman. In June, 1899, she came to my office again, and her size was so great that the front of her abdomen almost touched the front of the

¹ Zeit. f. Geb. u. Gyn., Bd. lxi, 42, and American Journal of Obstetrics, January, 1900, p. 124.

coupé in which she sat. I removed the ovarian tumor on June 14, 1899, and will simply say that the tumor and its contents weighed 102 pounds, that it was very adherent and that there was an independent cyst in the epigastric region distinct from the ovarian tumor and imbedded in the abdominal parietes. She recovered rapidly, and went home well July 12, 1899.

Dr. Whitney reported the tumor to be a cystadenoma of the ovary.

On August 28th I saw her again. She was enormously distended and in great distress, crying out with pain and discomfort. About 30 pounds of ascitic fluid were removed by an incision through the old scar. The intestines were chronically inflamed, red and thickened. Several cysts were found in the abdominal walls; one to the right of the umbilicus was emptied of its thick, ovarian-like fluid and its smoothly-lined cavity was packed with gauze in hopes of obliterating it. There was another one near the umbilicus the size of a butternut, and at least one or two others larger. One cyst removed for examination was sent to the Medical College. The report of its character has been given above. The patient was relieved of her pain and distress and bid fair to recover, but died on September 1st rather suddenly, apparently from a thrombus. No autopsy was allowed. From this case and that of Olshausen it seems that persons with ovarian tumors within the abdomen may have others like them developed in the abdominal walls.

A CASE OF CÆSAREAN SECTION.¹

BY THOMAS KITTREDGE, M.D., SALEM, MASS.

Mrs. M. M., twenty-eight years old, was sent to the Salem Hospital at seven o'clock in the morning of January 31, 1900, by Drs. Mignault and Daniel R. Brown. She had been in labor twenty-four hours; the pelvis was very narrow, the head would not engage, and could not be reached by forceps. The woman was in excellent condition, having a normal temperature, and pulse of less than 100. She was immediately prepared for abdominal section. She was given a hasty surgical bath; the abdomen was scrubbed; permanganate of potash and oxalic acid were applied, also ether and absolute alcohol. The abdomen was then covered with towels wrung out in 1-2,000 bichloride solution. She was given one-thirtieth grain of strychnia, hypodermically, and catheterized. The vagina was rendered antiseptic by soap and water, and a 1-2,000 bichloride solution.

Instruments, dressings and all the accessories of an abdominal operation were sterilized in the usual way by steaming and boiling, and the hands and arms of the operator and assistants rendered antiseptic by scrubbing and rinsing, and then treating with chloride of lime and carbonate of soda.

With Dr. Elliot, house officer at the Salem Hospital, to assist me in the operation, Dr. Edward L. Pierson to hold the broad ligaments, and Dr. Ara N. Sargent to take the child, the patient was anesthetized, and the operation began at a little after eight o'clock. A median incision was made, from three inches above the symphysis pubis to half-way between the umbilicus and ensiform cartilage (about ten inches),

and even this long incision made an opening barely large enough to deliver the uterus. The uterus was lifted out of the abdominal cavity and surrounded by warm moist towels; sterile gauze strips were then packed into the abdominal wound to prevent the entrance of blood and meconium, while Dr. Pierson grasped the broad ligaments from behind. An incision in the uterine wall was made, extending from just below the fundus to near the junction of the cervix and the body of the uterus. As the muscular tissue was cut by the scalpel it retracted immediately, leaving bevelled edges to the wound in the uterine wall, and this bevelling of the edges caused some difficulty in closing the incision later on. At a point just above the junction of the cervix a vessel of considerable size was cut (probably one of the uterine sinuses), from which there was, for a moment, a considerable hemorrhage. An attempt to control it with the artery forceps failed, probably from retraction within the muscular tissue; but while the attempt was being made, it ceased and did not recur. The left shoulder of the child presented in the wound (the head being in the right upper part of the uterus, with face to the back), and with some little difficulty the child was lifted out through the incision, which was barely long enough, although as long as it could be made with safety. It was immediately handed to Dr. Sargent; the finger was easily passed beneath the placenta, which was attached to the left posterior wall of the uterus; the placenta was carefully peeled off, and the child, with placenta attached, taken by Dr. Sargent, who succeeded, with little difficulty, in establishing respiration and making the child cry. The child, a male, weighed eight and one-half pounds, was well nourished, and in normal condition.

By the time the child and placenta had been taken away, the uterus had contracted to the size of a coconut, and was hard and firm. The uterus was flushed with normal salt solution, both within the body and through the os into the vagina. There was practically no bleeding from the cavity of the uterus or from the wound. As no kangaroo tendon of sufficient size was at hand, four interrupted silkworm-gut sutures (boiled until they were as soft as ordinary silk) were passed through the muscular wall of the uterus, and the edges of the wound brought into apposition. Owing to the bevelled edges previously spoken of, there was some separation of the superficial part of the incision, which necessitated numerous sutures in the peritoneal coat. These last sutures were of fine intestinal silk, and were interrupted.

The whole uterus was flushed with normal salt solution and dropped back into the abdomen. When the deep sutures were in place, but before they were tied, thirty minims of ergotol were given hypodermically. The abdominal wound was closed with interrupted silkworm-gut sutures, the abdomen bathed with sterile water, and the usual sterile abdominal dressing applied. The pulse was strong and full throughout the operation, and rose but little above 80. There was absolutely no shock. The patient was placed in bed, with a pillow beneath the knees, and the foot of the bed raised. At the end of a few hours the foot of the bed was lowered to its natural level, in order not to interfere with the drainage from the vagina.

There was rapid recovery from the ether, and there was no vomiting. The patient was given hot water,

¹ Read before the Essex South District Medical Society, April 10, 1900.

in small quantities, at short intervals during the first twenty hours, and then gradually given the usual liquid diet. The bowels were moved by a saline enema (to avoid distention with gas) on the next morning after the operation, and she had to be catheterized but a few times.

On the third day, during the temporary absence of the nurse from the room, the child began to cry, the patient got out of her bed, walked across the room, took the baby from its crib, and carried it back to her own bed. The patient made an uninterrupted recovery. The sutures in the abdominal wound were removed on the fourteenth day, and she was ready to go home at the end of three weeks.

The baby did well; was put to the breast at the usual time, and the mother continued to nurse it. There was rather less lochia than after a normal delivery. No gauze was placed through the os before closing the uterine wound, as I felt that drainage from the cavity of the uterus would be better without it.

I regretted very much not having absorbable suture material to close the muscular wall of the uterus, and considered silkworm gut safer than the large silk which I should have been obliged to use. On another occasion, having to deal with bevelled edges to the uterine wound, as in this case, I think I should not attempt to bury the deep sutures, but should pass them through the muscular wall and peritoneum, with the exit of the sutures some little distance from the line of incision. This, it seems to me, would bring the surface of the wound into closer apposition, and put less strain upon the sutures in the peritoneal coat, and perhaps obviate the necessity for them.

I have neglected to state that careful pelvimetry revealed a pelvis shortened in all its diameters, the anteroposterior being less than three inches, with a very oblique superior strait. After the operation the patient was recognized as a woman who had been delivered, one year previously, of a dead and maimed child, with great difficulty and after a long struggle, by three members of the hospital staff.

Reports of Societies.

TENTH ANNUAL MEETING OF THE HARVARD MEDICAL ALUMNI ASSOCIATION.

THE tenth annual meeting was held at the Harvard Medical School building at noon on Tuesday, June 26, 1900. Dr. David W. Cheever, the president, presided. About forty members were present. The secretary's report was read and approved. It showed a membership of 1,232.

The treasurer's report was read and accepted. It showed a balance on hand of \$2,504.01. The dues for 1900 do not appear in this report. The least sum received in any previous year has been \$600, which added to the amount on hand makes \$3,104.01.

The following officers were then elected, for three years: President, Clarence John Blake, M.D., 1865, Boston, Mass.; Vice-Presidents, James Forster Al-leyne Adams, M.D., 1866, Pittsfield, Mass.; Wooster Parker Giddings, M.D., 1871, Gardiner, Maine; John Winters Brannan, M.D., 1878, New York, N.Y.; William Wotkyns Seymour, M.D., 1878, Troy, N.Y.; Oscar Joseph Pfeiffer, M.D., 1884, Den-

ver, Col.; Leonard Wood, M.D., 1884, Havana, Cuba; James Woods Babcock, M.D., 1886, Columbia, S. C.; George William Perkins, M.D., 1886, Ogden, Utah; William Barnes, M.D., 1887, Decatur, Ill.; William Sydney Thayer, M.D., 1889, Baltimore, Md.; Secretary, George Shattuck Whiteside, M.D., 1897, Boston, Mass.; Treasurer, William Herbert Prescott, M.D., 1888, Boston, Mass.; Councillors for the term ending 1904, Walter Prentice Bowers, M.D., 1879, Clinton, Mass.; John Baldwin Walker, M.D., 1888, New York, N.Y.; William Henry Robey, Jr., M.D., 1895, Roxbury, Mass. Dr. D. D. Gilbert, of Dorchester, a graduate of Harvard College but not of the Harvard Medical School, was elected to honorary membership.

On motion of DR. BLODGETT, the following resolution was unanimously passed, tendering the thanks of the association to Dr. Walter Ela at the close of his ten years of service as treasurer:

Resolved, That this association desires to place on record its sense of appreciation of the able manner, the untiring zeal, faithful devotion and uniform courtesy with which Dr. Ela has so long administered the financial affairs of the association, with the expression of its sincere regret that he feels himself obliged to decline re-election.

On motion of Dr. Folsom, it was voted that Dr. Stone receive the thanks of the association for the duties he has discharged in the last three years.

ANNUAL DINNER.

The tenth annual dinner was at the Vendome at one o'clock. Drs. William T. Councilman and James R. Chadwick were present by invitation and spoke. The graduating class were also invited. One hundred and fifty-six were present.

THE PRESIDENT said in his address: Since the last meeting we have received 119 new members. There are now 1,232 members. Of those who have just come in, 3 are life members and we have altogether now 59 life members. The fact of life membership does not mean only that we have received temporarily a larger sum of money, but it means that that money is set apart as a permanent fund and not used in the annual expenses, and we hope to have it accumulate until we can get by and by sufficient money to make some important endowment; this is the advantage of life membership, and why we always desire those who can afford to do so to become life members.

We have lost 17 members by death: Enoch Adams, 1851, of Litchfield, Maine; Arthur Appleton Beebe, 1898, of Boston; George M. French, 1884, of Malden; John Henry Gilbert, 1853, of Quincy; W. H. H. Hastings, 1868, of Boston; Thomas L. Jenks, 1854, of Boston; Lawrence G. Kemble, 1883, of Salem; Alfred H. Lindström, 1894, of Boston; J. W. Merriam, 1892, of Iquique, Chile; G. C. Pierce, 1866, of Ashland; E. A. Perkins, 1854, of Boston; J. K. Phillips, 1885, of Bangor, Maine; Samuel Q. Robinson, 1876, of Boston; F. D. Stackpole, 1878, of Roxbury; Russell Sturgis, Jr., 1881, of Boston; I. T. Talbot, 1854, of Boston; James J. Tucker, 1867, of Chicago, Ill.

Our school has been prosperous. The classes have been large and we think the scholarship has been creditable. We are crowded for room, owing to the increasing need of laboratories. The future will require a new site, and many of us think that one which

has been looked at for us is all that could be desired. But I am aware it is not from the president you wish to hear, but from others. First I will call for the regular report on the Medical School, which will be read by Dr. GEORGE M. GARLAND, of Boston.

REPORT OF THE COMMITTEE ON THE HARVARD MEDICAL SCHOOL.

The committee would first notice and speak of the fact that the school is one centre of the most profound enthusiasm. Every man is not only radiant about what has been done, but is beaming with the hope and promise of what the school intends to do—a most hopeful condition. And as it is true that all radiant force is more effective as it is focussed on one centre, it seemed to me that the radiant energy of our school was brilliantly focussed in our worthy dean. In hearing the account of all that the faculty have been doing and of all that is laid out for the future, I was reminded of the story of a young Texan who recently came to Boston to have his appendix removed. On the second day after the operation the doctor found him sitting up and reproved him for his recklessness. He replied, "Why, Mr. Doctor, you don't seem to understand the situation. I came on here from Texas to get rid of my appendix, do up your blooming little town, have my life insured and get married, and I have only a month to do it in."

My predecessors have told you about the changes in the methods of teaching in the last year or two,—the concentration of study, the regulation of the sequence of topics and one or two other measures which have come into vogue in the school. More than that, a series of articles have recently appeared in the *Boston Medical and Surgical Journal* from different members of the faculty, one of which by Professor Councilman has portrayed most vividly and instructively the great change in the methods of study and the greater necessities and obligations brought upon the professors of the different departments, especially his own department of pathology. Another article by Professor Bowditch—his address before the Fifth Medical Congress in Washington—outlines the immediate future and the prospect of medical education in this country. His conclusions I take the liberty to read: "If the views here presented are well founded we may expect that a medical school of the first rank will in the immediate future be organized and administered somewhat as follows: (1) It will be connected with a university, but will be so far independent of university control that the faculty will practically decide all questions relating to methods of instruction and the personnel of the teaching body; (2) it will offer advanced instruction in every department of medicine and will therefore necessarily adopt an elective system of some sort, since the amount of instruction provided will be far more than any one student can follow; (3) the laboratory method of instruction will be greatly extended and students will be trained to get their knowledge, as far as possible, by the direct study of nature, but the didactic lecture, though reduced in importance, will not be displaced from its position as an educational agency; (4) the work of the students will probably be so arranged that their attention will be concentrated upon one principal subject at a time and these subjects will follow each other in a natural order; (5) examinations will be so conducted as to afford a test of both

the faithfulness with which a student performs his daily work and of his permanent acquisition of medical knowledge fitting him to practise his profession." Other articles of interest are one by Mr. Cannon on "The Case Method of Study," and one by Dr. Burrell on his experience with this method in surgical teaching—a method used elsewhere with gratifying results. Mr. Cannon has by very able discussion of this question brought it into notice as a practical, profitable means of training students along one line of study. The only objection I have heard to this method was that it did not sufficiently train to individual observation. Now, it is not a fair criticism of any method to say it does not do something else. If it does well the work intended it is a profitable measure to employ. I am glad it is receiving so much attention not only in our own school, but in other schools and being received with so much approval. It is not intended as a method to teach independent and individual observation; it is merely intended as an auxiliary to such individual and independent observation.

We stand to-day at the beginning of a new epoch. Before speaking of that in detail I want to look back for a few minutes to another epoch which occurred in our school in 1871. The essentials of the change at that time were the establishment of a three years' course, with a graded sequence in subjects. At that time also the didactic lecture was losing prominence and the so-called introductory lecture passed for good and all. My class were gathered together to listen to an introductory lecture by our honored chairman of to-day, Dr. Cheever. If I do not mistake, Mr. Chairman, it was the last introductory lecture of the Harvard Medical School. The president of our university the other day apologized for the way he and his associates had imposed upon the students. He speaks of the six mortal hours of talk every day of the week thirty-five years ago. Twenty-nine years ago began the changes. We had Bowditch back fresh from Europe from Ludwig's laboratory, with his own laboratory well equipped for original investigation and for teaching the students to look into nature rather than into books. We had Wood just starting the chemical laboratory; Ellis, with his clinical method of investigation where the student was put in direct contact with the patient. We had the beginning of the district work in obstetrical practice under Dr. Richardson's guidance. The good work of instructing the students directly from nature itself was nobly begun at that time. The chief epoch which faces us to-day is the merging of the faculties of the Medical, Dental and Veterinary Schools into one faculty. There will be one faculty with one dean, and each school will be represented by administrative boards which will carry on the individual work of its department.

It is interesting to contrast the condition of affairs in 1871 at the beginning of the old epoch and the state of the school at the present epoch. In 1871 there were 34 members on the faculty, 5 other instructors, and 196 students. In 1899 there were 40 members of the faculty, 101 other instructors and 558 students. Such an increase of teachers and students and the immense ramification of laboratory work in place of didactic talk in the lecture-room has proven the inadequacy of our present medical building. Steps have been taken for the securing of larger

accommodations. A syndicate of gentlemen have purchased twenty-six acres of land situated between Huntington Avenue, Francis Street and Longwood Avenue, known as the old Francis Estate. Gradually as funds are accumulated the various buildings of the different departments of the Medical, Dental and Veterinary Schools will be erected on that site.

This is also the last year in which students will be admitted by entrance examination. Hereafter a university degree will be required. Hereafter the degree of *cum laude* will be given only to those who obtain an average of 80% during the whole course. Hereafter this distinction has been conferred upon the obtaining of 75%.

The income of a fund received from the late Benjamin E. Cotting will next year become available and be given to such students as the medical faculty may select, having regard to the pecuniary needs, intellectual capacity and faithfulness of the student rather than the highest scholarship. Next year, also, two fellowships in surgical pathology of \$500 each will be awarded from the income of the Austin Fund and a second Hilton Scholarship will be available.

Next year we lose Dr. Schaper, assistant professor of histology, who returns to Europe. Prof. Wm. T. Porter will go on his sabbatical year. Dr. Franklin Dexter has been appointed associate professor of anatomy. Dr. Franz Pfaff has been appointed assistant professor of pharmacology and therapeutics.

This year 153 men applied for a degree; 18 failed to get it; 84 received the degree, and 51 the degree *cum laude*.

I noticed in my conversation with members of the faculty the greatest readiness in giving me information, and also an evident respect for your opinion, your good word and your good service. In this matter of the progress of our school we as the general profession have a work to perform. The school always needs money. It is our duty and privilege to hunt out such people as can give money and tell them where they can put their money to good uses.

Dr. Keen in a recent address reported these figures: "In 1898 84 theological schools reported endowments of \$18,000,000, and 71 schools do not report this item; 19 out of 151 medical schools report endowments of \$1,906,072. Five theological schools have endowments of from \$850,000 to \$1,369,000 each. Yet in 1899 there were only 8,000 students of theology for whom this enormous endowment was provided, as against 24,000 students of medicine. Each theological student had the income of an endowment of \$2,250 provided for his aid, each medical student the income from \$83. As against 171 endowed chairs of theology there are only 5 in medicine." He continued: "I do not grudge a dollar to the theologian, but I plead for his medical brother, that, with a vastly more expensive education, he shall have a reasonable provision made for his training.

"The tide of charity in the United States has reached a remarkable height. The *Chicago Tribune* publishes an annual list showing that in 1894 the charitable gifts and bequests in the United States amounted in round numbers to \$20,000,000, in 1895, to \$29,000,000; in 1896, to \$34,000,000; in 1897, to \$34,000,000; in 1898, to \$24,000,000; and in 1899 to the enormous sum of nearly \$80,000,000. I hope that we may be able as ministering angels throughout the

community to convert some of the people and some of this money to medical uses."

In conclusion, I have one other piece of cheering information, the message of the presiding genius of the Christian Science Convention, warning her followers not to be too hard on our profession, not to believe all that is said against us, and that on the whole we are doing as well as we know how. In an atmosphere of such kindness it was cheering to know that we are doing our best and are not wholly as bad as we seem.

THE PRESIDENT then introduced one who may be called the apostle of the new method of education, Professor Councilman.

DR. COUNCILMAN: In the first place, I wish to thank you for the honor you have done me in making me, several years ago, an honorary member of your association, and again for asking me to address you to-day. I have now been connected with the Medical School of Harvard University for eight years; and it may be permitted me to give some retrospect of those years, to briefly review what has been done, and as briefly to speak of the future.

I can speak of the progress which has been made in pathology with perfect propriety, for it has been due to a number of circumstances with which I had but little to do. The important position which pathology now holds in medicine is due primarily to the recognition of the importance of the knowledge of the causes of disease. It is felt that the knowledge which is gained from the study of pathological processes, their causes, the character of the lesion, is of immediate importance in the treatment of disease. The early recognition of the character of an infection influences the treatment, and may make a difference between life and death for the patient. It is the recognition of this, which may be called the practical side of pathology, which has led to the creation of laboratories in connection with our hospitals. In these laboratories all the appliances and facilities for work are found; and they are immediately directed by men for whose services the hospital pays, and regards the money as well spent. Boston was almost the first city in the country to recognize the important part which the laboratory plays in furthering the work of the hospital, and the laboratories in connection with her great hospitals are models for the other cities to imitate.

These laboratories are so well known that inquiries concerning their organization come from all parts of this and from other countries, and the number of medical visitors leads us sometimes to wish that their importance was not so generally recognized. Not only do the laboratories serve the important practical end of directly assisting in the treatment of the sick, but they serve an equally important end in contributing to the advance of knowledge by original research, and to the extension of knowledge by teaching. It is necessary for the efficient conduct of the laboratory that research work and teaching should be prominent; for no man can preserve his intellectual vigor and spend all his time in making the routine examinations required by the clinic. It is well that he should have done such work and that he continues to do a certain amount of it, but even the routine work will not be so satisfactory if his faculties of observation and deduction are not continually sharpened by research. The laboratory must also serve to stimulate research in the hospital, for investigation and teaching are just as necessary in the wards of the hospital as in the

laboratory. There should be perfect unity between the wards and the laboratory. Each should further and assist the work of the other.

Under the present conditions the laboratories in the hospitals are connected through the men in them with the laboratory at the Medical School, and an important part of the teaching of pathology is carried on in the hospital laboratories. It is best for the laboratories and the school that this should be the case. Through their connection with the Medical School the men in the laboratories are brought in contact with men in other departments and following other lines of investigation, and the introduction of students into the hospital laboratories widens their influence.

It has been the aim of the department of pathology to have perfect accord between the hospital laboratories and the pathological laboratory at the school. A most important function of the school laboratory must be the teaching of undergraduates, for the large spaces required for class teaching are found there. The school laboratory also serves an important place in connecting pathology with physiology, anatomy, and bacteriology, standing in much the same relation to these branches as the hospital laboratories to clinical medicine. Research is, of course, carried on in the laboratory of the school.

A great change has been effected in teaching pathology to undergraduates. This consists primarily in concentrating the instruction in pathology and the allied subject of bacteriology. The entire time of the student in the first half of the second year is given to these subjects. The instruction at the same time has been made much more practical, much less time being devoted to lectures and more to laboratory work and demonstrations to small classes. A printed syllabus giving a concise account of the various processes studied has, to a great extent, taken the place of lectures. The belief has gradually become very strong with me that students learn but little from being told. They must above all learn to see clearly and to interpret clearly what they see. It is the power of being able to do this which we wish to give our students. In accordance with this idea, even instruction has been cut down. It was formerly considered that an ideal state of instruction would be reached when one instructor would have not more than 10 students, who could always turn to him for any question and have him always at their side for help. In the laboratories I frequently left 75 men for an hour or two without any instruction save the syllabus and the specimens they were studying, and have seen no lack of either industry or interest. For certain sorts of instruction very small classes are the best; and for this purpose the entire class is divided into groups of 10, which groups go separately to autopsies at the hospitals and to demonstrations which are given in separate rooms. The result of one year's experience in this mode of teaching has been most gratifying, and has fully justified the experiment. Men have been thrown on their own resources. They have felt that what they acquired was by their own efforts. The work has been made more interesting, and there has been much closer sympathy between student and teacher. The results of the examination have also shown the efficiency of the plan. The percentage of rejections in pathology since I have been at the school has previously been from 20-33%. This year, with a much more difficult examination and one more varied in its character,

but 5 out of a class of 154 were rejected. I am also sure that the men have gotten more out of the subject than any class in pathology ever did before. With the view of enabling the student to continue his interest in pathology and to overcome a serious defect necessarily connected with the short course, weekly demonstrations in gross pathology will be given at the hospitals during the time of the year when the course is not given at the Medical School, and which can be attended by students from all classes.

I should not omit to speak of a most important aspect of the teaching. In order that the student may understand the vital connection between pathology and the clinic, courses are given in surgical pathology and in neuropathology. These courses are optional, but they have been so well given that they are attended by practically the entire class. In these courses the student studies his pathology in direct connection with the vital phenomena of disease. A part of the course in the theory and practice of medicine as given by Dr. Fitz is very similar to these courses.

When we look toward the future, it seems to me that there are several well-defined ways in which we must advance. The increase of our knowledge, and with that the opening of new paths of research, has become so vast that no man can master all that pertains to any of the great subjects in medicine. It would be impossible for any one to even control the literature in pathology, to know what is being done in all subjects pertaining to this. At the same time the close union which exists between pathology and clinical medicine and surgery has opened paths of research which perhaps are better approached from the clinical side. This has been recognized in Harvard by the creation of the surgical laboratory, in which questions more immediately connected with surgery will be studied. The same thing is eminently true of certain branches of internal medicine, especially neurology. So great has been the recent advance of our knowledge of the anatomy, physiology and pathology of the nervous system that it is impossible that the questions in connection with it can be adequately treated from the side of anatomy, physiology and pathology alone. Moreover, in no department in medicine are these so intimately connected with one another and with the clinic. Our knowledge of the nerve tracts in the brain and cord has been gained by a study of embryonic development and by the pathological degenerations which take place. The physiology also of the nervous system has received its most important aid from a study of the effect of degeneration or injury of certain parts. We hope to see a department of neurology with a laboratory in which all questions connected with the nervous system can be studied from an anatomical, physiological, pathological and clinical point of view. A neurological clinic with a small but well-selected number of cases must form an important part of such a department. Only a small part of the energies of the department should be expended in teaching. Its real work should be directed to an increase of knowledge by research.

While, undoubtedly, progress in teaching has been made, it must be confessed that progress in other directions is a little disappointing. The work which we accomplish is not commensurate with our opportunities. The Medical School should be one of the crowning glories of the university. We should add to its lustre, but we are living in its light. We have not

done, we are not doing, our share in advancing knowledge, and that, too, with the fullest opportunities before us. One of the reasons that the Medical School has not advanced with the university is that we are still, in a great measure, under the influence of the grammar-school idea of education — very much in the condition that the American college was in the old days when a fixed college course was supposed to cover the entire field of what could be known. We have endeavored in the same way to teach to the student the medical art; if not to give him all that was known, certainly to give him the most that could be useful to him. We have scarcely realized how broad medicine has become. The Medical School must not only be a real part of the university and imbued with the university spirit, but in the number of its departments and in the development of which each is capable is almost a university in itself.

Teaching must certainly be regarded as one of the chief functions of a university, and there has been a gradual evolution, a change for the better in methods of instruction in all departments; but the progress in this direction has been much slower in medical than in other departments. Harvard probably owes her pre-eminence among other educational institutions more to the introduction and the wide extension of the elective system than to any other factor, and this has been gradually extended to the Medical School. In the elective system we recognize that certain studies are essential. In these essential studies again there is a choice. On certain of them a great deal of stress should be laid, and a corresponding amount of time should be devoted to them. Outside of these a certain amount of choice is given the student. He can take certain special courses, the importance of which is estimated by the amount of time given to them; and on this the time devoted to examination is reckoned, which time counts in the total number of hours devoted to examination.

Opportunity should be given the student to choose the kind of instruction which will most appeal to him and under which he will make the greatest progress. He should have the same subject presented to him in a great many different ways. We should remember that we are not teaching boys of the grammar-school age, but intelligent men from twenty-two to twenty-seven years, who know, as a rule, under what kind of instruction they will make the most progress much better than we do. In order to give this greater amount of freedom to the student, the first thing would be a better organization of the various departments in the Medical School. The number of departments could be greatly restricted and the various specialties included under the head of either medicine or surgery.

Under the present system which prevails in almost every American medical school the scheme of instruction in every department is fixed. There are so many hours devoted to lectures, so many to laboratory work, so many to the clinic; and these hours are so arranged that the various sorts of instruction will not occupy the same hours, and will interfere least with the office hours of the instructor. The head of the department determines everything — the amount and character of the instruction and the manner in which it is given. He also chooses the men who are to give the instruction, and it cannot be otherwise but that he chooses men who are in sympathy with him and believe in

his methods. In the first place, this does not give sufficient freedom to the student, enabling him to develop in the way which is best suited to him; but it equally restricts the instructor and interferes with his development. Both the instructor and student are in a narrow way, and must walk between the high walls on either side. The instructor knows that the head of the department obtained his present position by following in the footsteps of his predecessor; and the instructor's best prospect for success is by continuing in the same direction, and assisting the chief in carrying out his policy. The power of the head of the department, the one man, is almost absolute. He is only controlled by the faculty as a whole, and in most cases they are interested in continuing the system. One might compare such a system with the organization of a great department store or army, where it is the only system that will work; but the conditions in educational work are different. In the department store or army it is easy to determine what constitutes success, and the chief pays the penalty of failure. But how can that be determined in educational work? If we judged the work of an honest man by our own views of the importance and truth of his work, it would often interfere with the accomplishment of every reform. In the university the reasons for the dismissal of a man from his position should be very few.

The organization of the department could be very simple. It should have an official head chosen by the department, who should represent it; but all measures affecting the department should come from the department as a whole. The department should include all those connected with it. Within the department every individual should be absolutely free to teach what he chooses, how he chooses, and when he chooses. The value of the instruction which is offered will be judged by the men who are most interested and the only men who are capable of passing the proper judgment upon it, the students.

Every facility for instruction, and for the particular sort of instruction which a man wishes to give, should be granted. The more varied the instruction the better; for certain ways of presenting the subject will appeal to some men, other ways to other men. Some men would feel that they could best lecture upon a subject. Give them a room, and let them lecture. Others might prefer to give their instruction to small classes by questions and explanatory answers, some by laboratory work, some by clinics. A man might consider himself especially gifted in the use of drugs, and capable of demonstrating their efficiency in disease. He could teach from this point of view. Each man should receive the reward of his work, and in this way come into competition with his fellow-instructors. He should receive all the money which the students pay for instruction less a certain amount which goes to the university. His pay will be according to the value of the instruction he gives, and this will be determined by the body of men most capable of judging. This leaves it perfectly free for every man to develop how he will, to the greatest extent he will, and as early as he will. The latter is most important, for it secures the services of men at the age when they are at their best. There will be sufficient reward to stimulate every man to do his best; for there is not only the pecuniary reward which comes from successful teaching, but the reward which

comes from wide reputation. His reward does not depend upon any fortuitous circumstances, but upon what he does; and he will seek to add to his reputation by original work. Admission into such a department should be absolutely free, the only condition being that a man should show proof of the earnestness of his purpose and his ability. The only way he can show this is by the work he has done; and this would further increase original investigation, and further the realization of the university ideal. A man's ability to teach cannot be determined beforehand; only competition with others will determine that. The department would probably include men who were not good instructors in the narrow sense, but who are good investigators themselves, and capable of directing investigation. Every investigator is really a teacher of high quality, for the influence exerted by the honest work of a man is often of more value than any direct instruction he could give. The character of the instruction which each man gives would to a large extent be determined by the facilities for instruction which he possesses. A man with a hospital position would probably give clinical instruction, but there is a great deal of instruction in both medicine and surgery which is not immediately dependent upon the use of clinical material. There could be courses, for instance, in the special pathology of the organs, working back to the clinical features from the point of view of the lesions, instead of the other way. Such a system would also enable a medical school to draw into its teaching force men from adjacent cities who have good opportunities to teach. Students from such cities would probably find it to their advantage to take certain branches of instruction there. The student should be allowed to take up a subject when he chooses and spend as much time upon it as he chooses. It would be better to strongly advise students to complete certain branches before entering the clinical studies, and the student would soon find that it was to his advantage to do so; but in ordinary life there is no restriction to a man's beginning his dinner with a cigar and following with coffee and pie, yet few choose this method.

In such a system the examinations are of the greatest importance. The character of the examination should be determined not by one man, but by a committee of the department. It should be made as thorough as possible and as practical as possible. A man should be required to show not what he has memorized, but what he can do. The examination should do away absolutely with the time and brain consuming practice of cramming, and should be a real test of a man's ability. Examinations on a subject could be held much oftener than they are, probably four times in the course of the year instead of once; and a man could present himself for examination in a subject when he is ready. When the requirements had all been fulfilled, he should obtain his degree. Why is it necessary to have a fixed time for medical study? It would be perfectly possible for one man to accomplish in three years what another man requires five years for. The adoption of the system would undoubtedly enormously increase the amount of post-graduate teaching, and men would gladly avail themselves of the exceptional opportunities for instruction which they could find in the summer. There is nothing new in this, it is not an untried system: it is but the *Lehr und Lern Freiheit*—the freedom of

study, the freedom of teaching, which is the fundamental basis of the German university. It is the system under which the University of Edinburgh has undergone such an enormous development; and there is no doubt that its adoption would place the Medical School in the position, as compared with other medical schools, which Harvard University holds among other institutions of learning. It would enable us to develop not only students, but teachers, who would go out from us, and widely extend our influence. Under our present system it has not seemed to me that there is an extraordinary demand for our men from other schools.

The system would enable us to utilize the local conditions to the fullest extent, but more is required. We must have a university hospital, the appointments to which are controlled by the university. Without this we must always be limited to the *locus*. Under the present system the surest way for a man to obtain a position in the university is to connect himself with a hospital and gain possession of clinical material. A man enters a hospital in the lowest position, and gradually ascends by a system of promotion. There is no reason to believe that the best men always secure the positions in the first place. There is no possibility of telling how a man will develop in the course of ten years; and once in the hospital his promotion is sure, provided he is careful not to violate traditions and to do what the hospital requires of him. His promotion does not depend at all upon his development, upon the reputation he has made. In seeking a reputation, he is again confined to the *locus*. He does not appeal to the world; for it is the local, and not the general, reputation which will help him. The two sorts of reputation are not always synonymous. There are plenty of instances of men with a high local reputation who are scarcely known outside of the *locus*, and I have known at least one instance of a man whose work was known throughout the world, and who had made most important contributions to knowledge, being refused the lowest position in a hospital.

Under the system of promotion, advance, though sure, is slow; and a man usually has passed beyond his best years and has become too thoroughly moulded into the prevalent local form to advance when the chance comes to him. With a university hospital it would be possible to call men to the highest clinical positions from any place in the world, and give them the best opportunities. The services in the hospital could be made continuous, for the short services interfere in the most serious way with the best development of the hospital and of the school. The hospital need not be large. Thirty-five medical and thirty-five surgical beds and a large out-patient department from which to select the most suitable cases would be sufficient, certainly in the beginning. The expense for the maintenance and construction of such a hospital need not be very great. I have every confidence that we shall have such a hospital. When anything is greatly needed, means will generally be found to provide it, and I know of no more pressing need for this community than the creation of a university hospital. Nothing has interfered more with the advance of medicine in this country than the relation which exists in most places between the schools and the hospitals. We know certainly of one conspicuous example where there is the closest union between the school and the hospital, where the hospital is recognized as a

department of the university, in the same way as the chemical or physical department, and where, in consequence of this, the school has in a few years attained a world-wide reputation.

The university ideal—which seeks, above all, the advancement of knowledge, and in its teaching the development of the best in the individual—must prevail in all the departments of the university, in the clinical as well as in the scientific departments of the Medical School. The reputation of the school can only be formed from the work it does, from the character of the men it sends out. The reputation must be general; it must attract the best men from all parts of the country. Our medical students come from a more limited area than do the students from any other department of the university. With the introduction of the new requirements for admission the territory from which we have drawn our students will not furnish us with sufficient men. We must attract the best men, because only in this way can we turn out the best. We must train men in the things which are necessary for the successful practice of their profession; but we must also do what we can to develop the man, to bring out the best that is in him. If he thinks that there is something higher than a position of social respectability, with a practice sufficient to enable him to keep up such a position, we must do what we can to enable him to carry out his aspirations.

THE PRESIDENT then called attention to the fact that the Medical School and the hospital are not everything in regard to medical education in Boston, and that a few minutes were to be devoted to considering the great scheme of founding a superb medical library, and introduced as the father of that library Dr. James R. Chadwick.

DR. CHADWICK said in brief: I was going to prelude my description of the building which we are erecting for the medical library with a contrast between the collections of medical books at the beginning of this century and those that existed when our present medical library was founded twenty-five years ago, but the time is too short. Twenty-five years ago the books doctors had to consult were scattered all over the city. The Treadwell Library at the Massachusetts Hospital had 4,000 or 5,000 volumes, the Medical Observation Society had 1,000 volumes, the Medical Improvement Society 500 volumes and the Public Library 10,000 volumes, and there were various other small collections. A man had to go about the city for hours and days to get at the books he wanted, and then found the files of periodicals very imperfect. We decided to unite as many of these collections as possible, and succeeded so well that in a year or two we had collected 4,000 or 5,000 volumes in Hamilton Place. In 1878 we bought the house in Boylston Place, and have there developed the library until at the present day we have 32,000 volumes, about 28,000 pamphlets and a large number of portraits. We bought last spring a lot of land on the Fenway, 75 feet wide by 100 feet deep, besides the grass plot in front, at an expense of \$42,000 and have contracted for a building, which, furnished, will cost about \$110,000, in all expending between \$150,000 and \$160,000. The building is of gray stone and brick, 75 feet front and an L running back to the alley in the rear 100 feet.

On the ground floor we have the usual cellars, furnaces, janitor's room, vault for articles, a room to un-

pack and pile up the boxes, arrange the books and put them on a dumb waiter that will go up to the stacks. On the next story one enters on the front into an octagonal hall with an entrance from the vestibule into the directory for nurses; next to that a sitting-room for nurses; in the rear a chamber for the registrar for nurses and bath-rooms in the rear of that. Across the hallway we have a large cloak-room; beyond that a lecture-room opening into the hall for meetings, which is 32 by 28 feet and will accommodate from 75 to 95 people, a hall large enough for the ordinary section meetings of the medical societies, with a cloak-room and every accommodation. We have had a donation of \$5,000 from Congressman Sprague and his mother to dedicate this hall to the memory of Dr. Richard Sprague, who died about five years ago. He has recently given in addition to that three handsome carved oak chairs to be put on the platform. There is an elevator. You go upstairs—not quite a high story—and enter into what we call Hólmes Hall; a portrait of Dr. Holmes at one end and a replica of the bronze bust in the Public Library at the other end. There will be alcoves of books and in each will be a little square table, a place for a man to sit and do his work. On the shelves will be the books most in demand. The room is 72 feet long by 32 deep, beautifully lighted with big windows overlooking the Fenway. To the rear is the librarian's room. The stack-room has five stories of stacks taking about 10,000 volumes. In the rear is the cataloguer's room and a room in which the current periodicals will be exposed. Half a story up are toilet-rooms, cloak-rooms, a room for medical students and another for committee meetings. On the next story we have a hall that will seat 300 to 350 men. Therefore we shall have accommodations for all large meetings, and in the rear is another hall the same size as Sprague Hall for section meetings. I am assured that the collection of medals of Dr. Storer is to be given to us. We have a great many portraits by some of the best portrait painters of the day that have had to be stored in the Art Museum for fear of fire.

There is one thing more. We are going to pay \$150,000 to \$160,000 for this. The question is of paying for it. We want you to do it. We have raised within a year in cash \$70,000. We have as a result of former investments, selling our present building and a lot on which we expected to build—that is, not sold yet, but assessed for \$25,000 and undoubtedly will sell for that within a few months—we have got about \$110,000 toward this \$150,000 or \$160,000 we need. The young men who really encouraged us to start on this great movement could not subscribe large sums to the general fund, but came forward in the beginning and offered to pay the interest on a mortgage of \$25,000 for five years. We need \$15,000 more to pay off all indebtedness and enter upon that place without debt. I hope all who have not had an opportunity to put their names down on the little books will apply for the privilege, and they will get it.

DR. GEORGE S. DERBY, the president of the graduating class, spoke briefly of the justifiable pride felt by the class in having successfully finished the four years of study, mingled with regret at the thought of opportunities not accepted. Plans for the future are, of course, uppermost in the minds of his classmates, many hoping to lead busy, useful lives in the service of

the communities in which they live, some looking forward to helping in the advance of the scientific side of medicine, a few of the more conceited even looking forward to making a living out of practice.

The deepest feeling, however, is gratitude, for which there are many causes. The thorough grounding in the theory and practice of medicine, the benefits of modern laboratory and clinical methods, the use of the case system, make all glad that they are entering on their active careers at the beginning of the twentieth rather than at the beginning of the nineteenth century, that they have acquired easily the accumulated knowledge of the century just closing, though looking forward confidently to even greater triumphs in the century just dawning. The class are grateful to their teachers for their conscientious work and inspiring example, grateful to the profession for the high standard of skill, industry and self-sacrifice always maintained, yet humble to think of calling themselves doctors. Finally, there is the feeling of gratitude for having studied medicine in spite of all obstacles and a greater gratitude for having studied medicine at Harvard.

In conclusion, DR. CLARENCE J. BLAKE, the newly elected president, was introduced. He said in brief: Mr. President: It is an honor to be your successor, as it has been always a pleasure and an honor to have been your pupil. A member of the Massachusetts Medical Society recently found it necessary to qualify in an adjoining State. He was asked, "How long have you studied medicine?" His answer was: "Forty-two years." Those of us who are graduates in medicine, all of us, appreciate the truth underlying that remark, and therefore understand better the meaning and the possibility of such associations as this, because of that study of medicine after graduation which is the sterner curriculum, since its examinations are held every day and its tests are made in our contact with the individual patient. In the graduate study of medicine we find it worth while to circumscribe our work, carrying it in one direction between two lines; those lines are honor and service, between them flow all the possibilities of the medical profession. In thanking you for this reception, in thanking you for giving me the opportunity to join you as presiding officer, in thanking you for the honor, I cannot but think also of the service which this implies. I will honestly try to render that service, to keep the two lines parallel, and so in response to your greeting, let me use a word which those of us who have studied in Vienna remember as the greeting of the medical students of the Josephinum, a greeting always extended and always responded to whenever and wherever met: Gentlemen, "*Servus.*"

On Wednesday, Commencement Day, the association had a spread at 21 Thayer Hall, where between two and three hundred were entertained.

Recent Literature.

System of Diseases of the Eye. By American, British, French, Dutch, German and Spanish authors. Edited by WILLIAM E. NORRIS, A.M., M.D., and CHARLES A. OLIVER, A.M., M.D. Vol. IV, Pp. 949. Philadelphia: J. B. Lippincott Co. 1900.

With the appearance of the final volume of this System of Diseases of the Eye the labors of Dr. Nor-

ris and Dr. Oliver have, as editors of the various monographs therein presented, reached a satisfactory conclusion. The high standard already created by what have preceded is maintained and possibly the subject matter is even more interesting, being, taken rather broadly, a discussion having bearing upon Anomalies of the Motor Apparatus, Diseases of the Cornea and Lens, Ametropia and Medical Ophthalmology in the guise of sixteen papers prepared in most cases by individuals who by predilection or environment seem to be very well fitted to carry on investigation in some particular direction. Mr. Swanzy's paper, Eye Diseases and Eye Symptoms in their Relation to Organic Diseases of the Brain and Spinal Cord; that of Dr. Lawford, Ocular Lesions Dependent upon Disorders of the Secretory and Excretory Organs; Mr. Story's paper entitled, Ocular Lesions in Variola, Rubioli, Morbilli, Scarlatina, Erysipelas and Diphtheritis; and that by the younger Hutchinson, Eye Affections due to Graves's Disease and Herpes Zoster, come to us at first hand from British writers and leave but little to be desired either as regards thoroughness in preparation or method of treatment. The chapters prepared by American writers are as follows: Diseases of the Lens, by Dr. Norris; Ametropia, by Dr. Oliver; Motor Changes Associated with Functional Neuroses, by Dr. Standish, and Toxic Amblyopias, by Dr. de Schweinitz. Those papers which have passed through the vicissitudes of translation certainly have lost none of the excellent features of the original, a flattering commentary upon the linguistic attainments of the various gentlemen to whom this very important duty had been delegated. The papers by foreign writers are: Anomalies of the Motor Apparatus, by Dr. Landolt; Diseases of the Cornea, by Dr. Nuel; The Ocular Lesions of Influenza, Dysentery, Cholera, Malarial Fever, Dengue and Yellow Fever, by Dr. Santos-Fernandez; Hysteria, by Dr. Parinaud; The Entozoa of the Human Eye, by Dr. Salzmann; Simulated Blindness, by Dr. Baudry, and The Ocular Signs of Death, by Dr. Gayet. It is unfortunate that the limited space at command renders it impossible to review in detail the different papers which go to make up this valuable book and prevents more than the mere mention of the fact that it contains 949 pages, including a complete index, 51 full-page plates and 211 text illustrations; that it is a fine example of press work and binding, and must sooner or later, with the other three volumes that have preceded it, be considered by ophthalmologists generally as a highly prized standard of reference.

Introduction to the Outlines of the Principles of Differential Diagnosis, with Clinical Memoranda. By FRED J. SMITH, M.A., M.D., (Oxon.), F.R.C.P. (Lond.); Physician (with care of out-patients) and Senior Pathologist to the London Hospital. Pp. ix, 353. New York: The Macmillan Co. 1899.

In this volume of 341 text pages is gathered a large amount of information, succinctly expressed. The author does not claim originality for his work, but he does believe that he has arranged the "old phenomena of disease in such a way as to show more clearly their fundamental meanings and relationships." To accomplish this end the parallel column has been frequently used, in general with good effect, and brief

statement everywhere takes the place of extended exposition. We cannot but feel that this method has been overdone in places; for example, a tabular view of the anatomy of the nervous system compressed into a few pages may hardly be expected to give any sort of an accurate or helpful idea of that intricate subject. A complete omission is more desirable than such a necessarily imperfect statement. As a book of ready reference we should heartily commend the volume to the attention of our readers. As a textbook for students we think such a compendium is of doubtful value, as laying stress by its very form on details, to the exclusion of the fundamental principles underlying those details. No doubt this depends somewhat upon the constitution of the individual mind, but we suspect that the author's hope that he has shown the "fundamental meanings and relationships" of disease by this condensed and over-tabulated form of exposition will not be shared, at least, by all his readers. The book is satisfactorily printed and bound, has an index and is of convenient size.

Manuel Complet de Gynécologie Médicale et Chirurgicale. Par A. LUTAUD, Professeur libre de Gynécologie, Médecin adjoint de Saint-Lazare. Nouvelle édition, entièrement refondue, contenant la technique opératoire complète et 607 figures dans le texte. Paris: A. Maloine, Editeur. 1900.

The fourth edition of this work has been greatly enlarged and extended as compared to the earlier editions, and the publisher's work is, as a whole, good. It is profusely illustrated with very good cuts. Its chief interest lies in the admirable opportunity which it presents of comparing French practice with that with which we are familiar; in this respect an especially striking feature is the profusion of instruments and machinery which are figured and described, and the exceedingly free use of compression forceps, in which the author follows Péan, whose pupil he was in earlier life. In the comparison between the vaginal and abdominal route for operating it is very fair, and the vaginal route is less strongly emphasized than would be the case with most French authors.

Paralytic Deformities of the Lower Extremities. By E. NOBLE SMITH, M.D. London: Smith, Elder & Co. 1900.

Mr. Smith's monograph on the subject of infantile paralysis presents an evidence of improvement and advance in the method of treatment of paralytic deformity. Comparison of this with the work of Hoffa, however, indicates that the German surgeon has presented a more thorough monograph on the subject. Mr. Smith has improved in his illustration from his previous works and has given the medical profession an interesting account of what is being done in this branch of orthopedic surgery.

Congenital Dislocation of the Hip. By DR. MAX SCHEDE. Hamburg: Graefe Sillem. 1900.

Dr. Schede, whose work on congenital dislocation has been of great value, reports with excellent skiagraph reproduction the results of his experience in treating this deformity. Dr. Schede is an advocate of the bloodless method of treatment and shows the results of the reduction by this method. The monograph is a valuable contribution to the subject.

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THE HARVARD MEDICAL ALUMNI ASSOCIATION.

THE tenth annual meeting of the Harvard Medical Alumni Association, of which we publish a full report in another part of this issue, has recently been held. Young as the association still is, it has already risen to a place of usefulness and power in the medical community, and so indirectly in the community at large. We are not disappointed each year as we read the speeches given at the annual dinner to find expressed sentiments which look forward with confidence to the constantly increasing improvement of medical education in the broadest sense. This year was certainly no exception to this rule. In various ways the past year has seen developments which bid fair in the immediate future to elevate medicine to the position of complete dignity which it has, for diverse causes, been slow in attaining. It is always to be borne in mind, as the incoming president of the association, Dr. C. J. Blake, said in his introductory remarks, that much of the serious study of medicine comes after graduation rather than before. One of the most important schools at which such study may be presented is a suitable library building with an adequate supply of books. This need, which has been growing year by year, has finally been realized by the building, which is now nearing completion, of the Boston Medical Library, which for a long time to come it is hoped will prove a sufficiently commodious repository for the books and other possessions of the Library Association, and at the same time serve as an adequate meeting place for the various medical societies. Dr. Chadwick, the librarian, said, in speaking of the library and its growth, that twenty-five years ago the books of reference in Boston were scattered so widely that the difficulties of the reader were enormously increased. The concentration which has gone on since that time has finally resulted in a library which, in its new quarters, will be convenient for use and really of service to the student even in the highly specialized

fields of medical research. At the same time it must be remembered that new books are appearing at an unprecedented rate, and that scientific periodicals of value are multiplying in equal proportion. This means a constant and no doubt increasing outlay in the future, a demand which must be met if the library is to fulfil completely its object. There can, however, be small reason to doubt that this demand will meet with a ready response, when the necessities of the case are clearly set forth. The influence of this library should extend far beyond the confines of Boston, and be a source of education to physicians throughout the State.

A dinner of the Alumni Association rarely passes without allusion to the progress of medical education, a topic much discussed of late, and one about which it might seem the last word, for several years at least, had been said. That such is decidedly not the case, a reading of Dr. W. T. Councilman's speech, which we publish in full, will prove. Whether we are radical or conservative in our views of these questions, no one, we venture to think, can fail to derive a stimulus and renewed enthusiasm from his views and opinions. There are several points which strike us with special force, to which we beg leave to draw particular attention. Dr. Councilman, in the first place, believes in the individual and not in the various extraneous circumstances of that individual's life and education, which have tended to mould him into a certain stereotyped form. Give men an opportunity, let them do, in great measure, what they wish to do, and see if they can do it well. Let every man be encouraged in his independence of thought, and not forced into a groove which others have followed for generations. By this means teachers are developed and research is stimulated. As Dr. Councilman says, "This leaves it perfectly free for every man to develop how he will, to the greatest extent he will, and as early as he will." To his early development particular importance is to be attached, that he may be of use before age has sapped his enthusiasm. This sort of advice we need, and particularly should it be impressed upon the young men whose future is yet unformed, for the time is rapidly coming when the beaten track traversed so long by men of note will be found to lead to no profitable end. Again, Dr. Councilman is eager to recognize the close relationship between clinical and laboratory teaching. With the necessary growth of specialism, he sees a new possibility of more adequate teaching through a combined knowledge on the part of the instructor of the pathological anatomy as well as the symptomatology of disease, and urges that the student's mind should be directed to the whole subject and not to one of its aspects merely. There is absolutely no evidence throughout his remarks that he looks with favor upon the separation of the laboratory from the clinic, a charge at times made against laboratory students and departments primarily concerned with the theory of medicine. As we have observed the trend of events in the teaching of medicine, we have become

more and more convinced that the growing tendency of the future will be a closer union between medicine as taught in the laboratory and medicine as taught by the bedside. Conscientious clinicians will be welcomed in laboratories just as laboratory workers are welcomed in the wards of a hospital. Science, we are convinced, will not suffer thereby, as some seem inclined to think. Finally, Dr. Councilman believes in the dignity of medicine as a branch of knowledge, and he thinks it lies with physicians to dignify it. "The work," he says, "which we accomplish is not commensurate with our opportunities. The Medical School should be one of the crowning glories of the university. We should add to its lustre, but we are living in its light."

We do no justice to this address by these brief comments. We would urge our readers to atone for this deficiency by a reading of the full report. However opinions may differ as to detail, the broad-minded and liberal point of view and absolute freedom from pettiness must impress the most thorough-going conservative.

THE PENALTIES OF THE FOURTH OF JULY.

It was reported several days ago that one result of Philadelphia's Fourth of July was "Ten dead and three hundred in the hospitals." This reads like the war news with which the last year or two has again made us familiar, rather than as the record of a day of national rejoicing. We have no doubt that other cities have suffered in proportionate measure, and the query naturally arises whether we are to continue complacently to look on at this destruction of life and limb without an organized protest which will really prove efficacious. It may be our imagination or the fact that we have sought a place of retirement during the celebration of the holiday, but it seems as if the conventional noise were decreasing year by year. This, however, evidently does not mean that the element of danger is thereby removed. There is apparently a growing tendency, on the contrary, to use the more powerful explosives, as, for example, dynamite, in the construction of Fourth of July toys. The accident in Philadelphia which led to the death of a number of children and the injuring of twenty or thirty more, was said to have been due to the explosion of dynamite, this dynamite being publicly exposed for sale on a crowded street. We learn also that the authorities at once arrested the vender of these wares, and were inclined to mete out summary punishment. But why not be forehanded in such matters and prevent the sale of such articles entirely, except by properly licensed persons? Clearly something radical needs to be done in spite of the fact that the glorious day comes but once a year. Thus far we have not heard much of tetanus; it is to be hoped that the precautions taken may have done a good work in averting this added menace to life.

OLD AGE AS A CAUSE OF DEATH.

IN a recent number of the *Bulletin of the New York State Board of Health*, some pertinent statistics and remarks are made on the subject of "Old Age as a Cause of Death." The question is brought up as to whether senility in itself is ever to be regarded as a sufficient cause of death. Inasmuch as the very onset of old age in a physical sense is due to certain organic changes in more or less vital organs, this should be regarded as doubtful. The well-worn saying that a man is as old as his arteries is applicable here, but a man of sixty dying of conditions incidental to pathological changes in his arteries would not be classed as a death from old age. A man of eighty, on the contrary, with wholly similar alterations would, in most statistical returns, be placed in that category. It is clear that there is absolutely no accuracy in such classification. We are too apt to put down vague symptoms, the explanation of which is obscure, coming on in late life as a part of inevitable physical decay, and group them under the misleading but convenient heading of senility. Whether death occurs at thirty or ninety, there must evidently always be a perfectly definite cause, but our tendency, engendered no doubt by the practical demands of the situation, is to study the diseases of youth and middle life in a much more conscientious way than we are inclined to do those of age. We have long felt that a valuable research would be an investigation into the causes of senility in more detailed fashion than has yet been attempted. The following statistics from the publication we have mentioned are of considerable interest as showing the lack of accuracy in the tabulation of returns:

Of the 435 deaths noted in May of this year 170 were certified as from *old age* without other causes being given. The ages of these were sixty-three to one hundred; 4 were in the decade of the sixties; 45 in the seventies; 113 in the eighties, and 22 were over ninety. The phrases used were old age, senility, senile debility or decay or marasmus or atrophy or exhaustion. There were 80 deaths placed in this class of which *grippe* was returned as the cause, all of them occurring at advanced age, and with old age as a contributing cause. Sixty-eight were over seventy-five years of age, 6 being past ninety. *Grippe* has no separate place in the *Bulletin*, and is either registered under the class of local diseases or in the unclassified group, save those in which the element of senility was placed as the chief or contributory cause of death. There were probably 1,300 deaths in all from *grippe* during the month in the part of the State represented by these 80 occurring in old age. Sixty-five of the deaths classed as from old age were reported as *heart failure*, heart atrophy and the like, with or without old age as contributory. The average age was seventy-nine. Heart failure, a justifiable term, though an unfrequent cause of death, and generally misused on death certificates, when reported at advanced age without definition as to the condition of the heart except its enfeeblement of action, can no doubt be interpreted as due to suspension of vital forces incident to old age. One-eighth of the deaths as from old age were reported as heart failure past the age of seventy-five. There were 26 certificates on which the cause of death was

given as general debility, 14 as exhaustion, 10 as asthenia and inanition, 3 as paralysis of the vital nerve centres, and 11 as other indefinite conditions, such as nervous prostration; all occurring at advanced age. These are undoubtedly phrases used by the reporter which could have been replaced by senility, where they should be classed instead of swelling the unclassified group.

The writer of the above report is of the opinion that unclassified groups should not be enlarged, and that a general term, senility, is far preferable to a multiplication of inaccurate subheadings. True as this may be in the present state of our knowledge, it simply adds weight to our proposition that we decidedly need more scientific study of this class of senile changes to the end of an ultimate adequate classification.

MEDICAL NOTES.

APPOINTMENTS AT JOHNS HOPKINS UNIVERSITY.—Dr. F. S. Cullen and Dr. W. W. Russell have been appointed professors of gynecology at the Johns Hopkins Medical School.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the eight days ending at noon, July 11, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 72, scarlatina 17, measles 65, typhoid fever 23.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending at noon, July 7th, was 204, against 195 the corresponding week last year, showing an increase of 9 deaths, and making the death-rate for the week 19.17. Of this number 122 were males and 82 were females; 200 were white and 4 colored; 133 were born in the United States, 68 in foreign countries, and 3 unknown; 54 were of American parentage, 134 of foreign parentage, and 10 unknown. The deaths from consumption were 23, pneumonia 13, whooping-cough 2, heart disease 19, bronchitis 6, and marasmus 3. There were 15 deaths from violent causes. The number of children who died under one year was 38, the number under five years 65. The number of persons who died over sixty years of age was 47. The deaths in public institutions were 65.

CUBAN TEACHERS AND THE FLOATING HOSPITAL.—A contingent of the Cuban teachers, now studying in Cambridge, was given this week an opportunity to study practical philanthropy by a trip down the harbor with the Floating Hospital.

NEW YORK.

NATIONAL VOLUNTEER EMERGENCY SERVICE MEDICAL CORPS.—The first annual meeting of the National Volunteer Emergency Service Medical Corps was held at the New York Academy of Medicine on July 3d. Among the founders of the association, besides physicians, lawyers and business men, are a considerable

number of prominent clergymen of various churches and denominations. The first board of directors was superseded by a provisional board of administration, pending the appointment of a permanent board. In his address the director-general, Dr. Gottlieb, described the general object and scope of the organization as follows: "While we all appreciate the noble work accomplished by the various Red Cross societies, the time has come when these must give way to later and more improved methods. This can best be done by a thoroughly trained and disciplined corps, with all the advantages of regular drills, routine emergency work, and the resulting comradeship of its members, with a staff corps enrolled from among the foremost men of the nation. From such a body the government could draw material in case of need. Within the past few years we have all become painfully cognizant of the numerous local and national disasters in which the hands of both civic and military authorities have been tied for various reasons, such as time required for the course necessary for official sanction, unavailable funds, inability to procure immediate equipment, and lack of expert service. I would have an organization capable of dealing with such catastrophes as are occasioned by floods, hurricanes, epidemics, riots, railroad accidents and war."

CLEANING OF TENEMENT HOUSES.—The Health Department expended a portion of the \$20,000 emergency fund recently allotted it in the thorough cleansing and disinfection of the courtyards and cellars of about a thousand downtown tenement houses on July 6th, under the direction of Sanitary Inspector Blauvelt. Other sections of the city will be disinfected in turn, the object being to keep down the mortality incidental to hot weather.

BIOLOGICAL LABORATORY OF BROOKLYN INSTITUTE OF ARTS AND SCIENCES.—The biological laboratory of the Brooklyn Institute of Arts and Sciences began the regular class work of its eleventh season on July 5th. The number of instructors has been increased since last year by the addition of W. L. Tower, of Harvard University, Dr. Henry A. Kelly, of New York, and Dr. H. C. Cowles, of the University of Chicago.

NEW YORK SCHOOL OF CLINICAL MEDICINE.—We learn from Dr. Thomas H. Manley, professor of surgery at the New York School of Clinical Medicine, that the school, erroneously announced last week as about to be closed, is to continue its sessions. Only six of the teaching staff have resigned.

Obituary.

ALEXANDER J. C. SKENE, M.D.

DR. ALEXANDER J. C. SKENE, of Brooklyn, New York, died at his summer home in the Catskills on July 4th. He came of a noted Scotch family, and was born in 1838 in the Parish of Fyrth, Aberdeenshire. He came to this

country when nineteen years old, and studied first at the University of Michigan and afterwards at the Long Island College Hospital, Brooklyn, being graduated from the latter in 1863. After serving with distinction as a surgeon in the Civil War he was appointed adjunct professor at the Long Island College Hospital, and soon achieved a high reputation as an operating and consulting gynecologist. His work on "Diseases of Women," published in 1883, gave him an international name. For many years he was professor of gynecology at the Long Island College Hospital, as well as dean of the faculty. About a year ago he resigned both these positions in order to take charge of the organization and establishment of a charitable hospital for women. It was to be known as the Skene Hospital for Self-Supporting Women, and he hoped to open it during the coming autumn. It is probable that the project will now be carried forward to completion as a memorial to Dr. Skene. Among the societies of which he was president at different times were the American Gynecological Society, the New York Obstetrical Society and the King's County Medical Society. Aside from his eminence in the medical profession, Dr. Skene was one of the most highly esteemed citizens of Brooklyn. He was also a great lover of art, and was himself a sculptor of ability.

Correspondence.

"THE NEW METHOD OF INDUCING SLEEP WITHOUT DRUGS." ONE HUNDRED DOLLAR PRIZE.

NORTHAMPTON, MASS., July 5, 1900.

MR. EDITOR:—The new method of inducing sleep without drugs consists in bringing under will power the functions of organic life immediately on retiring. The organs of respiration and circulation respond to our bidding. Certain other groups of muscle, by contraction and relaxation are made accessory in directing the arterial and vital currents away from the gray matter of the brain. As a result, automatic thinking, which is the immediate cause of sleep's delay in the case of the average brain-working business man, is absolutely shut out, and normal sleep is inevitable.

Believing that the medical profession has power to turn the attention of suffering humanity from the mysterious chimerical and damaging drug agents they now depend upon, and that it is our duty to shed light rather than darkness, I offer a prize of one hundred dollars for an essay which shall describe any method of extemporizing sleep immediately on retiring for the brain-working classes that will equal or surpass the new method above referred to.

The principle employed is that of withholding power. The belts turned off, automatic thinking ceases. An equilibrium of circulation is established, and the normal conditions that precede and invite sleep prevail. Dr. H. O. Marcy, of Boston, says: "Every night I waft myself to gentle slumbers by the use of your 'method.' Long may you live to help suffering humanity."

To give the technique in full would require more space than can be allotted here. Suffice it that mental and physical conditions, positions and changes, extemporized and controlled by will power in the horizontal position, with suitable temperature and ventilation of body surface as well as lungs, are the sheet anchor of the new method.

Time allotted for preparing essays, from June to December of the present year. Length of essay must not exceed five thousand words; to be in print or typewritten, without the name of writer. Judges of the merits of essays shall be representative men of scientific medicine. Time for awarding prize, January 1, 1901. Results will be announced in this JOURNAL.

J. B. LEARNED, M.D.

METEOROLOGICAL RECORD

For the week ending June 30th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...24	29.83	69	82	56	76	80	78	S.W.	S.W.	21	14	C.	C.	
M...25	29.73	78	87	67	63	66	66	W.	N.W.	9	10	F.	F.	
T...26	29.90	71	82	60	46	60	53	S.	S.	8	13	C.	C.	
W...27	29.68	79	91	64	73	66	70	S.W.	S.W.	12	20	C.	O.	
T...28	29.62	80	90	70	68	71	72	W.	S.W.	8	14	C.	E.	.17
F...29	29.56	76	85	68	64	66	66	W.	S.W.	14	12	C.	F.	.16
S...30	29.73	65	72	58	46	44	45	W.	W.	22	15	C.	C.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatning; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 30, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	1406	633	20.72	9.38	11.97	2.94	1.68
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	156	41	19.84	7.04	1.28	3.84	.64
Baltimore	506,389	251	127	19.50	6.63	9.75	.78	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	154	82	39.65	6.50	28.60	1.95	—
Washington	277,000	135	74	37.00	4.64	22.20	.74	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	70	34	31.24	1.42	2.84	—	1.42
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	38	19	15.78	18.41	5.26	—	2.63
Fall River	103,142	39	24	40.96	17.92	33.28	—	—
Cambridge	92,520	18	4	38.88	—	5.55	5.55	—
Lowell	90,114	39	11	12.80	2.56	5.12	—	—
New Bedford	70,511	16	9	12.50	6.25	—	—	—
Lynn	68,218	18	2	33.33	—	—	—	—
Somerville	64,394	13	4	23.07	15.38	—	—	—
Lawrence	59,072	37	17	45.90	2.70	35.10	—	2.70
Springfield	58,266	14	4	14.28	7.14	7.14	—	—
Holyoke	44,510	27	11	37.00	7.40	22.20	3.70	—
Brockton	38,759	6	5	16.66	—	—	—	—
Salem	37,723	13	6	33.95	13.58	—	6.79	—
Malden	36,421	8	1	12.50	12.50	—	—	—
Chelsea	34,235	13	3	15.38	—	—	7.69	—
Haverhill	32,651	8	2	12.50	—	—	—	—
Gloucester	31,426	2	—	—	—	—	—	—
Fitchburg	30,523	5	3	20.00	—	—	—	20.00
Newton	30,461	6	2	16.66	16.66	—	16.66	—
Taunton	28,527	16	4	25.00	6.25	6.25	6.25	—
Everett	28,102	5	2	—	—	—	—	—
Quincy	24,578	5	2	40.00	—	20.00	20.00	—
Pittsfield	23,421	—	—	—	—	—	—	12.50
Waltham	22,791	8	2	12.50	12.50	—	—	—
North Adams	21,583	7	1	14.28	—	—	—	—
Chicopee	18,316	5	3	40.00	—	40.00	—	—
Medford	17,190	3	2	—	—	—	—	—
Newburyport	15,036	4	1	—	—	—	—	—
Melrose	14,721	1	—	—	—	—	—	—

Deaths reported 2,451; under five years of age 1,135; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 757, diarrheal diseases 375, consumption 219, acute lung diseases 204, diphtheria and croup 62, measles 31, whooping-cough 22, typhoid fever 21, cerebrospinal meningitis 13, scarlet fever 8, erysipelas 6.

From whooping-cough New York 7, Pittsburg 5, Washington 4, Salem 3, Baltimore and Worcester 1 each. From typhoid fever New York 7, Pittsburg 5, Washington 3, Providence 2,

Cambridge and North Adams 1 each. From cerebrospinal meningitis New York 6, Washington 2, Boston, Baltimore, Providence, Worcester and Lynn 1 each. From scarlet fever New York 4, Boston 2, Washington and Worcester 1 each. From erysipelas New York 5, Baltimore 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 23d, the death-rate was 14.9. Deaths reported 3,325: acute diseases of the respiratory organs (London) 181, measles 117, whooping-cough 82, diarrhea 64, diphtheria 56, scarlet fever 28, fever 18.

The death-rates ranged from 9.9 in Nottingham to 22.4 in Salford; Birmingham 15.4, Bradford 13.6, Croydon 13.5, Gateshead 12.4, Hull 13.3, Leeds 17.5, Leicester 10.9, Liverpool 21.2, London 13.3, Manchester 20.8, Newcastle-on-Tyne 16.0, Norwich 10.0, Portsmouth 10.2, Sheffield 16.1, Sunderland 21.2, West Ham 11.9.

RECENT DEATHS.

LOUIS ARCULARIUS, M.D., a prominent German physician in New York, died of apoplexy on July 1st, at the age of sixty-two. He was born in Hessen, Darmstadt, and studied medicine at the Universities of Giessen and Heidelberg. For over thirty years he practised in New York, where he was a member of a number of German societies, medical, scientific and musical.

THOMAS P. EDWARDS, M.D., of Newark, N. J., died suddenly of cardiac disease on July 4th. He was born in Marcy, N. Y., and was thirty-nine years of age.

BOOKS AND PAMPHLETS RECEIVED.

Ninth Annual Report of the Ohio Hospital for Epileptics, at Gallipolis, Ohio, to the Governor of the State of Ohio, for the Fiscal Year of 1899.

Transactions of the Medical Society of the State of California. Thirtieth Annual Session, San Francisco, April, 1900. Vol. 30. Published by the Society.

What Bearing has Higher Professional Education on the Work and Welfare of the Manufacturing Pharmacist? By Joseph Helfman, Editor of the "Bulletin of Pharmacy," Detroit, Michigan. Reprint. 1900.

Fractures. By Carl Beck, M.D., Visiting Surgeon to St. Mark's Hospital and to the New York German Poliklinik, etc. With an appendix on the Practical Use of the Röntgen Rays. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

A Manual of Clinical Diagnosis, by Means of Microscopic and Chemical Methods, for Students, Hospital Physicians and Practitioners. By Charles E. Simon, M.D. Third edition. Thoroughly revised. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

A Manual of Surgical Treatment. By W. Watson Cheyne, M.B., F.R.C.S., F.R.S., and F. F. Burghard, M.D. and M.S. (Lond.), F.R.C.S. In seven volumes. Vol. III. The treatment of the Surgical Affections of the Bones, Amputations. Philadelphia and New York: Lea Brothers & Co. 1900.

Atlas and Epitome of Special Pathologic Histology. By Docent Dr. Hermann Dürk, Assistant in the Pathologic Institute, etc. Authorized translation from the German. Edited by Ludvig Hektoen, M.D. Circulatory Organs, Respiratory Organs, Gastro-Intestinal Tract. Illustrated. Philadelphia: W. B. Saunders. 1900.

Diseases of the Chest, Throat and Nasal Cavities, including Physical Diagnosis and Diseases of the Lungs, Mediastinum, Heart and Aorta, Laryngology and Diseases of the Larynx, Pharynx and Nose, and Special Diseases of the Thyroid Gland and Esophagus. By E. Fletcher Ineals, A.M., M.D. Fourth edition, illustrated. New York: William Wood & Co. 1900.

Wound of the Urinary Tract during an Operation for Acute Appendicitis—Spontaneous Closure of Urinary Fistula—Recovery. Conical Stump after Amputation in Childhood. Methods and Results in 450 Cases of Fracture of the Fore-Arm Bones. Methods and Results in 175 Cases of Simple Fracture of the Femur. By Charles A. Powers, M.D., Denver, Col. Reprints. 1899-1900.

Surgical Anatomy: A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By John B. Deaver, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. In three volumes. Illustrated. Vol. II. Neck; Mouth; Pharynx; Larynx; Nose; Orbit; Eyeball; Organ of Hearing; Brain; Male Perineum; Female Perineum. Philadelphia: P. Blakiston's Son & Co. 1900.

Address.

MILK; ITS PRODUCTION, ITS CARE, ITS USE.¹

BY T. M. BOTCH, M.D., BOSTON.

MR. CHAIRMAN AND GENTLEMEN OF THE CONFERENCE:—The remarks of the gentlemen who have just spoken regarding milk and its production are very pertinent to the subject, and indeed pertinent in the sense of the extreme importance of the subject. Physicians have long recognized what a dangerous food milk may be under certain conditions. It is probably the most dangerous food that we can supply to the people at large, and yet it is the food that is evidently demanded by people all over the world, and has been for centuries; that is, the milk question has existed for many centuries. It dates back to the time of the Egyptians, and in their hieroglyphics we see what a change took place in regard to the production of milk as time went on through the different dynasties; that is, in the earliest times before the value of milk as a food was recognized. From these records found on the pyramids, and traced from century to century, it is evident that the cow at first was neither developed for nor used as a food producer. In the beginning the udders were small, and knowing how extremely realistic the Egyptians were in their representations, we are led to believe that what is seen on the pyramids and in the hieroglyphics is a true record. This is interesting to us as physicians, and also must be interesting to you health officers throughout the State and throughout the country; in fact, throughout the world.

The cow was not originally a food producer for the people, but simply gave sufficient milk for a limited time, and was not intended to produce milk throughout the year. As time went on the value of milk as a food was recognized. Later it came into use as a medicine by physicians, and soon became an important article of food for the table of the rich and of the poor. In order to obtain a sufficient amount of this food the cow had to be developed in some way, and gradually, as the hieroglyphics show, the udders were depicted as being larger and larger until finally the udder was fully developed and the cow became an animal directly connected with the food supply.

Although at different periods statements have been made that milk is not a good food, yet it has continued to be used, and its dangers being recognized, the people are now demanding a safe milk and are supporting the health officers in the measures which they take to get it. The physician is continually meeting with cases of sickness which arise from milk, and it is the duty of the health officers to aid the physician by such regulation of the milk supply as to prevent this transmission of disease by milk. Milk, is such a good culture ground for all forms of pathogenic organisms that it becomes a source of the greatest danger to, and one of the causes of the great mortality among, infants and young children. It is true that the health officers have been somewhat hampered in their efforts by the ignorance of certain physicians who are dealing with the diseases, but have no idea of the source of such diseases. The health officer who is dealing directly with the milk well knows it is dangerous, and therefore it is extremely impor-

tant that when you health officers are discussing this subject you should impress upon the physicians that they should by their influence with the public support what the health officers do. The health officer lays down certain laws and in doing so the milk dealers find that in order to conform to these laws they must raise the price of their milk, and the people are very apt to refuse to pay the high price which is giving them the best milk. The physician should therefore come forward and insist that the health officer is right, and in this way the physician and health officer working together will be able in the future to make milk a safe food, and in doing so will give to the public a good food. There is no doubt that milk is the ideal food if it is good and if it is safe.

You would perhaps like to hear a little about the way in which the milk is produced and cared for by some of the farms in the East. I have always been thankful to the health officers for what I have learned from them and to the expert farmers for what they have taught me. The physician is too apt to turn aside from them and not obtain valuable knowledge which is ready to be given to him if he is ready to take it. I have been very much impressed with this, and have felt that I was often so powerless in curing infants and children after the disease transmitted by the milk had once begun, that it became very evident to me that we should turn our attention especially to the prophylaxis of these diseases.

In attempting to get good milk, that is, safe milk, for children, my attention was first called to the farmers, and I at once made up my mind that the cry of cheap food for the people was one which should be strenuously put down by the health officer, by the physician, and through them by the intelligent public. The cry of cheap food and cheap milk is a dangerous one, and one which of course is heard all over the world, but, as is true of everything which has to be produced in the world, you cannot get what is good cheaply, and you cannot produce and deliver milk for four or five cents a quart in the best way. It must cost more and the people must learn that it must. I do not believe that it is the poor people who will suffer, nor is it the people in moderate circumstances that will suffer when paying a higher price for their milk. I have had quite a large experience in inducing people to buy what I believed to be safe milk and safe preparations of milk, rather than cheap preparations, and I have found in the East, and I think the same experience will be met with all over the country, that it is not the poor people nor the people of moderate means who object to the price; it is the rich people, the millionaires, who find the most fault if you ask them to pay ten or twelve cents a quart for their milk. This is simply one phase of human nature. The millionaire has often been a smart business man who has been trying to get the most for his money all his life, and he is not half the time intelligent enough to look into such a complicated problem as milk. He therefore finds fault with the cost of it. The poor man, however, has it practically brought before him every day. He sees his children sick and often dying with diseases evidently caused by cheap milk which he has been in the habit of giving them. As soon as he appreciates this he does not grumble about the price, but he saves in other ways and gives his children safe milk and one of higher price. In medicine, antitoxin, which preserves so many lives when

¹ An address delivered before the Health Officers of the State of Michigan, at Grand Rapids, October, 1899.

people are attacked with diphtheria, is expensive, but the poor get it. The best apparatus in surgical cases is used and a high price is paid for it, in like manner it is of great importance that good milk should be obtained and paid for, and that millionaires and the fortunes of the millionaires, and that the riches of the country should be turned in this direction to aid the health officers in bringing about a change and making it understood that good things cost. Then after a time, when the milk has been made good, as happens in all commodities, cheaper methods of making it good will be discovered and the milk itself will become cheaper. I have been much impressed with this principle, which I believe is at the root of obtaining all good things, and therefore also good milk.

Those who are engaged in the production of milk should not consider in the beginning to too great an extent the expense. They should be willing to pay a sufficient amount of money in getting good milk for the people, and they will then find that after a time they will receive a fair return for it and that it will be in the end a good business transaction. This has been proven in a number of places in our large cities in the East, and I think it will be proven here in the West in the same way. It has resulted in this way in New York, in Boston and in Philadelphia, where milk is by certain companies produced and delivered in what we consider the best way. For instance, in supplying New York and Philadelphia, a farm has been started in New Jersey midway between Philadelphia and New York, so that the milk can be brought in a couple of hours to either city.

In arranging for a milk supply, there is no part of it which is too insignificant to be attended to. It means that the water that the cows drink should be fresh water, that the milk should be as free from dirt as possible, that those who milk the cows should not have the care of the cows, and should not be in the position of farm hands. On these farms which I have just referred to, the milkers are a set of intelligent young men trained for this purpose, and being trained as a milker means to be trained to take antiseptic precautions as a surgeon is trained; and just as in surgery the operations in the last decade have been more successful on account of antiseptic precautions, which practically means absolute cleanliness, so should it be in the milking of the cows; the clothes of the milker should be clean, and such as can be boiled or steamed before being used again. The superintendent of a farm of this kind should be a man who is educated in such a way as to understand the laws of hygiene. The milkers should be under the supervision of a physician, for a milker when suffering from disease can infect the milk which he is drawing from the cow. All these factors of the problem have to be taken into consideration. The physician should examine the milkers from time to time and see that they are healthy. I have had an instance brought to my notice where a milker who came from Pennsylvania and went to a farm in Baltimore had some disease on his finger which he transmitted to a cow, and the milk of that cow which was used to supply milk for a boarding-school caused a violent form of diarrhea in 70 of the scholars, the disease being directly traced back to the man who milked the cows.

These pathogenic organisms which cause disease can get into the milk in a variety of ways and we should in every possible way shut out all means of

entrance. The milkers should never be allowed to go into the milk house, one man being especially detailed to take charge of the milk house. The milk house should be kept completely antiseptic and absolutely clean, and the milk should be quickly bottled in sterilized glass jars with a sealed top, and then be delivered immediately to the people. It is extremely important that as clean a stable as possible should be used for the cows, and that special men should be employed to take away the manure as fast as it accumulates. Dust as far as possible should be prevented from entering the stalls of the cows, and for this reason the hay and other food of the cow should not be kept in the same stable as the cows are. When all these precautions are taken, those who are engaged in the production of milk in this way will soon get the reputation with the public that they are providing a milk that is not a dangerous milk, and when the public has been made to understand by physicians that milk is a very dangerous food unless it is produced and looked after in this way, these are the men who will have a monopoly of the trade and will eventually deservedly obtain a good profit. There is no question that these men will succeed, but they must have the ability and business insight to take up the question in this way and to carry it out.

The general care of the cow, of course, is very important. You gentlemen know a great deal more about it than I do as a physician. They should have running water in the stalls and the troughs should be arranged so that live steam can be turned into them from time to time, so that they can be kept as antiseptic as possible. On these farms to which I am referring, the water which the cows drink comes from a well that is a hundred yards away from any building and which is protected so that nothing can filter into it. It is cemented up to the water line with a double wall around it, so that no one but the superintendent of the farm can get at it. In fact, what is most needed in the production of a safe milk is that the cow should have pure water to drink and should be surrounded with absolute cleanliness. In regard to the actual care of the cow, it is found that care should be taken not to brush or wash the udder too much, as the udder of the cow is very sensitive and this will often produce sufficient irritation to interfere with the different components of the milk.

The milk, besides being tested as to its quality, should be examined by a bacteriologist, who should be paid to give a careful report of its condition from day to day. The milk from one of the farms to which I have referred has been examined for each day of the year and in certain months the number of bacteria in the cubic centimetre was found to be under 2,000, which is an extremely good record when we consider that 10,000 has been given as the limit for good milk.

One of the gentlemen has referred to the use of the separator in the production of milk. There is no question but that by its centrifugal action it removes a large amount of filth from the milk, and it has also been found that large numbers of bacteria have been separated by the action of the centrifugal machine and removed in this way, so that there are much fewer bacteria in milk that has been passed through the separator.

There are, of course, many other points which could be spoken of in treating this subject. Certain principles however must be insisted on in the

production of good milk: (1) That it must be obtained from healthy cows in the most cleanly and antiseptic ways known; (2) that it should be taken care of under the most strict precautions, and (3) that it should be delivered to the consumer as quickly as possible. This cannot be done at present cheaply, and you as health officers must insist that the people should have good milk and safe milk, no matter what it costs.

Original Articles.

GENERAL REMARKS ON THE PATHOLOGY AND SYMPTOMATOLOGY OF ACUTE PELVIC SUPPURATIVE PROCESSES IN THE FEMALE AND THEIR TREATMENT BY POSTERIOR COLPOTOMY.¹

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

BEFORE considering the pathology of acute pelvic suppuration as it occurs in the female, we would first give our views on the etiology. It is our firm conviction that all forms of suppurating salpingitis and oöphoritis are the result of the direct extension of an inflammatory process in the endometrium, the infection being propagated by the mucosa of the uterus to that of the tubes, and in some instances by means of the lymphatics. Gonorrhæal infection and puerperal infection are the only processes that can give rise to pus in the pelvis with the exception of appendicitis. As to abscess of the broad ligament, it may be said that, with very few exceptions, this lesion is always due to puerperal infection, and that the process extends from the uterus to the broad ligament by either the lymphatic or venous circulation. We do not believe that auto-infection in the virgin or malformations of the uterus can ever give rise to acute suppurating salpingitis. Catarrhal salpingitis in the nulliparous female may give rise to a suppurating salpingitis if later during labor a slight infection occurs, as has been observed in one or two instances in our practice.

There are three distinct varieties of peri-uterine suppuration, namely, salpingo-oöphoritis, pelviperitonitis and abscess of the broad ligament, and a few words regarding the pathology of these conditions will, perhaps, aid us in demonstrating why, in a large number of cases, the vaginal incision is superior to the abdominal route.

Inflammatory lesions of the tubes cannot be described separately from those occurring in the ovary, because the two lesions are so intermingled that usually it is impossible to separate them one from the other. All the classifications given in the text-books up to the present time are more or less imperfect, and Bouilly has very aptly said that the primary affection is always identical, and according to the virulence of the infectious agent, the nature of the soil and the method of treatment employed, it ultimately results in various lesions which only represent certain degrees or complications of the primary lesion in the uterus.

Acute catarrhal salpingitis is the first stage of inflammation of the tubes; the tube is red, swollen and has a cylindrical form which may reach the size of the little finger or even more. The fringes of the pavil-

ion are agglutinated, but microscopically only a slight hypertrophy of its cell elements can be found. At a more advanced stage the tube presents the lesion of an acute purulent salpingitis. The pavilion has become occluded, but an important fact to be remembered is that the uterine orifice still remains patent and the pus escapes into the uterine cavity instead of becoming collected in the tube. Later on the uterine ostium becomes occluded in its turn.

A word now as to normal position of the tubes and ovaries. In a normal condition the tube forms a curve in such a manner that the ampulla is in direct relation to the posterior layer of the broad ligament and is suspended above the retro-ovarian fossa, or Douglas's cul-de-sac. Now, when the organ is the seat of an inflammatory process and becomes heavy by the occurrence of a more or less large amount of serous exudate in its meshes, it naturally tends to fall into the retro-ovarian fossa behind the uterus and it is in this region that it will usually be found on examination. But this position is not always the same in every case, for the simple reason that the tube, being a movable organ, may contract adhesions very rapidly after inflammation has occurred and may consequently be glued down at most any point. Another condition may also occur, namely, the tube itself is healthy, but another organ in the neighborhood, the seat of an inflammatory process, may contract adhesions with the tube which will give it an entirely different position in the pelvis.

This varying position of the tubes has certainly a very great importance, both in the diagnosis of pelvic lesions and their treatment.

Pelviperitonitis, which is, as we understand it, an inflammation of the peritoneal pelvic tissues, has been, we think, absolutely demonstrated, and is admitted a rather frequent lesion by the larger number of authorities who have written on this subject. If we leave aside the accidents produced by appendicitis it may be said that inflammation of the pelvic peritoneum is always due to acute suppurating lesions of the internal genital organs. There are few cases of salpingitis or ovarian abscess which do not bring about more or less extensive changes in the peritoneum, sometimes of very serious character. Pelviperitonitis is rarely met with as a unique lesion, excepting when it occurs in puerperal infection.

There are two types of pelviperitonitis, the first being those instances where the infection extends to the healthy peritoneum, in which case the collection will, in the large majority of cases, be found filling Douglas's cul-de-sac. It is just in these cases that the lesion is suited for posterior colpotomy. The second type is represented by those cases where the collection is seated in variable regions, and when Douglas's cul-de-sac is divided up into pockets.

An intraperitoneal collection forms very rapidly, sometimes as quickly as three or four hours, but when seen in this early stage it cannot be distinguished by palpation because it has not become encysted, and the sensation that one gets by the finger in no way differs from that obtained before its formation, this being due to the mobility of the coils of intestine. It is only a few days after that false membranes are thrown out and wall off the collection. This collection usually forms behind the uterus in Douglas's cul-de-sac and there becomes encysted; it then undergoes a purulent transformation, excepting

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, February 28, 1900.

in those cases where it remains serous. Adhesions are thrown off between the tubes and coils of the intestine, the omentum, the top of the uterus, broad ligaments, rectum and pelvic wall.

Sometimes the pus extends upwards into the anterior cul-de-sac and adhesions are thrown out between the pubis and the sacrum, in which case the uterus floats, so to speak, in a well of pus.

Now the reason why the pus nearly always collects in the cul-de-sac of Douglas is explained very well by Delbet as follows: "The part of the peritoneum which is first diseased is always that which is situated behind the uterus; it becomes infected nearly always by means of the tube whose pavilion is behind the broad ligaments, nearly above the cul-de-sac of Douglas. When the tubes are healthy the uterus itself always contracts adhesions with the rectum on account of the disposition of the lymphatics."

When once the collection has formed, adhesions wall it off and the pressure within increases and causes Douglas's pouch to bulge into the vagina. This pocket hardly ever extends above the top of the uterus, but there are cases on record where it has extended upwards to the umbilicus, burrowing underneath the omentum, which forms a vault over it.

In the beginning the collection is serous, of a yellowish color, which is more or less tinted red by the admixture of blood, but it is always transparent. It may remain in this condition, but most always it undergoes a purulent transformation. When once pus is formed it may become absorbed when it is not present in any large amount, but in practice we should never count upon such an outcome.

The pus has always a tendency to make its exit through different organs in the neighborhood, which at first ulcerate, and the intestine and more particularly the rectum are its favorite points of exit, but all abscesses have not the same tendency to open outwards, and there are certain cases where they become encapsulated by neoformed membranes which line the pocket and whose walls become extremely dense; a most important condition for the treatment which we recommend, because they are rigid and almost sclerotic. The inflammation and induration of the subperitoneal cellular tissue contributes also to this condition, and when these cases are examined bimanually, they feel like hard cartilaginous masses. In this case an incision in the posterior cul-de-sac is quite insufficient, because the pocket, if it is single, will be emptied, but its rigid and resisting walls will not collapse and come together, and sometimes an enormous cavity is thus formed which will prevent healing from taking place. But these cases are infrequent, and what causes the great danger in pelviperitonitis are the adhesions which are thrown off, and these are not only the source of persistent pain, but from the malposition that they produce in the genital organs will nearly always render the patient sterile.

When the inflammatory process has extended to the subperitoneal tissue, the damage done is so important that a vaginal incision is more than insufficient, as well as in the case of multiple collections which are composed of secondary pockets independent of the first in which the infectious organism has had its starting point.

We would now like to say a few words on the pathology of suppurative processes in the cellular tissue of the pelvis, and we would here point out that

there are two distinct regions in which this lesion occurs, and which naturally give rise to two forms of abscess, namely, the cellular tissue of the broad ligaments and that present in the sheath of the hypogastric artery.

It is the inflammation of the connective tissue which is found along the vessels irrigating the pelvic organs that gives rise to abscess of the broad ligament. These vessels are the utero-ovarian artery and the lymphatics of the fundus uteri, tube and ovary. The topography of these abscesses is most interesting on account of their treatment. On their inner aspect abscesses of the broad ligament are in relation with the side of the uterus, which organ they push more or less to the opposite side, and they may even raise up the peritoneum on the anterior and posterior surfaces of the uterus, but only in the neighborhood of its borders. They have a tendency to extend towards the iliac fossa, where they form rounded tumors of varying size and which are perfectly independent of the abdominal wall. When once they have reached the iliac fossa they may extend in two different directions: (1) In some cases they extend upwards under the peritoneum towards the lumbar region, sometimes as far as the diaphragm; (2) in other cases the abscess descends towards the abdominal wall raising up the peritoneum in the vicinity of the ligament of Fallopius and is then in direct relation with the abdominal wall.

A typical abscess of the broad ligament does not come very near the vaginal cul-de-sac, from which it is separated by about two centimetres of tissue, in which is contained numerous vessels of fair size and sometimes the ureter. It is on account of the immediate neighborhood of these vessels that curettement of these abscesses is extremely imprudent, if not to say dangerous.

In the commencement of an inflammatory process there is only an edema, or serous infiltration, but little by little the meshes of the cellular tissue become distended by a serous liquid, which is thick and of a lemon color, and the pathologic process continuing its progress transforms this liquid into small foci of pus. The character of this pus has a very great bearing from the point of view of treatment, and one can readily understand that an incision is more proper in a case where the pus is whitish in color and of a bland odor than when the collection is greenish in color and presents a fetid odor.

A hypogastric abscess simply means an inflammation of the cellular tissue surrounding the internal iliac artery and the lymphatics of the cervix uteri and the upper part of the vagina. There is little to be said regarding these abscesses excepting that they are rather frequent in occurrence. The pathological process is the same as in the case of abscess of the broad ligament, and only differs from the latter by its seat. An important fact to be mentioned, and which applies to all purulent collections whether in the tube or the broad ligament, is that their upper wall is formed by the visceral peritoneum, which has become thickened and has lost its normal resistance, so that an irrigation made with any force whatsoever may break through it and enter the general peritoneal cavity.

The following five figures represent diagrammatically what could be felt by palpation in some of our cases, all of which were operated on by posterior colpotomy and made eventful recoveries. I have selected these five drawings from many others that I

have made of cases of pus in the pelvis because they very well demonstrate the different positions that the purulent collections may have in the pelvis.

Fig. I



Fig. II.



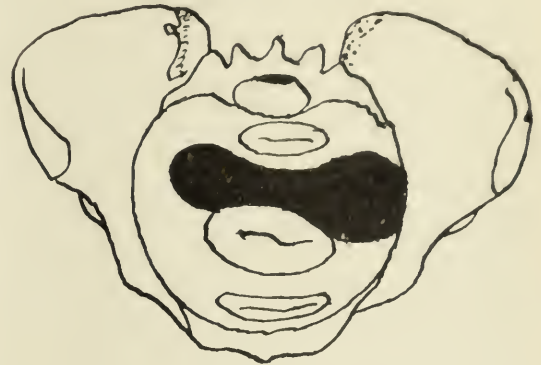
Fig. III



Fig. IV



Fig. V.



In considering the symptomatology we first wish to point out the extreme frequency of purulent or serous peri-uterine collections, and at the same time the fact that in many instances they are very latent, if I may be allowed to use the expression. I have known of cases where from 25 to 100 grammes of pus have remained pent up in a pocket situated somewhere in the neighborhood of the uterus, and the patients did not have a rise in temperature for years, until suddenly some intervening cause exaggerated the local condition and then all the symptoms of the presence of pus occurred.

In the case of salpingitis and oöphoritis the patients usually come to the surgeon complaining of more or less distress in the lower abdomen which has been present for a certain time, and it is very difficult in these cases to estimate the exact time at which the adnexa were invaded by the inflammatory process, because the constitutional make-up of the patients varies very greatly from this point of view. There is, however, a fairly good classification which simply divides those cases which present very acute onset and those where the affection develops insidiously. In the first case a patient will seek relief for more or less severe abdominal pains which have come on after being exposed to cold or after overwork. The commencement of the symptoms is in most cases very sudden, and generally coincides with menstruation. In other cases the patient suddenly presents serious symptoms of an acute peritonitis, but these instances are usually met with after a normal labor, a miscarriage or during an acute gonorrhœa. The inflammatory process appears to invade all the tissues of the pelvis and only becomes localized later on, and when the acute attack has blown over bimanual examination will reveal the formation of pus tubes.

In the second class of cases the lesions are exactly the same as in the first, but they undergo their evolution silently. The various symptoms which later on will form the picture of salpingitis appear one after the other; they may be only slightly marked or they may give rise to considerable trouble, but they always appear *separately*. We thus get in the first place pain, which is sometimes complained of on one side, in other cases it is bilateral; then disturbances in the menstruation arise and so the disease continues its progress. Of course the division into acute cases and insidious cases is entirely artificial, and between the two extremes there are very numerous intermediary conditions.

The first symptom is pain in the region of the adnexa, usually on both sides, but perhaps more especially on the left. It sometimes reaches a very extreme acuteness and never is present in any constant type, excepting that it is increased when the patient gets tired and usually becomes better when the patient remains quiet in the horizontal position. The pain increases sometimes a few days before menstruation occurs and diminishes after the blood makes its appearance, but in other instances I have found that it began during the flow and in infrequent cases it did not appear until after menstruation was finished.

Menstruation itself is nearly always disturbed, the most marked derangement being frequent and repeated periods of flowing, with the loss of considerable blood. On the other hand, amenorrhea is infrequent in these cases. The blood appears every fifteen or twenty days and the flow may last a week or more, which is the cause of the anemia almost always noted in these cases. The concomitant metritis gives rise to a more or less purulent discharge during the interval between the metrorrhagias, and this leucorrhoea is sometimes accompanied by pains of a colicky nature. It has been thought that these colics have their starting point and their maximum of violence in the adnexa, and that they coincide with the evacuation of pus, but as the internal orifice in the tube has in these advanced cases become obliterated by the inflammatory process, it is very probable that the pus cannot make its exit, and that the uterus, which is always very greatly diseased, is the source of the purulent discharge. For that matter we all have had cases where a severe mucopurulent discharge was present due to an infectious metritis, but where the tubes were perfectly healthy.

Disturbances in the digestion nearly always complicate these purulent lesions, and have a very notable influence for the worse on the patient's general condition.

If the patient recovers from her first acute attack she is apt to think that she is well, because the pains have disappeared and have only left behind them a feeling of weight in the pelvis, but suddenly the acute symptoms will return, usually at about the time of menstruation, after the patient has taken cold or has become fatigued. In one or two instances in which a pain was complained of in the region of McBurney's point I was able to demonstrate at the operation that it was due to an adhesive inflammation which had arisen between the appendix and the diseased adnexa.

Inspection of the abdomen usually does not show anything in particular. Vaginal examination gives a very incomplete idea of the condition present, but by bimanual palpation a very good idea of the exact con-

dition of affairs may be obtained. In cases of catarrhal salpingitis the tubes feel like little hard, irregular cords, pointed at their uterine end, swollen at the other. The anatomical relationship of the tubes has become changed and on account of the thickening they have undergone they become heavy and fall down behind the uterus into Douglas's cul-de-sac. Cystic salpingitis feels like an oval, hard and irregular mass which gives rise to the sensation of fluctuation in certain points. In all these tumors we can find a distinct separation from the uterus and they are united to the cornua by a kind of pedicle. The uterus is pushed to the opposite side if the lesion is on one side only, but when the latter is bilateral the uterus is more frequently pushed forwards towards the pubis.

Acute secondary pelviperitonitis is practically only a complication of acute purulent salpingitis, and is consequently preceded by the latter affection. It disappears in a few days if the patient is kept quietly in bed, but it usually leaves the adnexa more or less bound down in a mass of exudate. In the beginning there is a sharp pain in the hypogastric region, chills and temperature reaching 39° C. to 40° C., nausea and vomiting, in fact, all the signs of an ordinary acute peritonitis, but what should be remembered is that the secretion coming from the genital organs is always increased in amount. At this time fluctuation is difficult to make out, but in some cases the serum infiltrates the vaginal walls, which become thick and to which the French authorities have given the very apt term of "cardboard vagina."

The serous fluid next transforms into pus and this pus becomes encysted and then all the local symptoms become more marked, but the general symptoms undergo a decided improvement. The pelvic abscess is thus composed, as I have already pointed out in speaking of the pathology, and then its next move is to make its exit. When the abscess discharges through the rectum we have all the symptoms of an acute proctitis, namely, a recurrence of the fever, tenesmus and a very acute dysuria. When the abscess bursts through the vagina, the fact is simply known by the presence of pus coming from the genital canal. If the abscess pocket should burst into the general peritoneal cavity, a condition that my personal experience would lead me to believe as being extremely infrequent, it would naturally give rise to all the symptoms of an acute septic generalized peritonitis.

Evacuation of pus may recur several times when the abscess has been left alone because it cannot thoroughly empty itself, and finally most rebellious fistulae form, which may cause the patient's death by general hectic.

As regards the diagnosis of the abscess of the broad ligament, it has been pointed out that the condition presents alternatives of increase and decrease in the size of the tumor, and it is a well-known fact that the cellular tissue of the broad ligament may be the seat of an inflammatory process which is very long in its course and difficult to cure, but which has little tendency to undergo suppuration.

All pelvic inflammatory processes have generally a chronic evolution, and the acute or subacute cases are in most instances simply a lighting up of a latent focus. A pyosalpinx, after having produced very acute symptoms, may continue its evolution insidiously, only giving rise to pain and disturbances of

menstruation up to the time when a perimetritis develops and then a pelvic collection is formed. If it undergoes an intraperitoneal rupture the prognosis is always bad, but the pocket may open into no matter what organ situated in the neighborhood, and one or more fistulae are formed. An abscess of the broad ligament may undergo resolution, but usually the suppurative process continues and the pocket may open into the vagina, the rectum, rarely through the abdominal wall and still more infrequently into the uterus or bladder. After the pus has been voided the symptoms improve, but the collection will surely reform sooner or later and, as in the case of pyosalpinx, fistula formation will result.

After its sudden commencement and high elevation of the temperature a pelviperitonitis will either pass on to the chronic state, or the liquid collection will become absorbed or be evacuated into another organ. In the puerperal form of pelvic suppuration the prognosis is extremely serious.

An experience of more than six years in vaginal work has demonstrated to me the fact that posterior colpotomy is a very innocent operation and in the highest degree conservative. It may be performed not only in cases of acute purulent lesions in the pelvis where it would be imprudent, not to say dangerous, to perform laparotomy or vaginal hysterectomy, and also in cases of chronic purulent pelvic lesions. Posterior colpotomy should, in my opinion, be preferred to laparotomy or vaginal hysterectomy in every case where the patient is a young woman, when it is the duty of the surgeon to preserve the adnexa at any cost, and I know of patients who have had their pelves full of pus which was removed by vaginal incision and who afterwards became mothers. This conservative operation in no way compromises the result if any more radical operation should be deemed necessary later on, and I have never seen a fistula follow in any of my patients, whose number is already fairly considerable. To sum up, I may say before describing the technique and indications and contraindications of the operation, that every suppurating pelvic collection that is accessible by Douglas's cul-de-sac is suited for posterior colpotomy and drainage, the technique of which I will now describe.

In practice the operation may be considered in most cases one of emergency, and consequently no very elaborate preparations can be made, but if one has a day or two at his disposal the ordinary preparation as used in any abdominal operation should be employed, and particular care should be given to completely empty the intestines.

The instruments necessary are few and simple. Two ordinary hysterectomy valves, a few artery forceps, two stout tenaculum forceps, a long and stout pair of curved scissors, two large glass or rubber drainage tubes and an irrigator are all that are necessary. To operate easily in the vagina depends entirely upon the valves used and none have given me such perfect satisfaction both in simplicity and effectiveness as those devised by Segond, of Paris. We believe that the operators who speak of the vaginal route as a blind method do so because their vaginal retractors are improperly constructed and are insufficient, and it is for this reason that I have insisted on this point.

Another thing that is essential in vaginal work, in order to do it properly, is the right kind of an operat-

ing table, one in which an exaggerated Trendelenburg position can be obtained when the patient is in the lithotomy position, and a table that fulfil this to perfection and which is remarkable by its great strength and perfect simplicity is the one invented by Pryor, of New York. This table has given me entire satisfaction, and it is particularly useful in home-to-home operating, as it can be folded up into very fairly small dimensions.

After having seized the cervix with the two strong tenaculum forceps, one retractor is placed on the posterior vaginal wall, and the cervix is drawn upwards towards the pubis until it cannot be drawn any farther by a gentle traction. With the stout curved scissors a transverse incision varying from four to six centimetres in length is made in the vaginal mucous membrane at the point where it joins the cervix. The mucosa should be boldly cut through with one cut of the scissors, and then introducing the finger through the incision the adhesions are rapidly broken down, the peritoneum is felt, and then guiding the scissors along the finger introduced into the wound the surgeon incises the peritoneum, keeping close to the posterior aspect of the uterus. In very pronounced cases the purulent collection may project so distinctly into the cul-de-sac that the abscess pocket is opened at the same time that the incision into the mucous membrane is made. I would here say that occasionally considerable hemorrhage may arise from the vaginal incision, and if it is very considerable I think it is better to immediately ligate the vessel or vessels giving rise to the blood before proceeding, because in one case recently operated on quite a serious post-operative hemorrhage ensued, which was only arrested after considerable difficulty. I will say, however, that this case was simply the removal of the adnexa through the vagina, and not a pus case, and that the clamps placed upon the ovarian artery held well and the pedicle was carefully inspected and no oozing came from it, and after considerable trouble the bleeding point was located in the right-hand angle of the vaginal incision. This is, however, the only case where the vaginal arteries have ever given me any trouble. After the sac has been incised the pus flows out freely, and then the cavity should be explored with the finger in order to ascertain if other pockets exist, and if so they should be broken down and emptied. On several occasions I have found large pus tubes on both sides present, and in these cases, having made sure by digital examination that the general peritoneal cavity was protected by the formation of adhesions, I have opened these pockets with the scissors and inserted a large drainage tube in each tube with very happy results.

After the pocket or pockets have been thoroughly evacuated the cavity is carefully irrigated with a 1-2,000 solution of cyanide of mercury or a 1-3,000 solution of citrate of silver.

If the pocket is very small, a wick of iodoform gauze may be sufficient, but it is better practice to obtain a free drainage and for this purpose two glass drainage tubes or two red rubber drains should be introduced well up into the cavity. The vagina is next carefully packed with gauze, and an ordinary aseptic dressing is placed over the vulva and held in place by a T bandage. The next day the pocket is carefully cleaned out with peroxide injected into one drainage tube, and after a couple of days the vaginal packing

is removed and renewed. As the pocket retracts it forces the tubes downward and after a few days usually they may be changed for ones of smaller calibre.

Posterior colpotomy has been more particularly advised in cases of pelvic suppuration and the so-called retro-uterine hematocele. This latter condition does not come into the province of this paper, but I would like to say one or two things regarding its treatment by the vaginal incision. As we all know, hematocele is due to the rupture of an ectopic gestation in a large majority of cases, and when it results in a large collection of blood and all evidences of hemorrhage have ceased, posterior colpotomy is, in our opinion, by far the better method to adopt under these circumstances. Laparotomy is always a very serious operation when dealing with a hematocele, and is always attended by many difficulties, and posterior colpotomy should be preferred to the abdominal route because it is a more simple operation, far less dangerous, and just as efficacious if not more so than the abdominal incision. In cases of hematocele the adnexa can be explored with as much ease through the vaginal incision as through the abdomen and they can be removed with just as much ease through the vagina if it is deemed necessary to do so. We believe that there is less liability of infecting the cavity after the blood has been removed when posterior colpotomy is done, because we get a natural and easy drainage and it can be treated more directly than through the abdomen.

Posterior colpotomy may also be used as a preparatory step towards vaginal or abdominal hysterectomy, and after the purulent pockets have been emptied and drained they diminish in size, the patient's general septic condition can be improved, and then if total hysterectomy is deemed necessary, it can be done under far more advantageous conditions.

In principle, all cases of pelvic suppuration should be treated by incision and drainage, and this having been said we should examine more closely what should be our conduct in the presence of primary or secondary pelvic suppuration, be it either acute or chronic. In those cases where the purulent collection is localized within the pelvis and when it is not composed of a large number of pockets, posterior colpotomy is proper. On the other hand, when dealing with those cases where the purulent collection is so divided into minute cavities that the mass forms a sponge full of pus, so to speak, colpotomy is insufficient and vaginal hysterectomy is, in our way of thinking, the proper operation to select.

In doubtful cases vaginal incision can be performed, the parts can be explored and will be no detriment to the performance of vaginal hysterectomy if necessary. When we are dealing with a peri-uterine collection which projects into the posterior cul-de-sac, vaginal incision is indicated. Even in those cases where a very prolonged inflammatory process has been present and has changed the walls of the pocket so that they have become sclerous and adherent, vaginal colpotomy may be indicated, provided that the pocket is a small one. Every time that the collection is situated high up in the pelvis, but is accessible to the finger in the vagina, the vaginal incision is indicated. When there are several pockets they may all be opened one into the other through the vaginal incision.

In those cases where the collection is situated high up in the pelvis and cannot be reached by the finger

in the vagina, posterior colpotomy is contraindicated and abdominal section should be resorted to. When the purulent collection is very large and surrounds the uterus, so that it floats, so to speak, in pus, vaginal incision is proper, but on account of the multiplicity of the pockets vaginal hysterectomy will have to be resorted to, because in most instances drainage would not be sufficient.

In this latter class of case it is practically useless to endeavor to preserve the tubes and ovaries, because the pus and false membranes which completely surround these organs will progressively give rise to their destruction.

When we are dealing with an acute suppurating salpingitis or a puerperal pelviperitonitis, the serious general condition of the patient demands the evacuation of the pus by posterior colpotomy, because laparotomy and hysterectomy are particularly grave under these conditions.

In cases of acute gonorrhoeal salpingitis or pelviperitonitis the general condition of the patient will be the guide which will dictate to the surgeon how he should act, but generally speaking, a large number of these cases will recover perfectly after the pus has been evacuated through the vagina unless the pocket has become secondarily invaded by the streptococcus or the staphylococcus. Abscess of the broad ligament is subject to the same treatment.

In closing this paper I would say that posterior colpotomy is, in my opinion, a justifiable procedure in a large majority of cases, and, like everything else in surgery, if we can cure a patient by a simple operation, that is the one to be selected. I have endeavored to point out that the operation in question will not cure every case any more than will any other one operation, but it certainly has a vast field of usefulness and in many cases a patient will be left with all her organs of generation in a very fair state of health, and we should always endeavor not to sacrifice these organs whenever the condition justifies.

PARTURITION COMPLICATED WITH SUPPURATING FIBROIDS.¹

BY E. H. STEVENS, M.D., CAMBRIDGE, MASS.

WHEN I accepted your secretary's kind invitation to present a case of suppurating uterine fibroid complicating pregnancy, with an operation, I expected to be able to refer to other cases of a similar nature which had been reported. With the limited time at my disposal for looking over files of medical journals and books of reference, I have been unable to find a single case. I presume there are many such cases which have escaped my attention. I hope some one will be able to refer me to such reports. Such cases must be relatively rare and therefore all the more interesting.

The case which I shall report to-night occurred in my practice in 1897. It has seemed to me of sufficient interest to warrant my bringing it to the notice of this society. In looking over the records of my obstetric cases (something over 2,200), I find mention of 18 cases where uterine fibroids complicated labor. In all of these cases the mother recovered. In only

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, February 28, 1900.

2 cases was the child lost. This does not include the case before us.

March 1, 1897, I was consulted by Mrs. P., age thirty-nine. She gave the following history: Ten years married; miscarried at three months nine years ago; not pregnant since. Health always good up to nine months ago, when she began to have a bearing down in the pelvis, with pain in the back. She consulted a Boston physician, who said she had an enlarged uterus. Was treated by electricity for several months. Thinks treatment relieved symptoms. Menstruation has been regular and normal in amount up to January 12, 1897, since which time it has not appeared; she has had difficulty in passing water for two or three weeks past. Experienced a feeling of discomfort at the stomach—not amounting to nausea—for about the same length of time. General health good. Vaginal examination reveals a mass which nearly fills the pelvis. This mass is connected with the body of the uterus. The cervix, which is soft and patulous, is well up behind the pubes. The whole mass is movable, but cannot be pushed up above the brim of the pelvis. Diagnosis: Uterine fibroid, probably complicated by pregnancy.

Patient consulted Dr. W. H. Baker, who confirmed the diagnosis and advised waiting developments. On two occasions it was found necessary to use a catheter to empty the bladder. On April 15th a sudden attack of pain lasting half an hour. An examination made two hours later showed the pelvis free from the mass which had filled it; the cervix in its normal position. In the abdomen a rounded tumor could now be felt, which was quite freely movable.

From this time until October 25th, when she was confined, her health was good. On the above date she was delivered of a healthy female child weighing eight pounds. The first stage of labor lasted three hours, second stage two hours. The delivery was in every way normal. The uterus contracted quickly, a very small amount of blood being lost. On my next visit eight hours later, temperature 100°, pulse 80; feeling perfectly comfortable. At five o'clock the next morning, twenty hours after delivery, woke with a severe chill. Temperature at this time 105°, pulse 130. When seen two hours later was complaining of headache. Temperature 102°, pulse 110; no pain or tenderness in the abdomen; lochia free and in appearance normal. A careful examination of the vagina showed nothing wrong. The uterus was thoroughly cleaned out and drained with iodoform gauze. (This was done as a matter of precaution.) At my next visit, five hours later, temperature was 100°, pulse 80; comfortable in every way. By evening, temperature had risen to 102°, pulse 100; lochia free and normal in appearance. Drain removed and uterus carefully cleaned; passes urine freely.

Morning of second day. Nurse reports patient as having a restless night with slight chill at 2 o'clock A. M., temperature reaching 103.2°. Uterus and vagina again carefully cleaned; lochia perfectly free from odor. Seen at 10 A. M. by Dr. W. H. Baker, temperature 99½°, pulse 80. Appears perfectly comfortable. A thorough examination by Dr. Baker failed to discover any tenderness. A few hours later came a severe chill with high temperature and pulse, which continued through the night.

Morning of third day, 8.30. Again seen by Dr. Baker. Breasts filling; lochia free from odor;

uterus with tumor freely movable, no tenderness. Dr. Baker advises free use of alcohol; a continuance of the intrauterine douche, with generous feeding. At this time the question of doing something surgically was discussed and decided in the negative. As the pulse and temperature continued high with other evidences of general septic infection, I decided to use antistreptococcus serum. Twenty cubic centimetres were injected at 4 P. M., temperature being 104°. Four hours later temperature had fallen to 100°, with free perspiration; general condition good.

Morning of fourth day. Passed a fairly comfortable night, temperature 103°, pulse 120. Little milk in breasts; lochia becoming less, entirely free from odor. Second injection of 20 cubic centimetres of serum given. Four hours later temperature 101°, pulse 100; taking two ounces of brandy every two hours. Stomach retains food well. Evening temperature 103°, pulse 120.

Morning of fifth day. Passed a restless night, pulse 112, temperature 102°. Dr. W. L. Richardson in consultation. He agrees in diagnosis of general septic infection. Advises continuation of intrauterine injections and full doses of alcohol. The question of hysterectomy was again discussed and decided negatively. Dr. Darling reports no growth from blood taken the day before. A culture taken from the cervical canal shows a variety of bacteria but no streptococci. The urine, which is fair in quantity, shows albumin for the first time.

Morning of sixth day. A severe chill during the night, followed by high fever and great prostration. Color beginning to be bad. At times has profuse perspiration; mind clear. Takes from 12 to 16 ounces of brandy every twenty-four hours. Bowels have moved freely each day. From the sixth to thirteenth day, no chills. Has only a slight discharge from vagina, which is tinged with blood and entirely free from odor. All injections were discontinued. Pulse and temperature continue high, with free perspiration. No tenderness or pain on pressure. Mind clear when awake; sleeps a good deal.

Morning of fourteenth day. Had two chills since yesterday, temperature reaching 106½° after one of them. Vomited for the first time this morning. Mind wanders in sleep.

Sixteenth day. Seen by Drs. J. Homans and W. L. Richardson, who agree that the tumor is probably suppurating. They advise abdominal hysterectomy as a last resort.

Seventeenth day. Temperature 103°, pulse 120. Slight chill during night; mind dull, but rouses and talks about operation. A complete hysterectomy was done by Dr. W. H. Baker. There were no adhesions, the peritoneal cavity being perfectly normal in appearance. The operation was quickly done and was well borne. Very slight vomiting from ether. Six hours after the pulse was 110, temperature 102°. Very little pain.

Eighteenth day. Slept five hours; had one-eighth grain morphia subcutaneously. Abdomen very little distended. Mind more clear than for two days. Has not vomited since last evening. Pulse 110, temperature 102½°. Takes brandy and champagne freely. Evening temperature 103°, pulse 120.

Nineteenth day. Slept but little during night; was kept awake by the incessant itching of a rash which covers the entire body, in appearance like that seen

after the injection of diphtheritic antitoxin. Has vomited several times; extremities cold; several loose dejections. Abdomen not tender; very little distention. Pulse 130, temperature 98°.

Twentieth day. Has slept only three hours of the last twenty-four. Suffers very much from constant irritation of skin. The rash, dark red in color, has become confluent over the entire body. Face, hands and legs, swollen and tender to pressure; abdomen moderately distended; no vomiting. Temperature 97°, pulse 140. Evening temperature 104°, pulse 140. Other conditions same as in morning.

Twenty-first day. Rash less red, and less swelling about face. Almost constant delirium. Pulse 150, temperature 106°. During the day she became comatose and died about midnight, five and a half days after the operation. No autopsy. The wound was examined and found to be perfectly healed.

This most unfortunate case presents several points of interest.

The first question which I have asked myself over and over again is: Could anything more have been done to prevent this tumor from becoming septic?

The second question which presents itself to my mind is: Would the result have been different had an operation been done within the first three days after the first chill?

The third important question is: Did the use of antistreptococcus serum do harm?

In answer to the first question I can only say: The surroundings were the very best. A carefully trained nurse was in attendance. No pains were spared to have everything used about the patient as aseptic as possible, both before and after labor. At the first warning of trouble the vagina and uterus were carefully and thoroughly cleaned.

To the second question my answer is: Should another similar case present itself to me I should not hesitate to advise an early operation.

To the third question: Did the serum injected do harm? It certainly did no good. The appearance of the rash two days after the operation caused great discomfort as well as great depression. My own opinion is that it did do harm.

There was no evidence that the organism which caused the trouble in this case was a streptococcus. In fact, the clinical aspects of the case would be against such a theory. I have used serum several times since in non-puerperal cases, but have always had positive evidence of the presence of streptococcus, either from its presence in the blood or from the point of infection. If antistreptococcus serum is expected to be of service we should have a streptococcus infection. Where such infection is known to exist we are justified in resorting to almost any measures which experience has shown may be of benefit.

BRITISH LOSSES IN SOUTH AFRICA.—The total losses, exclusive of sick and wounded, have been 29,706, of which the killed in action were 254 officers and 2,403 non-commissioned officers and men; died of wounds, 70 officers and 610 non-commissioned officers and men; missing and prisoners, 65 officers and 2,624 non-commissioned officers and men; died of disease, 133 officers and 4,204 non-commissioned officers and men, and invalided home, 844 officers and 18,433 non-commissioned officers and men.—*Medical News.*

Clinical Department.

GLANDULOPENILE HYOSPADIAS; TWO URETHRAS, ONE EXTENDING TO THE BLADDER, THE OTHER TWO AND ONE-HALF INCHES LONG, AND TERMINATING IN A BLIND POUCH.

BY J. COPLIN STINSON, M.D., C.M., SAN FRANCISCO.

M. B., age seventeen years. No history of malformations in other members of the family. The case is reported more as an anomaly than for any other reason. An aunt died of phthisis. As a boy he had a tubercular knee-joint, which with local and constitutional treatment got well. Since then his general health has been fairly good. A couple of years ago he was operated upon for a convergent strabismus, with fair but not complete success. He is inclined to be anemic, has smoked and inhaled cigarettes for a number of years, using on an average one hundred and twenty a week. About June, 1898, he became infected with gonorrhoea. No history of any operation of the urethra, penis, etc. Examination showed a free, purulent discharge. His penis is above the average size. The glans is well developed; on its under surface is a deep vertical groove which represents the glandular urethra. There is a depression at the proximal (nearer his pelvis) end of glandular groove which admits a small probe about one-eighth of an inch. The proximal portion of glans for about three-fourths of an inch is covered on its superior surface and lateral aspects with prepuce, but the inferior surface is free from covering. There are two linear scars on the skin of the prepuce, one on each side, extending in a semicircle around the prepuce. The scars do not meet on the superior surface of prepuce, but for about one-third of an inch in the median line of the superior surface the skin is entirely free from the scar tissue. Where each cicatrix terminates the skin is heaped up into a mass of fine scar tissue, each mass being about one-fifth of an inch in diameter. The glans penis is drawn downward and is fixed at about a right angle to the shaft of the penis. This is probably due to adhesions, contraction of scar tissues, and the loss of prepuce and subcutaneous tissues on the under surface of glans and penis. There are two urethras, one extending to the bladder, the other two and one-fourth inches long passing parallel with the main tube, but ending in a blind pouch. The external orifice of urinary urethra is situated in the penile urethra about one-half inch posterior to proximal portion of glans; the opening is small, admitting about a 16 French sound, and its edges are somewhat cicatricial. It is situated slightly to the right side of median line, and on inspection a small patch of mucous membrane of urethra can be seen. The canal of urinary urethra is apparently of normal calibre. The incomplete urethra is situated close to the left of the urinary urethra, about in the median line. Its external orifice is small, but readily admits the bulbous end of a pocket-case probe, which passes downward along the median line for two and one-half inches, where it terminates in a blind pouch which does not communicate in any manner with the urinary urethra. This I have tested in several ways, for example, by probes, small sounds and injections. He has no disturbance with micturition or urination, except that

the stream is about half the normal size, and passes downward at right angles to the shaft of the penis. Copulation is not interfered with. There was considerable discharge of pus from both urethras. This shows that the one ending in a blind pouch is also lined with mucous membrane. I had considerable trouble treating the short tube. I used daily mild antiseptic solutions but with no quick results. I then employed applications and injections of carbolic acid in tincture of iodine, one in ten, with a fine probe and a hypodermic syringe with a fine but blunt needle. With the iodine-carbolic solution the discharge ceased. Altogether four injections of carbolic-iodine solutions were made at two-day intervals with the blunt-pointed hypodermic syringe. The last injection was made July 28, 1898. Since then no discharge at all has been noted. No operation was done for the deformities.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting Wednesday, February 28, 1900,
Dr. R. A. KINGMAN in the chair.

Dr. C. G. CUMSTON read a paper entitled

GENERAL REMARKS ON THE PATHOLOGY AND SYMPTOMATOLOGY OF ACUTE PELVIC SUPPURATIVE PROCESSES IN THE FEMALE AND THEIR TREATMENT BY POSTERIOR COLPOTOMY.¹

Dr. BAKER: I think the society is certainly indebted to Dr. Cumston for his very clear description of the pathological process present in these cases, which is too often overlooked by writers in general. I think the treatment by vaginal or abdominal route in these cases must depend upon (1) the individual case, as he has suggested; (2) upon the experience of the operator. For my own part I should feel generally in such cases I can save more tubes and ovaries by the abdominal route than I can by the vaginal. After separating the adhesions, oftentimes opening the tube, resection of the tube, washing it out, etc., I think that I can save more tubes and ovaries by careful work in the abdomen than I can by the vagina. However, I think that the operator must be largely guided by his own personal experience. I have been very much interested indeed in Dr. Cumston's paper.

Dr. STEVENS: I think that Dr. Cumston's conclusions have been demonstrated in former times before operations were done as much as they are at present. It was not an uncommon thing to see a woman who had a pelvic abscess, pelvic cellulitis, as it used to be called, with free discharge of pus into the vagina, or into the rectum more commonly, make a perfect recovery and bear children. I can remember more than one case where that has happened, and if that would happen under those conditions where the thing was left long enough to discharge, it certainly must be very much more favorable when operation can be done earlier and very much less destruction of tissue go on. I have been very much interested in the doctor's

paper, and I should feel a good deal as Dr. Baker does that the experience of the operator would have a good deal to do with success in this operation. It seems to me desirable always to get the pus out through the vagina when it can be done, and the technique that Dr. Cumston has pointed out I think would be a help to all of us in those cases.

Dr. BRECK: I have very little to add except that I believe in the operation thoroughly and have done it quite a number of times. It has been a source of satisfaction in several cases with very large abscesses where I was obliged to explore cavity after cavity bimanually, opening one into another to see the thorough recovery which followed. I should like to say a word about one condition that is sometimes mistaken for the ordinary pelvic suppuration, and that is, for instance, a case like this: A gonorrhoea which is evidently extending into the uterus and apparently into the tubes, producing a mass to one side of the uterus, and you operate and relieve what you suppose to be a tube filled with pus. A sinus remains open (as in a case which I operated upon this morning) for some unexplained reason, and after dilating that opening and curetting a few hairs come away, showing the nature of the case at once. I have had one or two of those cases in which there was every reason to think there was the ordinary pelvic suppuration, and in which a small cyst has been found to be present, showing one way in which the operator may be deceived.

Dr. BOLAND: The possibilities of the usefulness of this operation in ectopic gestation are very suggestive, but in the few cases I have seen (there was one or two where there was great uncertainty, and one in which the diagnosis lay between extra-uterine pregnancy and twisted pedicle) the abdominal route was safer and better. In the ectopic gestations I have had it was not so much a question of getting rid of the blood as of preventing further hemorrhage. Where you have no sepsis to deal with, the abdominal route is safe unless the woman is terribly collapsed, and even then I have seen them considerably collapsed and recover.

Dr. DENNETT: I have seen Dr. Cumston remove ovaries and tubes through the vagina. I believe one objection urged against it is that you are working in the dark. By his method you are not working in the dark. I have seen him take down the ovaries and tubes so that they are plainly visible with the instruments that he uses. I believe that infection sometimes takes place when the ovaries and tubes are normal, and not through the lymphatic system by the micro-organisms going through the uterus itself. I think cases have been reported as such. I think Dr. Cumston seems exceptionally successful through that route, and I was surprised the first time I saw him operate at the ease with which he did that work, both removal of the ovaries and tubes and uterus.

Dr. KINGMAN: I am glad Dr. Cumston has brought up this matter, for many will agree with him in the advisability of operating on this class of cases through the vagina who might have some difference of opinion when it came to some other forms of vaginal operating. Personally I have been in favor of the vaginal route for these cases and operate by preference by that method. I have a case for to-morrow at the Carney Hospital, with a large accumulation of pus in the pelvis extending upward, which I suppose will be operated by that method. It seems to me it offers

¹ See page 51 of the Journal.

a favorable opportunity of saving organs which otherwise might have to be sacrificed, and this is certainly a consideration of value.

DR. CUMSTON: I would like to give an instance where vaginal colpotomy was the only thing that saved the patient's life. A young lady was confined in August. Normal labor. Nothing went wrong for the first two weeks, and about the only thing in her previous history was that as a young girl she had been in a private hospital for what was called an abscess of the ovary, and a very excellent surgeon in this city had charge of it at that time, but when I questioned him on the subject he had only a faint recollection of the condition. This patient went well until two weeks after confinement, when the temperature began to go up. I found the uterus all right. The temperature stayed up several days about 38.5° C. As it would not go down by douching, I went over the endometrium carefully with the curette, with the result that it dropped immediately after the operation, but only to remain a day or two, and went up and continued to go up every day, until after watching that patient a fortnight I came to the conclusion she was going downhill and would probably die from septicemia. In the meantime she complained of pain on the left side at the site of her former trouble. Palpation revealed a mass. It was tender to pressure, and it was hard to say what size it might have been, but perhaps the size of a mandarin orange. On consultation with the gentleman who had formerly taken care of her, we agreed that the proper thing was to drain that pocket which was done through the vagina, but unfortunately for myself I considered the pocket so small that I put in gauze drainage and not a tube, as is my habit. The patient simply went downhill until five days later she was almost moribund, thoroughly septic. Consultation again with the same surgeon. He thought she could not live and that another operation was useless. I was not satisfied, and with him I agreed to have another gentleman in consultation. That gentleman decided in my favor that a second operation was the proper thing. I went in again, opened up another small pocket, put in two large drainage tubes and drained that cavity for somewhat over four weeks. That patient is practically well to-day. She went out about the last of November for the first time, and is now about and going out every day and in comparatively good condition. The only trouble she has is at the time of menstruation; she has some little pelvic pain on that side, which I think is due to adhesions. I was perfectly able to demonstrate the exact nature of the lesion on palpation through the incision. I could demonstrate to my entire satisfaction that all the trouble was on the left side. She was saved by the operation. It was no case for hysterectomy. I have seen other cases where perhaps the condition was not quite so bad as in this patient, but very serious, and if allowed to go on as in this would have presented the same symptoms.

There is one thing in reply to Dr. Boland I would say. I mentioned in my paper in regard to pelvic hematocoele that I should not advise posterior colpotomy except in those cases where the collection of blood had become encysted and I was positive the bleeding had stopped.

DR. E. H. STEVENS, of Cambridge, read a paper

PARTURITION COMPLICATED WITH SUPPURATING FIBROIDS.²

DR. BAKER: This case is certainly a most unusual and very instructive one. It seems to me that Dr. Stevens has hardly laid stress enough on the thorough work that he did with this uterus during the puerperium. From the time of the first rise of temperature, which to his mind meant some infection, knowing the location of this to be probably inside the uterus he began at once his work with the endometrium, cleansing the cavity with the curette and ensuring perfect drainage from the uterus. In going over the case from time to time with Dr. Stevens it so happened that the times that I saw her after the operation occurred just after he had done some such thorough work as I have just described, the temperature had dropped and things looked very much more favorable and as if things then were going on all right, but we were led into error. I think the lessons drawn from this case, unusual although it is, and the only case, so far as my knowledge goes, where a like condition has been present, is, that in such a case, not yielding to the first curetting, and the first thorough cleansing of the interior of the uterus, knowing the presence of a fibroid in the substance of the uterus, we should proceed at once to hysterectomy and not lose any more time. My experience of nearly thirty years in the diagnosis, course of development and appropriate treatment of fibroids of the uterus has been full of the greatest interest and importance. Without enlarging the scope of the subject of the paper of Dr. Stevens to too great an extent, I would briefly say that as the result of that experience, in a large majority of cases I have found the existence of fibroids of the uterus in married women to be the cause of sterility. In a small minority I have found pregnancy occur, and during the course of such pregnancy to greatly increase in size, and with the subsequent involution of the uterus after labor to find a corresponding diminution in the size of the fibroid, even in some cases its absolute disappearance. That the existence of a fibroid during pregnancy does complicate matters to a somewhat serious extent, I think no one could question, but I feel unwilling to accept my fixed rule of procedure to be applied to such cases in general, and know of no subject the individuality of which case must be more carefully considered than the appropriate treatment of one belonging to the class described by Dr. Stevens. Among the cases of this class which come prominently to my mind is the following:

Mrs. E. W. P., referred to me by Dr. J. M. Smith, of Barnstable, Mass., January 29, 1882, was thirty-two years of age. Had been married four years. First noticed at the time of her marriage an enlargement of the abdomen on the right side, which seemed to her about the size of her fist, and which slowly but steadily increased in size. This gave her no special pain until about a year before she consulted me. Then it was noted that about the menstrual period it increased much in size and became painful. Being the wife of a sea-captain she sailed with her husband from Zanzibar for home, September 24, 1881, and when she consulted me she had had no menstruation for five months. There was no special inconvenience noticed except frequency of urination and constant nausea. She was examined by a prominent authority

² See page 56 of the Journal.

in London in November, with the opinion that she was not pregnant and that the absence of her menstruation was due to the change of climate. About a month before she consulted me she felt a decided quickening, and this motion had grown stronger in the last month. Physical examination showed the uterus to be enlarged unequally. The left half of it seemed soft to the feel, and through the abdominal walls I could detect the motion of the fetus. The left half, however, felt hard and had risen to a point about five inches above the umbilicus. Diagnosis of pregnancy at the beginning of the sixth month complicated with fibroid, interstitial in character. I referred the case to Dr. O. W. Doe for delivery. April 29th Dr. Doe brought on labor at the eighth month, considering it unwise to wait any longer for natural delivery, on account of the great size of the patient. He delivered her safely and her convalescence was uneventful. I saw the patient six months afterwards, the mother and child both being well, and although I could still detect the presence of the fibroid, it had diminished two-thirds in size from that which it was when I first saw her.

Other cases I have in mind, but am not able at this moment to refer to the notes of them, where the fibroid has entirely disappeared during the puerperium. Some eight or ten years ago, the late Dr. Francis Minot reported to the Obstetrical Society of Boston one or more similar cases, and my remembrance of the discussion at the time was that his paper brought out a number of illustrative cases where fibroids had entirely disappeared after labor.

DR. BRECK: I would like to show a specimen which somewhat bears on the present discussion—pregnancy with fibroid tumor in which hysterectomy was done. Single woman, thirty-six, about five months pregnant. She had a large tumor to the left and above the uterus which reached high into the left hypochondrium and which was movable. The size of the tumor was that of an average musk melon, and that of the abdomen what might be expected at seven and one-half months' pregnancy. Thinking it was probably ovarian I advised operation, and yesterday morning operated with the assistance of Dr. Twombly. We made an incision just below the umbilicus, and introducing the hand found this tumor proceeding from the left cornu of the uterus with a very large pedicle. It showed the muscular fibres of the uterus so distinctly that I thought at first it might be a uterus bicornis, but further examination showed it was probably a fibroid. The question was whether to let the tumor alone or attempt removal. In manipulating the uterus to see if he could get the pedicle, the question was decided by a very profuse hemorrhage which took place at the junction of the tumor with the uterus. This could not be permanently controlled on account of the friability of the uterine tissue. It was temporarily controlled by gauze pressure and the complete operation done, the uterus being amputated above the cervix. The patient has made³ a complete recovery, the convalescence having been a very smooth one.

DR. CUMSTON: The question of complications due to fibroids during pregnancy and the post partum is extremely important both to the general practitioner and the surgeon, and is a vast subject. I think the society is indebted to Dr. Stevens for his valuable contribution to the subject.

³ March 16, 1900.

We all know the frequency of metritis in cases of fibroid, and the serious complications which may ensue from the lesions of the endometrium; we also know of the renal complications due to these growths, such as pyelonephritis. Various forms of cystitis are also met with. Hemorrhage complicating fibroid growths of the uterus is probably the most frequent and one of the most serious complications which may occur, and is more frequently met with during the post partum, although cases are recorded where loss of blood occurred during gestation, in which case the neoplasm was usually seated in the cervix.

Of these complications I will say nothing, and shall confine my remarks to the inflammatory and infectious processes occurring in fibroids and which frequently complicate the post partum. Naturally their frequency has considerably diminished since the introduction of antiseptics. The septic complications are of two origins: They are either produced indirectly by the fibroid, following obstetrical manipulations and operations of all descriptions necessitated by the presence of the growth, and where proper surgical antisepsis and asepsis have been improperly carried out; or the complications may be produced directly from a necrosis of the growth which has been produced by laceration or compression that they have undergone during labor, or following a softening of the fibrous mass during pregnancy.

It is, however, necessary, in order that infection shall take place, that an entrance has been given to the pyogenic germs existing without, because it is well known that a subperitoneal fibroid, for example, which has lost all its connection with the uterus and which is free in the abdominal cavity will never give rise to any septic process. But even after a perfectly normal labor, numerous lesions can be produced in the lymphatic and venous channels which allow an easy access to pathogenic bacteria if strict surgical cleanliness is not observed.

My experience with pregnancy complicated by fibroids giving rise to septic conditions is limited to two, and I will briefly report these cases and quote a few others that have been reported in the general medical literature.

CASE I. We saw in consultation a young woman, twenty-five years old, who had been delivered of her first child four weeks previously. The labor, other than being rather tedious and long, had been perfectly normal. Twenty-five days after the confinement the patient had a chill and the temperature went up to 39° C. At our visit we found the abdomen distended, the pulse 120, presenting the peritoneal type. The urine contained a considerable amount of albumin, and indican was present. Upon examination the uterus was found to reach nearly to the umbilicus; the cervix was soft and the uterine cavity, which was greatly dilated, was found filled with a dirty, fetid pus. In the right iliac fossa a large purulent pocket was found communicating with the cavity of the uterus. This was opened by posterior colpotomy and explored, which resulted in removal of the debris of a fibroid tumor about the size of an orange, which had become compressed during labor and had undergone gangrene. The bits of neoplastic tissue were removed, the cavity was irrigated and thoroughly drained, and the patient made an uneventful recovery.

CASE II. The patient was a woman thirty-two years of age, who had been married five years, during

which time she had had four miscarriages, all occurring about the second month. When seen for the first time a pregnancy of about four months, complicated with a fibroid tumor, was diagnosed. About two weeks after seeing the patient, she developed all the symptoms of a pelviperitonitis, and in a few days gave issue to a fetus about five months old. About ten days after the miscarriage the patient had a chill, the temperature reached 40° C. and the pulse was rapid and intermittent. This condition did not change, and as the symptoms of septicemia were rapidly increasing, we decided to open the abdomen. Laparotomy was performed and we found a large subperitoneal fibroid, which had contracted firm adhesions with the parietal peritoneum, the omentum and intestine. Palpation of this large tumor showed that in certain spots it was fluctuating, and an incision was made over the most prominent point of fluctuation, which gave issue to about a litre of yellowish, creamy pus. On account of the great adhesions binding the growth, which would necessitate a very long and tedious operation for its removal, and could not be withstood by the patient on account of her very poor general condition, we drained the pocket and closed the abdomen. The patient, however, died in twelve hours after the operation, but unfortunately no autopsy could be obtained.

Here are a few other cases which I have found reported. The first is that recorded by Hegar of a patient three months pregnant, and who presented a large uterine fibroid, which had become softened and inflamed. Peritonitis developed and laparotomy was done, but the patient died three days afterwards.

Trenb reports the case of a woman twenty-seven years old, who for several years had presented an abdominal tumor which extended up to the umbilicus, but had never given rise to any pain. Menstruation had always been regular, and when seen she had been married for a year and was about three months pregnant. She then developed a peritonitis, and a miscarriage occurred five days later. There was a severe hemorrhage following this, which was controlled by ergot. There then developed a fetid vaginal discharge, with fever and a poor general condition. The tumor was found to extend above the umbilicus, and curettement under narcosis was decided upon, and at the same time to make a complete examination. The tumor was found to be solid, and no fluctuation could be made out. The uterus could not be mapped out from the tumor, so that in all probability it was a fibroid very intimately connected with the body of the organ. Curettement brought away the débris of yellowish tissue, and consequently the diagnosis of a gangrenous fibroid was made. On the next day the abdomen was opened, but the adhesions attaching the growth to the abdominal wall and intestine were so thick and firm that it was considered dangerous to break them down. A median incision was made, extending along the entire anterior wall of the uterus in order to enucleate the neoplasm, which was found free in the uterine cavity. The tumor was removed, the uterus and abdomen were sutured and the cavity of the uterus tightly packed with gauze. The patient recovered in spite of two utero-intestinal fistulae. This was a case of a fibroid tumor which had attained an advanced degree of necrobiosis.

Frommel's case was a woman in the fifth month of gestation. The fibroid, which was about the size of a

fetal head, was inflamed and softened; peritonitis developed and myomectomy was done. She recovered, and was delivered at term.

Croffard reports the case of a woman in the sixth month of a pregnancy complicated with a uterine fibroid. The neoplasm surrounded the cervix like a cuff. Symptoms of infection arose and as the fetal foot protruded it was seized and the child delivered. Infection, however, continued and seventeen days later the abdomen was opened. The neoplasm, which was gangrenous, was so adherent that removal was impossible. As much of it was removed as was possible by the thermocautery and the tubes were removed. The patient recovered.

Bonipiani has recorded a case of a thirty-five-year-old primipara who had a fibrous tumor in the posterior wall of the uterus. Artificial abortion was performed during the sixth month, after which the patient developed a pelviperitonitis, but recovered.

There are a few rare instances of so-called spontaneous purulent disintegration taking place in fibroids during pregnancy, which are in all probability due to septic infection. I have only been able to find two, one reported by Krukenberg, the other by Cappil. In the first case the patient was suddenly taken with chills and presented symptoms of severe peritonitis. Miscarriage took place and six hours after this the patient died. Necropsy revealed pus in the broad ligament, in the peritoneal cavity and uterine cavity. In the second case there was an ovarian cyst and on the right upper angle of the uterus was a fibroid with torsion of the pedicle, which had resulted in gangrene of the neoplasm. From this condition there had resulted a local inflammatory change in the neighboring intestinal coils, with the result that the intestinal bacteria had invaded the growth and suppuration had resulted.

In some cases we get an edematous softening of the fibroid which is followed by a necrobiotic disintegration. The edematous condition is usually due to hemorrhage into the neoplastic tissues resulting in cystic formation. There results an engorgement of lymph and if any chance for infection is offered after delivery the neoplasm becomes rapidly purulent.

Other complications due to fibroids may occur during the post partum, such as phlebitis, inversion or prolapsus of the uterus, all of which appear to be infrequent, and this also may be said of eclampsia and rupture of the bladder, both of which are due to prolonged pressure by the growth. One case I find recorded long ago by Depaul, in which intestinal compression occurred, the patient dying with all the symptoms of strangulation of the intestine.

DR. BRECK: Dr. Cumston has referred to myomectomy during pregnancy. If the conditions were anything like what they were in my case I can hardly consider it possible. The uterine tissue was friable and the uterine vessels so dilated I do not see how hemorrhage could be controlled.

DR. BAKER: I think as we get more and more experience in operating upon fibroids that the cases are very few in which myomectomy cannot be done to-day. I have notes of cases of fibroids of the uterus where I have persisted with the operation and removed as many as thirteen without removing the uterus or interfering with the ovaries or tubes in any way, and left the woman in a condition that I hope she may yet be a happy mother.

DR. KINGMAN: I am a strong believer in myomec-

omy. I have a patient in St. Elizabeth's Hospital from whom I removed a tumor of about two pounds' weight, an interstitial fibroid protruding somewhat into the cavity of the uterus, giving rise to profuse hemorrhage in a young married woman anxious to have a family. The tumor was very easily taken out with almost no hemorrhage. It seems to me it is a great accomplishment to be able to save the uterus and appendages, and not feel that in the large majority of cases we must sacrifice them.

DR. STEVENS: My experience with uterine fibroids subsequent to pregnancy would be in accord with Dr. Baker's. Without any question, in a number of instances the size of the tumor has very markedly diminished during the involution of the uterus and in two instances has practically entirely disappeared. In regard to this particular case I have reported, it may seem a little strange that the question of suppuration of the tumor had not been decided on earlier. It was not tender in any particular, and it seemed to all of us who saw it that with a suppurating fibroid under those conditions, which had acutely become septic, we must get some localized tenderness. In regard to doing a myomectomy in case of a suppurating fibroid subsequent to delivery, it seems to me that we should always bear in mind the chance of having a septic uterus and that if we leave the uterus and take away the tumor we may not remove all of our foci of sepsis and still have trouble. If a similar case should present itself to-day I should not hesitate to do a complete hysterectomy.

DR. BOLAND: In regard to fibroids complicating pregnancy, one case gave me a good deal of trouble in delivery, which was a breech. I found an intramural fibroid as big as the fetal head. It was in the time of the Apostoli treatment. I got the outfit and used it faithfully. The tumor had disappeared very largely by the end of about three months, and until Dr. Baker spoke I supposed the reduction in size was due to the electrical treatment. As she did not pay her bill she has not reported since, so I cannot give the final result.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTY-SECOND ANNUAL CONGRESS, HELD AT THE HOTEL ARLINGTON, IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

THE President, DR. SAMUEL JOHNSTON, Baltimore, Md., in delivering the opening address, referred to the increased attention which had been given in recent years to affections of the larynx and their bearing on other complaints. A large amount of credit for this was due to the association, whose meetings had been annually increasing in interest. At the last meeting in Chicago many important papers were read, and he trusted that the present meeting would be even more memorable. To attempt to make a survey of the progress that was being made even in this one branch of medical and surgical science would involve a herculean task, which he shrank from undertaking. He would therefore confine himself to a few practical suggestions as to the policy which should be followed by the association in the future. Among the points on which he laid

most stress were extreme care as to the qualifications of the new members they admitted and the adoption of such measures as were deemed most efficacious for the purpose of inducing old and experienced members not only to retain their membership but also to keep up an active interest in the association. He next touched on the necessity of scientific research and clinical laryngology going hand in hand, and in regard to the arrangement of programmes for their meetings, he suggested that it would be better to have a few good papers with ample time for their proper discussion than that they should have a great array of papers, many of which could not be read, much less discussed, for want of time. He concluded by suggesting the introduction of some sort of a censorship to prevent theories which had not stood the test of clinical experience being supposed to carry with them the endorsement of the association when published in the *Transactions* of the association or elsewhere.

LARYNGEAL IRRITATION A CAUSE OF ASTHMATIC PAROXYSMS.

This was the subject of the first paper on the programme. The author, DR. WILLIAM C. GLASGOW, St. Louis, Mo., being absent, the paper was read by title.

DR. THOMAS AMORY DEBLOIS, Boston, read a paper on

FRACTURES OF THE NOSE.

He stated (1) that a broken nose was generally not broken; (2) that the subject could be divided according to the degree of injury; (3) and also relatively to the parts involved. By his first assertion he implied that in most cases there was no fracture of the bone itself. It might be more properly classed as a dislocation. The nasal bones became separated at their internal borders from the nasal processes of the superior maxillaries; this, although accompanied by more or less violence, was not in itself a true fracture, and this solution of bony continuity was by far the most common variety of broken nose. Secondly, the injury might not alone involve the small nasal bones (for it was impossible to move one without the other), but it might be more severe, and result in fracture of the nasal process of the superior maxillary or the zygomatic arch of the malar, as from the kick of a horse. The author exhibited drawings showing examples of the different kinds of simple fractures and dislocations which were commonly met with, and then proceeding to deal with the subject of treatment, said that in many cases where the patient could be seen sufficiently often it was found that apparatus could be dispensed with. In cases where for one reason or another apparatus of some sort was considered advisable, he was in the habit of using soft-rubber tubes, applied internally, for the purpose of getting the nose back into its proper position and shape. This was in cases where the same object could not be effected by manipulation of the fingers. In some cases he also used external splints, and these he made of plaster of Paris. He understood that Dr. Leland, of Boston, thought that splints ought to be dispensed with altogether, but his own experience was that they were necessary in some cases, though by no means in all.

DR. EMIL MAYER, New York, in opening the dis-

cussion on the paper, said he was opposed to the use of the soft-rubber tubes, because of their irritating tendency. This was why vulcanite tubes were often used.

DR. DEBLOIS explained that he used the rubber tubes not so much as splints as for the purpose of restoring the nasal organ to its natural shape. They were never allowed to remain in the nostrils for any length of time.

DR. WILLIAM E. CASSELBERRY, Chicago, said he was afraid the rubber tubes would cause unnecessary pain. He advocated the giving of ether to patients who had to be operated on for nasal fractures or dislocations.

DR. JONATHAN WRIGHT, Brooklyn, remarked that the Greeks had frequent occasion to deal with broken noses in connection with their popular sports, and they used practically all the methods that were used now, together with some that might well be used. He advised those not familiar with it to study the Hippocratic method of treatment. One thing particularly to be avoided was the introduction of absorbent material into the nostrils.

DR. JOHN O. ROE, Rochester, said he had found aluminum a good material to use for external splints, one recommendation it had being its lightness.

DR. H. L. SWAIN, New Haven, Conn., remarked that useful hints as to the treatment of broken noses were to be found in the work of an author less ancient than Hippocrates—he alluded to the work of Dr. Jonathan Wright, of Brooklyn, where he thought some things would be found that were not known to the Greeks.

Some remarks followed from Drs. F. C. COBB and J. PAYSON CLARK, of Boston, both of whom urged the avoidance of splints as much as possible.

DR. SIMPSON, New York, having exhibited a splint which he recommended, DR. DEBLOIS closed the discussion by replying to some of the criticisms.

DR. J. E. LOGAN, Kansas City, read a paper on

ATROPHIC RHINITIS.

He protested against the multiplicity of terms that were used to describe this disease, and said they were as much in the dark as they were ten years ago as to its etiology. While something was to be said in favor of the germ theory, the experiments in the way of inoculation so far failed to support it. He was disposed to think that the disease had its origin in the accessory sinus.

The view of the author of the paper received some support from DR. CLARK, Boston, but was dissented from by DR. WRIGHT, Brooklyn. The latter suggested that a more probable source of the disease was to be found in the occlusion of the connecting veins. Dr. Wright also called attention to the fact that the complaint was more common among broad-nosed people, and referring to statistics quoted by the author to show its greater frequency among women than among men, he suggested that the sexual life might also have something to do with it. He thought, however, that the origin of the disease was not to be traced to a single cause, but to a combination of causes.

The discussion was continued by Drs. SWAIN and CASSELBERRY.

DR. EMIL MAYER, New York, contributed a paper on

RECURRING MEMBRANOUS FAUCITIS DUE TO THE BACILLUS OF FRIEDLÄNDER,

at the same time reporting a case which showed all the same symptoms as those reported in Europe. His patient was a young woman who had recurring membranous growths at intervals never exceeding a fortnight, and yet never showed any constitutional effects.

The paper was discussed by Drs. J. E. BOYLAN, Cincinnati; A. W. DE ROALDES, New Orleans; SWAIN and WRIGHT.

The secretary read a paper by DR. T. R. FRENCH, Brooklyn, on the

EMPLOYMENT OF THE UPRIGHT POSITION IN ETHER OPERATIONS UPON THE NOSE, THROAT AND OTHER PORTIONS OF THE HEAD,

with exhibition of a chair to facilitate such operations.

Several members said that they would have liked to discuss the paper, but the chair ruled that it would be irregular to do so in the absence of the author. The secretary was instructed to request Dr. French to bring the subject up at another meeting at which he could be present.

The presentation of a number of instruments and specimens closed the proceedings for the day.

SECOND DAY.

The second day's proceedings commenced with a business meeting, at which reports were presented from the secretary, the treasurer and other officials, showing the affairs of the association to be in a satisfactory condition. The nomination of officers for the ensuing year resulted as follows: President, Dr. Henry L. Swain, New Haven, Conn.; First Vice-President, Dr. Henry L. Wagner, San Francisco, Cal.; Second Vice-President, Dr. Arthur Ames Bliss, Philadelphia, Pa.; Secretary and Treasurer, Dr. James E. Newcomb, New York, N. Y.; Librarian, Dr. J. H. Bryan, Washington, D. C.; Member of Council, Dr. Samuel Johnston, Baltimore, Md.

A discussion on the subject of

THE EARLY DIAGNOSIS OF LARYNGEAL CANCER AND THE TREATMENT

was introduced by DR. JOHN N. MACKENZIE, of Johns Hopkins University, Baltimore, who dealt with the methods of diagnosis and general principles of treatment. The subject he considered of such importance that, as he mentioned, he had left a sick bed in order to be present and take part in the debate. The present unsettled condition of the question led him to confine himself to the statement of certain views that were entertained on the subject, and the submission of certain propositions, which some might consider either revolutionary or reactionary, but which nevertheless he hoped would meet with some support. Leaving out of account the possible existence of a cancer bacillus, there remained three methods of diagnosis, namely, (1) the naked eye, or diagnosis by ocular examination; (2) thyrotomy; and (3) the microscope. The second, of course, was often included in and ancillary to the first. In his opinion, it was impossible to exaggerate the importance of examination by the naked eye. It was the most practical of the three methods, and it was unfortunate that it was so often relegated to a subordinate position.

Every resource of clinical work should be made use of before the recourse was had to the microscope. It indeed should be the very last court of appeal. The literature of the day showed that far too little reliance was placed on clinical work, and far too much on the microscope. There was no solitary sign by which they could detect cancer. They must group all the phenomena and form their diagnosis accordingly. But supposing they had weighed all the facts, and a reasonable doubt still existed, would they not then be justified in removing a portion of the growth for the purpose of subjecting it to microscopical examination? In spite of all the authorities to the contrary, he emphatically said, "No." The reasons he had for objecting so strongly to the removal of any part of the affected tissue were that it exposed the patient to auto-infection, stimulated the growth of the cancer, if such it proved to be, and often led to misleading conclusions. It was not to be forgotten that cancer was an infectious process. He believed that sooner or later its bacillus would be discovered, and that then the disease would cease to be treated surgically—the place of the knife being taken by an antitoxin. Meanwhile the cardinal fact that they had to face was that the surgical treatment of cancer had resulted in failure because the methods had not been sufficiently radical. They had not completely removed the disease. So long as they left the lymphatics to carry infection to other parts, they were bound to fail, and after painful experiences he had come to the conclusion that the only hope of success lay in the total extirpation of the organ and also the lymphatics. Surgeons had ceased to trifle with cancer in other parts of the body, and there was no reason why they should continue to trifle with cancer in the larynx.

DR. D. B. DELAVAN, New York, who was down on the programme to report on the

STATISTICS RELATING TO THE TREATMENT OF CANCER BY THE DIFFERENT METHODS,

said he was very much in the position of the author who headed one of his chapters, Snakes in Ireland, and then proceeded to say, "There are none." In regard to cancer, it was not literally true that there were none, but such as existed were of very little value, principally because of the tendency on the part of surgeons to report only their successes, and withhold all mention of their failures. For this reason, in collating such statistics as he had, he had found it necessary to eliminate all the American operators. Only a few European operators had reported both failures and successes, and the statistics he had gathered from their reports left the entire matter in a very unsatisfactory condition. He suggested that surgeons should be urged to practise greater frankness. The speaker proceeded to give the meeting the benefit of his researches for what they were worth.

DR. J. SOLIS-COHEN, Philadelphia, spoke on the surgical procedures connected with cancer. He remarked that Dr. Mackenzie had struck the keynote of the matter, so far as surgery was concerned, when he said that a more radical operation was necessary in order to make sure that the whole of the infected area was removed. As regarded the procedure, the first danger to be guarded against was from the accumulation of septic material and its passage into the lungs. To avoid the latter, he operated with the head lower than the shoulders, which was easily accomplished by

allowing it to hang over the table. In some cases it might be found desirable to perform a preliminary tracheotomy, but if the patient was in such a condition that he could not wait for the radical operation it should be performed at once. In order to prevent septic pneumonia, it was necessary to shut off all communication from the mouth to the air passages. Another important point was to avoid all dressing, and it was also essential to be careful in the after treatment, the patient being put in a bed with the foot-board raised, so as to keep the head low. The operation required the co-operation of the laryngeal mind and the mind of the general surgeon.

DR. SWAIN said that in view of the discouraging statistics it was desirable, if possible, to look on the brighter side, and with that end he related some of his experiences at New Haven.

DR. C. C. RICE, New York, said it was important that the laryngologist should not turn over his patients to the general surgeon until he was sure of his diagnosis. He thought, too, that some laryngologists were inclined to operate too early. Especially after hearing the discouraging statistics, he thought they would do wisely if they did not come too soon to the conclusion that an operation was required.

DR. EMIL MAYER, New York, said the assistance of a general surgeon was always desirable, because additional operations were sometimes found necessary outside of the region of the larynx.

DR. A. B. THRASHER, Cincinnati, thought the removal of a small part of the growth with a view to microscopical examination was sometimes justifiable.

DR. W. K. SIMPSON, NEW YORK, agreed with the last speaker, and said he considered it would be very unwise to extirpate the larynx without a previous microscopical examination.

DR. F. C. COBB, Boston, gave the results of some of his experiences with thyrotomy.

The authors of the papers then replied on the debate, Dr. MACKENZIE stating in answer to questions that his experiences with the entire extirpation of the larynx without the removal of the lymphatics consisted of three dismal failures. The plan he recommended of including the lymphatics in the removal had not yet been tried, so far as he knew.

DR. COHEN said that in the next case in which he was called on to operate he would insist on taking out the entire larynx and the lymphatics.

Other papers on the programme had to be postponed for lack of time.

THIRD DAY.

A paper was presented by DR. ARTHUR AMES BLISS, Philadelphia, on

SEVERE HEMORRHAGE AFTER OPERATIONS ON THE THROAT AND NOSE, WITH A REPORT OF FIVE CASES.

In the absence of the author it was read by title.

DR. F. E. HOPKINS, Springfield, introduced the subject of

SECONDARY HEMORRHAGE AFTER THE USE OF SUPRARENAL EXTRACT.

He said that the universal use of suprarenal extract had caused its value to be so fully recognized, and he himself had been so strongly impressed with the fact

that it enabled them to perform bloodless operations on the nose, and also to cut into the septum internally, that he was unwilling to believe anything against it. Yet he had been forced by experience to acknowledge that there was a danger of secondary hemorrhages occurring, and he thought it his duty to call attention to this danger in order that it might be guarded against, and not at all from any wish to decry the merits of suprarenal extract, or to advise against its use. These secondary hemorrhages came on several hours after the operations, and were often so profuse as to alarm the patient. At first he had supposed that the hemorrhages might be due to the too early removal of the packing, or to some exertion on the part of the patient—to anything, in short, except the trusted suprarenal extract; but he had come reluctantly to the conclusion that there was a likelihood of having more profuse secondary hemorrhages after the use of cocaine and suprarenal extract than after the use of cocaine alone. This opinion was confirmed by the responses he had received to a circular letter he had sent out to other specialists asking their experience. Indeed, so thoroughly was the danger of these secondary hemorrhages recognized by some operators that they always packed the part carefully before dismissing their patient.

Dr. SWAIN said that while he had not noticed any serious increase in hemorrhages after such operations since suprarenal extract had come into use, he thought it natural that the greater contraction caused by a combination of cocaine and suprarenal extract should be followed by a correspondingly greater relaxation. There must always be some after-hemorrhage whether cocaine alone or a combination of cocaine and suprarenal extract was used.

Dr. J. W. FARLOW, Boston, said that he had heard some of his assistants complain of these secondary hemorrhages, but personally he had never had any of the trouble described. The fact that so many others encountered them made him think there must be something in the way of the preparation of the extract or in the treatment to account for the different results.

Dr. A. W. WATSON, Philadelphia, said he had found cocaine just about as useful as suprarenal extract. The reason for the hemorrhages coming on later after the use of the latter was evidently that its action tended to defer the relaxation. He made it a point after administering cocaine always to keep his patients with him until the natural relaxation came on.

Dr. HOPKINS, in his reply, repeated that he did not wish to discourage the use of suprarenal extract, but only to show the necessity of greater care in its use.

A CASE OF OZENA OF PROBABLY SPHENOIDAL ORIGIN

was reported by Dr. J. W. FARLOW, Boston. The patient, a young lady, suffered from nasal discharge and the formation of offensive crusts. She had been treated without success by several physicians before coming to the author of the paper. Dr. Farlow and his assistant took great pains over the case, which proved to be one of a very obstinate character. Ultimately by washing out the sphenoidal sinus such a marked change was effected as to indicate that that was the source of the trouble.

Dr. LOGAN said the case just reported coincided

with two he had had, in which relief was given by opening and draining the cells.

Dr. SAMUEL W. LANGMAID, Boston, expressed the belief that in the near future they would hear of many more cases of sinus inflammation. No doubt influenza was the cause of much of this sinus trouble, and they would probably get cases of chronic sinus inflammation as the result of recent epidemics of the complaint referred to. They ought in all such cases to ascertain the condition of the sinuses, and not be content with the superficial work of spraying the nose.

DrS. WATSON and FARLOW added some remarks on the same lines.

Dr. J. B. CLARK, Boston, contributed two papers:

(1) BULLOUS MIDDLE TURBINATES; (2) TWO CASES OF BENIGN GROWTH OF THE LARYNX.

In regard to the first class of cases, he said that removal of the growth was the one rational treatment.

Dr. A. B. THRASHER, Cincinnati, described a case in which he had successfully removed a fibroma of the larynx.

Dr. C. C. RICE, New York, reported two cases of

PARTIAL PARALYSIS OF THE VOCAL CHORDS,

which, he suggested, were due to over or improper use of the telephone.

Dr. A. W. DE ROALDES, New Orleans, reported a case of the

REMOVAL OF A PIN FROM THE LARYNX

after it had been there two years, causing the child who had swallowed it infinite suffering, and leading it near to death's door before the parents brought it to the reader of the paper for radical treatment. Immediately after the operation the child began to improve, and soon was quite well.

A conversation of some length followed on the removal of pins by other operators, and also as to the best way of removing them.

The report of Dr. D. B. KYLE, Philadelphia, on

A PECULIAR CASE OF MIGRATORY FOREIGN BODY,

with x-ray illustration, was discussed in the same connection.

Dr. T. M. MURRAY, Washington, read a paper on

TRACHEAL INJECTIONS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

In answer to criticisms, he said he did not mean to convey the impression that tuberculosis could be cured by the process indicated. He did maintain, however, that it was a valuable aid to recognized methods of cure, and particularly the climatic one, while it gave the patient much immediate relief.

The other papers, several of which had to be read by title, were: "Correction of the Deviation of the Nasal Septum," by Dr. John O. Roe, Rochester; "Angioma Cysticum of the Nose," by Dr. H. L. Wagner, San Francisco; "The Surgery of the Turbinal Bodies, with a New Method of Operating," by Dr. Boylan, Cincinnati; "Dermoid Cysts of the Nose," by Dr. H. S. Birkett, Montreal; "Recurrent Tonsillar Tumors," by Dr. R. P. Lincoln, New York; and "Hemorrhage from a Peritonsillar Abscess," by Dr. W. F. Chappell, New York.

Recent Literature.

On Diabetes Mellitus and Glycosuria. By EMIL KLEEN, Ph.D., M.D. Pp. 313. Philadelphia: P. Blakiston's Son & Co. 1900.

In 1898 Naunyn published the most comprehensive work on diabetes which has ever been written. In the same year appeared the second edition of Von Noorden's work, based on an observation of 353 patients and Williamson's treatise. In 1899 the friends of Kütz gave to the world the investigations of the late scientist on 1,100 patients and published 692 protocols of his cases. These four volumes are standard works and one naturally looks at a new book on diabetes with a critical eye. Does the author present the sum total of the literature in a clearer manner, is the wealth of his material greater, or has he been more prolific in original work? Only when one or all of these specifications are fulfilled is a new book justified.

Dr. Kleen published the present volume in Swedish in 1898, and a few months ago its translation into English was completed. It opens with the following sentence: "Under the name diabetes mellitus are included different pathologic conditions which, however imperfectly understood, undoubtedly in most cases affect the central nervous system, and which are characterized by a faulty metabolism, as a result of which, under ordinary diet, there takes place the excretion in the urine of an abnormally large amount of sugar." It is only justice to the author and translator to say that the latter part of the book reads more smoothly. The historical review of the subject contains no reference to Dobson's use of opium in the last century or to Rollo's genius in pointing out a hundred years ago that vegetable food should be excluded from the diabetic's diet, which should consist of a restricted amount of animal food and fat. As this is essentially our treatment to-day, Dobson and Rollo deserve credit for their discoveries.

There is a good chapter on the geographical distribution of the affection. "Among all people beyond the pale of culture, diabetes is very rare." "With . . . a more intense culture . . . we are bound to find more diabetes mellitus." As to the influence of diet in the etiology, he thinks "it is too rich a diet, both as regards the mixed nutriment and more especially as regards alcohol, . . . and that the importance of large quantities of starch and sugar has been exaggerated . . . laborers on sugar plantations show no special disposition to glycosuria."

The chapter on glycosuria is simply a compilation of the existing literature, to which the writer contributes but rarely from his own experience. The differences which he points out between simple glycosuria and mild diabetes are well drawn. On page 74 occurs the following sentence in reference to the amount of sugar in the urine: "Higgins and Ogden speak of 20% (?)." If the author had read the article of Higgins and Ogden with even a moderate degree of care, he would not have misquoted them and so found it necessary to doubt their statement. They say nothing about 20% of sugar in the urine.

Symptoms and complications occupy more than a fourth of the book, but the chapter is remarkable by the absence of statistics from the author's own cases. He mentions 3 cases of recovery from diabetes. When the patients came under observation they showed

no sugar, but its presence at an earlier date was certified by reliable authorities. The first was following influenza. Eight and eight-tenths sugar was found in the urine, but six months later the ingestion of 300 grammes of carbohydrates provoked no glycosuria. The second developed after a violent blow on the forehead, and the urine contained sugar a year and a half after the injury, but six months and two years later respectively was sugar free. The third was a teacher in whose urine 7.5% sugar had been found, but five months later was able to take 200 grammes of carbohydrates a day without glycosuria. It would be of great interest to know the condition of these patients after the lapse of a few years. The section closes with an account of 24 cases. We are disappointed again here to find instead of scientific studies simply pleasing narratives of patients. No data are offered regarding the amount of proteids and fats in the patient's diets and only scant records of the carbohydrates. Ammonia and acetone are never quantitated and B-oxybutyric acid is estimated but once quantitatively in the whole book and then only imperfectly. The amount of urea is but rarely stated, and in 3 of the cases there is no record of the twenty-four hour amount of urine.

A chapter of seven pages is devoted to Diabetes Infantilis. That a fourth of even this short account is taken up with the records of 2 cases in girls, fourteen and nineteen years of age, respectively, shows the rarity of the disease in early life. An excellent summary on diabetes following extirpation of the pancreas follows. How conscientiously the author has studied the literature is evident from his discussion of metabolism and nutritive needs. The origin of acetone and diacetic acid in B-oxybutyric acid is clearly brought out. "Whenever I see a frank Gerhardt's reaction with the urine of a patient receiving an abundant supply of calories with his food—which generally presupposes a certain amount of carbohydrates—I know at once that an exclusive diet on meat and fat will not remove the glucose from his urine." That this is not a universal experience the following case, which was furnished us by Dr. Pfaff, will show: A boy came under his care on August 21st. He was on a liberal diet, weighed 90 pounds, and passed 6 to 7 litres of urine daily. The amount of sugar was between 5 and 6% and Gerhardt's reaction was present. On the 26th of October following the weight of the boy was 98 pounds; sugar and the Gerhardt reaction were both absent.

The rules laid down for the investigation of a case of diabetes are good. We feel that much is learned by knowing the amount of urea, as this to a great extent is the measure of the nitrogenous portion of the patient's food. As a rule an excessive amount of urea means neglect on the physician's part to provide his patient with an adequate supply of fat.

The chapter on treatment is disappointing and as far as it relates to diet will we fear do more harm than good. Without adducing a single experiment in support of his position he says: "I have no doubt that this dietetic principle (restriction of proteids) is at present on its last legs." Unfortunately for the writer's conclusion, Naunyn and Lenné give facts to support their position.

One finishes the chapter with the impression that the treatment of diabetes is a *laissez faire* procedure, while on the contrary if there is a disease which taxes the ingenuity, the judgment, the enthusiasm and

skill of the doctor, it is this. The writer lays so much emphasis on the harm of an absolute diet that the good results from such treatment in the prevention and cure of complications, the general well-being of the patient, and the gain in the power of assimilating carbohydrates are not adequately presented. He says: "The disadvantages of the absolute diet, even in mild cases, are unfortunately very great . . . they almost invariably lose flesh." In our opinion, if a mild case of diabetes loses flesh on a diet just strict enough to keep the urine sugar-free, the fault is with the doctor. He does not know how to feed his patient. The author so fears underfeeding his patients and their death from coma that in severe cases, though without B-oxybutyric acid, he allows 80 to 100 grammes carbohydrates in twenty-four hours and in the severest cases of all is forced to the conclusion (not shared by Naunyn, von Noorden, Külz, Lenné, Ebstein) that he promotes "best the interests of such patients by allowing them a generous if not an unlimited amount of bread and potatoes." A pint of cream contains about four times as many calories with only one-third as much sugar forming material as bread, but, strange to say, cream is not mentioned in the whole article on treatment. We agree with Dr. Kleen in recommending ordinary bread instead of diabetic breads and are glad to coincide in general with his views on drugs.

Atlas and Epitome of Special Pathologic Histology.

By DOCENT DR. HERMANN DÜRCK, Assistant in the Pathological Institute; Prosecutor to the Municipal Hospital L. I. in Munich. Authorized translation from the German. Edited by LUDVIG HEKTOEN, M.D., Professor of Pathology in Rush Medical College, Chicago. Circulatory Organs, Respiratory Organs, Gastro-Intestinal Tract. With 62 colored plates. Philadelphia: W. B. Saunders & Co. 1900.

This is a small book composed of 148 pages of text and 62 colored lithographic plates made from microscopical drawings. The volume deals with the special pathological histology of the circulatory and respiratory organs and of the gastro-intestinal tract. Most of the plates have two figures. The lithographic work has been excellently done. The drawing of most of the plates is good. The text consists of short descriptions, in most instances facing the plates, and a condensed discussion of the subjects with which the book deals. The most important defect which we have met with in looking over the book is the treatment of the intestinal lesions in typhoid fever. The plates illustrating these are among the most inferior of the book. We think that the book will be of considerable use to medical students as an aid in their study of pathological histology.

The International Medical Annual Synoptical Index to Remedies and Diseases. For the twelve years 1887 to 1899. New York: E. B. Treat & Co. 1900.

This small volume of 391 text pages aims, as stated in the preface, to "fulfil all the requirements of an ordinary index, and at the same time contain in a very condensed form those facts which are likely to be wanted for reference in everyday practice." This idea has been consistently carried, with the result that in small compass is contained a large number of useful therapeutic facts systematically arranged, which will no doubt be of service to the practitioner.

THE BOSTON

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THE MEDICAL SITUATION IN CHINA.

It is evident that whatever the immediate outcome of events in China may be, the world at large is likely in the future to have a constantly increasing interest in the customs and manners of the Chinese. This is particularly true in matters pertaining to medicine, for the state of medical science in any country is undoubtedly an excellent index of its progress toward civilization. Medicine often runs counter to religious observances, as shown by the prejudice even in our own day in certain quarters against dissection and similar means of studying the human body. If such prejudices have not been wholly overcome, even in communities which boast the highest civilization, it is by no means surprising that in China, where superstition still dominates thought, medical practice is at a peculiarly low ebb. In conversation with a medical missionary some years ago, he said that the difficulties of performing even the simplest mutilating surgical operations were almost insuperable owing to the fanaticism of the Chinese, who were far more willing to die than to enter a future existence cursed with a body devoid of any of its physical attributes. It is clear that for a nation about entering upon what is likely to be a protracted war which will undoubtedly lead to a great loss of life, the prospect is something appalling from the medical point of view. We are unfortunately familiar enough with the fact that deaths from disease in any long-continued campaign are always in excess of the deaths from casualties in action. The boon to modern armies of an efficient and properly equipped medical service has done far more to mitigate the horrors of war than all other means combined. So far as we can learn, this is entirely lacking among the Chinese. The wounded and the sick must die without medical or surgical aid, in any modern sense of the term. To draw a still darker picture, it is altogether depressing to think of the possible fate of prisoners of war whom the Chinese armies may from time to time take. If present indications are to be

trusted, this war will do much to restore conditions under which armies suffered in the Middle Ages.

A recent editorial in the *Lancet* discusses in considerable detail the present situation in China with regard to the condition of medical knowledge. It appears that in all China there are but two schools at which there is an attempt to teach systematic modern medicine and surgery, one at Tientsin and the other at Hong-Kong. Li Hung Chang has been the patron of the school at Tientsin, his idea being to provide physicians trained in western methods for his army and navy. He is said to have stated that "he hoped anatomy and chemistry would form a prominent part in the training of the students, for he held these sciences to be the basis of all true medical knowledge." These are notable sentiments, no doubt shared by a certain number of the better educated among the Chinese, but how small an impression they have made in the country at large is sufficiently shown by the fact that but two schools have been established at which such doctrine could, in any sense, be taught. All the evidence goes to show that practically throughout China the same old superstition and fanaticism regarding medical practice prevails as has prevailed for hundreds of years.

However earnestly and conscientiously the missionary enterprises to the Chinese may have been carried out, we are being forced to the conviction that they have failed, that no material part of the population has been Christianized, and that the very missionaries themselves are being exterminated. We have long been convinced, and have previously expressed our conviction in these columns, that the introduction of modern medical methods into China, quite independently of any creed of which they might be the expression, would accomplish far more than the insistence upon the acceptance of this or that dogmatic belief as a preliminary to scientific progress. In other words, it is desirable that the teaching of the facts of science, and particularly of medical science, should precede the inculcation of doctrine. Recent events appear to have proved the correctness of this position, but the *Lancet* analyzes the situation still further in a way which had not hitherto occurred to us. We quote its conclusions:

The medical missionaries from Great Britain and the United States of America have done a great deal of excellent hospital work in China; but it is perhaps unfortunate that the medical work has been accompanied in almost every instance by religious proselytising. There seems little reason to doubt the fact that the progress of medicine and, what is still more important, the progress of general education and science and even of civilization, have been thwarted by the fact that the converts are in most instances tinged with conversion to a new religion. The young Chinese trained in medicine are almost all Christians, and the fact is deterrent to the advance of medical science amongst the Chinese. We believe that were science to be taught to the Chinese in a purely secular way Christianity might follow, but it seems impossible to civilize the Chinese by means of Christianity. The

Japanese have become civilized irrespectively of Christianity. Encourage secular western education and especially medical science in China, send Chinamen thus trained into every centre and town of China, and a leaven will be introduced and a diffusion of knowledge spread through the length and breadth of China which will in the near future bring many good things in its train — among others, we truly believe, a considerable conversion of Chinamen to Christianity.

It is altogether easy to conceive that with the deeply rooted prejudice against Christianity, the Chinese physician, however skilled he might be, would by the very fact of his identification with the hated foreign religious teachers at once lose his influence over his countrymen. Such advice may be late, but we quite agree with the *Lancet* that the proper method to pursue is to demonstrate the results of Christian civilization first, in the hope that the doctrine underlying such civilization may ultimately be adopted by a sufficient number of the natives to bring about radical reforms. Experience at least has shown that the other order of procedure has led to most unfortunate results.

BRITISH MEDICAL ARRANGEMENTS IN SOUTH AFRICA.

It is a common experience that when an investigation of whatsoever sort is instituted its promoters are very apt to find a justification for their efforts. It is scarcely human to be above criticism, and it appears, on the other hand, always a difficult matter for the investigators to preserve a fair judicial attitude toward the object of their investigation. The criticism of the British Army Medical Service in South Africa is a case in point. It requires no reiteration here to recognize clearly the fact that medical arrangements in time of war, and particularly if that war is being conducted in a foreign country under highly disadvantageous hygienic conditions, are likely to be imperfect, even to the extent of positive danger. The difficulties of the situation must be admitted, and criticism made in a spirit of fairness and with as complete a view as possible of all the facts. The last few weeks have made us familiar with the scathing criticism which Mr. Burdett-Coutts has seen fit to visit upon the British Medical Corps in their treatment of the sick during the South African campaign. We have hitherto hesitated to comment upon the matter, because we felt we were not in possession of information which would permit a fair expression of opinion. It appears to be freely admitted that in certain camps there has been a large amount of typhoid fever and a crowding of the hospitals and improvised shelters far beyond what any one concerned would wish. This means added suffering, no doubt, and very possibly what a critic might regard as neglect. At the same time it must be remembered that the difficulties of providing in all cases proper sanitary arrangements are almost insuperable under such circumstances. We are by no means disposed to palliate faults which might have been corrected, but

we are convinced that a charitable point of view will bring us nearer a just estimate of the entire situation.

The *British Medical Journal* comments on the charges which have been made and publishes a letter from Mr. Treves, which certainly should be given due weight before we hastily attempt in our minds to fix the blame :

There is no doubt, the writer says, that there has been a great deal of typhoid fever in the army, especially among the forces engaged north of the Orange River. Mr. Fripp, the chief surgeon of the Imperial Yeomanry Hospital, in a letter dated June 4th, informs us that he had shortly before visited Bloemfontein and Kroonstad. In Bloemfontein there were at that time over 5,000 sick, most of whom were suffering from enteric fever; while in Kroonstad the three hotels, the town hall, and the church had been converted into hospitals, even the billiard tables being requisitioned to accommodate cases of enteric fever. He adds that as the railway had been opened, the surgeon-general was engaged in rapidly pushing up adequate hospital accommodation. The train in which Mr. Fripp returned brought down 241 sick to Bloemfontein, where they were admitted into one of the general hospitals, bringing the number of sick it contained "to the huge total of 1,800." Mr. Fripp describes the water supply all over the country as extremely bad. "Water," he says, "in the small streams at the bottom of the river beds is often very muddy." Dead horses are generally to be seen in the streams, and they are never above the strong suspicion of being typhoid infected. It is impossible for all water that is required for drinking purposes to be boiled; there is not fuel enough.

Mr. Treves writes a very judicial letter, not however without feeling, at what he regards as the baseless charges made by Mr. Burdett-Coutts. The exact present situation cannot be known to Mr. Treves since he is now in England, but it seems inconceivable to him that a department which withstood so well the trials of the Natal campaign should have suddenly collapsed as its critic implies. We quote some of Mr. Treves's remarks :

My experience had induced me to think that the organization of the army medical service was sound and good, that the general scheme of work and of administration was efficient, and that the lavish arrangements planned by the director-general were carried out by his subordinates in a liberal, thorough and business-like manner. I cannot think that our sick have been treated with "neglect" and "inhumanity," as Mr. Burdett-Coutts asserts. Instead of neglecting their patients the surgeons I met worked with heart and soul, sparing themselves in no particular, and of the untiring and unselfish devotion of the nurses I have already spoken. This war has been a war of surprises. The casualties have been higher than the gloomiest ever dreamt of, and there was no reason to anticipate that the outbreak of enteric fever would assume the enormous proportions it has assumed. I left South Africa with the impression that nothing more could have been done to mitigate the sufferings of the sick and wounded than had been done when a temperate regard for the circumstances of war was kept in mind. The army medical service can lay no claim to the gift of prophecy, nor to the power of anticipating the future, but so far as any reasonable foresight can go the department seems to have done all that in

fairness could have been expected of it. Mr. Burdett-Coutts will, no doubt, substantiate the points detailed in his report, but his preliminary account is conveyed in language which so savors of the theatrical that it fails to carry with it an overwhelming conviction. Mobile field hospitals, if they have to do the work they are intended to do, cannot take beds with them. It is better for a typhoid patient to lie upon a blanket and waterproof sheet on the ground — as Mr. Burdett-Coutts describes — than to be hurried helter-skelter to the base. No human being can tell how the progress of an epidemic may proceed, nor how the numbers of the sick will be distributed. Preparations may be made for 1,000, and the admissions may not reach 10. It is impossible to avoid overcrowding at times, and equally impossible to provide in every detail for emergencies which no reasonable foresight could anticipate. The seat of war is at least three weeks distant from the seat of supplies, and in those three weeks a region free from disease may become the seat of a desperate epidemic. The movements of the troops cannot be exactly foretold. It would be better for the country to be flooded with doctors and nurses rather than that the soldiers should suffer, but it is quite impossible that the medical arrangements can at a time of war overthrow all those circumstances of transport and supply upon which the conduct of the campaign depends. Unfortunately in war the war comes first, but I should imagine that in no campaign has there ever been such solicitous and successful care for the sick.

This whole unfortunate matter must now, no doubt, be sifted down to bottom facts, and we hope it may result in future benefit. As we look at the question from a necessarily superficial and distant point of view, we cannot restrain the conviction that the degree of inhumanity and neglect will be found to be far less than Mr. Burdett-Coutts imagines, however conscientiously he may think he has tabulated the facts of his investigation.

MEDICAL NOTES.

SMALL-POX AND TYPHOID FEVER AT NOME. — It is reported that both of these diseases have appeared at Cape Nome. Quarantine and sanitary arrangements are very imperfect, and unless stringent action be taken considerable epidemics are feared.

INTERNATIONAL CONGRESS OF THE MEDICAL PRESS. — An International Congress of the Medical Press will be held in Paris, beginning July 26th, in connection with the Exposition.

BOSTON.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 18, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 57, scarlatina 18, measles 40, typhoid fever 8.

NEW YORK.

MORTALITY STATISTICS. — The Health Department reports for the month of June show a still further reduction in the mortality of the city. The deaths recorded during the four weeks ending June

30th represent an annual death rate of 17.49, as against 18.83 for the four weeks preceding. The mortality is also less than in the corresponding four weeks of last year, when the death-rate was 18.60. As before, the deaths from pneumonia show the greatest decrease, the weekly average from this disease being 139.5, against 215 in May. The weekly average of deaths from pulmonary tuberculosis declined from 174.5 to 142.5; from bronchitis, from 35.25 to 24.25; from whooping cough, from 14.5 to 8.75; from scarlet fever, from 11.5 to 7; and from influenza, aside from pneumonia, from 7.5 to 4. The mortality from diphtheria, measles and typhoid fever remains about the same. On the other hand, with the advance of warm weather, there has been a considerable increase in the number of deaths from diarrheal diseases, the weekly average for the four weeks in June being 73, against 17.5 in May. In the week ending June 9th there were only 16 deaths from this cause, but in that ending June 30th the number amounted to 171, 160 of which were in children under five years of age.

VACATION SCHOOLS. — The attendance at the opening of the vacation schools of Manhattan on July 8th showed an increased interest in the movement, the number of applicants at most of the schoolhouses being about twice as large as there were accommodations for. There are ten of these vacation schools, each accommodating six hundred, and they are all situated in the crowded tenement-house districts on the lower East Side. The small children are given kindergarten instruction, and for the larger ones are courses in drawing, cooking, dressmaking and manual training of various kinds. The hours are from 9 to 12, and there are frequent trips to Central Park and the large suburban parks. In addition, the playgrounds of the schools are open every afternoon, and instruction is given then in gymnastics and games.

NEW HOSPITAL OF NASSAU HOSPITAL ASSOCIATION. — The new hospital established by the Nassau Hospital Association in Mincola, Long Island, was opened with appropriate ceremonies on June 30th, and among those who made addresses were Dr. Walter B. James, of New York, and Superintendent C. Irving Fisher, of the Presbyterian Hospital, New York. The hospital, which is a large frame building, with wings on either side and an operating pavilion in the rear, standing on a plat of five acres, is designed to supply the needs of the new Nassau County, which consists of that portion of Leeds County which was not included in the limits of Greater New York.

DECISION IN THE FAYERWEATHER WILL CASE. — The final decision in the noted Fayerweather will case was handed down by Judge Lacombe in the United States Circuit Court on July 12th. By the terms of the will, which has now been declared valid, \$210,000 is bequeathed to the Woman's Hospital, \$50,000 each to St. Luke's and the Presbyterian Hospitals, and \$25,000 each to the Mount Sinai Hospital, the Methodist Hospital, Brooklyn, the New York Cancer Hos-

pital, the Manhattan Eye and Ear Hospital, the New York Eye and Ear Infirmary, and the Montefiore Home for Chronic Invalids.

A HEAVY HEART. — In making the autopsy at the morgue, on July 8th, of the body of an unknown man who had died suddenly on the street, Dr. Hamilton Williams, coroner's physician, found that the heart weighed 36 ounces, which is believed to be the largest on record in America. The man's general weight was about 190 pounds.

DEATHS FROM TETANUS. — On July 14th it was reported that four deaths had occurred in New York from tetanus, the result of Fourth of July accidents, which, with one exception, were injuries to the hand from pistols. On the previous day one death in New York and one in Hoboken were reported from the same cause.

Miscellany.

THE INSOLATION CATASTROPHE AT ALDERSHOT.

THE *Medical Press* comments as follows on the recent unfortunate experience of the British troops at Aldershot: 'The unprecedented disaster which befell the troops in training at Aldershot a few days since belongs, like so many of the disasters which have befallen our troops in the field, to the eminently preventable variety. Hot days are not altogether unknown in June, and the provision of suitable headgear is precisely one of the things that a reasonable administration would have taken care to secure. The arrangements as a whole seem to have been a hopeless bungle, for not only were the men marched out regardless of the overwhelming heat and the absence in great part of proper covering for the head, but the commissariat department appears to have miserably failed to fulfil its functions. What can a sprinkling of medical officers do when suddenly confronted with several hundred cases of insolation or heatstroke? Obviously very little, for in such cases moments are precious and instant refrigeration is as imperative as it is unobtainable. Such an occurrence is disheartening, and we trust that the responsibilities will be brought home to the persons to whose want of foresight and organizing capacity the disaster is directly attributable.'

Obituary.

JOHN ASHURST, JR., M.D.

IN the death of Dr. John Ashurst, which occurred July 7th, Philadelphia loses one of her best known practitioners, and this country a man whose work has been generally and favorably recognized. He was born in 1839 in Philadelphia, and in 1860 was graduated at the University of Pennsylvania. He served during the Civil War as an assistant surgeon. He had also been connected with the medical department of the University of Pennsylvania as professor since 1877. In that year he was made professor of clinical surgery, and in 1888 he was elected to the John Rhea Barton Chair of Surgery, which he held up to last

year. Dr. Ashurst was a prolific writer on surgical topics, and as a citizen apart from his profession was highly esteemed in the community in which he lived.

Correspondence.

ETHNOLOGY AND ARCHEOLOGY AT THE PAN-AMERICAN EXPOSITION.

BUFFALO, N. Y., July 3, 1900.

MR. EDITOR:—The Pan-American Exposition has seen fit to entrust the care of the department of ethnology and archeology to a practising physician. I should be very glad if you would allow me to reach your readers with the following request for assistance.

Many members of the medical profession are interested in the study of American ethnology and archeology, and not a few have valuable collections of Indian relics and skeletons from Indian graves. Those not directly interested in this study are so circumstanced as to be aware of the hobbies of their neighbors and could doubtless furnish the address of collectors. I should be greatly obliged for information and for the loan of collections for the use of this department of the exposition. Exhibits which represent study in some special line of American ethnology and archeology will be particularly suitable.

Very truly yours,

A. L. BENEDICT, M.D.,

Superintendent of Ethnology and Archeology.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 7, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York	3,654,594	1524	784	28.56	8.28	15.06	.60	2.16
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	544	251	27.72	3.42	14.40	1.44	3.24
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	204	65	24.50	9.31	2.94	1.96	4.41
Baltimore	506,389	291	154	44.20	4.42	33.33	.34	1.36
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	183	95	38.50	5.50	28.05	2.75	1.65
Washington	277,000	197	99	40.80	3.06	25.50	2.55	.51
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	72	31	31.97	4.17	23.63	1.39	1.39
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,185	34	12	32.34	—	20.58	—	—
Worcester	111,732	45	23	17.77	13.33	4.44	—	4.44
Fall River	103,142	64	42	54.60	1.56	46.80	1.56	—
Cambridge	92,520	20	8	30.00	—	10.00	—	20.00
Lowell	90,114	31	14	19.38	9.69	9.69	—	—
New Bedford	70,511	18	4	27.77	5.55	5.55	—	—
Lynn	68,218	—	—	—	—	—	—	—
Somerville	64,394	18	5	16.66	22.22	—	—	11.11
Lawrence	59,072	18	13	50.00	—	33.33	5.55	—
Springfield	58,266	25	7	20.00	—	16.00	—	—
Holyoke	44,510	27	17	51.80	—	33.33	—	—
Brockton	38,759	5	2	20.00	—	—	—	—
Salem	37,723	12	1	25.00	—	5.33	—	—
Malden	36,421	8	2	12.50	—	—	—	—
Chelsea	34,235	6	—	16.66	—	—	16.66	—
Haverhill	32,651	2	—	—	—	—	—	—
Gloucester	31,426	6	—	—	—	—	—	—
Fitchburg	30,523	8	3	25.00	12.50	—	—	12.50
Newton	30,461	4	—	75.00	50.00	25.00	—	25.00
Taunton	28,527	8	1	37.00	25.00	12.50	—	—
Everett	28,102	2	1	—	—	—	—	—
Quincy	24,578	15	—	40.00	—	40.00	—	—
Fitsfield	23,421	—	—	—	—	—	—	—
Waltham	22,793	4	—	—	—	—	—	—
North Adams	21,536	4	2	—	—	—	—	—
Chicopee	18,316	8	5	37.00	—	37.00	—	—
Medford	17,190	4	—	50.00	—	—	—	25.00
Newburyport	15,026	7	1	14.28	—	—	—	—
Melrose	14,721	1	1	—	—	—	—	—

Deaths reported 3,417; under five years of age 1,645; principal infectious diseases (small-pox, measles, diphtheria and croup,

cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 1,112, acute lung diseases 235, consumption 280, diarrheal diseases 625, diphtheria and croup 81, typhoid fever 37, measles 30, whooping-cough 25, cerebrospinal meningitis 16, scarlet fever 13, erysipelas 5.

From measles New York 16, Philadelphia 10, Pittsburg 3, Boston 1. From whooping-cough New York 12, Washington 5, Boston and Pittsburg 2 each. Philadelphia, Providence, Worcester and Fitchburg 1 each. From cerebrospinal meningitis New York 6, Boston and Baltimore 4 each. Worcester and Cambridge 1 each. From scarlet fever New York 8, Philadelphia 2, Boston, Pittsburg and Holyoke 1 each. From erysipelas New York, Baltimore, Washington and Worcester 1 each.

METEOROLOGICAL RECORD

For the week ending July 7th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		W'e'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S...1	29.92	64	71	55	54	54	54	N.W.	N.W.	20	12	C.	C.
M...2	30.11	66	75	56	53	55	54	N.W.	S.	17	9	C.	F.
T...3	30.06	68	77	60	60	59	60	S.W.	S.W.	11	17	C.	O.
W...4	29.89	77	87	67	70	46	58	N.W.	N.	9	6	C.	O.
T...5	29.98	71	78	64	58	62	60	N.E.	N.W.	5	6	C.	F.
F...6	29.86	66	71	62	55	74	64	N.E.	E.	4	5	O.	O.
S...7	29.71	80	95	65	66	91	78	W.	W.	10	12	F.	O.
☞	29.93	70	80	61	59	63	61	—	—	11	10	—	—

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☞ Mean for week.

APPOINTMENTS.

The following gentlemen, in addition to those already announced, have been appointed upon the Consulting Board of the New York State Hospital for the care of Crippled and Deformed Children: DRs. SAMUEL B. WARD and A. VANDER VEER, of Albany, JARVIS S. WIGHT and JOHN A. MCCORKLE, of Brooklyn, and RICHARD B. COUTANT, of Tarrytown.

SOCIETY NOTICE.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION. — The twenty-sixth annual meeting of the association will be held Tuesday, Wednesday and Thursday, October 9th, 10th and 11th next, at Asheville, N. C., under the presidency of Dr. Harold N. Moyer, of Chicago.

BOOKS AND PAMPHLETS RECEIVED.

Rochester Academy of Medicine, Constitution and By-Laws. 1900.

The Legal Prevention of Tuberculosis. By Clark Bell, Esq., LL.D., New York.

Transactions of the Massachusetts Medico-Legal Society. Vol. III. No. 2. 1900.

Short Papers on Nursing Subjects. By L. L. Dock, New York. M. Louise Longeway, Publisher. 1900.

Third Annual Report of the Trustees of the Boston Insane Hospital, for the Year ending January 31, 1900.

Conditions of the Throat and Larynx Simulating and Predisposing to Tuberculosis. By Lennox Browne, F.R.C.S.E. Reprint. 1900.

Metropolitan Water Board Investigation. Argument of J. H. Benton, Jr., before Joint Special Committee of Massachusetts Legislature, May 4, 1900.

Nineteenth Annual Announcement and Catalogue of the Woman's Medical College of Baltimore, Session 1900-1901. With the Report of the Hospital of the Woman's Medical College (Hospital of the Good Samaritan), for the year ending January 1, 1900.

A Dictionary of Medicine and the Allied Sciences. Comprising the Pronunciation, Derivation, and Full Explanation of Medical, Pharmaceutical, Dental, and Veterinary Terms; together with much Collateral Descriptive Matter; Numerous Tables, etc. By Alexander Duane, M.D. Third edition. Enlarged and thoroughly revised. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

Lecture.

MORBID CONDITIONS CAUSED BY BACILLUS
AÉROGENES CAPSULATUS.¹

THE SHATTUCK LECTURE.

BY WILLIAM H. WELCH, M.D., LL.D.,

Professor of Pathology, Johns Hopkins University, Baltimore.

MR. PRESIDENT AND FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY:—Although the subject which I have chosen for this lecture relates for the most part to infrequent affections, the scientific and practical interest attaching to them is considerable and varied. Many instances of the presence of free gas in parts of the body where it does not normally occur and in association with various diseases were recorded by writers of past centuries and were even then the subject of much speculation. The discussion turned generally around the question whether the gas was atmospheric air or the result of putrefaction—a question which in most cases could be solved only by bacteriological examinations. The most numerous and important of such examinations have been made during the last decade, and, although these have left problems still unsolved, they have corrected many current errors and have shed a flood of light upon conditions which were formerly among the most mysterious in pathology.

While it has been demonstrated that various bacteria may be concerned in producing gaseous affections, it is now evident that the bacillus which I discovered in 1891, and to which I gave the name *Bacillus aërogenes capsulatus*, is the one whose causative agency is best established and most frequently in action. What I shall say will relate mainly to this micro-organism and its pathogenic effects.

Historical.—As a certain amount of confusion concerning the dates of the first publications² on this bacillus exists in foreign literature on this subject, it may be well to state that I reported my observations in November, 1891, to the Johns Hopkins Hospital Medical Society and that the full report of these observations and of the characters of the bacillus was published in July-August, 1892, by Dr. Nuttall and myself.³ E. Fraenkel's first publication⁴ was a short preliminary one which appeared in January, 1893, and was followed in the same year by his valuable monograph on gaseous phlegmons.⁵ In August, 1893, one year after the publication of the paper by Nuttall and myself, appeared simultaneously the interesting articles of P. Ernst⁶ and of Graham, Steward and Baldwin.⁷ Early in 1894, Mann published from my laboratory an observation of emphysematous gangrene caused by *Bacillus aërogenes capsulatus*⁸ and in January, 1896, Dr. Flexner and I published an extensive paper reporting 23 human cases, including not only 6 personal observations of emphysematous gangrene but also examples of submucous gas cysts, pneumoserositis, and various other pathogenic mani-

festations of this bacillus.⁹ In July, 1895, appeared Goebel's preliminary communication¹⁰ and in the following year his full paper on foamy organs.¹¹ Of the subsequent records the most numerous and valuable have appeared in this country, although they appear to be little known to most European writers.¹² I shall have occasion to refer later to many of these publications.

Nomenclature.—Dr. Fraenkel has kindly favored me with cultures of the bacillus which he cultivated from gaseous phlegmons and to which he gave the name "*Bacillus phlegmones emphysematosæ*." There can be no question whatever as to the identity of his bacillus with our *Bacillus aërogenes capsulatus*, a point upon which we are both agreed, and which is also made certain by Goebel's studies under Fraenkel's supervision. According to the generally accepted principles of the nomenclature of zoological and botanical species, the latter name, as being the first one applied, should be preferred to the former. It is, moreover, as pointed out by Muscatello, not open to the objection of implying exclusive relationship to a single disease, as is the case with Fraenkel's designation of the bacillus. As a matter of fact, the capacity to produce gaseous phlegmons is only one of many pathogenic manifestations of *Bacillus aërogenes capsulatus*. Unfortunately I think that we both erred against the canons of botanical nomenclature in using a trinomial rather than a binomial name for a species.¹³

Characters of bacillus.—Since our first publication only one material addition has been made to the extended description given by Nuttall and myself of the morphological and cultural characters of *Bacillus aërogenes capsulatus*, or the gas bacillus, as I shall briefly call it.¹⁴ Fraenkel noted the presence of spores in a few of the bacilli growing in one lot of agar containing sodium formate and in 1897, Dunham¹⁵ observed spores in blood-serum cultures, but not in other media.

Our further studies of the gas bacillus obtained from different sources have shown a moderate range of variation in some of its properties. This is true especially of spore formation, rapidity of liquefaction of gelatine, presence of capsules, retention of Gram's stain, and virulence. While some specimens of the

¹ Journal of Experimental Medicine, 1896, i, p. 5.

² Centralbl. f. allg. Path. u. path. Anat., vi, p. 465.

³ Jahrb. d. Hamburg. Staatskrankenanstalten, iv.

⁴ Thus v. Hübner in 1890 (Centralbl. f. Bakt. xxv, p. 513, et seq.) in an elaborate study of pathogenic anaerobes is entirely ignorant of our work and that of other American investigators on *Bacillus aërogenes capsulatus*. The information of Hirschmann and Lindental (Sitzungsber. d. k. Akad. d. Wiss., Math.-Naturw. Cl., Wien, 1899) on the American work is second-hand and both incomplete and inaccurate, in these respects being in unfavorable contrast to that of Muscatello and Gangitano (Riforma Med., 1900, ii, p. 508, et seq.) writing also on the subject of emphysematous gangrene. Knowledge of *Bacillus aërogenes capsulatus*, under the name "*Bacillus perfringens*," has begun to appear in France in the last two years, but without any evidence of acquaintance with the American publications. Even allowing for the great difficulties in keeping pace with the literature of any subject in medicine, a decade would certainly seem sufficient for the light to penetrate even into dark places.

⁵ Migula, who, with considerable success, has attempted to reform bacteriological nomenclature, has given the binomial names "*Bacterium Welchii*" to *Bacillus aërogenes capsulatus* and "*Bacterium emphysematosum*" to *Bacillus phlegmones emphysematosæ* (System der Bakterien, ii, pp. 392 and 385, Jena, 1900). He is, however, in error in describing this organism under two different names, as his *Bacterium Welchii* and *Bacterium emphysematosum* are identical.

⁶ As regards these characters, it will suffice here to say that the micro-organism is a rather coarse, non-motile anaerobic bacillus staining by Gram, growing on all of the ordinary culture media under anaerobic conditions, best at body temperature, but also at room temperature, forming spores incessantly, according to the race and the culture medium, and capable of forming gas not only by fermentation of sugars but also from proteids. The full description of the characters may be found in Welch and Nuttall's paper. The gas, according to Dunham's analyses, is composed approximately of 64% hydrogen, 28% carbon dioxide and 8% of a residual gas believed to be mainly nitrogen. It has no foul odor.

⁷ Bulletin of the Johns Hopkins Hospital, 1897, viii, p. 68.

¹ Delivered before the Massachusetts Medical Society, June 12, 1900.

² Levy's description in 1891 (Deutsche Zeit. f. Chirurg., xxxii.) of "*kleine, feine*" bacilli, cultivated from a gaseous abscess and growing in long threads and chains only at body temperature and cultivable only in the first generation, without animal experiments, cannot be accepted as an identification of *Bacillus aërogenes capsulatus*, or indeed be readily reconciled with its characters.

³ Bulletin of the Johns Hopkins Hospital, 1892, iii, p. 81.

⁴ Centralbl. f. Bakt., xii, p. 13.

⁵ Ueber Gasphlegmonen, Hamburg u. Leipzig, 1893.

⁶ Virchow's Archiv., cxxxiii, p. 308.

⁷ Columbus Medical Journal, xli, p. 55.

⁸ Annals of Surgery, xix, p. 187.

bacillus seem never to form spores on any culture medium, others, and these appear to be the more common, do so occasionally, especially upon blood-serum, in mannite bouillon, and on plain agar. In animals inoculated with pure cultures we have not observed spore-bearing bacilli.

As a rule the bacillus liquefies gelatine slowly, but some specimens do so scarcely at all, and others with fair rapidity.¹⁶

As stated in our original articles, capsules are not constantly present, but I have generally found no difficulty in demonstrating them in the situations and by the method described by us, and, with the exception of Hirschmann and Lindenthal, most other investigators have been able to demonstrate capsules when these are searched for by suitable methods.

While the bacillus is to be ranked among those which stain by Gram, it is sometimes rather noticeable in cover-slips from cultures that among well stained bacilli others are partly or wholly decolorized, and this may be observed in members of a single chain. In the tissues the bacilli stain well by Gram. Differences in the viability of cultures were pointed out in our first paper.

It sometimes happens that original cultures from human beings show only a feeble growth, with relatively weak power of gas production, while subsequent cultures, especially those obtained after passage through the animal body, present the usual vigorous growth and other typical characters. Pratt and Fulton¹⁷ from a typical case of foamy organs with gas throughout the body were unable to cultivate the bacillus at all, although twelve anaërobic culture tubes containing various media were inoculated from different parts of the body. This negative result they attribute to the fact that the body had lain in a cold-storage vault for sixteen hours after death, an explanation which has some support in an observation previously reported by Welch and Flexner, but still seems hardly satisfactory, as under similar conditions the bacillus has been often cultivated.

Lactose, glucose and saccharose are all fermented by the gas bacillus, the first with the largest production of gas and the last with the smallest. There is apparently no fermentation of mannite, at least the gas is not appreciably more than in sugar-free media. The amount of hydrogen greatly preponderates over that of carbon dioxide.

E. Fraenkel, in 1893, was the first to demonstrate the etiological relation of the gas bacillus to gaseous phlegmons, our previous investigations being concerned mainly with the so-called foamy organs (Schaumorgane) and the presence of gas in the blood, our results being confirmed a year later by P. Ernst. Soon after Fraenkel's publication we were able to confirm his discovery of the causation of gaseous phlegmons by *Bacillus aërogenes capsulatus*, and to repeat with like results his animal experiments.

Material or cultures fresh from the infected body are usually highly virulent for guinea pigs, pigeons and sparrows (E. Fraenkel), which succumb to a rapidly spreading local necrosis of the tissues with abundant development of gas, the bacilli invading the blood during life only in small number or not at

all. There is more or less bloody edema, but otherwise little inflammatory reaction, leucocytes being present usually only in small numbers in the exudate. Rabbits and mice, while not wholly immune, are far less susceptible than guinea pigs and pigeons. Dr. Lanier, in my laboratory in 1896, succeeded in producing typical gaseous phlegmons around the fractured bones of rabbits inoculated intravenously with pure cultures, and Muscatello has obtained the same results. Welch and Nuttall reported an instance of death of a pregnant rabbit after intravenous inoculation, the infection with the gas bacillus originating in a dead fetus. There are considerable differences in the degree of virulence of the bacillus, even in fresh cultures, and old ones may be of slight virulence.

One of the most interesting and valuable tests of the gas bacillus is its power of producing gas abundantly in the blood, organs and tissues of rabbits killed a few minutes after intravenous injection, a power not possessed by colon bacilli. The differential value of this test is as great as that of cultures in fermentation tubes. The blood and tissues of the dead rabbit make the culture medium, the body of the animal takes the place of the test tube, the inoculation is an aseptic one, the bacteria are spread by the blood-current and the conditions are anaërobic. This procedure, which was introduced by Nuttall and myself and has been fully described by us, we have found useful in isolating the bacillus, in separating it from other bacteria which may resemble it, and in the demonstration of one of its most fundamental characteristics, namely, the power to produce gas from proteid material.

Among the points distinguishing the bacillus of malignant edema from *Bacillus aërogenes capsulatus* may be mentioned the following: The malignant edema bacillus is somewhat thinner, has greater tendency to grow into filaments, is less readily stained by Gram, produces spores regularly in culture media, is motile, liquefies gelatine more rapidly, produces a foul odor, produces less gas in lactose bouillon, peptonizes clot casein, generates little or no gas in rabbits inoculated intravenously and then killed, and by subcutaneous inoculation in susceptible animals causes spreading bloody edema with little or no development of gas bubbles, and appears after death in filaments on serous surfaces.

The bacillus to which Lindenthal¹⁸ has quite unnecessarily given the name *Bacillus emphysematis vagina* is doubtless identical with *Bacillus aërogenes capsulatus*. The same is true of Veillon and Zuber's¹⁹ *Bacillus perfringens* found by them in appendicitis, by Guillemot^{19a} in gaseous gangrene, and by Soupault and Guillemot^{19b} in gaseous abscesses, and of Buday's²⁰ *Bacillus cadaveris butyricus*, found in foamy organs. I am strongly inclined to the opinion that the anaërobic bacillus isolated by Achalme and others from several cases of acute articular rheumatism and found by Savtchenko and Mielkich in the soil is likewise identical with our gas bacillus.²¹

Distribution.—The surmise expressed by Welch and Nuttall that the gas bacillus is widely distributed in nature has since been confirmed. The natural habi-

¹⁶ Wien. klin. Woch., 1897, p. 3, et seq.

¹⁷ Arch. de méd. exp., 1898, x, p. 539.

^{18a} Compt. rend. Soc. de Biol., 1898, 10, s., v, p. 1017.

^{19a} Bull. et. mém. Soc. méd. d. hôp. de Paris 1900, 3, s., xvii, p. 216.

²⁰ Centralbl. f. Bakt., 1898, xxiv, p. 369.

²¹ Achalme: Ann. de l'Inst. Pasteur, 1897, xi, p. 845; Pio and Lesteur: Jour. de phys. et de path. gén., 1899, i, p. 1007, and Savtchenko and Mielkich: Arch. russes de path., 1899, viii, p. 145.

¹⁶ In our original communication we noted peptonization and softening of the gelatine, but this was so slow and slight with the particular specimen studied that we then preferred to class the bacillus among the non-liquefiers. Further experience has shown that the bacillus is a liquefier, but generally a slow one.

¹⁷ Boston Medical and Surgical Journal, June 7, 1900, p. 599.

tat of the organism is the intestinal canal and the soil, the home of so many other anaërobic bacteria. Welch and Flexner in 1896 brought evidence of the presence of the bacillus in both of the situations mentioned. Clopton, of the Johns Hopkins Hospital, has found the bacillus twice in the appendix vermiformis. Howard²² has recently reported the presence of morphologically identical bacilli in the intestines of 25 consecutive human cases examined post mortem, and in 10 of these he demonstrated the bacillus by cultures and inoculation of animals. The same conclusion has been reached by Hirschmann and Lindenthal. The gas bacillus has been repeatedly cultivated from the intestine in my laboratory, but we have made no systematic study of the frequency of its presence. I have found the bacillus also in the intestines of rabbits, dogs and swine, and here it is interesting to note the frequency with which submucous gaseous blebs are found in the pig's intestine at autopsy.

In 1896 Dr. Walker at the Johns Hopkins Hospital succeeded in finding the gas bacillus in dust collected by sweeping floors, proving its presence both by cultures and animal experiments. My assistant, Dr. Harris, has cultivated the bacillus from the contents of an old cesspool. I had previously reported in 1896 the isolation of the bacillus from a bullet removed from the head of the tibia in a case of gaseous phlegmon, and E. Fraenkel²³ has cultivated the gas bacillus from a splinter of wood extracted from a wound in a case of tetanus. These observations confirm the natural inference to be drawn from the study of cases of traumatic emphysematous gangrene, in most of which the source of infection is manifestly foreign material, especially dirt, in wounds. In the light of these demonstrations of the wide distribution of the gas bacillus in the outer world and in feces, the conclusion is warranted that it must occasionally be present upon the human skin.

We are not informed whether there are differences in the regional distribution of the gas bacillus. The fact that during the last decade a larger number of cases of emphysematous gangrene have been reported from Baltimore than from any other single locality is due probably to our interest in the subject and consequent search for cases. The bacillus has been found not only in America and Europe, but Dr. Flexner has brought back reports of three infections with the gas bacillus in Manila observed during a stay of three months.

GAS BUBBLES IN THE BLOOD AND ORGANS.

We turn now to the consideration of the various conditions in which the gas bacillus has been found in human beings. We need not pause to consider the presence of this bacillus in ordinary cadaveric decomposition, a circumstance sufficiently explicable by the occurrence of this organism in the healthy intestinal canal.

Of an entirely different nature are the cases in which gas bubbles are found in the blood and organs within a few hours after death and without any trace of ordinary putrefaction. Such a condition has been recognized at autopsies as soon as one, two, three, five, eight hours after death. It may occur not only after death from gaseous phlegmon, when, however,

it is by no means constant, but also after death from the most varied causes. It has been observed repeatedly in autopsies on pregnant and puerperal women, especially after death from abortion, operation for placenta previa and acute sepsis. There is every gradation from cases with a few bubbles of gas in the blood or tissues to those with extensive emphysema of the organs and tissues. The term "foamy organs" (Schaumorgane of the Germans) may be applied to the latter condition. The liver is the organ most frequently the seat of early and abundant development of gas, but there is no definite rule as to the distribution and amount of gas in different cases. As will be explained later, the invasion in the majority of cases is from the intestine. That the gas bubbles may be dislocated from their original position in liquid and soft material in the body is self evident, but I have not found them unassociated with gas bacilli.

Formerly this early presence of free gas in the heart and vessels, without evident post-mortem decomposition, was very generally explained by the assumption of entrance of air into the circulation, even when no portal of entry could be found.²⁴ The most extensive application of this explanation was made in the pregnant and puerperal cases. It is remarkable that the first case of this nature to be examined bacteriologically was that reported by me in 1891. In this and in all subsequent similar cases with satisfactory bacteriological examination *Bacillus aërogenes capsulatus* was found.

The main questions which arise concerning the interpretation of these cases are whether the invasion of the bacilli and whether the development of the gas are ante-mortem or post-mortem phenomena.

Rabbits survive the introduction of large numbers of gas bacilli directly into the circulation, unless there exists somewhere in the body necrotic or damaged tissue offering little or no vital resistance. If the animal be killed within a few minutes after the intravenous injection of the bacilli and kept in a warm place there are abundant multiplication of the bacilli and large development of gas throughout the dead body within the space of six or eight hours; whereas if the bacilli be introduced at one point, as for example the right heart, of a rabbit just killed, it takes a much longer time, often twenty-four to forty-eight hours, for gas and bacilli to make their appearance at points far distant from the seat of inoculation. It seems justifiable to draw from these three groups of experiments, which have been fully reported by Welch and Nuttall, the conclusion that when bacilli and gas are found within a few hours after death widely distributed in the body, the gas bacilli have entered the circulation during life, but probably in most cases only shortly before death.

There is one factor, however, to be considered which is absent in the experimental cases and may be present in human beings, to wit, the quick disappearance of the bactericidal power of the blood. This factor is an important determinant of the rapidity of onset of post-mortem decomposition. After death from certain diseases, and particularly from snake venom, bacteria may make their appearance in the blood and organs very soon after death. An explanation of these cases is furnished by the experiments of Ewing and myself,²⁵ which demonstrated that the blood of rabbits

²² Contributions to the Science of Medicine, dedicated by his Pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate, p. 461, Baltimore, 1900.

²³ Münch. med. Woch., 1899, Nos. 42 and 43.

²⁴ Cless: Luft im Blute, Stuttgart, 1854, and Couty: Thèse de Paris, 1875.

²⁵ Lancet, 1894, i, p. 1236.

killed by rattlesnake venom is practically devoid of bactericidal power, so that immediately after or even shortly before death bacteria can start growing in the body as they would in a tube of beef broth. But after all due allowance has been made for the possible reduction or loss of bactericidal power of the blood, I still consider that it is not possible to explain some of the cases in which bacilli and gas have been found in the heart, blood-vessels and organs very soon after death, especially when the corpse has been kept in a cold place, otherwise than upon the assumption of the distribution of the bacilli by the circulating blood.

It is another question whether gas as well as bacilli may be present in the circulating blood and internal organs during life in the class of cases now under consideration, and I regret to be unable to furnish a positive answer to this question. I do not see how an affirmative answer can be obtained otherwise than by the actual demonstration of gas in these situations either during life or immediately after death. Gas bubbles and bacilli have been found in the heart and vessels within an hour after death, but that is time enough for bacilli which have already been introduced to multiply and begin to form gas. I at first thought that absence of nuclear staining around the gas bubbles and masses of bacilli might serve as an indication of their presence during life, and this view is advocated by P. Ernst, but I have since learned from experiments on rabbits that this is not a decisive criterion, although often both in rabbits and human beings there is no defect in nuclear staining around bacilli and gas bubbles.

I know of no other pathogenic micro-organism which offers such difficulties in determining whether its effects in the interior of the body have been produced before or after death. The difficulty arises from the circumstance that these effects in most cases and most situations consist almost entirely in local necrosis and formation of gas, whether the invasion and growth of the bacilli be before or after death, and that unlike most pathogenic bacteria the gas bacillus grows better in the dead than the living body. Possibly some importance in the solution of the problem may attach to the demonstration of emboli of liver cells and of bone-marrow cells, which were in enormous numbers in the pulmonary vessels in a case of gaseous phlegmon of the submammary tissues following infusion of salt solution. At the autopsy made by Dr. Carroll the liver and other organs were emphysematous. Further observations with reference to these emboli in this class of cases are needed.

I do not consider that there is any inherent improbability in the supposition that gas bubbles may be in the circulating blood during life without causing speedy death from gaseous embolism. It is only when a large volume of air is introduced quickly into the blood-current that sudden death results from air embolism. Very exaggerated ideas have prevailed among physicians as to the dangers from the entrance into the circulation of small quantities of air. Laborde and Muron²⁶ injected into the external jugular vein of a dog 1,120 cubic centimetres of air in the space of one hour and a half without causing death, and Jürgensen²⁷ into the left femoral artery of a narcotized dog weighing 43½ kilogrammes, 3,650 cubic centimetres in the space of two hours and twenty-five minutes with only

slight disturbance of the respiration and of the action of the heart. Hare,²⁸ likewise, on the basis of experiments, controverts current beliefs in the dangers from entrance of air into veins.

I have come across in the older literature from the days when venesection was a common practice reports of cases in which blood containing bubbles of gas escaped during venesection from veins of the arm.²⁹ In none of these was there evidence that air had gained entrance to the circulation. Maisonneuve³⁰ in incising two gaseous phlegmons of the thigh following compound fracture observed the escape of blood containing gas bubbles from the cut veins, and was able to trace the gas within the veins for a long distance.

It seems to me very improbable that an anaerobic bacillus such as the gas bacillus can multiply in the circulating blood, still this bacillus is less sensitive to the presence of oxygen than many anaerobes, and we do not know whether the loose combination in which oxygen is present in the blood would necessarily prevent its growth under all circumstances.

I see no reason why this bacillus might not multiply in the liver, spleen and most other internal organs, as we know it can do in parts open to inspection during life. We have positive evidence in the cases reported by Graham, Steward and Baldwin and by Dunham that gas bacilli may be conveyed by the circulation from an infected portal of entry — in the one case the puerperal uterus and in the other a urethral wound — to distant parts of the body and there produce subcutaneous emphysema and necrosis. There is no part of the body which offers such favorable conditions for the post-mortem growth of the bacillus as the liver, probably on account of its content of carbohydrate, and if the liver, like the integuments, were open to inspection during life, I believe that we should find evidence that in certain cases the emphysema of this organ, which is such a conspicuous post-mortem phenomenon in instances of invasion by the gas bacillus, had begun during the life of the patient. Emphysema, due to gas bacilli, of mucous membranes open to inspection we know can exist during life. This subject will be considered subsequently.

In the great majority of instances, however, in which gas bubbles are found in the blood and internal organs at autopsy the evidence is in support of the view that the development of the gas is a purely post-mortem phenomenon. Certainly the greatest caution should be exercised in the interpretation of any such cases as vital processes, even in early autopsies without ordinary putrefaction.

One thing which our investigations have established is that the finding of gas bubbles in the blood-vessels and heart within as short a time as one hour after death furnishes in itself no proof of the entrance of air into the circulation. I shall refer later to the question of gaseous embolism in cases of emphysematous gangrene and of physometra.

EMPHYSEMATOUS GANGRENE.

In a few instances we have found in wounds, usually compound fractures or gunshot injuries, in which dirt had gotten in, *Bacillus aerogenes capsulatus*

²⁶ Therapeutic Gazette, 1889, 3 s., v, p. 606.

²⁷ Marshall's case reported by May, Trans. Path. Soc., London, 1858, ix, p. 157; Durand-Fardel's case also cited by May, and Pirogoff's case in his Grundzüge d. allg. Kriegschirurgie, p. 1063, Leipzig, 1864.

³⁰ Cited from Hirschmann and Lindenthal: Sitzungsber. d. k. Akad. d. Wiss., Math.-Naturw. Cl., Wien, 1899.

²⁶ Compt. rend. de la Soc. de Biol., 1873, v.

²⁷ Deutsch. Arch. f. klin. Med., 1882, xxxi, p. 458.

without the presence of gas or other evidence that the bacillus was producing any characteristic effects.⁸¹ Such cases have always been watched by the surgeons with anxiety and it is probable that at least in some the early recognition of the bacillus, followed by free incisions and thorough cleansing and disinfection, has warded off a subsequent grave infection. In view of the wide distribution of the gas bacillus in the outer world and in the intestinal contents it is probable that it must not so very infrequently gain access to wounds without securing a foothold. While this innocent behavior, with which we are also familiar in the case of the tetanus bacillus, may sometimes be due to attenuated virulence of the bacillus, it is probably oftener attributable to accessory circumstances, such as the resistance of the patient, the condition of the wound and surrounding tissues, and association with other micro-organisms and with foreign substances.

It is as a cause of that most dreaded of wound complications, emphysematous gangrene, that *Bacillus aerogenes capsulatus* especially claims the interest of surgeons. The classical clinical descriptions of this disease we owe to Maisonneuve,⁸² and to Pirogoff,⁸³ the former giving to it the name "gangrène foudroyante," and the latter designating it "primary mephitic gangrene" or "acute gangrenous edema." Among other more or less common designations are "emphysematous or gaseous gangrene," "gaseous phlegmon," "septic emphysema," "érysiplèe bronzé" (Velpeau), "progressive gangrenous edema," "gangrenous septicemia," and "emphysematous cellulitis."

This wound complication was more common in pre-antiseptic times, especially in military surgery, than it is to-day, but at least 70 cases have been reported during the last quarter of a century. In pre-bacterial days the affection was attributed by some writers to the penetration of air into the tissues, but by most to the decomposition of the tissues, particularly of adipose tissue and bone-marrow, brought by an injury into contact with the atmosphere.

Botini⁸⁴ in 1871 was the first to demonstrate the infective nature and transmissibility of emphysematous gangrene. Later Gussenbauer also recognized the disease as a definite infection and attributed it to the bacteria of putrefaction. After Pasteur's discovery in 1877 of his "vibron septique," more commonly, since Koch and Gaffky's investigations, designated *Bacillus œdematis maligni*, and especially after Chauveau and Arloing's⁸⁵ paper in 1884, cases of emphysematous gangrene have been usually reported, especially in France, as instances of Pasteur's gangrenous septicemia or Koch's malignant edema. W. Koch's⁸⁶ attempt to identify the disease with symptomatic anthrax (Rauschbrand) was based on faulty bacteriological studies and has met with no confirmation. In 1884 F. J. Rosenbach⁸⁷ reported finding in cover-slip specimens from two cases of traumatic emphysematous gangrene coarse bacilli, some of which had terminal spores. These emphysema bacilli, as he calls them, he was unable to cultivate, only aerobic

methods being employed. It is probable that Rosenbach saw *Bacillus aerogenes capsulatus* in these cases, but without distinguishing it from associated spore-bearing bacilli.

A critical examination of the records of alleged malignant edema in human beings shows that in very few was the organism concerned satisfactorily identified as the genuine malignant edema bacillus. Very often it has been simply assumed without more than a microscopical examination that bacilli found in spreading edematous conditions with or without gas have been those of malignant edema, and even where cultures and animal experiments have been employed the descriptions are frequently so meagre as to leave the identity of the organism wholly in doubt. In France it is usually assumed without any discussion and even without any bacteriological examination that gangrène foudroyante is malignant edema (Pasteur's septicemia),⁸⁸ and the same ignorance of the present status of this subject is still sometimes encountered in England, Germany and elsewhere. Nevertheless, the investigations of the last seven years, beginning with those of E. Fraenkel, and soon followed by observations of myself and collaborators, have demonstrated that by far the most common and important specific cause of gaseous phlegmons or emphysematous gangrene is *Bacillus aerogenes capsulatus*.

Whether the bacillus of malignant edema can produce an identical or similar anatomical and clinical affection in human beings I regard as an unsettled question. It is certainly remarkable in view of current doctrines in text-books that neither E. Fraenkel nor I, with our relatively large experience, nor indeed, so far as I am aware, any one who has made himself thoroughly acquainted with *Bacillus aerogenes capsulatus*, has encountered an instance of emphysematous gangrene in man caused by the bacillus of malignant edema. The whole subject of human malignant edema is one which needs thorough revision and investigation by more exact bacteriological methods than have yet been applied to it.⁸⁹ I have already mentioned the chief points of difference between the bacillus of malignant edema and *Bacillus aerogenes capsulatus*.

There is a relatively small group of cases of gaseous phlegmon attributed by those reporting them⁴⁰ either to the colon bacillus or the proteus bacillus. In most of these cases anaërobic culture methods were not employed. No one has succeeded in producing experimentally gaseous phlegmon with either of these bacilli, and I think there is good reason to be sceptical concerning their capacity to produce this disease, unless, perhaps, *Bacillus coli* may do so in diabetics.

It is possible that some of those reporting the colon bacillus as the cause of emphysematous gangrene may have confounded with it a facultative anaërobic bacillus which we have isolated from two cases of this disease and which has been studied in my laboratory by Dr. Lanier. It resembles in anaërobic cultures very

⁸⁸ An exception is Guillemot (Bull et mem. Soc. med. d. hôp. de Paris, 1900, 3. s., xvii, p. 216) who has found *Bacillus aerogenes capsulatus* in a case of gaseous gangrene, and who controverts the prevalent belief of authors who attribute this disease exclusively to Pasteur's vibrio.

⁸⁹ In the case reported recently by Bräbe (Wien. klin. Rundschau, 1900, xiv, pp. 145 and 167) the identification of the malignant edema bacillus seems satisfactory. Here there was extensive bloody edema without gas, so that the case was not one of emphysematous gangrene. On the other hand the latest writers on the subject, Häming and Silberschmidt (Correspondenzbl. f. schw. Aerzte, 1900, xxx, p. 361) bring no proof of any consequence that they were dealing, as they supposed, with the malignant edema bacillus in two cases of gangrène foudroyante.

⁴⁰ Chlari, v. Dungen, Bunge, Klemm, Hlava, Evans, Grasberger, Hauser, Margarucci, Muscatello, Hirschmann and Lindenthal.

⁸¹ Such cases have been reported by Bloodgood, of the Johns Hopkins Hospital, in *Progressive Medicine*, December, 1899, iv, p. 158.

⁸² *Gaz. méd. de Paris*, 1853, p. 592.

⁸³ *Grundzüge d. allg. Kriegschirurgie*, pp. 867 and 1006, Leipzig, 1854.

⁸⁴ *Gior. d. r. Accad. di med. di Torino*, 1871, 3 s., x, pp. 1121 and 1138.

⁸⁵ *Bull. de l'Acad. de Méd.* 1884, 2. s., xiii, p. 604.

⁸⁶ *Deutsch. Chir.*, Lief., 9, Stuttgart, 1886.

⁸⁷ *Die Mikro-Organismen bei den Wund-Infektionskrankheiten des Menschen*, p. 91, Wiesbaden, 1884.

closely *Bacillus aërogenes capsulatus*, but it is capable of aërobic growth also, and then the rods are thinner and more like colon bacilli. It has the power of producing gas abundantly in the blood and tissues of rabbits killed a few minutes after intravenous injection, a power not possessed by genuine colon bacilli. I have already spoken of the importance of this test, which has been employed by none of the writers who have claimed to find colon bacilli as the cause of gaseous phlegmons. This bacillus, when virulent, is capable of causing the same spreading and fatal emphysematous necrosis in guinea pigs and pigeons as is *Bacillus aërogenes capsulatus*.

I have been accustomed to speak of this bacillus, to which I have called attention in previous publications, as the aërobic variety of our gas bacillus. I believe, however, that it is identical with Sanfelice's *Bacillus pseudo-œdematis maligni*,⁴¹ with which he is inclined to identify Klein's "new bacillus of malignant edema."⁴² Chavigny⁴³ has isolated apparently the same bacillus, which he likewise identifies with Sanfelice's *Bacillus pseudo-œdematis maligni* (not to be confounded with the pseudo-edema bacillus of Liborius), from a case of gaseous gangrene, and he also calls attention to the probability that others may have mistaken it for the colon bacillus. While, therefore, unwilling upon existing evidence to accept the colon bacillus as a demonstrated cause of gaseous gangrene (except perhaps in diabetics), I am of the opinion that an aërobic bacillus, probably identical with Sanfelice's *Bacillus pseudo-œdematis maligni*, is capable of producing this affection, but it is much less frequently concerned than *Bacillus aërogenes capsulatus*.

I have collected 46 cases of emphysematous gangrene, in all of which *Bacillus aërogenes capsulatus* was demonstrated, and, therefore, all reported or observed during the last seven years.⁴⁴ This is a far larger number of cases than has ever been brought together before.

Thirty-two are reported by American observers and only 14 by foreign investigators. Of the former group of cases 16 were observed in Baltimore, most of the cultures having been studied in my laboratory; of the foreign group of cases all are reported from Germany, Austria, Italy and France,⁴⁵ 4 by E. Fraenkel, 1 (not absolutely certain) by Passow, 5 by Hiitsch-

mann and Lindenthal, 3 by Muscatello assisted by Gangitano, and 1 by Guillemot.

Cases of gaseous phlegmon in which *Bacillus aërogenes capsulatus* was not demonstrated are not included, although many of these presented the same clinical characters and doubtless in some at least the gas bacillus was the active agent. This is true especially of the cases of gangrène foudroyante, usually without satisfactory bacteriological examination, attributed by French writers to Pasteur's vibron septique. Gertler's⁴⁶ 8 cases of gaseous phlegmon cannot be utilized for our purposes at all, as they are without any satisfactory bacteriological reports.

A complete analysis of these 46 cases would afford material more than sufficient to occupy this entire address, so that I shall be able to present here only some of the more important points.

Thirty-five of the patients were males, 10 females, and of 1 the sex is not stated. The preponderance of males is explained by the fact that most of the cases were due to severe injuries. Robust workmen in the prime of life furnished the largest contingent of cases.

In 80% of the cases one of the extremities was the seat of the emphysematous gangrene, the lower being affected a little over twice as often as the upper extremities. In several instances the emphysema extended from the thigh to the abdominal wall or from the arm to the subcutaneous tissues of the shoulder and chest. There were three examples of primary emphysematous phlegmon of the abdominal wall; of these 1 following removal of the appendix (Bloodgood), 1 from an unrecognized strangulated Littré hernia (Martin) and 1 affecting the deep tissues of a nephrectomy wound (Muscatello). In all of these the infection is believed to have started from the intestine. In one of Dunham's cases there was emphysematous gangrene (originating in a prostatic abscess opening in the buttock) of the scrotum, penis and anterior abdominal and thoracic subcutaneous tissues. In three instances (Carroll, 2; Dobbin, 1, reported by Bloodgood) the breast and submammary tissues were the primary seat of the disease, all of these resulting from the infusion of salt solution. In one case (Dunham) the gaseous phlegmon appeared at the angle of the lower jaw after incision of a foul submaxillary abscess. In one instance (Welch and Flexner) it started within the pelvis from traumatic rupture of rectum and extended through the sciatic notch down the thigh.

Of especial interest are three examples of multiple or metastatic emphysematous gangrene, one of the forearm and opposite shoulder, another of the thigh and both shoulders, and still another of one shoulder and the buttocks. In the older literature are similar cases; thus Nélaton observed emphysemia not only in the injured leg but also in the opposite uninjured extremity. In 1897, Leech⁴⁷ reported without adequate bacteriological examination, a case of emphysematous gangrene of the right leg following about three weeks after injury of the right thumb, which became inflamed, there being no evident local cause of the affection of the leg. These cases are to be explained by transportation of the bacilli through the lymphatic or blood current from the primary focus of entrance.

In all but 5 of the 46 cases the emphysematous gangrene followed traumatic or a surgical operation.

⁴¹ Ann. d. Ist. d'Igiene sper. d'R Univ. di Roma, 1891, n. s., i, p. 365, and Zeit. f. Hyg., 1893, xiv, p. 352.

⁴² Centrabl. f. Bakl., 1891, x, p. 186.

⁴³ Ann. de l'Inst. Pasteur, 1897, xi, p. 860.

⁴⁴ This list includes 16 cases observed in Baltimore, mostly at the Johns Hopkins Hospital, of which 2 are unpublished, and the remaining 14 have been published by Mann (1), *Annals of Surgery*, 1894, xix, p. 187; Welch and Flexner (6), *Journal of Experimental Medicine*, 18'6, i, p. 5; Martin (1), *University Bulletin*, 1896, i, No. 3; and Bloodgood (6), *Progressive Medicine*, December, 1899, iv, p. 158. The notes of an additional unpublished case observed in Manila have been given me by Dr Flexner. There are also 3 unpublished cases for the records of which I am indebted to Dr. Carroll, of Washington. The references to the remaining 26 cases are as follows: E. Fraenkel (4), *Ueber Gasphlegmonen*, Hamburg u. Leipzig, 1893; Passow (1), *Charité-Annalen*, 1895, xx, p. 275; Dunham (5), *Bulletin of Johns Hopkins Hospital*, 1897, viii, p. 68; Ferguson (1), *Transactions of Indiana Medical Society*, 1897, p. 339; Erdmann (1), *Medical Record*, February 5, 1898, p. 205; Le Boutillier (1), *Medical Record*, March 5, 1898, p. 353; Love and Cary (1), *Medical Record*, April 8, 1899; Norris (1), *American Journal Medical Sciences*, 1899, cxvii, p. 195; Hirschmann and Lindenthal (5), *Sitzungsber. d. k. Akad. d. Wiss., Math Naturw. Cl. Wien*, 1899, cviii, Heft. 3, Abth. iii, p. 67; Thorndike (2), *Boston Medical and Surgical Journal*, June 7, 1900, p. 592; Muscatello with Gangitano (3), *Riforma med.*, 1900, ii, pp. 508, 519 and 530; Guillemot (1), *Compt. rend. Soc. de Biol.*, 1898, 10, s., v, p. 1017. A few other cases in which the gas bacillus was found are not reported with sufficient detail to be available for analysis. It is safe to say that *Bacillus aërogenes capsulatus* has now been found in at least 50 cases of gaseous gangren.

⁴⁵ Soupault and Guillemot's (*Compt. rend. Soc. de Biol.*, 1898, 10, s., v, p. 1017) three cases of gaseous abscess came to my notice too late to be included, and perhaps should not be classed under emphysematous gangrene. All were relatively benign.

⁴⁶ *Ueber Gasphlegmonen*. Inaug-Diss. Halle, 1898.

⁴⁷ *Quarterly Medical Journal (Sheffield)*, 1896-97, v, p. 237.

The injuries were as follows: Compound fracture, 18; bullet and gunshot wounds, 7; infusion of salt solution, 3; hypodermic injections, 2; ligation of the femoral artery for aneurism, 3; external urethrotomy, 2; traumatic rupture of the rectum, removal of the appendix, prostatic abscess following self-catheterization, operation for strangulated Littré hernia, incision of a foul submaxillary abscess, and nephrectomy, each 1. Of the 5 non-traumatic cases the gaseous gangrene followed erysipelas in 1, was consecutive to apparently spontaneous gangrene in 2, whether diabetic or not is not stated, and was without apparent explanation in 2 (Fraenkel, Case 2, and Passow).

Compound fractures, and next bullet and gunshot wounds, occupy by far the most prominent place in this list, each of the other various causes being represented only by scattered cases. Those injuries in which there are much laceration and crushing of tissue, comminution of bone and grinding of dirt, bits of clothing or other foreign bodies into the wound are the ones most likely to be followed by emphysematous gangrene. That, however, severe traumatism is not an essential factor is shown by the 5 cases (10% of the entire number) following hypodermic injections and infusion of normal salt solution. These latter, however, were all of patients whose vital forces were greatly depressed, namely, by Asiatic cholera, typhoid fever, surgical shock, or post-partum hemorrhage. There is good reason to believe that the intact tissues of human beings in health possess marked resistance to the gas bacillus.

In the great majority of cases it was evident that the gas bacillus was introduced through the wounded skin from without. In three instances (removal of appendix, strangulated hernia, and traumatic rupture of the rectum) the infection undoubtedly came from the intestine. This was also the probable source of infection in one of Muscatello's cases (gaseous phlegmon in the site of an extirpated kidney). With our present knowledge of the frequent, if not regular, presence of *Bacillus aerogenes capsulatus* in the intestine, there is nothing surprising in this mode of infection. In three of Dunham's cases the infection followed injury of the urethra, and here also the bacilli may have come from the intestine. In one of his cases (gaseous phlegmon at angle of the jaw) it was suggested that the bacilli gained entrance through decayed teeth.

Bloodgood thinks it probable that in one of his cases the gas bacilli were brought by the circulation to the seat of infection. In this case the femoral artery was ligated for traumatic arteriovenous aneurism in the popliteal space. There was no primary infection of the wound, but gangrene of the foot and leg ensued and on incision gas bubbles were found in the blood of the aneurismal sac and the tissues. With what we know about the entrance of intestinal bacteria into the circulation, there is nothing improbable in Bloodgood's opinion. The clot in an aneurism and tissues robbed of their nutrient supply would offer little or no resistance to the growth of bacilli which might reach them or their immediate neighborhood through the circulation, and the conditions would be anaërobic. It was indeed a case of aneurism in which I first found the gas bacillus, and here the clot was swarming with bacilli. It is interesting to note that three of the cases of emphysematous gangrene in

my list followed ligation of the femoral or popliteal artery for aneurism.

Pirogoff⁴⁸ distinguished clinically two groups of cases of traumatic emphysematous gangrene. He described under the name "primary mephitic gangrene" cases in which the emphysema appears within two days after the injury, the "local stupor" passing without inflammatory reaction into crepitating gangrene. Here the emphysematous necrosis spreads rapidly, the patient sinks into collapse with an icteroid hue of the skin, small, thready pulse and cold sweats, and death occurs usually within a few days after the onset. This type of the disease corresponds to Maisonneuve's *gangrène foudroyante*. In the second group, designated by Pirogoff also as "acute gangrenous edema," there is reaction from the primary "local stupor" of the tissues, the emphysema is preceded and accompanied by local edematous or purulent inflammation, is associated with febrile reaction, often appears later after the injury and spreads less rapidly, and presents in general a more varied anatomical and clinical picture than the first class of cases.

Hitschmann and Lindenthal consider that Pirogoff's first group corresponds especially to cases of pure infection with the gas bacillus, and his second group to mixed infections. Erdmann is also of the opinion that in the unmixed infections the emphysematous necrosis spreads more rapidly and is more likely to terminate fatally. On the other hand Muscatello and Gangitano, who also divide the cases into two groups — pure infections and mixed infections — hold that the mixed infections are characterized by the rapidly progressive form of emphysematous gangrene, while the pure infections, at least in their early stage, show little tendency to spread beyond the injured tissues. According to the last named authors the gas bacillus is incapable of exerting any pathogenic action upon healthy tissues, but attacks only tissues already altered in their vitality by injury, other pathogenic micro-organisms, toxins, or other depressing factors.

The study of our cases has not enabled me to adopt either of the two conflicting opinions just stated. Of the collected 46 cases, 30 were mixed infections, 14 were pure, and in 2 there is no clear statement on this point. The most common associated bacteria were the pyogenic streptococci and staphylococci. Other forms found occasionally were *Bacillus coli*, proteus, pyocyaneus, tetanus, Sanfelice's *Bacillus pseudo-œdematis maligni*, and uncultivable, often spore-bearing, bacilli. It seems probable that the bacillus of malignant edema, being a common inhabitant of the soil, must occasionally, like the tetanus bacillus, be present, but it was not isolated from any of these cases. My experience is that if reliance be not placed exclusively upon cultures, but careful microscopical examinations be also made, instances of unmixed infection with the gas bacillus are rare. It is by no means always easy to determine whether associated bacteria are exerting pathogenic action or not. Pyogenic cocci may be present without producing pus or marked inflammatory reaction.

We have found rapidly progressive forms of emphysematous gangrene both with pure infections with the gas bacillus and with mixed infections, and on the other hand we have observed with both types of infection cases in which the tendency to spread is much

⁴⁸ Grundzüge d. allg. Kriegschirurgie, p. 1006, Leipzig, 1864.

less marked. In all of the cases with much purulent inflammation mixed infection was present, but aside from this feature the division of the cases into pure and mixed infections does not, according to our experience, correspond to different, sharply marked, clinical features. Pirogoff's classification is doubtless of clinical value, but there is every gradation between the two groups.

I cannot agree with Muscatello and Gangitano, whose investigations of emphysematous gangrene are of great value, that the gas bacillus is incapable of attacking healthy tissues. Virulent cultures, even in small doses, can produce rapidly spreading gaseous phlegmons when inoculated into the subcutaneous tissues of susceptible animals, such as guinea pigs and pigeons. In human beings the emphysema may extend very rapidly into the healthy tissues, frequently outstripping in its advance the inflammatory edema. This may occur in pure, as well as in mixed, infections with the gas bacillus. It is true, as urged by Muscatello and Gangitano, that toxins derived from the bacilli may prepare the tissues for the invasion and action of the advancing bacilli, but the same explanation has been put forward for the spread of other pathogenic bacteria in healthy tissues. In asserting that the gas bacillus may attack healthy tissues, I would not be understood as minimizing the great importance of the various accessory causes of emphysematous gangrene which act by lowering the vitality of the tissues or the general resistance of the patient or as failing to recognize the marked resistance to infection by the gas bacillus offered by the healthy tissues, a resistance to which I have previously called attention and which I shall have occasion further to emphasize.

Gas may appear in the tissues as early as eight hours after the injury. In a case of gaseous phlegmon following a bullet wound of the knee joint, reported by Welch and Flexner, Dr. Bloodgood recognized gas in the joint⁴⁹ and surrounding tissues just twenty hours after the injury. In a case of Dr. Tiffany's which we have reported, death from emphysematous gangrene, due to pure infection with the gas bacillus, occurred forty-eight hours after a fall causing a compound comminuted fracture of the patella with grinding of the underclothing into the wound. There was no other injury of the body. Any one who has seen one of these rapidly fatal cases of spreading traumatic, emphysematous gangrene will receive an impression which he will never forget.

The anatomical and clinical study of uncomplicated emphysematous gangrene demonstrates that the disease is not, as many formerly supposed, simply an intense variety of ordinary phlegmonous inflammation or cellulitis, but is a disease sui generis. It may be combined with phlegmonous inflammation, but then some other micro-organism, usually the streptococcus, is associated with the gas bacillus.

In typical uncomplicated cases the lesions consist in necrosis of all the tissues, the presence of gas in the interstices, infiltration with blood, evidences of the mechanical action of the gas, and exudation of a variable amount of bloody serum. The amount of gas varies much in different cases. There may be only a few bubbles or the tissues may be everywhere blown up with gas. The nuclei disappear by karyolysis. The

notable thing in most cases is a nearly complete absence of leucocytes and of cellular reaction, although in a few instances, even of pure infection, I have found leucocytes in considerable number, and even purulent foci, but generally at a distance from the primary necrosis. As will be shown later, *Bacillus aërogenes capsulatus* in certain situations is capable of setting up purulent inflammation. In one of our cases, reported by Bloodgood, Dr. Cushing found gas bacilli without gas in a small subcutaneous abscess of a stump two months after amputation of the thigh for emphysematous gangrene of the leg, the amputation having been followed by uninterrupted convalescence.

After death there may be a rapid extension of the subcutaneous emphysema, and at autopsies made a few hours after death gas bubbles may be found in the heart, vessels, liver and other organs, but as to this occurrence there is no rule. As I have already explained, wide-spread distribution of gas in the blood and organs in early autopsies indicates entrance of the bacilli into the circulation during life.

As is to be expected from the etiology of many of the cases of emphysematous gangrene, emboli of fat and of bone-marrow cells are common in the pulmonary capillaries, but I do not know that in any case they contributed to the fatal result.

The prognosis of emphysematous gangrene is more favorable to-day than before the antiseptic period. The disease terminated fatally in 59% of the cases in my list. In the cases observed and treated at the Johns Hopkins Hospital — 10 in number — the fatality was 50%, but of these one was a gaseous phlegmon of the pelvis extending to the thigh, resulting from traumatic rupture of the rectum: a second was a gaseous phlegmon of the abdominal wall following removal of the appendix and complicated with diffuse gangrenous peritonitis, and a third case terminated twenty-five days after disappearance of a gaseous phlegmon of the thigh (treated by incisions) from a late streptococcus infection, gas and the gas bacillus having disappeared. Of the two remaining fatal cases, in one — emphysematous gangrene following compound fracture of the thigh — amputation was refused by the patient until the fourth day, when he was in a state of collapse and died fifteen hours later, and in the other — compound fracture of the skull and both lower extremities — the patient died thirty hours after the accident, having never regained consciousness. When the disease is accessible to surgical treatment, is not complicated by other grave conditions, and is promptly recognized and treated, the prognosis, according to the experience of my surgical colleagues, Professor Halsted and Dr. Bloodgood, is not very unfavorable.

The clinical evidence seems to me to favor the view that, at least in most uncomplicated fatal cases, death is due to toxemia. Norris was unable to demonstrate the presence of strong toxins in artificial cultures of *Bacillus aërogenes capsulatus*, but, as is well known, the same difficulty is encountered with many other pathogenic bacteria which are believed to produce poisons in the human body. Muscatello is also of the opinion that the constitutional symptoms are attributable to toxemia.

The suggestion that death may be due to gaseous embolism is not new. Pirogoff and other of the older observers knew that gas bubbles may be found within the heart and vessels very soon after the death

⁴⁹ It is to be regretted that in the cases reported by Prutz (Deutsch. Zeit. f. Chir., 1898, xlviii, p. 591) as traumatic entrance of air into the knee joint, no bacteriological examination was made.

of patients from emphysematous gangrene. In the discussion on Lungenbeck's paper on traumatic infiltration before the Society of German Military Surgeons in 1870, Senator⁵⁰ advocated the idea that death is caused by gas embolism. While the possibility of this occurrence as the cause of death may be admitted, there is at present no proof of this opinion. Gas bubbles are by no means always found in the blood and organs after death from emphysematous gangrene, and the clinical histories of those in which they are found post mortem do not appear to differ from those when they are absent. In experimental gaseous phlegmons in guinea pigs there is no evidence of the presence of gas bubbles in the circulation during life.

In 1 of our cases (Mann) death resulted from tetanus, and Verneuil⁵¹ has reported 3 cases, which without bacteriological examination he calls malignant edema, where also tetanus intervened. There is nothing surprising in this association when one considers that the home of the tetanus bacillus, like that of the gas bacillus, is the soil. The period of incubation for tetanus is longer than for infection with the gas bacillus, the former appearing rarely before the seventh day, and the latter usually within two or three days after the injury.

Prophylactic measures against emphysematous gangrene are sufficiently obvious from the etiological factors which have already been considered. It is important in wounds of the character most frequently followed by this complication to search microscopically and by cultures for the gas bacillus. The examination of cover-slips will usually suffice for a probable diagnosis. I have already cited instances in which this bacillus has been detected before the onset of emphysema and in which there is good reason to think prompt surgical treatment warded off severe infection. The possibility of infection from the intestinal canal, as well as from external sources, is to be borne in mind.

The cases were treated either by free incisions or by amputation or both. The results were better after amputation than after simple incisions. Of the cases of emphysematous gangrene affecting primarily the extremities, the recoveries numbered 68% after amputation, and 33 $\frac{1}{3}$ % after incision without amputation. Careful study of individual cases shows that amputation is by no means always necessary. Everything depends upon early recognition of the nature of the infection. Dr. Bloodgood⁵² from a relatively large experience says: "If the infection is recognized early, and the destruction of the soft parts and bone is not extensive, free incisions with immediate continuous bath treatment should be tried. If the general symptoms of infection are not immediately relieved, amputation should be done. If, however, the infection is recognized late, one should take no risk but amputate at once. . . . An early diagnosis will probably save life, and from many observations an amputation may not always be necessary."

A similar position as to prognosis and treatment is taken by Muscatello and Gangitano in their valuable paper on gaseous gangrene, in which they also emphasize the value of abundant irrigations with disinfectant and oxidizing solutions. In the service of

Dr. Halsted at the Johns Hopkins Hospital the continuous bath treatment has been found useful. Hirschmann and Lindenthal are certainly mistaken in their assertion that incisions are usually without favorable effect and that early amputations offer the only chance of recover. As pointed out by Thorndike and others, recovery may follow amputation, even when it is impossible to remove the whole of the diseased tissues.

UTERINE INFECTIONS.

Knowledge of *Bacillus aerogenes capsulatus* is of not less interest and importance to the obstetrician than to the surgeon. Infection of the puerperal uterus by this micro-organism leads to a variety of morbid conditions, some comparatively mild, others of the utmost gravity.

The wide distribution of the gas bacillus in the intestinal canal and the outer world renders as explicable the occasional presence of this bacillus in the female genital tract as that of the colon bacillus in the same situation. Lindenthal⁵³ found the gas bacillus in the vagina without the presence of gas or other pathogenic effects, twice out of 6 puerperal cases examined. According to the observations of others, Lindenthal's experience would seem to be exceptional. As with so many other pathogenic bacteria, the mere presence of the organism upon exposed surfaces does not necessarily signify infection.

I shall consider the uterine infections by the gas bacillus under the headings of emphysema of the fetus, puerperal endometritis, physometra, emphysema of the uterine wall, and puerperal gas-sepsis, although these conditions may be associated with each other.

Emphysema of the fetus.—The occurrence of emphysema in the dead fetus in utero has been known for centuries,⁵⁴ but it was not until 1897, when Dobbin published his paper on "Puerperal Sepsis due to Infection with the *Bacillus Aerogenes Capsulatus*,"⁵⁵ that the cause of this condition was determined to be invasion by the gas bacillus. In this case gas and the gas bacillus were both recognized during the life of the patient in the fetus, the placenta and the cavity of the uterus, and after death there was general gas formation throughout the body.

Dr. Dobbin has kindly given me the notes of a second unpublished case observed by him. He was called to see a woman in difficult labor, upon whom repeated attempts at delivery of a dead fetus had been made. Upon examination he recognized crepitation of the caput succedaneum while the fetus was still in utero. Upon delivery the fetus was emphysematous with foamy organs. The gas bacillus was found in pure culture in the fetus and mixed with other bacteria in the amniotic fluid. No gas was recognized in the uterus after delivery. The patient made a good recovery without evidence of sepsis.

Menge and Krönig⁵⁶ have observed three instances of fetal invasion by the gas bacillus and have brought strong evidence that usually the invasion is through the mouth of the fetus, the bacilli being taken into the lungs or stomach by inspiring or swallowing am-

⁵⁰ Wien. klin. Wochn., 1877, pp. 3 and 35.

⁵⁴ It is usually stated that this condition was known to Celsus, but he does not expressly mention the presence of gas, although this is to be inferred. In the chapter on extraction of the dead fetus, he says: "Solet etiam evenire, ut in infans humor distendatur, eaque eo profuata foedi odoris sanies." Milligan's "Celsus," p. 391, Edinburgh, 1831.

⁵⁵ Bulletin of the Johns Hopkins Hospital, 1897, viii, p. 24.

⁵⁶ Bakt. des weibl. Genitalkanals, Teil II, p. 167, Leipzig, 1897.

⁵⁰ Deutsch. militärärztl. Zeit. 1872, I, p. 260.

⁵¹ Semaine Méd., 1890, p. 403.

⁵² Deutsch. Zeit. f. Chir. 1898, xlviii, p. 174.

niotic fluid. In their cases the bacilli were not found in the part of the umbilical cord attached to the placenta, but in Dobbin's first case this, as well as the placenta itself, was infected with the gas bacillus. The amniotic fluid within the intact membranes, as is well known, is usually sterile, and only exceptionally becomes infected before rupture of the membranes, so that the infection of the fetus from this source is generally after this rupture. As shown by Menge and Krönig, all grades of invasion of the fetus by the gas bacillus occur, so that there may be only a small amount of gas, and this limited to the lungs or the alimentary canal or both. The medico-legal importance of not mistaking for air this gas in the fetal lungs produced by gas bacilli should be emphasized.

As is well known, fetal emphysema is usually unattended with danger to the mother. In 2 of the 5 cases due to *Bacillus aerogenes capsulatus* in my list the puerperium was even without rise of temperature, in 2 there was mild fever, but in Dobbin's first case there was rapidly fatal gas sepsis.

Puerperal endometritis.—Under the heading "gas-sepsis" will be considered cases of acute uterine infection with the gas bacillus followed by invasion of the blood and organs by this organism. Here it may be mentioned that *Bacillus aerogenes capsulatus* may be present in the uterus, usually in association with other bacteria, in both mild and severe cases of puerperal endometritis without the recognition of gas in the fetus or the uterine cavity or wall. An example of such a case is an unpublished one in the service of Dr. J. Whitridge Williams, of which the notes have been furnished me by Dr. Dobbin. A woman with rachitic pelvis, upon whom delivery by forceps had been attempted before admission to the Johns Hopkins Hospital, was there delivered by craniotomy. There was no gas in the fetus. Forty-eight hours later *Bacillus aerogenes capsulatus*, together with streptococci, was found in the uterine lochia. No gas was detected. The patient developed fever, but recovered.

In 2 cases, one reported by Dobbin⁵⁷ and the other by Blumer,⁵⁸ the gas bacillus, although not identified with absolute certainty, was probably present in the puerperal uterus in association with the typhoid bacillus.

Physometra.—Distension of the uterine cavity with gas (physometra, or tympany of the uterus) was present in Dobbin's first case, already cited, and is often associated with emphysema of the dead fetus, but may occur without the latter and even in the non-pregnant uterus. This curious condition was formerly ascribed to entrance of air or to ordinary putrefaction,⁵⁹ but it is now known to be the result of the activity of gas-producing bacilli.

Since the observations of Lindenthal,⁶⁰ reported in 1898, it cannot be doubted that *Bacillus aerogenes capsulatus* is the chief cause of physometra. He found this bacillus in five cases during life and reproduced the condition experimentally in guinea pigs. He is justly sceptical of the correctness of the previous reports of Gebhard⁶¹ concerning the agency of the colon bacillus in generating gas within the uterus. We

know from Theobald Smith's investigations that the colon bacillus can produce gas only from carbohydrates, whereas it is the most distinctive biological attribute of our gas bacillus that it can produce gas from proteids. Until it has been shown that the amniotic fluid and uterine contents may under any conditions contain enough carbohydrate to explain the development of gas by the colon bacillus, there is every reason to question the claims for this bacillus as a cause of tympany of the uterus.⁶²

My list of cases contains ten instances of physometra in which *Bacillus aerogenes capsulatus* was demonstrated. Although, as some of our cases show, this condition may be associated with invasion of the bacilli into the wall of the uterus and by acute gas sepsis, these occurrences are exceptional and the prognosis is in general a favorable one. Most of the cases furnish a good illustration of the resistance of living human tissues to the action of the gas bacillus. Doubtless in these cases the bacilli grow simply in the amniotic fluid after rupture of the membranes, and in the dead fetus, these offering no vital resistance, whereas we must suppose that the intact uterine wall offers ordinarily an effective resistance to the invasion and multiplication of the gas bacillus. That occasionally the bacilli may find other dead material in the uterus, as in sloughing myomata and cancers, is evident from the histories of some cases of physometra.

Emphysema of the uterine wall.—Far graver in significance is septic emphysema of the uterine wall, of which Halban⁶³ has recently reported an interesting case due to *Bacillus aerogenes capsulatus*. Graham, Steward and Baldwin and P. Ernst were the first to demonstrate this bacillus in this condition, their papers, to which reference has already been made, appearing simultaneously in August, 1893. Eleven instances of emphysema of the wall of the uterus, all puerperal, have been reported, of which 5 were recognized during life. In all but Halban's case there was also physometra, and this would seem to be a necessary accompaniment unless the cervical canal is open, so as to permit the escape of the gas from the uterine cavity. All of the cases were fatal, and in most gas was found at autopsy in the blood and internal organs.

Subperitoneal emphysema has been observed after rupture of the uterus, Dischler⁶⁴ having collected reports of 14 cases. In most instances this has been attributed to entrance of air, but I think that it is safe to predict that the gas bacillus will be found in similar cases in the future, if proper methods for its detection are employed. I know, however, of no instance of this condition in which it has been looked for.

Puerperal gas sepsis.—I have adopted from Halban the term "gas sepsis" as a convenient one, although perhaps open to criticism, to designate the important group of fatal puerperal cases in which gas bubbles are found at early autopsies in the heart and vessels and often also in the organs and tissues under conditions where we must suppose that gas bacilli and possibly gas have passed from the uterus into the circulation during life.⁶⁵ Here, in my opinion, belong most of the cases which have been reported as deaths

⁵⁷ American Journal of Obstetrics, 1898, xxxviii, p. 185.

⁵⁸ Ibid., 1899, xxxix, p. 42.

⁵⁹ The older hypotheses and records on physometra and emphysema of the fetus are fully presented by Staude: Zeit. f. Geb. u. Gynäk., 1878, lii, p. 191.

⁶⁰ Monats. f. Geb. u. Gynäk., 1898, vii, p. 269.

⁶¹ Zeit. f. Geb. u. Gynäk., 1893, xxvi, p. 480, and 1897, xxxvii, p. 132.

⁶² Halban (Monats. f. Geb. u. Gynäk., 1900, xi, p. 102) states that he has found lactose once in the amniotic fluid of a normal puerpera. Further studies of this subject are needed.

⁶³ Monats. f. Geb. u. Gynäk., 1900, xi, p. 88.

⁶⁴ Arch. f. Gynäk., 1893, lvi, p. 199.

⁶⁵ Gas sepsis in this sense occurs also in other infections with the gas bacillus than the uterine.

due to the entrance of air into the uterine veins. This opinion, which I expressed in my first communications on the gas bacillus in 1891 and 1892, received prompt confirmation in the papers of Graham, Steward and Baldwin and of P. Ernst, in August, 1893, and has since been strengthened by other similar observations. Cases described by Wendeler⁶⁶ as sepsis acutissima belong also in the same category.

My list includes 12 puerperal cases in which gas bubbles and the gas bacillus were found at autopsy in the blood or organs, but in only 6 of these does it seem to me conclusive or extremely probable that the infection occurred during life.⁶⁷

The most remarkable of these cases is that reported by Graham, Steward and Baldwin, of a woman upon whom abortion had been recently produced, who during the four hours immediately preceding death became emphysematous over nearly the whole body. At the autopsy gas and gas bacilli were found everywhere throughout the body. In Dalton and Bremer's⁶⁸ case, also one of criminal abortion, an emphysematous swelling of the arm and pectoral region was likewise recognized during life. These cases are of importance as demonstrating the invasion of the body by the gas bacillus from the uterus while the blood is still circulating. In Halban's and Dobbin's cases gas was recognized also during life within the wall or cavity of the uterus.

In the majority of cases of puerperal gas-sepsis there has been some operative interference preceding infection, such as criminal abortion, forced delivery for placenta previa or other causes, or the manipulations of an unskilled midwife. The fulminating character of the infection, death being sometimes very sudden, is a notable feature of many of the cases.

In a case of attempted criminal abortion reported by Perkins,⁶⁹ the patient, according to the statement of the practitioner in whose office death occurred, died suddenly, and at the autopsy twelve hours later in cold weather, gas was found in the vena cava, heart, and other vessels, with evidences of injury to the pregnant uterus. The case was reported by Perkins as one of death from air embolism, and certainly with as much and even more plausibility than most cases thus reported. After the publication, Dr. Perkins, upon the request of Dr. Dobbin, was so good as to send the uterus, well preserved in alcohol, to my laboratory, where Dr. Dobbin demonstrated in the uterine vessels and tissue bacilli morphologically and in staining reaction identical with *Bacillus aerogenes capsulatus*.⁷⁰

I would not be understood to deny the possibility of the occurrence of fatal air embolism from the uterus. A very few of the reported cases are difficult to interpret upon any other supposition, but I do claim that the foundations of this doctrine have been seriously shaken by our discovery and investigations of the gas bacillus, and that no case, however plausible, can be considered as positively proven without a satisfactory bacteriological examination. Did we not know how long it takes new knowledge, especially

that originating in this country, to penetrate throughout the medical world, it would be amazing that cases should still continue to be reported, as they are,⁷¹ of deaths ascribed to air embolism without any bacteriological examination or even any reference to the possibility of any other explanation. I am not aware that in any instance of alleged air embolism, a bacteriological examination has been made which would exclude the presence of gas-forming bacteria.

Whether, as suggested by Staude, in any of the cases with gas within the uterine cavity death is attributable to gaseous embolism is, I think, an open question. It is possible, although I know no proof of it, that in some of the cases of sudden death following immediately after some manipulation or operation on the pregnant uterus and attributed to air embolism, gas, generated by bacteria, may have existed under pressure within the uterine cavity and have entered wounded veins in sufficient amount and so suddenly as to have caused death.

To what extent the free gas found in the blood-vessels, heart and internal organs, even very soon after death from what has been described as puerperal gas-sepsis, is there during life is a question difficult to answer. I have already considered this subject, and in this connection will again emphasize the importance of caution in interpreting the presence of gas in these situations as a vital phenomenon, although there is evidence that it may be such.

INFECTIONS OF THE URINARY TRACT.

There is evidence that the urinary tract may not only be a portal of entrance for the gas bacillus into the circulation or adjacent tissues but also be itself the seat of infection by this organism. Unfortunately for the decisive interpretation of many of these cases, *Bacillus aerogenes capsulatus* has, so far as I am aware, hitherto been found in the urinary tract only after death, although in some instances so soon thereafter and under such conditions that its presence during life cannot be doubted.

I have already called attention to instances of emphysematous gangrene following external urethrotomy and other operations on the urinary passages.

Among the cases of general invasion of the blood and organs (foamy organs) by the gas bacillus observed by myself and others are several in which the portal of entry was the urethra, bladder or other part of the urinary tract.⁷² In a case of urethral stricture with cystitis, for which perineal section had been done, reported by Welch and Flexner, gas bacilli were found three-quarters of an hour after death in large numbers in the bladder, ureters and renal pelvis and a few gas bubbles and gas bacilli were already present in the blood of the right ventricle. In Howard's case of meningitis caused by the gas bacillus, to be cited subsequently, he considers that the portal of entry was the urinary tract.

Gas, generated by *Bacillus aerogenes capsulatus*, has been found in the urinary passages in 6 cases which have come to my notice.⁷³ The gas may be either free in the cavity of the bladder, ureters or renal pelvis, or contained within submucous blebs, or in both situations.

⁷¹ Zorn (Münch. med. Woch., 1898, p. 567) may be cited as an example. Gas limited to the right heart may occur from invasion of the gas bacillus.

⁷² Such cases are reported by Welch and Flexner, Goebel, Dunham, and Howard in papers already cited.

⁷³ These do not include some instances of very extensive post-mortem emphysema of the organs with gas everywhere throughout the body.

⁶⁶ Monats. f. Geb. u. Gynäk., 1896, iv, p. 581.

⁶⁷ These are the cases reported by Graham, Steward and Baldwin, P. Ernst, Krönig and Menge, Dobbin, F. C. Wood (Medical Record, April 15, 1899), and Halban, to whose papers references have already been given.

⁶⁸ American Journal Medical Sciences, 1888, xciv, p. 594. This infection, although attributed to the bacillus of malignant edema, was probably due to the gas bacillus.

⁶⁹ Boston Medical and Surgical Journal, 1897, cxxxvi, p. 154.

⁷⁰ Dobbin has reported his examination with further notes of this case in the Monats. f. Geb. u. Gynäk., 1897, vi, p. 375.

Welch and Flexner⁷⁴ have reported an instance of pneumaturia in a diabetic man in whom six hours after death, without trace of cadaveric decomposition, the urinary bladder was found filled with frothy urine containing *Bacillus aerogenes capsulatus* in pure culture. This case indicates that the colon bacillus and *Bacillus lactis aerogenes* are not the sole causes of pneumaturia in diabetics. Dr. Flexner has given me the notes of a second case of pneumaturia upon which he made the autopsy at the University Hospital, Philadelphia. This was of a patient with chronic cardiac disease who had been catheterized twenty-eight hours before admission and who died thirty hours after admission. At the autopsy, made one hour and a half after death, about 60 cubic centimetres of frothy urine were found in the bladder, from which *Bacillus aerogenes capsulatus*, together with *Staphylococcus aureus* and *Streptococcus pyogenes* (no colon bacilli), was cultivated. Neither gas nor gas bacilli were found elsewhere in the body. The mucous membrane of the bladder was edematous. There can be little doubt that in this case the gas bacillus was introduced by the catheter into the bladder.

In one of Welch and Flexner's cases (Case XVIII) of hypertrophied prostate with pyoureter and pyonephrosis, the renal pelvis and ureters were found at autopsy distended with gas and containing pus mixed with bubbles of gas. Small gas cysts were present in the mucous membrane of the renal pelvis. Neither gas nor gas bacilli were present outside of the urinary organs. In this case cocci and colon bacilli were associated with the gas bacillus.

In a case of Dr. Kelly's, of which the full records have been given me by Dr. Miller,⁷⁵ there was pneumonia demonstrated by cystoscopic examination and ureteral catheterization to come exclusively from the inflamed left renal pelvis and ureter. Among cocci and other bacteria were found on cover-slips bacilli morphologically resembling *Bacillus aerogenes capsulatus*, but unfortunately no anaerobic cultures were made. None of the bacteria which grew aerobically produced gas in lactose agar. This case is interesting as demonstrating that the gas may come exclusively from one renal pelvis and ureter, but the micro-organism producing the gas was not satisfactorily demonstrated. It seems certain that it was an anaerobic organism, and from the microscopical appearances may have been the gas bacillus.

The subject of submucous gas cysts will be considered subsequently, but here it may be mentioned that besides the gas cysts in the renal pelvis noted by Welch and Flexner in the case already cited, Goebel found gas blebs containing in pure culture *Bacillus aerogenes capsulatus* beneath the mucous membrane of the urinary bladder, without gas elsewhere in the body, and Dunham has reported a similar condition of the bladder in a case of emphysematous gangrene with general invasion of the blood and organs by the gas bacillus.

Bacteria have been found also in emphysema of the bladder (cystitis emphysematosa) by Eisenlohr,⁷⁶ Camargo⁷⁷ and Kedrowsky,⁷⁸ but it is impossible

from the authors' descriptions to identify their bacteria. Kedrowsky considers the bacillus isolated by him as allied to *Bacillus aerogenes capsulatus*, but less sensitive to oxygen. Perhaps it was Sanfelice's *Bacillus pseudo-œdematis maligni*, to which I have already referred, but Kedrowsky's description of his cultures hardly inspires confidence in their purity.

Welch and Flexner, and Howard have reported finding the gas bacillus in association with other bacteria in inflammatory lesions of the bladder, renal pelvis and kidneys, without the detection of gas. Howard considers that in one of his cases the bacillus was concerned in the etiology of suppurative lesions of the kidneys, but in this case the colon bacillus and *Streptococcus pyogenes* were also present.

INFECTIONS DERIVED FROM THE GASTRO-INTESTINAL CANAL.

Mention has already been made of the frequent, if not constant, presence of *Bacillus aerogenes capsulatus* in the intestinal canal, of gaseous phlegmons originating from this source, and of the readiness with which intestinal bacteria may gain access to the genitourinary tract.

The intestine is by far the most common source of the gas bacilli found together with gas bubbles in the blood and organs at autopsies. This invasion may occur either with or without definite intestinal lesions, and is probably in the majority of cases an agonal or post-mortem event. The mode of distribution and spread of the bacilli in these cases has been well described by Howard,⁷⁹ whose experience has been exceptionally large with this class of affections. Especially demonstrative of invasion of gas bacilli from the intestine, usually post mortem, is the occurrence of gas bubbles limited to the neighborhood of the intestine, as in the intestinal wall, within the portal or mesenteric veins or lymphatics, in the subperitoneal tissue, mesentery and omenta, around the pancreas, in the mesenteric glands, and especially in the loose tissue near the gall-bladder and in the porta of the liver, without gas in more remote situations. I have seen examples of each of these occurrences in very early autopsies without ordinary cadaveric decomposition.

Local gastro-intestinal lesions.—Interstitial emphysema of the gastro-intestinal wall will be considered subsequently.

Howard has described several cases with larger or smaller areas of superficial necrosis of the mucous membrane of the stomach and intestine, in which gas bacilli were present in large numbers. These areas, which may occur either with or without gas cysts, are found most frequently beneath the folds of the valvula conniventes and are characterized by absence of nuclear staining and disintegration of the cells and tissue, usually without marked inflammatory reaction.

Bacillus aerogenes capsulatus may undoubtedly be a cause of meteorism. Instances of this are reported by Welch and Flexner, and by Howard.

Pneumoperitonitis with and without perforation.—My records include 13 cases of diffuse peritonitis in the exudate of which *Bacillus aerogenes capsulatus* was found. Eleven of these were in autopsies made either by Dr. Flexner or myself, 7 having already

⁷⁴ Case XIII of our list in *Journal of Experimental Medicine*, 1896.

⁷⁵ This case is briefly reported by Kelly and MacCallum, *Journal American Medical Association*, 1898, xxxi, p. 376, whose paper may be consulted for the full literature of pneumaturia.

⁷⁶ *Ziegler's Beiträge*, 1888, iii, p. 101.

⁷⁷ *These de Genève*, 1891.

⁷⁸ *Centralbl. f. allg. Path. u. path. Anat.*, 1898, ix, p. 817.

⁷⁹ *Contributions to the Science of Medicine, dedicated by his Pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate*, p. 491, Baltimore 1900.

been published by us in 1896. The remaining 2 cases (both being perforations of gastric ulcers) have been reported by Page,⁸⁰ and by Pratt and Fulton.⁸¹ It was the observation of these cases which first called my attention to the frequent presence of the gas bacillus in the intestine.

Ten of the cases were perforative and 3 were non-perforative. Of the former, 4 were the result of perforation of typhoid ulcers, 4 of gastric ulcers,⁸² 1 of strangulated gangrenous intestine and 1 of a cancerous ulcer of the duodenum. In the last case (autopsy fourteen hours after death) the exudate was sero-fibrinous and the gas bacillus was found in pure culture⁸³ and abundantly in the peritoneal cavity and was absent from other organs and the blood. In the other perforative cases the gas bacillus was mixed with other bacteria, although in some instances it predominated. In all of the cases the abdomen was greatly distended with gas and usually there was great tympanites.

I attach especial importance to the case fully reported by Welch and Flexner,⁸⁴ in which we brought conclusive evidence of the occurrence of pneumoperitonitis without perforation, the first of the kind on record in which similar proof was obtained. Since our publication a similar case has been observed by Dr. Flexner in Manila, who has kindly furnished me the notes. At the autopsy, twelve hours after death, there was found hemorrhagic infarction of the lower part of the ileum and adjacent part of the large intestine, caused by the passage of this part of the intestine through a hole in the mesentery. The peritoneal cavity was greatly distended with gas which burnt with a pale blue flame. There was a large amount of frothy, bloody serum in the peritoneal cavity, together with a fibrinous exudate. The most careful examination showed no perforation. *Bacillus aerogenes capsulatus* was obtained in pure culture and abundantly from the peritoneal fluid. Gas was absent from the blood and other organs.

We have found the gas bacillus, mixed with other bacteria, twice in circumscribed, gas-containing, intraperitoneal abscesses resulting from perforation of the appendix vermiformis.

Hepatic and biliary infections. — The development of gas in the liver is so striking a phenomenon in most autopsies where the gas bacillus and free gas are found in the blood and organs that P. Ernst used the term "Schaumleber" for the title of his article on the gas bacillus, published a year after the paper by Welch and Nuttall, in which we first directed attention to the subject of foamy organs and the gas bacillus.⁸⁵ I have already considered the general subject of gas bubbles in the blood and organs, and wish here to call attention especially to infections of the gall bladder and biliary passages by *Bacillus aerogenes capsulatus*.

In cases of foamy liver gas may be found in the bile ducts and gall bladder, but my experience is that, when the gas bacilli reach the liver through the blood-vessels, the appearance of gas in these situations is a rather late occurrence and met chiefly in advanced cases. In contrast to these cases are the observations of gas in the biliary passages, associated sometimes with definite lesions of the bile ducts and liver, where the evidence is that the gas bacilli entered from the intestine directly into these passages. Two such cases have been reported by Howard⁸⁶ and I have observed 2 cases.

Pratt and Fulton⁸⁷ report a remarkable case of cancer of the common bile duct and pancreas in which cholecystotomy was performed, the opening in the gall bladder being stitched to the abdominal walls. At the autopsy the liver was found studded with minute abscesses with greenish translucent walls. In cover-slips, sections and cultures *Bacillus aerogenes capsulatus* was found in pure culture in these small biliary abscesses, but there was no gas in the abscesses, the liver, blood or other organs. A somewhat similar case, in which cholecystenterostomy for gall stones had been performed, was previously reported by Nicholls⁸⁸ from Adami's laboratory. Here also multiple miliary abscesses containing the gas bacillus were found in the liver, but in this case gas was present in the liver as well as in the blood and other organs, the autopsy being six hours after death. Larkin⁸⁹ has likewise reported a case of hemorrhagic pancreatitis with fat necroses and small, multiple hepatic abscesses with gas holes in the liver, from which *Bacillus aerogenes capsulatus* was isolated. The autopsy was eight hours after death.

Hintze⁹⁰ has recorded a post-mortem observation of gas in the inflamed bile ducts with cholelithiasis. He cultivated only the colon bacillus, but it does not appear that he made anaerobic cultures.

From the foregoing cases it is to be inferred that the gas bacillus may invade the bile ducts and gall bladder from the intestine, and sometimes during life, and that it may not only produce gas but also necroses and purulent inflammation. The presence of gall stones, cancer of the bile ducts and operations on the gall bladder appear to favor this mode of infection.

INTERSTITIAL EMPHYSEMA OF THE GASTRO-INTESTINAL, GENITO-URINARY AND BILIARY TRACTS.

One of the most interesting lesions produced by *Bacillus aerogenes capsulatus* is the formation of submucous or subserous gas cysts or blebs, of which the earliest examples attributed to this organism were reported by P. Ernst, Goebel and Welch and Flexner. They are sufficiently common to have been observed by nearly all investigators who have had much experience with the gas bacillus in human beings. My list of cases includes 25 instances of this condition, of which 5 were of the stomach, 11 of the intestine, far oftener of the small than the large intestine, 5 of the gall bladder and bile ducts, 3 of the urinary bladder, 1 of the renal pelvis, and 1 of the vagina. The majority of the cases were observed by Flexner, Howard and myself, and in all the gas bacillus was demon-

⁸⁰ Canada Lancet, May, 1900.

⁸¹ Boston Medical and Surgical Journal, June 7, 1900, p. 599.

⁸² Welch and Flexner have reported an instance of perforated gastric ulcer causing peritonitis in a rabbit, in which the gas bacillus was found.

⁸³ The purity of the culture in this case is explicable by the results of Cushing and Livingood's interesting bacteriological and experimental studies of the duodenal flora published in Contributions to the Science of Medicine, dedicated by his Pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate, p. 543, Baltimore, 1900.

⁸⁴ Case XIII of our list in Journal of Experimental Medicine, 1896, p. 35.

⁸⁵ Heydenreich's paper on "Emphysem der Leber" (Centralbl. f. Bakt., 1897, xxi, p. 305) may be mentioned as a curiosity. He had never heard of the gas bacillus or of any other investigation of the subject later than 1872. In contrast to this is the interesting article of P. Bernhardt on pneumoemathema and foamy organs, with full consideration of the recent literature. Deutsch. med. Woch., 1900, p. 83.

⁸⁶ Contributions to the Science of Medicine, dedicated by his Pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate, pp. 475 and 476, Baltimore, 1900.

⁸⁷ Boston Medical and Surgical Journal, June 7, 1900, p. 599.

⁸⁸ British Medical Journal, 1897, ii, p. 1844.

⁸⁹ Medical Record, 1898, liii, p. 354.

⁹⁰ Münch. med. Woch., 1895, xliii, p. 209.

strated. The case of emphysema of the vagina was reported by Lindenthal.⁹¹

These gas cysts vary in size from microscopic dimensions to large blebs. They are most common in the submucous coat, but may be present in the mucous membrane, the muscular coat, or beneath the serous covering; in fact, in any part of the membranous wall. They may be few or in enormous numbers, in groups or scattered. In one of our cases the whole small intestine from the duodenum to the ileocecal valve was studded with small gas cysts. Gas cysts of the same general character may be found in the mesentery and omenta.

These gas cysts are in their inception simply such gas holes as we are already familiar with in the liver and other organs in cases of local or general invasion with the gas bacillus. They indicate a foamy or emphysematous condition of the walls of the stomach, intestine, gall bladder, bile ducts, urinary bladder and vagina, due to the invasion into these parts of the gas bacillus.

The condition of the walls of the blebs and of the surrounding tissues varies. Some of the cavities are round and their walls smooth, others are irregular in shape and have ragged walls. They may correspond to dilated lymphatics, but more frequently they do not represent dilatation of any preformed channels. There may be communication between adjacent cavities, but oftener the cysts are distinct from each other. The tissue in the immediate neighborhood of the cavities may present no alteration not explicable by the mechanical pressure of the gas, or it may show necrosis in varying degree and extent. Inflammatory changes or cellular reaction which could be reasonably referred to the presence of the cysts or of the gas bacilli causing them were not noted. Sometimes a little coagulated, homogeneous or granular material is present in sections of the cysts in hardened tissues, as indeed may often be found in gas holes in the organs.

In sections stained by Gram there is usually no difficulty in demonstrating the relation of the gas bacilli to the cysts. The bacilli may be in masses in the walls of the cysts, but sometimes they are not more numerous there than in the tissue at a distance from the gas blebs, and occasionally it requires some searching to find them. By anaërobic methods the gas bacillus can be cultivated from the cysts or the adjacent tissue.

All of the instances of submucous and subserous gas cysts in my list were observed post mortem. In the larger number of cases gas bacilli and gas bubbles were more or less widely distributed in the blood and organs, but without evidences of ordinary post-mortem decomposition. There are, however, several cases in which these gas cysts in various situations were the sole manifestation of the presence of the gas bacillus in the body. Howard has shown that if careful systematic search is made for areas of necrosis and minute gas cysts due to *Bacillus aerogenes capsulatus* in the stomach and intestine, these lesions can be found much more frequently than has been supposed.

It is with our present information a difficult matter to say in how many of these cases the emphysematous state existed before death. It is certain that, at least in the great majority of cases in my list, the emphysema was not the result of ordinary post-mortem decomposition. In a large number of the cases the

autopsy was made within a few hours after death. Howard in one of his cases of gas cysts, limited to the intestine, made the autopsy one hour after death. I have already emphasized the importance of great caution in interpreting as vital processes the various gaseous conditions of parts and organs not open to inspection during life, even when autopsies are made soon after death and there is entire absence of putrefaction, and I can only repeat this caution here. Mere absence of nuclear staining around gas holes, I do not regard as proof of their origin during life.

It would lead altogether too far to enter here into a discussion of the general subject of submucous gas cysts, concerning which there is a large literature, the principal references to which will be found in the articles of Eisenlohr,⁹² Camargo,⁹³ Winands,⁹⁴ Dupraz,⁹⁵ and Lindenthal.⁹⁶ It would appear from a study of the records of the subject that anatomically different conditions have been described under the designation "gas cysts" (*cystides aëriferae*). Some have been apparently of long standing and show chronic inflammatory changes in their walls and surrounding tissues. The most voluminous literature relates to the gas cysts of the vagina (*kolpolyperplasia cystica* of Winckel, *emphysema vaginae* of Eppinger).

At present we have no warrant to identify the more chronic gas cysts with thickened walls with the more acute emphysematous condition which I have described as referable to *Bacillus aerogenes capsulatus*. Nevertheless the former are probably of bacterial origin also, although I am unable to accept the bacteriological findings of Eisenlohr, Camargo and Dupraz as at all convincing, for they made no use of anaërobic methods of cultivation. It is quite possible that *Bacillus aerogenes capsulatus* is concerned also in the etiology of the gas cysts of long standing; certainly it is important to apply hereafter anaërobic cultural methods to their study. Lindenthal has no hesitation in identifying the emphysema of the vagina observed by him post mortem and from which in a single case he cultivated what he chooses to call *Bacillus emphysematis vaginae* (in reality our *Bacillus aerogenes capsulatus*) with Winckel's *kolpolyperplasia cystica*, but while he may be correct, further observations are needed before this anatomical and etiological identification can be accepted.

The only instance in which gas cysts of the human intestine have been recognized during the life of the patient is reported by Hahn,⁹⁷ who found them in large number upon opening the abdomen. It is to be regretted that no thorough bacteriological examination of this case was made.

In my original communication on the gas bacillus I ventured the surmise that the bacillus found by E. Fraenkel⁹⁸ in hardened sections from a case of gastritis emphysematosa might be identical with *Bacillus aerogenes capsulatus*, and this suspicion has gained in probability by Goebel's statements based upon an examination of the sections, his work having been done under Fraenkel's supervision.

Notwithstanding an effort at compression, so much space has been occupied in the presentation of the

⁹² Ziegler's Beiträge, 1888, iii, p. 101.

⁹³ Thèse de Genève, 1891.

⁹⁴ Ziegler's Beiträge, 1895, xvii, p. 38.

⁹⁵ Arch. de méd. expér., 1897, ix, p. 282.

⁹⁶ Wieu. klin. Woch., 1897, pp. 3 and 35.

⁹⁷ Deutsch. med. Woch., 1899, p. 657.

⁹⁸ Virchow's Archiv., 1889, cxviii, p. 526.

⁹¹ Wein. klin. Woch., 1897, pp. 3 and 35.

foregoing subdivisions of our subject, which in less than a decade has grown to considerable magnitude, that I shall only summarize very briefly a few remaining topics, although all deserve fuller treatment.

Pulmonary and pleural infections.—To the two instances of invasion of the lungs by the gas bacillus reported by Welch and Flexner I can add the cultivation of this organism from a gangrenous lung by Dr. Flexner in my laboratory.

Of much importance is Levy's⁹⁹ demonstration of *Bacillus aerogenes capsulatus* as a cause of pneumothorax without perforation. This case and those of pneumoperitonitis without perforation to which I have already referred have settled affirmatively the long standing controversy concerning the possibility of the generation of gas within closed serous sacs during life.

Nicholls¹⁰⁰ has reported an instance of pneumothorax and pneumocardium without perforation, in which the gas bacillus was probably present. Finley¹⁰¹ and May and Gebhart¹⁰² attribute their 2 cases of pneumothorax without perforation to the colon bacillus, but in neither were anaërobic cultures made. It is important in all gaseous affections to search for anaërobic.

Gas bacillus in the blood during life.—Extremely interesting is the demonstration by Gwyn,¹⁰³ both by cover-slip specimens and by cultures, on repeated examinations, of *Bacillus aerogenes capsulatus* during life in the blood of a patient in the Johns Hopkins Hospital, with chorea insanians and acute endocarditis. I had the opportunity of examining his cultures, which were entirely typical. The patient died, but unfortunately no autopsy could be obtained. There was no evidence during life of free gas in the blood or tissues. The case is of importance as demonstrating that gas bacilli may be in the circulating blood for days in sufficient number to be demonstrable both microscopically and culturally without evidence of free gas. I have already expressed my suspicion that Achalmé's anaërobic bacillus, which has likewise been cultivated from the blood as well as from the tissues of several cases of acute articular rheumatism, is identical with *Bacillus aerogenes capsulatus*.

Presence of the gas bacillus without gas.—In this connection I may say that the gas bacillus may be present and even multiplying within the human body without the production of gas. Certain organs, above all the liver, offer much more favorable pabulum for the generation of gas than do others, but even in the liver the bacilli may be present without gas. I have found gas bacilli in small clumps within the spleen and kidney, surrounded by areas of necrosis, without recognizable gas. I have already cited the demonstrations by Cushing and by Pratt and Fulton of the gas bacillus in small abscesses without gas, the observation of the latter being particularly complete and satisfactory.

Dr. Harris in my laboratory isolated the gas bacillus in pure culture from an abscess containing blood and pus in the neck of a dog, following an operation on the jugular vein. There was no gas in the abscess. Aerobic cultures were entirely negative. These observations, however, are not the only ones demonstrat-

ing that the gas bacillus may under certain circumstances and in certain situations manifest prodigious capacity.

Meningitis: pyogenic capacity of gas bacillus.—Howard¹⁰⁴ in April, 1899, reported a case of acute fibrinopurulent meningitis, following operation for urethroperineal fistula. *Bacillus aerogenes capsulatus* was found in pure culture in the meningeal exudate. Hirschmann and Lindenthal¹⁰⁵ have recorded another convincing example of acute cerebral meningitis following fracture of the occipital bone, in which the gas bacillus was found unmixed with other bacteria. These authors call attention to the pyogenic power of the gas bacillus when it attacks the meninges, but, as already shown, the same power may be manifested elsewhere.

Cavities in the brain.—Finally, I would call attention to Reuling and Herring's¹⁰⁶ and Howard's studies of cavities in the brain produced by *Bacillus aerogenes capsulatus* and to the light which their observations shed upon certain obscure examples of cerebral cavities previously reported.

In this excursion into pneumatopathology I have invited you to the survey of fields comparatively new and little trodden. I can only hope that our journey has been not without some interest and some profit to you. To me the opportunity to present before such a body as the Massachusetts Medical Society the results of these investigations is one which I highly appreciate.

I desire in closing to pay my tribute of respect and to call to your grateful remembrance the founder of this lectureship, Dr. George Cheyne Shattuck. That the subject of this address would not have been without interest to him may be inferred from the title of his first Boylston Prize dissertation on the theme propounded in 1806 and entitled: "The difference between mortification produced by an external cause and that which is produced by a constitutional defect, the diagnostics and proper mode of treatment of each."¹⁰⁷ By his noble character, professional services and liberality Dr. Shattuck deserved well of the medical profession of his city and State and indeed of the whole country, and his memory is worthily perpetuated not only by the foundation of this lectureship but also by the endowment of the chair of pathological anatomy in the Harvard Medical School.

DURATION OF LIFE IN VARIOUS EMPLOYMENTS.—From the following statistics given in the *Medical Record* it will appear that average longevity apparently has little to do with employment which is not in itself dangerous. A general summary shows that the average duration of life has been about sixty-eight years and eight months. Forty-six poets average sixty-six years, 39 painters and sculptors sixty-six years, 30 musicians sixty-two years, 26 novelists sixty-three years, 40 men of letters sixty-seven years, 22 religious sixty-six years, 35 women sixty-nine years, 18 philosophers sixty-five years, 38 historians sixty-five years, 58 scientists and inventors seventy-two years, 14 agitators sixty-nine years, 48 commanders seventy-one years, 112 statesmen seventy-one years.

⁹⁹ Arch. f. exp. Path. u. Pharm., 1895, xxxv, p. 335.

¹⁰⁰ British Medical Journal, 1897, ii, p. 1844.

¹⁰¹ Philadelphia Monthly Medical Journal, 1899, i, p. 569.

¹⁰² Deutsch. Arch. f. klin. Med., 1898, lxi, p. 323.

¹⁰³ Bulletin of the Johns Hopkins Hospital, 1899, x, p. 131.

¹⁰⁴ Bulletin of the Johns Hopkins Hospital, 1899, x, p. 66.

¹⁰⁵ Sitzungsber. d. k. Akad. d. Wiss., Math.-Naturw. Cl., Wien, 1899, cviii, Heft. 3, Abth. iii, p. 67.

¹⁰⁶ Bulletin of the Johns Hopkins Hospital, 1899, x, p. 62.

¹⁰⁷ Published in Boston in 1808.

Address.

THE TRUE FUNCTION OF THE STATE MEDICAL EXAMINING BOARD.¹

BY ALLARD MEMMINGER, M.D.,

Professor of Chemistry and Hygiene and Clinical Professor of Urinary Diagnosis in the Medical College of the State of South Carolina; Visiting Physician in City Hospital of Charleston, etc.

MR. PRESIDENT AND GENTLEMEN OF THE SOUTH CAROLINA MEDICAL ASSOCIATION:—In presenting to the consideration of this august body the question of the propriety of the offices of the State Medical Examining Board as now organized, I trust sincerely my real and true purpose will not be misunderstood as a suggestion for lowering our medical standard, for its design is, on the contrary, to elevate and make that standard more practically useful.

As a teacher in our State Medical College, I hope you may and will regard the outcome of my views as suggested by a long course of observation, and not as in the least actuated by a desire to further alone the well-being of our institution to the detriment of the public good. With these excuses then, if indeed they be necessary, for the selection of my theme, I shall proceed at once to the subject matter of my paper.

(1) The offices of examination to constitute a graduate in medicine; (2) the offices of examination by our State board to constitute the right to practise medicine and surgery in our State.

The requirements for graduation are so well known by all of you here present that I need not take your time by a repetition of the same, but simply call your attention directly to the salient points that must always be kept in view, namely, that a student must have not only a theoretic, so-called, idea of the subject, but as well, a practical application of the same. To this end, the course or courses of our four year graded institutions is divided into two portions.

In the first the theoretic aspect of the branches taught is kept in view almost entirely, and thus the student is not only prepared for what is to follow, but his untrained mind is brought into better condition for the environment by which he is soon to be surrounded, and by imbibing which he is to become a graduate in medicine, and a practical medical man. Observe here, please, the words I use: graduate and a practical medical man.

With this idea then in view, our examinations are, or should be, directed, and for its accomplishment we have divided our course into what are termed junior graduating branches and senior graduating branches; the former dealing more with the theory of the underlying principles of medicine, and the latter with the application of the same. The junior branches are studied for two years, and at the end of this term an examination is held, and if the student attains a graduating excellency, he is allowed to discontinue his further study on these branches, and devote the remaining two years of his studies to the application of his theories gained by his two years' course.

This plan is deemed so advisable that our State Medical College allows the certificates of junior branches passed in other first class four year graded colleges to count, and exempt the holder of the same from standing the examinations on these branches in

our college, thus enabling these students to apply all of their time to the practical aspect of medicine. By this division of labor and study in our colleges, it is found that the students are better prepared to practise in a practical manner than when theory and practice were crowded into two years. Indeed if I mistake not, the trend of medical teaching is now aiming more at bringing our colleges into the line of post-graduate institutions, and thus giving to the public more practical and less theoretical physicians.

Now then let us glance at the offices of the State Medical Examining Board: What do they set out to do? (1) Examine, so as to keep out quacks and charlatans; (2) examine, so as to see whether the diploma of any particular college is upheld by the answers made to questions propounded the applicant for license to practise. Most assuredly with these two objects in view, the charlatan and graduate of a reputable college when he or she comes before the board, are on the same footing; true the board says you must show a diploma, but of what good is such a diploma when this State board is to decide upon the answers of the applicant and not on his credentials.

It is to this point I wish to draw particular attention, for we most assuredly think that the credentials should be allowed a full and just weight in the matter. The credentials or diploma give evidence that the student has studied medicine four years, has graduated in the junior or theoretic branches of medicine, and has also just before coming before this State board been considered worthy of applying this theory to the practice of medicine.

This board then does not show that comity which exists between four year and high standing colleges, but at once commences to examine on the senior and junior branches, which latter the student has put by two years ago, and which with the best of us grow dim in that time. No wonder then that some of the applicants show a less familiarity with these questions than with the senior and practical questions, and in the summing up of the examination may show a lesser total than that required. That such is the case is to be expected until the medical colleges all require a university A.B. or A.M. as necessary before entering the study of medicine.

I as a teacher know full well that questions which are put in chemistry to test the theoretic knowledge of the student, it would be unwise to ask two years after the student has passed, but this is what is expected by the board and which I contend is unwise, as it does not fairly subserve the purposes for which the board was created.

No doubt such an examination would be fair to put to one not holding a diploma, but then we should add this, that if one should pass successfully such an examination, he would be in our judgment fully prepared to practise medicine.

The diploma then of our four year graded medical colleges divided into junior and senior branches is surely deserving of some respect, and should entitle the holder thereof to some more deserving place than in the category of quacks and persons who have never studied medicine.

I would therefore respectfully suggest that the State Board of Examiners work along in the same line as that pursued by reputable four year graded medical colleges, accepting junior certificates as proper credentials of proficiency of having passed in

¹ Read at the Meeting of the South Carolina Medical Association, Charleston, April 19, 1900.

these branches, and paying more strict attention to practical medicine, limiting their examinations for those holding diplomas from four year graded courses to questions absolutely pertaining to the practice of medicine and surgery, and respecting to this slight degree the junior branches, which, as I have already said, grow dim after two years, and which hardly any of you who now listen to me would care to have himself tested on.

For example, would all of you gentlemen who have practised long and I hope well in the various sections you hail from care to answer the questions I now propound, and which have been well answered by many in the junior graduating class of chemistry this year.

QUESTIONS ON PHYSICS, TOXICOLOGY AND CHEMISTRY.

1. When does a liquid boil at 212° Fahrenheit?
2. Explain the upward draught or current in a chimney.
3. What is the effect of gravity, what the cause of pressure, and what is weight?
4. What is solution and upon what does it depend?
5. What is the universal effect of heat and how are heat and cold related?
6. When a moving mass is stopped by friction what takes place?
7. When heat falls upon a body what becomes of it?
8. Mention some of the cooling effects of evaporation.
9. Why is wet clothing injurious to wear.
10. What is the velocity of heat, light and electricity?
11. How is heat, light and electricity conveyed to our senses?
12. What would be the effect of removing the aqueous vapor from the air?
13. Describe the voltaic circuit.
14. State the difference between tonic and clonic contractions.
15. Give the order constituting the reaction of degeneration by the galvanic current.
16. Give the chemical properties of oxygen.
17. Give a like description of sulphur dioxide and chlorine gas.
18. Give one method of production for ammonia gas and phosphorus respectively.
19. Give the salts, with correct formulæ, containing one or more of the following elements: Oxygen, arsenic, potassium, calcium, carbon, iron, antimony, mercury, bromine.
20. Is the following formula correct, and if so, why?
 $As_2 O_3 + 6 HCl + Zn_3 = As_2 + 3 Zn Cl_2 + 3 H_2 O.$
 The atomic weights and valences are as follows:
 As atomic wt. 74.44. Valence, iii and v.
 H " " 1 " i
 Cl " " 35.5 " i iii v and vii.
 Zn " " 65.4 " ii
 O " " 16 " ii

Yes, gentlemen of this association, you all once answered questions of a like kind, but do not let us forget that which we have forgotten, and require this a second time of these students because we ourselves are safe. This lack of due appreciation, and what is deemed injustice to the four year graded course is, I believe, at the bottom of the *unrest* of the students in this and other States as to the rights of State examining boards; it is indeed a wave of discontent that must be met, not by harsh measures, but by just and wise acts.

Let us, therefore, keep ever before us the true office of a State medical examining board, which is neither to give a diploma nor revoke one, but, on the contrary, grant a license to practise — to stand between the honor conferred on the graduate and the exercise

of it on the people. The board, therefore, should busy itself with the clinic and hygienic aspect of the subject, and should feel that by close attention to this the public good is best subserved.

A course then such as I have hurriedly mapped out will not lower the scale of medical education in the State, but, on the contrary, tend to elevate and increase practical teaching, and give out to the State a better class of medical men. What we want is thorough and practical physicians, who will do the public no harm and much good; a State examining board organized then on such lines may aid much in this direction, and at the same time feel that in recognizing a graded course, they further and approve the good work already begun, and not in any way hamper nor render it less effective.

I repeat, I do not wish to abolish the State Board, far from it; I wish to make it, and by it the medical institutions all over our land, more effective, so that in the future a license to practise medicine in South Carolina will carry with it the assurance that the holder thereof is a good, practical physician who, having passed through the alembic of common-sense, is now fit to be a custodian of health in our historic State.

Medical Progress.

RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON.

REFLEXES.

IN a consideration of the more important clinical points in regard to the cutaneous and tendon reflexes in nervous affections, Strümpell¹ speaks first of the methods of irritation. By pricking a very small area of the skin quickly with a pin, whereby only a few nerve endings are excited, a reflex contraction of many muscles may be produced. If the reflex-excitability be diminished the contraction may ensue from long-continued pricking, — the time summation of a circumscribed reflex irritation. It leads us to imagine that the persistent irritation sends fresh waves of sensory impulse which finally break down the resistance. There is also a local summation of reflex irritation, where a number of cutaneous areas are irritated, as in the so-called stroking reflex. The abdominal and cremasteric reflexes among others are excited especially by this local summation from stroking a considerable area of the skin. Cold and pressure may also excite skin reflexes, and in some cases the reflex appears only on the cessation of the irritation. The place of the reflex irritation is also of importance; only certain regions, "reflexogenous zones," are excitable. The sole of the foot is the most excitable region. The reflexogenous zone for the cremasteric reflex may extend down to the foot, and that for the abdominal reflex to the thigh. True skin reflexes very rarely occur in the upper extremity. The reflex seems to vary with the strength of the irritation, and the muscles involved vary with the place of the irritation. The muscular contractions in the skin reflexes are usually of a tonic character. The tendon reflexes are regarded as true reflex processes, as is shown by the occurrence of reflexes in distant muscles and crossed re-

¹ Deutsche Zeitschrift für Nervenheilkunde, xv, 254, September, 1899.

flexes on the opposite side of the body. There is, however, this peculiarity about them, that they are excited only by brief, sudden concussion, which can cause vibration of the parts, and not by any other form of irritation. Time or local summation of the reflex plays no part, the contraction is short and never tonic, and often only a single muscle is affected. The old reflex diagram of a sensory fibre, motor fibre and inhibitory fibre coming from the brain is still useful. The inhibitory fibre, however, is probably not identical with the fibre for voluntary movement, for in certain cases with an enormous increase of the reflexes and muscular hypertonicity there may be very little paresis. The increase in reflex action due to cutting off this inhibitory influence does not affect the skin reflexes. In ordinary cerebral paralysis the skin reflexes are usually diminished, while the tendon reflexes are increased. The explanation of this contradictory behavior of these reflexes is still lacking. It is difficult to believe that there is a persistent irritation of some inhibitory fibres, while others have been cut off; nor is the supposition that the reflex are for the skin reflexes extends upward into the brain wholly satisfactory.

Furthermore, in a few cases of cerebral hemiplegia the knee-jerk is lost on the paralyzed side. In many cases of complete transverse lesion high up in the cord the knee-jerk is absent. The explanation of these facts is obscure, but it is not necessary wholly to abandon the old reflex diagram. The loss of knee-jerk may be due to secondary or co-existing changes in the lumbar cord. These changes may arise from concussion in traumatic cases, or to the secondary changes in the peripheral neurones due to cutting off all the nervous influences from above. The explanation of the different behavior of the skin and tendon reflexes, however, is not easy. The old reflex diagram, although probably correct, is insufficient at present to explain satisfactorily all the clinical phenomena, but we still lack sufficient knowledge for a satisfactory explanation. The object of the reflexes is probably originally protective, but with the higher mental development of man they have lost their importance, and many of them are now merely rudimentary functions.

PUPILS.

Marimò² has undertaken a careful study of pupillary conditions in young children and in a considerable number of hospital cases, and has come to the following conclusions: In about 600 healthy children the pupils are always normal in size and reaction, except that they react very little to painful stimuli. The pupils are very sensitive to toxic influences, such as alcohol and tobacco, even in small amounts, so that in adults these factors are to be considered, if specific causes for alteration of the pupils can be excluded. Anomalies of the pupils are very common in ordinary diseases, manifesting themselves not only in lesser degrees (mydriasis) but in inequality and in changes in the pupillary reflexes. The variations in the diameter of the pupils in the course of a disease and the changes in their reflexes are of considerable value in prognosis. Anomalies are very rare in tuberculosis, more common in anemia, and very common in digestive disturbances. In hysteria and neurasthenia the pupils are dilated or normal, never contracted; inequality and delayed reaction are very rare. In neuralgia the pupils vary greatly, but Marimò never found dilatation on the af-

ected side. In brain tumors there are almost always grave and complex anomalies, but these are less common in cerebral hemorrhage, although here myosis is often seen, and it is a constant symptom in hemorrhage into the pons. There are always marked pupillary anomalies in tubercular basilar meningitis. In cerebral syphilis the pupils are usually unequal. In syringomyelia and multiple sclerosis he found the pupils usually normal; in poliomyelitis there was inequality; in chorea, mydriasis. In epilepsy there was mydriasis in the intervals, and myosis or mydriasis with immobility during the attacks. In tabes myosis and Argyll-Robertson pupils were constant symptoms. Inasmuch, however, as Marimò has studied only a limited number of cases of the various nervous affections his conclusions refer chiefly to them and they can not be regarded as establishing a general rule, as pupillary changes are not uncommon in multiple sclerosis. In this connection reference may be made to a study of the pupils in the hysterical attack by Karplus.³ Most writers claim that the condition of the pupils during the attack is an important diagnostic sign between epilepsy and hysteria; a loss of reaction excluding the latter. In 18 cases of hysteria, where the diagnosis was established by prolonged observation, Karplus found immobility of the pupils during the attack and absence of reaction to light. The pupils are most commonly dilated, but they may be normal or even contracted. The immobility is observed in the first two periods of the grand attack, but it may last for a few minutes after the attack. The pupils behave in precisely the same way as in epilepsy. This immobility is sometimes seen in slight attacks without loss of consciousness. The loss of reflex is a cerebral phenomenon, but it is not psychical or dependent on idea. The psychical influence may start a nervous mechanism which is itself not psychical.

OBJECTIVE SIGNS OF HYPERESTHESIA AND ANESTHESIA.

Bechterew⁴ recognizing the frequency of local hyperesthesia or tenderness and local anesthesia in the various traumatic neuroses, and recognizing also that the ordinary tests depend upon the statements of the patient, considers the various objective manifestations of these conditions, which, in litigation cases where the suspicion of simulation is raised, become of great importance. Bechterew lays special stress upon the test suggested by Mannkopf, which he himself had employed previously—the increase of the heart's activity by pressure upon the alleged painful spot. This test, or variants thereof, such as changes in the pulse curve as taken by the sphygmograph, dilatation of the pupils, flushing of the face, changes in the respiration or the reflexes, following pressure on the tender spot, Bechterew regards as one of the surest objective signs, in spite of the objections which have been made to it. In local anesthetics a diminution of the cutaneous reflexes in the anesthetic area is another objective sign of great value. This anesthesia is often associated with spasm of the peripheral blood-vessels, causing increased coldness of the part and differences in the vasomotor reaction of the skin. In addition, the Mannkopf test may be used in a different manner. The reaction may be obtained in one or more of the ways indicated by painful stimulation of healthy areas;

³ *Jahrbücher für Psychiatrie*, xvii, 1, 1898.

⁴ *Neurologisches Centralblatt*, March 1, 1900.

² *Rivista Sperimentale di Freniatria*, xxv, 451, July, 1899.

the failure to obtain a similar reaction by the same stimulus when applied to the alleged anesthetic area proves the reality of the anesthesia.

Egger⁵ reviews the objections which have been made to this test of Mannekopf's, which objections he considers inadequate, and then gives the results of a series of personal observations made with the aid of a sphygmo-chronograph. Pain was produced by the faradic current. In a healthy person he found that marked pain thus produced increased the frequency of the pulse, usually in direct ratio to the severity of the pain. Muscular exertion and changes in the respiration have also an influence in healthy persons upon the pulse. Individuals vary according to their cardiac irritability. It is a simple matter, however, to exclude the influence of muscular or respiratory effort in testing the influence of pain. The same rule of increase in the pulse holds true in testing painful conditions not due to injury, pressure always increasing the pulse rate. In traumatic neuroses the same holds true. The frequency of the pulse is always increased by sudden pain, the increase depending upon individual peculiarities, especially the degree of cardiac irritability, and the amount of the pain. Where the pain is slight and the heart is not very irritable, the increase is slight. Psychological influences, even the application of electrodes to the tender spot without switching on the current, have much less influence than has been claimed. Muscular effort will increase the pulse, and this must therefore be excluded during the experiment. Respiratory effort, except in the extreme degree, as in Val Salva's experiment of inflating the middle ear, has slight influence. The test is of decisive value in all cases where it is our object to assure ourselves either that a procedure is painful in a healthy person or that there is actually a tender region in the patient under observation.

FACIAL ANESTHESIA IN SYRINGOMYELIA.

Schlesinger,⁶ from a study of five patients affected with syringomyelia, in whom the morbid process gradually ascended into the medulla and involved the nuclei of the trigeminal nerve, has established the relations between the different parts of the nuclei and the areas of the skin which send sensory fibres to these portions of the nuclei. The territories thus determined agree in the main with those described a few years ago by Head, and the distribution may aid in determining between central and peripheral affections. With an ascending lesion involving the trigeminal nuclei the anesthesia is at first noticed on the lateral border of the lateral portion of the forehead; later it invades the skin of the forehead up to the eyebrow and at the same time the lateral portions of the face near the ear. It then advances from the lateral portion to the cheeks and eyelids. The sensibility of the nose remains intact the longest. The first branch of the trigeminal nerve, therefore, arises from two nuclei, of which the most distal corresponds to the skin of the forehead and the most proximal to the skin of the nose. Anesthesia in the whole domain of the trigeminal may be caused by a lesion involving the region below the margin of the pons. When the affection is unilateral the anesthesia extends exactly to the median line. In the pharyngeal and buccal mucous membrane anesthesia first appears with an ascending lesion at the same time with anesthesia of the upper part of

the forehead, in the posterior parts of the mucous membrane of the cheeks, the anterior parts of the velum palati, and perhaps the posterior parts of the tongue. The mucous membrane of the buccal cavity is probably innervated by the distal portions of the spinal root of the trigeminal, but the mucous membrane of the pharyngeal cavity may remain normally sensitive when the buccal cavity is completely anesthetic and analgesic. This idea that there are two varieties in the distribution of anesthesia in the face, a segmental and a peripheral, according as the medulla or the peripheral nerves are affected, corresponds, of course, to the two varieties in the distribution of anesthesia in the trunk and limbs according as the cord or peripheral nerves are affected. Schlesinger's studies have been practically confirmed by the independent investigations of Sölder,⁷ who claims that in all diseases of the spinal cord, whether involving the spinal roots or the gray matter, the anesthesia is of the segmental type, as portrayed by Thorburn, Starr, Head and Koehler. Sölder holds that this segmental type of anesthesia is also found in affections involving the brain stem, and he gives diagrams corresponding in the main to some of the regions described by Schlesinger, showing the boundaries of the various areas. In this connection it may be noted that Hahn⁸ also confirms the existence of this segmental spinal type of anesthesia in the trunk and limbs in syringomyelia, but he has found an increase of the sensory disturbance toward the periphery of the limbs. This, however, is usually limited and is always subordinate to the segmental arrangement, but, in his opinion, it may afford an explanation of the claim made by Brissaud and other French observers, that the sensory disturbances of syringomyelia often assume the cerebral form, that is, that the boundary of the anesthesia is at right angles to the long axis of the limb, and the anesthesia presents the so-called "glove," "sleeve" or "stocking" type. Hahn himself claims that such a distribution is contrary to the facts afforded by the study of other spinal diseases and by anatomical research and, therefore, he doubts if it exists.

SENSORY DISTURBANCES IN TABES.

Frenkel and Fersler⁹ have made a detailed study of the sensory disturbances in tabes, of which only the conclusions have yet appeared as a preliminary communication. They find that disturbances of sensation are a constant symptom and are found both in the pre-ataxic and the ataxic periods. An absence of such disturbances is wholly exceptional and it was found only twice in several hundred observations; in both instances the tabes had been arrested by blindness. The disturbances affect cutaneous sensibility and the deep sensibility of the muscles and joints. Disturbances of the sense of touch are most constant, being found in every case. Disturbances of sensibility to pain are common in the pre-ataxic period and are the rule in the ataxic period; the same is true of sensibility to heat and cold. These disturbances are found localized in a constant fashion upon the trunk, and they may be regarded as an initial symptom of tabes. Even in advanced cases the sensory disturbances may be found only on the trunk. In the pre-ataxic period there may be hypoesthesia in two areas on the breasts and two corresponding areas on the

⁵ Archiv für Psychiatrie, xxxi, 274, 1898.

⁶ Revue Neurologique, July 15, 1899.

⁷ Jahrbücher für Psychiatrie, xviii, 458, 1899.

⁸ Loc. cit., xvii, 54, 1898.

⁹ Revue Neurologique, November 30, 1899.

back. Later on the sensory disturbance involves an area of varying extent encircling the body, often from the axillæ to the umbilicus. In the great majority of cases the tactile sensibility is alone affected, rarely the sensibility to pain. The anesthetic zone may be surrounded by a hyperæsthetic zone and hypo-æsthesia to cold, with delayed perception, is especially common. The arms are also affected as a rule; the disturbance is very common in the pre-ataxic stage and almost the rule in the ataxic stage. The anesthesia forms a band along the ulnar side of the arm, which is typical. This band may be large, involving all the fingers or the hand, but the radial aspect of the arm is only exceptionally affected. Disturbances of the pain sense are also common in the arms, but disturbances of the temperature sense are rare and atypical. Sensory disturbances in the legs are exceptional in the pre-ataxic stage, but they are the rule in the ataxic stage, but, even with marked ataxia, the cutaneous sensibility may remain intact. Disturbances of cutaneous sensibility, however, are the rule in the arms, even when there is no ataxia. The foot is first affected, especially on the plantar aspect of the toes; then the external border of the sole, the entire sole, the dorsal aspect of the toes, and finally the entire foot. The external and posterior aspect of the leg is next involved, and finally the entire leg. Sometimes this anesthesia is associated with anesthesia on the posterior aspect of the thigh and about the arms. The anal and genital regions may be affected without anesthesia of the legs. There is sometimes an area of anesthesia just above the groin, extending backwards to the buttock and in a band down on the scrotum. Rarely there are multiple patches of anesthesia on the legs and in advanced cases the entire leg may be involved. As a rule, the area of analgesia corresponds to that of anesthesia, and it is rare when it exceeds it. In very rare instances there may be sensory disturbances in the neck, face, mouth, tongue, or conjunctiva. It is a general rule, with rare exceptions, that the areas of skin affected by disturbances of sensibility are separated by normal areas, proving that morbid process in tabes is discontinuous and multilocular.

(To be continued.)

Reports of Societies.

THE NEW YORK ACADEMY OF MEDICINE.

STATED meeting, January 18, 1900, the President, WILLIAM H. THOMSON, M.D., in the chair.

DR. JOHN H. MUSSER, of Philadelphia, read a paper on

MYOCARDITIS.

He mentioned a number of other affections with which myocarditis was apt to be associated or consequent upon, and said that the symptoms of myocarditis were constantly mingled with those resulting from other conditions. He first described the form of myocarditis met with after, and secondary to, pericarditis, and gave an illustrative case. In this instance the aortic and mitral valves were thickened, and the tricuspid valvular orifice was enlarged. The heart muscle was fatty, and the cavities were greatly dilated. In another case mentioned the myocarditis was secondary to valvulitis, and in a third dependent

on pernicious anemia. Myocarditis was classified in general under four heads: (a) Secondary to pericarditis; (b) dependent on endocardial conditions; (c) of toxic origin; and (d) resulting from coronary artery disease.

The general statement might be made that myocarditis is met with most commonly in males just past the prime of life who have probably had syphilitic disease in early manhood. The symptoms referable to the heart might take the form of either dyspnea, syncope attacks, or arrhythmic cardiac action, and whatever the form of these special manifestations, there were certain striking phenomena which the cases had in common. The patient appeared prematurely old, with gray hair and abundance of wrinkles, while the eyelids were heavy and there was an almost characteristic sallow pallor of the countenance. There was usually evidence of endarteritis in the vessels and the physical signs found on examination of the heart might be those of myocarditis alone or in association with dilatation and other phenomena. Reduplication of the second sound was sometimes met with, but less frequently than in valvulitis. There might at times be reduplication, "gallop" rhythm, murmurs and other manifestations, but the most prominent characteristic of the phenomena was their great variability.

The disease was usually progressive, and the fatal termination might come from uremia in connection with concomitant renal disease, from angina pectoris, from pulmonary edema, or from prolonged cardiac dilatation. Myocardiac angina was especially characteristic, and in all the cases of angina pectoris which he had examined post mortem he had found myocardial disease present. In the advanced stages of the disease any slight occurrence in life might bring on the fatal result. In one case where the patient died at the age of fifty-six the subject was under his observation for ten years, during which he underwent an operation for appendicitis under anesthesia without any unfavorable results. In this instance he was at first inclined to the opinion that the cardiac trouble was functional, resulting either from excessive use of tobacco or from gastro-intestinal disturbance, but the increasing frequency of the attacks, notwithstanding the most careful treatment, convinced him of its more serious character. In another case characterized by pain and dyspnea, with enlarged area of cardiac dullness, the only phenomena found on auscultation were reduplication of the second sound and an uncertain murmur.

The first special symptom mentioned as incident to myocarditis was angina; the second was dyspnea. The attacks of dyspnea were due to the rapid outpouring of fluid into the air-vessels and bronchi, and the patient presented the appearance of pronounced shock, with the face pale and the forehead bathed in perspiration. The heart's action was irregular and intermittent. The attacks at first occurred only at long intervals, but as the disease progressed became more frequent. They might be called attacks of pulmonary edema and should be carefully distinguished, especially on account of the treatment, from pulmonary congestion due to acute dilatation. The latter was attended with marked cyanosis, and was most efficiently treated by general or local blood-letting. Certainly in the paroxysmal dyspnea of myocarditis bleeding would be entirely out of place. In myo-

cardial dyspnea the frequency of respiration was not so great as in dilatation of the heart with congestion. In many instances the attacks of dyspnea alternated with attacks of pain. G. T., age forty-nine, addicted to tobacco, a free liver and moderate drinker. For several years has had dyspnea associated with angina-like attacks. Prematurely old; gray hair; temples standing out prominently. No visible cardiac impulse; palpable impulse not extreme. High arterial tension. Area of heart dullness increased; "gallop" rhythm over left ventricle. Evidently the heart muscle is weak. He had known of some instances in which patients suffered from great dyspnea from ordinary walking, but could ride a bicycle for considerable distances with ease.

The third special phenomenon commonly met with in myocarditis was the Stokes-Adams syndrome. In one case with vertigo, high tension and slow pulse, the pulse would fall to 40 or even 30. In another case there were nose-bleed, headache, vertigo, and loss of consciousness followed by sensations of numbness and tingling. In the attacks of syncope the pulse would sometimes fall as low as 28.

The last special symptom referred to was arrhythmia; the heart's action being irregular and intermittent. In one case that he had seen several years ago, this phenomenon was so marked that he felt positive that the patient was suffering from myocarditis, but as time went on he made a complete recovery, and the conclusion was reached that the heart trouble had been due to a toxic agency, probably tobacco.

While these four groups of symptoms might occur independently, it was to be borne in mind that they might be intermingled in the same case. In making a diagnosis we should not depend altogether on the physical examination, but should also take into consideration the patient's family and personal history and his occupation, habits and general appearance. In addition, the fact that the renal pathological process often goes hand in hand with the cardiac was not to be lost sight of.

Dr. HENRY KOPLIK read a paper on

MYOCARDITIS IN INFANCY AND CHILDHOOD.

He said that our present knowledge of myocarditis had been principally obtained from the study of the disease in children, and it was one of the most important of the grave affections of early life. In speaking of its pathological characteristics, he stated that Romberg had found that the diseased action occurred in foci, and was not generally diffused, as in nephritis. The cardiac muscle was peculiarly sensitive to toxic agencies, and myocarditis was liable to be caused by the special poisons of the various acute infectious diseases, as well as by high temperature alone. One of the most striking effects of the modern serum therapy was the action of antitoxin in strengthening the muscular fibre of the heart, as well as fortifying the general system.

He mentioned the case of a child four years old, who, at the age of nine months, had suffered from severe malarial poisoning. As it grew older it became subject to attacks of weakness. There was now no plasmodium in the blood, and as the signs of valvular disease of the heart were absent, he believed that the case was one of myocarditis. At the present time the attacks were less frequent than formerly and it seemed possible that the diseased areas might eventually be

replaced by healthy tissue, and the child entirely recover. He next referred to one case of myocarditis in connection with pneumonia with marked cerebral symptoms, and to another in a case of osteomyelitis in which a sudden attack of pneumonia intervened.

In whooping-cough the heart was subject to great strain, and myocarditis might result not only from the direct effect of the violent paroxysms, but also from the special poison of the disease. In rheumatic pericarditis adherent pericardium was a very common result, and it was not difficult to understand how myocarditis might sometimes arise from this cause. It was certainly very difficult to make a positive diagnosis of myocarditis during life, but a probable diagnosis could often be made, and it should always be borne in mind that the muscular fibre of the heart was liable to this serious degenerative disease. In the diseases of children it was of great importance to support the heart, as well as the general strength of the patient, remembering that even in myocarditis there are left areas of healthy tissue which may be sufficient to enable the organ to perform its functions adequately.

Dr. EDWARD G. JANEWAY thought that while in some cases the characteristics of myocarditis pointed out by Dr. Musser were sufficiently evident, there were others in which it was extremely difficult for even expert clinical observers to make a correct diagnosis. He recalled one case in which the patient had hydrothorax on the right side and was sent to Colorado under the impression that he had tubercular pleurisy. There was nothing about the color or appearance of the man to suggest myocarditis, and, with the exception of being somewhat enlarged, the heart appeared to be entirely normal on examination. In the urine there was no albumin and no casts. He was aspirated some twenty times. Later he became delirious and finally died. At the autopsy there was found myocarditis, with fluid in the right chest and a periarthral gumma constricting the coronary artery.

Myocarditis, he believed, was very liable to be mistaken for tuberculosis. It was well to remember, however, that there might be found a few bacilli in cases where there really was no tuberculosis. When attacks of angina occurred a mistake might be made in not recognizing the gravity of the trouble present. Such attacks, really due to myocarditis, were sometimes attributed to digestive disturbances for the reason that they were liable to take place after a meal.

Dr. ISAAC ADLER said that formerly two types of myocarditis were recognized, but he thought that this distinction could no longer be made. At a very early stage of the disease the muscular fibres gave way and became degenerate, and he had never seen any specimen of myocarditis under the microscope in which the two types, proliferation of cellular tissue and degeneration of muscular fibre, were not united. No heart was entirely degenerate, some areas always being found in which the tissues remained intact. There was one point to which he desired to attract attention. The condition of the auricles, he thought, had been neglected to a very great extent, and he was convinced that the cases of myocarditis with pulmonary edema, owe their clinical features mainly to the fact that the auricles are principally affected.

Arterial sclerosis was commonly regarded as a disease of senile life, but in a considerable number of cases it occurred soon after puberty, and such individuals were especially liable to myocarditis. It was

principally in males, and often depended on syphilis and other toxic conditions, particularly the use of tobacco. That tobacco heart was a sclerotic heart. Heredity was also a prominent factor, and in certain families distinct sclerosis and sometimes myocarditis were found under the age of thirty.

DR. MUSSER, in closing the discussion, said he regretted that he had not stated as positively as he might have done that quite a number of cases of myocarditis occur which during life present no evidence of the disease. The peculiar countenance which he had described was by no means always present, but when it was present it constituted one of the most suggestive aids to diagnosis. The occurrence of right-side effusion in myocarditis, as had been referred to by Dr. Janeway, was of great interest, and could readily be explained on anatomical grounds.

Recent Literature.

Food for the Sick and How to Prepare it; with a Chapter on Food for the Baby. By EDWIN CHARLES FRENCH, M.D. Louisville: John P. Morton & Co.

The author of this little book of 171 pages is not alone in believing in the importance of properly prepared and chosen food in the treatment of the sick. Certain simple physiological principles regarding the action of various foods are given, in connection with a limited number of diseases. What may be taken with advantage is given in detail, and what should be avoided is alluded to. Methods of cooking and preparing foods are discussed at considerable length in the latter part of the book. This portion smacks somewhat of a cook book, which, however, we regard as no disparagement. Infant feeding has a few pages devoted to it, a necessarily superficial consideration of an extremely important subject. We confess to a feeling of doubt as to the necessity of a book of this sort, and it is a little difficult to see to what class of readers it will appeal. The typography is sufficiently good and the subject matter conveniently arranged.

A Manual of Clinical Diagnosis by Microscopical and Chemical Methods. For Students, Hospital Physicians and Practitioners. By CHARLES E. SIMON, M.D., late Assistant Resident Physician Johns Hopkins Hospital, Baltimore. Third edition, thoroughly revised. Illustrated with 136 engravings and 18 plates in colors. Philadelphia and New York: Lea Brothers & Co.

This edition of Dr. Simon's Clinical Diagnosis is an octavo volume, with index, of 563 pages. We have dwelt upon the merits of the book in a previous notice. The aim of the book is to aid and elucidate laboratory diagnosis. This new edition has been brought up to date. The parasitology and bacteriology of the blood, saliva, feces, urine and vaginal discharge have been rewritten. New methods of chemical examination have been incorporated in the book.

Diseases of the Intestines. A Text-book for Practitioners and Students of Medicine. By MAX EINHORN, M.D., New York. New York: William Wood & Co. 1900.

This volume of about 400 pages is a companion and continuation of a similar book by the same author on "Diseases of the Stomach," the two together covering

the principal disorders of the digestive tract. The writer dedicates his book to Von Leyden, of Berlin, and follows in large measure in the track of the labors of the German school, of which Von Leyden and Ewald are perhaps the most distinguished representatives. There was room for a book in English on this subject, and the author has produced a very competent and conscientious work.

Diseases of the Stomach, their Special Pathology, Diagnosis and Treatment, with Sections on Anatomy, Physiology, Chemical and Microscopical Examination of Stomach Contents, Dietetics, Surgery of the Stomach, etc. By JOHN C. HEMMETER, M.D., Professor in the Medical Department of the University of Maryland, Baltimore. Second edition, enlarged and revised. With many original illustrations, a number of which are in colors. Octavo; 898 pages. Philadelphia: P. Blakiston's Son & Co.

This second edition of Dr. Hemmeter's excellent work contains a considerable amount of new subject matter. The whole text has been subjected to careful revision with the effect of greatly increasing the value of the last edition over that of the earlier one.

Care and Treatment of Epileptics. By WILLIAM PRYOR LETCHWORTH, LL.D., Ex-President of the New York State Board of Charities, Ex-President of the Eleventh National Conference of Charities and Correction, author of "The Insane in Foreign Countries," etc. Illustrated. New York and London: G. P. Putnam's Sons. 1900.

In this volume of 246 pages the author has embodied the results of a wide experience in dealing with charitable enterprises, and particularly with the medical and social problem which the epileptic class offers. The result is an eminently readable and practically useful book, full of information regarding the constantly increasing number of hospitals and colonies devoted to the care of epileptics. There is also a certain amount of discussion of the disease itself, which naturally is not original with the author, and hence is of relatively small interest to the physician, though no doubt of value to the lay reader. The detailed consideration of the problems of building and sanitation, and even landscape gardening, in the planning of a colony hospital is of very distinct value and should be widely read and pondered. A highly conscientious account of the various epileptic colonies both here and in Europe fills the greater part of the volume. In this connection, as is natural, Craig Colony receives particularly detailed mention. Mr. Letchworth is an ardent believer in the colony system; he points out the fact that both the community and the epileptics are benefited by segregating the latter in a village, where they can work, go to school and to church, have expert medical attendance, a special hospital and constant experienced care. His efforts in behalf of the epileptic in New York State make his book particularly significant and valuable. It serves as an ocular demonstration of the soundness of the principle of colonization for certain classes of defectives, a principle which we are glad to note is gaining a wider and wider acceptance. The appearance of the book as regards paper and typography is quite beyond criticism and its value is much enhanced by numerous illustrations, chiefly of buildings. We would, however, suggest that the binding be strengthened in later editions.

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THE ACCIDENTS OF SUMMER.

SUMMER undoubtedly has its pleasures for those whose circumstances permit of their enjoyment, but to others, and even to the pleasure-seekers, there are concomitant dangers which a reading of the papers almost daily forces upon us. This last week, for example, has seen an unprecedented mortality from the effects of heat. A certain number of deaths from this cause we look forward to, and are never disappointed, but when we read a statement like the following taken from a contemporary, we are forced to the conclusion that summer has its notable drawbacks: "In New York the list of fatalities was unusually large. On Tuesday, which was the third day in which the thermometer stood at 94° F. at the registration bureau and 98° F. on the street level, cases of aphasia, suicide and insanity, due to high temperature, were reported, and the bodies of 33 children were received at the Morgue ranging in age up to five years. Twenty-two of these came from institutions and 11 from residences. This takes no account of the many deaths that occurred among private families which were not reported at the Morgue." Boston, in proportion to its size, was almost an equal sufferer, as may be seen by the mortality statistics published in another column. Deaths from this cause are however to be placed in the category of the unavoidable. No doubt our floating hospitals and similar charities save many lives which otherwise would be sacrificed, but unfortunately our cities grow as rapidly as our charities, with the inevitable result that the number of deaths appears to suffer but slight diminution from year to year. Among the poorest classes this evil must no doubt remain, but among the more well-to-do in the community each year finds a larger and larger number who are able for a shorter or longer time to leave the centres of population for less thickly settled and more breezy localities. But here again a new danger threatens which it is highly desirable not to underestimate. Boards of health at summer resorts are not apt to be

vigilant, if in fact they exist at all, and the possibility of danger from defective sanitation becomes in certain cases a menace to be reckoned with. We have previously found occasion to comment on the neglect of proper sanitary precautions by hotel proprietors and owners, whose season is short and whose expenses are heavy. It no doubt frequently happens that the health-giving qualities of salt water and fresh air are vitiated by noxious gases and surface drainage. The crowding of summer resorts becomes therefore a danger different in kind, but even more to be dreaded than the stifling cities, the drainage of which fortunately is unaffected by the number of degrees of heat. It is an anomalous state of affairs and yet a fact that people live calmly and contentedly in the summer under conditions which would not be tolerated for a moment in the winter. That there is relatively so little disease is certainly a source of wonder when we contemplate in a perfectly unprejudiced manner the typical successful, and hence populous, summer hotel.

A certain number each year are drowned. This is the fair penalty for the pleasures of risk. The victims are sometimes careless, and sometimes over-matched by the element with which they are finding amusement. Here again, although these accidents are usually avoidable, they are to be expected, and must be put down as part payment of the debt we owe for the summer's gayeties. There is however one variety of accident, often most unpleasant in its consequences, with which we have small sympathy. We refer to diving in shallow water. Each summer brings records of one or more such cases. It seems difficult to impress upon a certain type of venturesome swimmers that diving, except for the trained expert, demands at least several feet of water. Were the depth of the water a difficult matter to ascertain, we should be glad to make allowances, but inasmuch as the requisite knowledge is so easily gained, we are inclined to pity but not to sympathize with the victim of a fractured vertebra or a spinal hemorrhage who did not know how deep the water was.

But after all, unless our mood be one of unusual depression, the dangers and accidents which the months of summer bring make no impression on our minds when weighed against the satisfaction of an out-of-door life. Most of us willingly put up with crowds and odors and the risks of sudden death if we can only remove ourselves from the safety and sanitary perfection of a hot and crowded city.

THE NEED OF PRACTICAL LABORATORY METHODS OF INSTRUCTION.

THERE has grown up such an array of special tests in the study and detection of disease that the average doctor feels swamped at their mere mention. And well may he, for time is too short for him to master many of them, or, having mastered them, to put them in daily use. Time is not his only obstacle: ex-

pense and laboratory space are no small items. All will agree that the modern doctor should give his patients the benefit of medical progress, but all will at the same time assent that even with the help of our public laboratories it is in most cases impossible to do so. Few doctors feel warranted in employing an assistant (too few unfortunately, for a good assistant is a good investment), and to send to specialists for the performance of simple tests is a needless and almost unwarranted expenditure alike to doctor and patient.

The medical school to-day, no matter what its deficiencies in other respects, does not fail in furnishing methods for the refinement of diagnosis. But the question arises as to whether sufficient attention is given to supplying students with methods which are practicable for their office work. We feel that this is not the case. Only too often a common and important test is shown, which though easy to perform in the laboratory would be extremely difficult to perform at home. The same test could be performed in another way and a simpler, and it is this way we think which should be impressed upon the students. Then again a multiplicity of tests all for the same end are often demonstrated, and the student is confused by their mere number. He is not made to realize that a single reagent will suffice for all his wants. It is a common experience to hear a house officer say that it was not until he entered the hospital that he learned practical laboratory work.

This object should be constantly before the instructor's mind — to make his methods so easy that his hearers will feel capable and desirous of carrying them out later in their own offices. Unless we teach our students practical methods, their needs as practising physicians are not supplied. They will be overwhelmed by the obstacles of time, money and space and so fail to detect plasmodia and tubercle bacilli and neglect examinations of gastric contents, stools and urine. The usefulness of a test is measured by its simplicity.

THE SANITATION OF BOSTON SCHOOLS.

THERE has of late been a considerable agitation regarding the sanitary condition of many of the Boston schools. The daily papers have published somewhat detailed reports, under headlines which do not tend to reassure the reader, that many of the buildings are in a condition actually menacing the health of the children attending them. Allowing for certain inevitable exaggeration, the general facts appear to be substantiated by the investigations of the Board of Health, which finds a condition of affairs absolutely demanding attention. Many of the school buildings need immediate renovation — of that there seems to be no question. No doubt the members of the School Board recognize the necessities of the situation, though possibly not with the completeness with which it forces itself upon experts in public sanitation. There is, however, no evidence of any antagonism

between the School Board and the Health Board, as one might be led to expect from a reading of the press reports. It is clearly the duty of the Board of Health to leave no stone unturned which will tend to uncover any possible menace to health, and it is equally the duty and the privilege of the School Board in this case, to lend its heartiest co-operation in an attempt to remedy the evils which have been demonstrated to exist. It is an expensive undertaking, again a fact which the Board of Health acknowledges, and it is not to be expected that the suggested improvements can be at once accomplished. As we understand the matter, all that the Board of Health and the public whose representative it is demand is a conscientious effort on the part of the School Board to rectify the defects which have been pointed out as rapidly and as efficiently as the circumstances of the case will permit.

MEDICAL NOTES.

THE RED CROSS. — A meeting of the incorporators of the Red Cross was held in Washington, July 10th. Miss Clara Barton was again elected President. The act of incorporation sets forth that, at Geneva, representatives of Italy, Baden, Belgium, Denmark, Spain, Portugal, France, Prussia, Saxony and Württemberg, and the Federal Council of Switzerland agreed upon articles of a convention for mitigating the evils of war, and providing for a distinctive flag for wounded and neutrals. This treaty was ratified by 43 nations, including the United States, and a permanent organization formed for the purpose of co-operating with the international committee. The act gives the corporation right to hold real estate, to sue and be sued, and to use the Greek cross, which was adopted by the several nations. — *Philadelphia Medical Journal*.

WATER POLLUTION. — The Supreme Court of Pennsylvania has handed down an important decision, as stated in the *Medical News*, relating to the rights of water companies and the pollution of streams. A water company is an individual and can obtain only a civil remedy against a person polluting its water supply. The defendant in the case was ordered by the Secretary of the State Board of Health to abate the nuisance, but it was held that the board must take action before the secretary could enforce the order.

YELLOW FEVER IN HAVANA. — Up to July 20th there had been 45 cases of yellow fever in Havana and 16 deaths. Two, however, were attacked in June. Surgeon-Major Gorgas anticipates about 25 civilian deaths this month, which has been the average for July for the past ten years. Nearly all the cases have been Spaniards who recently arrived. Most of the cases are in the old part of the city. The situation is regarded as natural under existing conditions, and no alarm is felt.

INTERNATIONAL MEDICAL CONGRESS. — Beginning Monday, July 30th, special rooms in the buildings of the Faculty of Medicine, Paris, will be placed at the disposal of the national committees of each country. These rooms are to serve as meeting places for those attending the congress from various countries.

APPOINTMENT. — The appointment of Dr. D. R. Brower, of Chicago, to the professorship of neurology and psychiatry at Rush Medical College is announced.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 25, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 39, scarlatina 2, measles 14, typhoid fever 11.

BOSTON MORTALITY STATISTICS. — There were 17 deaths from heat prostration last week in Boston, while a year ago there were no deaths from this cause. The deaths reported from cholera infantum for the week ending July 21st numbered 41, as against 52 a year ago, while the number of deaths of children under one year of age is 97 this week, as against 103 a year ago. The hottest day in July last year was on July 4th, when the mercury registered 94 degrees. There was an increase of twenty-four diarrheal cases as compared with the number a year ago for the same period of the year, while there was a decrease on the larger part of the other diseases tabulated at the Board of Health office. The total number of deaths reported to the Board of Health for the week ending July 21st is 271, as against 249 the corresponding week last year. Of this number 132 were males and 139 females, 52 of American parentage, 194 of foreign parentage, and 25 unknown. The number of children who died under one year was 97, the number under five years 125. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 73.

DEATHS FROM HEAT. — The official reports of the Board of Health show that during the period of excessive heat last week there were 6 deaths due to weather conditions. Most of the deaths were reported through the agency of the police department, but it is probable that others occurred which were not officially reported. The number more or less overcome by the effects of the heat was exceptionally large.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH. — About 100 members of the Massachusetts Association of Boards of Health held their quarterly meeting at Gallup's Island, Boston Harbor, July 19th. Papers of a technical character were read by Dr. R. S. Weston and L. P. Kinnicut. Dr. Walcott, the president of the association, presided.

NEW YORK.

ANNIVERSARY OF ST. JOHN'S GUILD FLOATING HOSPITAL. — The twenty-fifth anniversary of the first trip of the St. John's Guild Floating Hospital was celebrated on July 19th. The exercises were held at

the Seaside Hospital of the guild at New Dorp, Staten Island, and the officers, members and invited guests sailed down there with the children on the original hospital boat, *Enma Abbott*, and returned to the city on the new one, *Helen C. Juillard*. Ex-Mayor Wm. E. Strong presided, and among those who made addresses was Sanitary Superintendent Charles F. Roberts, of the Health Department. Secretary John P. Faure gave an outline of the guild's summer work during the quarter century just closed. Since July 19, 1875, the *Enma Abbott* has carried 826,312 mothers and children, and together with those which have been cared for on the *Juillard*, which was built last year, the number now amounts to considerably over a million. For the first three years the *Abbott* made three trips a week from two landings. Now the two boats each make six trips a week from the two sides of the city, making numerous landings in Manhattan and touching at Harlem, Williamsburgh and Brooklyn. The trained nurse department was started in 1887, and the salt-water bathrooms the following year. Other facilities have been added from time to time, and Mr. Faure stated that for the first time in the fourteen years he has held the position of chairman of the Floating Hospital Committee no improvements were made on the boats this year, for the reason that there seemed to be nothing that could be done to make them more complete. The anniversary contributions amounted to \$1,300, \$500 of this sum being subscribed by Mr. Seth M. Milliken.

A LEGAL DECISION REGARDING CONTAGIOUS DISEASE. — When an outbreak of scarlet fever occurred at the Majestic Hotel on 72d Street, in January, 1896, Edward Eyre, then occupying apartments there with his wife and four young children, abandoned his rooms. He refused to pay further rent under his oral lease of \$4,050 a year, claiming that the prevalence of the disease, which endangered the lives of his family, justified him in surrendering the premises and terminating his liability for future rent. The hotel company, in a suit brought in the Supreme Court against Eyre, recovered judgment for about \$3,000, the referee before whom the case was tried holding that there was no eviction, and that the premises did not become untenable. The case was appealed, and the Appellate Division has now affirmed the decision. Justice Hatch, giving the opinion of the court after discussing the "Real Property law" and stating that the statute does not seem to cover the case, goes on to say: "There is nothing that appears which would justify a finding of negligence upon the part of the landlord in introducing the epidemic or in preventing its spread after it made its appearance in the hotel. On the contrary, every precaution which science or the Board of Health suggested was adopted. The finding of the learned referee has settled such questions, and it is abundantly supported by undisputed evidence. There is therefore no eviction, either actual or constructive, to be spelled out of the facts of this case, and therefore there is no defense to this claim."

DARK TENEMENT HOUSE STAIRS AND THE AWARD OF DAMAGES.—The Appellate Division of the Supreme Court on July 18th decided that persons injured in falling down stairs in a tenement house in which the hallways are unlighted are entitled to damages, and also that in case of its being a woman who is injured the husband may recover damages for the loss of the services and society of his wife. In a case in which a woman sustained serious injuries by falling down the stairway of a tenement house at night she brought suit and secured a judgment for \$2,750, and her husband also brought suit and was awarded damages. The landlord of the house appealed from the decision of the lower court, but the Appellate Division upheld the judgments, citing the law which requires that in the city of New York a light shall be kept burning in the hallways on each floor of all tenement or lodging houses from sunset until 10 p. m.

NEW JERSEY STATE BOARD OF MEDICAL EXAMINERS.—At a regular meeting of the State Board of Medical Examiners held at Newark, N. J., July 5th, the following resolution was adopted: **RESOLVED**, that this board will endorse the licenses of any State board of medical examiners in the United States, in lieu of an examination, provided, *First*, That the candidate for endorsement shall present satisfactory evidence of having the academic and medical education required by this board, and *Second*, That the license presented for endorsement shall have been issued after a State examination of the same grade and kind as that required by this board.

A CASE OF YELLOW FEVER.—One of the second class passengers of the Ward Line Cuban steamer *Havana*, which brought Gen Leonard Wood and his family to New York, died on Hoffman Island of yellow fever on July 18th. The disease did not develop until the vessel had reached quarantine, and the patient, who was a Syrian woman, was ill only about twenty-four hours.

MORTALITY FROM HEAT.—During the three days July 17th, 18th and 19th the first serious mortality from hot weather occurred, the number of deaths from the direct effects of the heat amounting to 68 in the various boroughs. Twenty-nine of the deaths were on July 18th, and 25 on the 19th. There was also, naturally, a considerable increase in the infant mortality of the city.

CÆSAREAN SECTION ON A DWARF.—Dr. Henry D. Nicoll recently successfully performed Cæsarean section at the Nursery and Child's Hospital in the case of a negro woman three feet eight inches tall. She and her husband, who is also a dwarf, are said to be acrobatic performers.

ARMY NOTES.

AMERICAN HOSPITAL IN CHINA.—The Ninth U. S. Infantry, now in China, has with it a regimental field hospital and an additional field outfit for 50

beds. The Fourteenth Infantry and artillery organizations now en route to China from Manila are similarly provided. In addition there has been shipped from Manila a division field hospital of 300 beds, with an allowance of medical supplies for 5,000 men for three months. This hospital will be under the command of Capt. Wm. Stephenson, Assistant-Surgeon U. S. Army, who has been provided with a fund of \$50,000 for contingent expenses. The smaller hospital will be under the command of Lieut. L. A. Fuller, Assistant-Surgeon U. S. Army, who has been provided with \$10,000 for contingent expenses. The transports *Grant* and *Sumner*, which sailed from San Francisco on July 3d and 16th, respectively, carried an aggregate of 18 medical officers and 78 hospital corps men available for service with troops in China. The transport *Meade* will sail on August 1st with 8 medical officers, a hospital of 50 beds and a large number of hospital corps men. Great care has been taken, in providing for the hospital service in China, to outfit for the cold weather met with in winter in the vicinity of Peking.

EXPERT IN MENTAL DISEASES TO BE SENT TO THE PHILIPPINES.—In view of the cases of insanity liable to occur in such a large force as is now stationed in the Philippines, Surgeon-General Sternberg has decided to station an expert in mental diseases at Manila to have charge of insane patients prior to their embarkation for this country. For this purpose he has given a contract as acting assistant surgeon to Dr. Charles H. Latimer, who has been a member of the staff of the government insane asylum at Washington (St. Elizabeth's) for the past twelve years. Dr. Latimer is a man of much experience and ability and will undoubtedly be of great assistance in the general hospital at Manila in his special line of work. He takes with him as assistants two attendants from the government asylum for the insane who have each had more than ten years' experience in the handling of cases of mental alienation.

WORK OF EXAMINING BOARD IN MANILA DELAYED.—An examining board which has been in session for some months in Manila for the examination of candidates for appointment in the medical corps has met with great delay, due to the scattered condition of the troops and the infrequent means of communication. Twelve candidates have so far been recommended for commissions and every steamer from the South is said to bring one or more applicants, who leave their stations as their services can be spared. An examining board recently in session in Cuba has passed four candidates; the one in session in Puerto Rico has not as yet rendered a report. All those recommended for appointment are either contract surgeons or medical officers of the volunteer forces. There are at present twelve vacancies in the regular medical corps.

AMERICAN OFFICERS WOUNDED IN CHINA.—Cable advices state that in the fight at Tientsin Ameri-

can medical officers were fired upon and wounded by the Chinese. As the present outbreak in China is largely of an anti-Christian nature, it is probable that the Red Cross badge of the hospital corps can scarcely be expected to afford protection, but, in fact, rather the reverse. It will be remembered that in the Philippines the medical officers and hospital attendants were a special target for Filipino bullets, and that it finally became necessary to arm the hospital corps men with Kräg-Jorgensen carbines. This plan will very likely have to be adopted with our forces in China.

HOSPITAL SHIP "RELIEF" DISABLED. — A recent cablegram states that the hospital ship *Relief*, which has been stationed in the Philippine Islands during the past year and which was ordered to Taku to receive the sick and wounded of the allied forces in China, has arrived at Nagasaki in a disabled condition and will require extended repairs. No details as to the nature of the disability were given.

Miscellany.

DR. A. CONAN DOYLE ON CONDITIONS IN SOUTH AFRICA.

DR. A. CONAN DOYLE, in the course of a letter on medical conditions in South Africa contributed to the *British Medical Journal*, writes as follows:

"When the nation sums up its debt of gratitude to the men who have spent themselves in this war, I fear that they will almost certainly ignore those who have done the hardest and the most essential work. There are three classes, as it seems to me, who have put in more solid and unremitting toil than any others. They are the commissariat, the railway men, and the medical orderlies. Of the three, the first two are the most essential, since the war cannot proceed without food and without railways. But the third is the most laborious, and infinitely the most dangerous.

"... How was this unforeseen and unprecedented crisis grappled with? [Referring to the outbreak of typhoid fever.] Entirely by the efforts of the medical men and by the devotion of the orderlies. When a department is confronted by a task which demands four times more men than it has, the only way of meeting it is for each man to work four times as hard. This is exactly what occurred, and the crisis was met. In some of the general hospitals orderlies were on duty for thirty-six hours in forty-eight, and what their duties were — how sordid and obscene — let those who have been through such an epidemic tell. He is not a picturesque figure, the orderly, as we know him. We have not the trim, well-nourished army man, but we have recruited from the St. John Ambulance men who are drawn, in this particular instance, from the mill hands of a northern town. They were not very strong to start with, and the poor fellows are ghastly now. There is none of the dash and glory of war about the sallow, tired men in the dingy khaki suits — which, for the sake of the public health, we will hope may never see England again. And yet they are patriots, these men; for many of them have accepted a smaller wage in order to take on these arduous duties, and they are facing

danger for twelve hours of the twenty-four, just as real and much more repulsive than the scout who rides up to the strange kopje or the gunner who stands to his gun with a pom-pom quacking at him from the hill.

"There is one mistake which we have made, and it is one which will not, I think, be repeated in any subsequent campaign. Inoculation for enteric was not made compulsory. If it had been so I believe that we should (and, what is more important, the army would) have escaped from most of its troubles. No doubt the matter will be fully threshed out in statistics, but our strong impression, from our own experience, is that although it is by no means an absolute preventive it certainly modifies the course of the disease very materially. We have had no death yet (*absit omen*) from among the inoculated, and more than once we have diagnosed the inoculation from the temperature chart before being informed of it. Of our own *personnel* only one inoculated man has had it, and his case was certainly modified very favorably by the inoculation.

"Of the courage and patience of the soldiers in hospital it is impossible to speak too highly. We have had 500 cases pass through our hands, and can speak now from a fairly large experience. I had always imagined that in every large army there must be a minority of skulkers and shirkers, but they are singularly absent in the South African Field Force. I have not had more than two or three cases in my wards which bore a suspicion of malingering, and my colleagues say the same. They are uniformly patient, docile and cheerful, with an inextinguishable hope of 'getting to Pretoria.' There is a gallantry even about their delirium, for their delusion continually is that they have won the Victoria Cross. One patient, whom I found the other day rummaging under his pillow, informed me that he was looking for 'his two Victoria Crosses.' Very touching also is their care of each other. The bond which unites two soldier pals is one of the most sacred kind. One man shot in three places was being carried into Mr. Gibbs's ward. I lent an arm to his friend, shot through the leg, who limped behind him. 'I want to be next Jim, 'cos I'm lookin' after him,' said he. That he needed looking after himself seemed never to have occurred to him."

It is of interest to note Dr. Doyle's and Dr. Wright's opinion given below regarding inoculation against typhoid, an opinion which apparently is not universally shared.

ANTITYPHOID INOCULATION.

DR. A. E. WRIGHT, Professor of Pathology at the Netley Army Medical School, sends a communication to the *British Medical Journal* (July 14th) on this subject. He gives some statistics in tabular form in regard to the results obtained with antityphoid inoculation in officers and men, and officers alone of the military garrison during the siege of Ladysmith. Dr. Wright's conclusions are that:

"In view of some points regarding which there is not at present any information available, it is at this stage impossible to determine precisely to what extent the inoculated were protected by inoculation. But the results set forth would appear to be distinctly encouraging, inasmuch as they show that the proportion, on the one hand, of attacks, and, on the

other hand, of deaths from typhoid was seven times smaller in the inoculated than in the uninoculated, and it may be borne in mind that if the number (no doubt a considerable one) of men who had previously suffered from typhoid had been subtracted from the number of the inoculated, as might quite legitimately have been done, the statistics would have borne an even more favorable aspect."

A PROLIFIC WOMAN.

DR. WILLIAM P. BURKE, of New Haven, Conn., reports in the *Medical Record* the following extraordinary case of fecundity:

"On the evening of May 23, 1900, he was called to attend Mrs. H — in her fourth labor. After a tedious and severe labor he delivered her on the morning of the 24th of triplets, two boys and one girl. The boys weighed eight and nine pounds respectively, and the girl seven pounds, making twenty-four pounds of children in all. There was but one placenta, which was attached in three places, arranged very much like a clover-leaf with membranous connections between the patches of placental tissue. One of the children, the second, a boy, presented by the feet and died in about fifteen minutes after birth. The others were vertex presentations. On May 1, 1898, he delivered this woman of twins, a boy and girl. She also had previously had two other labors with one child at each birth. Ten months before she gave birth to the twins and about the same time before giving birth to the triplets she miscarried at five months. All of this occurred within six years and one month. Of the seven full-term children but three are living. Her mother gave birth to eight children in all, and her grandmother to eleven."

Correspondence.

THE AVERAGE BIRTHS TO EACH CASE OF TRIPLETS.

Boston, July 24, 1900.

MR. EDITOR:— In the Massachusetts Registration Report for 1897, page 130, the average number of living births to one case of triplets is stated as 121,929.2 for the twenty years 1878-1897. In the Twenty-eighth Annual Report of the State Board of Health for 1896, page 738, the average number of births to each case of triplets is stated as only 9,629. for a nearly identical period. Why this tremendous discrepancy, and which is correct?

INQUIRER.

BOOKS AND PAMPHLETS RECEIVED.

Christian Science and the Practice of Medicine. Report of the trial of Crecentia Anies and Emma Nichols, charged with Practising Medicine without a License. Before the Police Court of the City of Milwaukee. Verbatim Report of all Testimony, Rulings of the Court, Arguments of Counsel and Decisions of Presiding Judge. First Unqualified Conviction of Christian Scientists for Practising Medicine. Edited by A. C. Umbreit, Assistant District Attorney. Milwaukee: Published by Thos. Mulholland. 1900.

The Alexander Treatment: A Relief and Remedy for Malignant Growths by Hypodermic Injection. An Account of a Demonstration of Results Obtained by its Use, made in the Presence of Forty Members of the Medical Profession in Boston, April 17, 1900. Additional history of what it has accomplished. Directions for its use by the medical profession.

Essentials of Medical and Clinical Chemistry, with Laboratory Exercises. By Samuel E. Woody, A.M., M.D. Fourth Edition. Revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Traitement de la Tuberculose Epididymo-Testiculaire par les Ligatures et les Sections des Elements du Cordon Spermatique. Par M. le Dr. Mauclair, agrégé Chirurgien des Hôpitaux.

Transactions of the American Microscopical Society. Volume XXI. Edited by the Secretary. Twenty-Second Annual Meeting held at Columbus, O., August 17, 18 and 19, 1899.

Transactions of the American Medical Association of Obstetricians and Gynecologists. Vol. XII. For the year 1899. Philadelphia: Wm. J. Dornan. 1900.

State Care of Leprosy. By E. S. Goodhue, M.D., Los Angeles, Cal. Reprint. 1900.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 14, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1579	798	34.20	7.50	20.26	.54	2.10
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	206	76	26.40	9.60	6.24	1.44	2.88
Baltimore . . .	506,389	318	171	43.40	4.65	34.41	.93	1.86
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	—	—	—	—	—	—	—
Washington . . .	277,000	186	89	43.20	2.16	23.22	3.24	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	76	31	40.92	2.64	35.68	—	—
Nashville . . .	87,764	—	—	—	—	—	—	—
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	111,732	31	15	45.22	9.69	16.15	—	6.46
Fall River . . .	103,142	64	49	56.16	3.12	49.92	—	—
Cambridge . . .	92,620	23	5	39.15	9.70	4.35	—	4.35
Lowell . . .	90,114	35	21	22.88	2.86	16.16	2.86	—
New Bedford . . .	70,511	21	—	19.04	4.76	19.04	—	—
Lynn . . .	68,218	—	—	—	—	—	—	—
Somerville . . .	64,394	11	3	18.18	—	9.09	—	—
Lawrence . . .	59,072	35	24	54.34	2.86	40.04	—	—
Springfield . . .	58,266	21	14	57.12	—	42.84	—	—
Holyoke . . .	44,510	23	18	56.65	6.70	52.20	—	—
Brockton . . .	38,759	—	—	—	—	—	—	—
Salem . . .	37,723	10	—	40.00	—	—	10.00	—
Malden . . .	36,421	8	—	37.50	12.50	—	—	—
Chelsea . . .	34,235	12	1	25.00	—	—	—	—
Haverhill . . .	33,651	9	1	—	11.11	—	—	—
Gloucester . . .	31,426	5	1	—	—	—	—	—
Fitchburg . . .	30,523	6	1	—	—	16.66	—	—
Newton . . .	30,461	6	3	—	—	16.66	—	—
Taunton . . .	28,527	6	1	—	—	—	—	—
Everett . . .	28,102	7	—	—	—	—	—	—
Quincy . . .	24,578	3	1	33.33	—	—	—	—
Fitsfield . . .	23,421	—	—	—	—	—	—	—
Waldham . . .	22,791	11	3	—	—	—	—	—
North Adams . . .	21,583	12	8	33.33	8.33	25.00	—	—
Chicopee . . .	18,316	10	8	40.00	—	40.00	—	—
Medford . . .	17,190	3	—	33.33	33.33	—	—	—
Newburyport . . .	15,036	—	—	—	—	—	—	—
Melrose . . .	14,721	3	—	—	—	—	—	—

Deaths reported 2,750; under five years of age 1,346; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 1,003, diarrheal diseases 620, consumption 245, acute lung diseases 185, diphtheria and croup 54, typhoid fever 22, measles 21, whooping-cough 14, scarlet fever 13, cerebrospinal meningitis 12, erysipelas 2.

From measles New York 18, Washington 2, Boston 1. From whooping-cough New York and Washington 6 each, Worcester and Springfield 1 each. From scarlet fever New York 9, Boston 2, Washington and Lawrence 1 each. From cerebrospinal meningitis New York 10, Boston 1. From erysipelas Worcester and Chelsea 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending July 7th, the death-rate was 14.5. Deaths reported 3,220: whooping-cough 89, measles 84, diarrheal diseases 63, diphtheria 63, scarlet fever 27, fever 26, small-pox (Liverpool) 2.

The death-rates ranged from 9.1 in West Ham to 24.1 in Sunderland; Birmingham 16.3, Cardiff 11.5, Gateshead 18.1, Hull 14.2, Leeds 15.1, Leicester 12.6, Liverpool 19.9, London 13.5, Manchester 19.3, Newcastle-upon-Tyne 15.1, Nottingham 11.4, Portsmouth 13.4, Sheffield 18.0.

Original Articles.**ASPHALT PAVEMENTS; THEIR NATURE AND DESIRABILITY.¹**

BY CLIFFORD RICHARDSON, ESQ.,
Expert on Asphalt, New York.

I HAVE been asked by your governing board to present to you this evening some facts in regard to asphalt and asphalt pavements, from the point of view of the engineer, and to explain the advantages which are offered by such pavements for abating the dust nuisance, the matter which you have especially under consideration.

It may interest you, to begin with, to learn something of the origin and extent of the industry.

ORIGIN AND HISTORY OF THE PAVING INDUSTRY.

Although the application of asphalt to industrial purposes on a small scale dates back to the earliest times, it is only with the introduction of rock asphalt into Paris about forty-five years ago that the asphalt paving industry can be said to have originated.

In 1838 the first sidewalks were laid in Paris with bituminous limestone from Scyssel and Val de Travers. In 1849 Mereau, a Swiss engineer, noticed that at the quarries pieces of the rock which fell from the carts united under the influence of heat and traffic so as to form a concrete mass, and on this principle he constructed a road in the village of Travers upon a macadam base. M. Darecy, inspector-general of bridges and roads in Paris in 1850, made a report recommending the use of compressed asphalt, and after some experiments a pavement of this material was laid in the Rue Bergere in 1854. In 1858 another trial was made on a larger scale in the Rue St. Honore, and from that time on the Parisian asphalt pavements were laid. In London, the first asphalt pavement was laid in Threadneedle Street in 1869. In Paris there are about 450,000 yards of asphalt pavement and in London about 400,000. But the amount has not increased of late years owing to the slipperiness of this form of asphalt surface. In Berlin the first asphalt pavements were laid about 1873 or 1874, and since then very large amounts have been put down, reaching about 1,700,000 square yards. Pavements of this description have never been popular, however, in America.

The success of asphalt pavements in Europe led to much experimenting in this country, and at first coal tar was used as a cementing material. Between 1870 and 1873 a large area of such pavements was laid in Washington, a majority of which proved worthless, and grave suspicion was thrown upon coal tar as a cementing material.

In 1870, De Smedt began experimenting with Trinidad asphalt with a view to overcoming the defects of coal tar, and laid a sample pavement in Newark. He took out a patent for his invention. In 1871 or 1872 he laid an asphalt pavement around Battery Park, New York, and in 1873 one on Fifth Avenue in front of the Worth monument, which remained in use, with one or two resurfacings, until 1886. At about the same time Trinidad asphalt was laid in Philadelphia, on Sixth Street, in front of Independence Hall. In 1874 or 1875 Eighteenth Street was paved with

Trinidad asphalt between Fourth Avenue and Irving Place, as were several other New York streets. The pavements were successful and attracted much attention. In 1876 Congress passed an act providing for the paving of Pennsylvania Avenue in Washington, under a commission composed of Gen. H. G. Wright, Gen. Q. A. Gilmore and Architect Edward Clark, of the Capitol, with no restrictions as to price or kind of pavement. The two former gentlemen, of the Corps of Engineers, U. S. Army, had been stationed in New York and had noted the success of the asphalt surfaces. The board therefore decided to lay compressed asphalt, and divided the work into two parts, using rock asphalt from the Capitol to Sixth Street, and Trinidad for the remainder. The rock was imported from the Val de Travers mines, and the work done by the New York Neufchatel Asphalt Company, of which Matthew Taylor was president. The contractor for the Trinidad surface was the New York and Grahamite Asphalt Company, with which De Smedt was connected. The rock asphalt pavement was condemned as being "too slippery for practical use," and no more of it has been laid in Washington.

The Trinidad asphalt was a success, and was so satisfactory that when the permanent board of commissioners was organized in 1878, they decided to limit the pavement of streets to Trinidad asphalt except where grade or traffic were prohibitory. Since that time the asphalt paving industry has rapidly expanded. In 1882 pavements of this description were laid in Buffalo, N. Y., which are still in fair condition. In that year asphalt was introduced in Omaha, Neb., and Youngstown, O. In 1883 the business extended to Baltimore, Philadelphia, Boston, Erie, St. Louis and Louisville, and from that time on has spread to 105 different cities in the United States, in which over 31,000,000 yards of asphalt concrete pavements have been laid by the several companies which have been engaged in the business. This extent of surface would amount to 1,950 miles of streets 26 feet wide. Of all this surface 26,000,000 square yards have been laid with Trinidad asphalt, the remainder with other asphalts, including about 1,000,000 yards of bituminous limestone rock from the Continent.

On the entire Continent of Europe there are only 4,000,000 square yards, or 250 miles of streets, all of which is constructed with bituminous limestone.

On the first of January, 1899 (the figures for January, 1900, are not yet available), some of the prominent cities of the United States had the following areas of asphalt pavements: Buffalo had about 3,900,000 square yards; Washington, about 2,600,000 square yards; New York, about 1,600,000 square yards; Boston, only 195,000 square yards.

In the smaller cities of the West asphalt pavements are extremely popular, and I may cite the town of Shelby in Ohio, which, with a population of only 6,000, put down in 1899 30,000 square yards of asphalt, or about 5 yards to every inhabitant. If Boston were paved on this scale it would have nearly 3,000,000 yards, or about the same as Buffalo. Every year asphalt pavements are introduced into numerous towns and cities, and the popularity of this form of roadway is growing rapidly.

In this connection it may be of interest for you to know what asphalt is, how it is obtained, something of the technology of the industry, the forms of construction, the extent of these pavements here and

¹ Read at a meeting of the Boston Society for Medical Improvement, February 19, 1900.

abroad, and their success and popularity as shown by the increasing demand for them.

WHAT IS ASPHALT?

Asphalt exists in nature and is not a by-product of manufacturing processes, like coal tar, as is often erroneously believed. It is a mineral found widely scattered over the earth's surface, but only rarely in commercially available quantities. It is also known as mineral pitch.

Asphalt, or more properly asphaltum, the essential constituent of asphalt, is a form of native bitumen. Bitumen is a mixture of hydrocarbons, with their derivatives which contain sulphur, nitrogen and more rarely oxygen, and may be either gaseous, liquid, viscous or solid, softening or melting when solid on the application of heat, and soluble in chloroform and similar solvents. Asphaltum is that variety of bitumen which is solid, or nearly so, at ordinary temperatures, melts rapidly on the application of heat, and contains a very considerable amount of sulphur derivatives. Maltha, or mineral tar, is a similar bitumen existing as a very viscous liquid and containing less sulphur. It grades from heavy petroleum to the less solid asphalts and is often called soft asphalt.

Asphalt is a name commonly applied to any mineral matter containing a considerable quantity of asphaltum, this form of bitumen being oftener found combined with limestone, sand, clay, soil, and, as in Trinidad asphalt, with sand and clay rather than in a pure condition, where it is characterized as glance pitch, the name applied to the bitumen of Judea or the asphalt of the Dead Sea. Asphalt is a secondary, or transformation, product of petroleum, being the result of the changes to which this lighter form of bitumen has been subjected under certain environment and especially in the case of petroleum containing hydrocarbons of a particular composition.

SOURCES OF ASPHALT FOR PAVEMENTS.

On the Continent of Europe there are large deposits of limestone impregnated with from 6% to 11% of bitumen which are mined to quite an extent for paving purposes. This material cuts no figure in the industry in this country.

The chief sources of the supply here are the pitch lake of the Island of Trinidad, that in the State of Bermudez, in Venezuela, and smaller amounts from California.

DESCRIPTION OF ASPHALT DEPOSITS.

The Trinidad deposit.—The Island of Trinidad is the largest colony of Great Britain in the Antilles, with the exception of Jamaica. It lies but a short distance from the mainland of South America, of which it was plainly once a part, near the most northerly and westerly of the mouths of the Orinoco and the coast of Venezuela, being separated from the latter by the Gulf of Paria. On the Gulf Coast and at an altitude of 138 feet above the ocean and 1,100 yards from the shore is the celebrated pitch lake described by so many writers, including Kingsley in "At Last." The lake is a level expanse of 114 acres of black pitch, over which one can walk or ride in any direction except where interrupted by shallow water courses between the several areas of asphalt. The latter appear like the tops of a mass of mushrooms which have been gathered together at their edges.

They are prevented from remaining together or coalescing by the water between them. At the centre fresh pitch is continually being emitted in a very soft condition but at a temperature not above that of the air and there the weight of a man can also not be sustained.

The surface is bare except for a slight growth of grass near the edges and a few masses of larger bushes, small trees and grass floating on the inner part of the lake, whose movements can be detected from year to year. In fact, from an evolution of gas which is taking place in the pitch, the entire material of which the deposit is composed is in a constant state of motion. Stakes driven in the pitch in a straight line are after some days quite out of alignment, and substances left upon the surface are engulfed, perhaps to appear years afterwards. The pitch, although in a constant state of motion, is sufficiently brittle to admit of its being flaked out, like ice, in masses of 50 pounds or more and an excavation thus made will close up and disappear in a few days. Borings in the centre of the lake made in 1894 penetrated the deposit to a depth of 135 feet and were still in pitch. With the extensive area of the lake and this depth, the quantity of asphalt in this deposit must be enormous, in the millions of tons, while at the same time levels taken of the surface of the lake in connection with the accurately recorded amount of material taken from it since the material had been sought, more than 1,200,000 tons, shows that the surface has not fallen as much as it should have done were there no present supply of fresh asphalt, and it appears that from 18,000 to 20,000 tons run into the lake every year, in itself no small supply.

The crude asphalt of the lake is a peculiar substance. It is a mixture, or emulsion, of asphaltum, gas, water, mineral and organic matter not bitumen in the following proportions: Water and gas, 29%; bitumen, 39%; organic not bitumen, 7%; mineral matter, 25%; total, 100%. And it is still more remarkable that the composition of the pitch is so uniform that no matter on what part of the surface or at what depth it is taken it is always the same, ranging less than 1% in any constituent. This uniformity in quality is, of course, of great value in any industrial process.

On the Trinidad lake there is a cable railway in the form of a loop on which cars carrying buckets run and are filled with pitch. The buckets on reaching the edge of the lake are hoisted to an overhead conveyer, upon which they are carried to the sea and out upon a pier where they are dumped directly into the hold of the vessel lying alongside, as much as 750 tons being handled in a day. The flakes of crude asphalt settle together in the hold of the vessel and at the end of their voyage have become a solid mass which must be again picked into flakes to discharge cargo.

The Bermudez deposit.—On the opposite side of the Gulf of Paria from Trinidad and about 30 miles in an air line from the coast the asphalt deposit, known as the Bermudez Pitch Lake, is found at the point where a northern range of foothills comes down to the swamps. The Guanaco River, a branch of the San Juan, one of the large estuaries of this region, at about 65 miles, in its winding course, from its mouth, runs within 3 miles of the deposit, but it is 5 or 6 miles to a suitable wharfage site. The so-called lake is situated between the edge of the swamp and the

foothills in what might be termed a savanna. It is an irregular shaped surface with a width of about a mile and a half from north to south and about a mile east and west. Its area is a little more than 900 acres, and it is covered with vegetation, high, rank grass and shrubs, 1 to 8 feet high, with groves of large moriche palms, called morichales. One sees no dark expanse of pitch on approaching it, as at Trinidad pitch lake, and except at certain points where soft pitch is welling up, nothing of the kind can be found. In fact the deposit is nothing more than the exudation of a vast quantity of maltha from various springs which has spread over the swamp around and become hardened by exposure and the burning of the vegetation of the swamp.

At different points there is at most a depth of 7 feet of pitch, while the deepest part of the soft maltha is only 9 feet and the average of the pitch below the soil and coke only 4 feet. At points there is not more than 2 feet of pitch and in the morichale, or palm groves, it is often 5 feet below the surface. It is plainly quite a different deposit from the Trinidad lake, and on further examination the material is found to differ essentially from the Trinidad pitch. Analyses show it is far from uniform in composition. The asphalt, or matter as evolved, contains no water or mineral matter. Considerable amounts of these substances soon become mixed with the pure bitumen mechanically after it has appeared at the surface, so that the average composition of the original material and that which has become altered is as follows:

	Original Soft Asphalt.	Hardened Highest.	Asphalt Lowest.
Water or loss 212° F., Dried Material.	1.0	46.2	10.7
Mineral Matter . . . . .	.0	3.7	.5
Organic not bitumen . . . . .	.2	6.5	.6
Bitumen	99.8	98.5	90.1

The bitumen, too, in Bermudez asphalt softens and melts at a much lower temperature than Trinidad asphalt. This asphalt is shipped like that from Trinidad and refined in the United States. It makes a good pavement, but requires greater skill to handle it successfully, as it is so far from regular in composition.

CALIFORNIA ASPHALT.

There are vast quantities of bitumen scattered over a wide area in California, especially in Santa Barbara, Ventura, Los Angeles and Kern Counties. This bitumen is in the form of true asphalt and of maltha or asphaltic petroleum. The hard asphalts are not in large enough deposits to be available to any great extent commercially, although they have been used in an experimental way. The asphaltic petroleum and maltha are valuable materials when properly used, but must be handled with skill to give satisfactory results.

No asphalts as we know them to-day can compare with that of Trinidad for uniformity and ease of handling. In any case, however, skill in handling the particular asphalt is of as much importance as the material. An unskilled person cannot make a good pavement of the best material.

REFINING AND TECHNOLOGY.

Asphalt for use in the form of pavements laid in the United States must be refined to remove water, light oils, volatile at a temperature below 325°, and such organic or mineral substances as are undesirable.

This is done by melting and volatilization of the water and oil, and separation of the mineral and organic impurities by skimming and sublimation. Mineral matter if not present in too large an amount or in size too coarse to remain in suspension in the melted asphalt is not objectionable. Refined asphalt cannot be produced from any single deposit which will be satisfactory for immediate use in a pavement. It must be combined with other asphalts or fluxes so that the resulting mixture shall have a consistency which experience shows is suitable for the conditions to which the pavement is to be exposed. For this purpose the residuum left on distilling off the lighter oils from eastern or California petroleum is used. The material thus prepared is known as asphalt cement. This must be mixed with a suitable mineral aggregate consisting of sand and a fine filler or dust to form a bituminous concrete wearing surface for the pavement. As the mineral aggregate forms 85% to 90% of the surface it is just as important that it should be of satisfactory quality and properly selected as it is that the consistency and character of the asphalt cement should be right. In the early days of the industry this was neglected and often poor pavements were the result, but with the experience of years the best equipped companies are now in a position to avoid mistakes of this description, and it is probable that the best asphalt surfaces of to-day are far in advance of those of 1880 in their ability to withstand traffic and other conditions which tend to cause a disintegration of the surface. The gritty mineral aggregate and the asphalt cement are mixed at temperatures in the neighborhood of 300° F., spread upon the street and compacted in a way which you probably have all seen in Boston. Skill is of course necessary in all parts of this process also, and cheap workmanship must be avoided.

Attempts have been made again and again to construct pavements with artificial bituminous materials, such as by-products of manufacturing processes, coal tar, petroleum sludge, etc., as a cementing material, but always with more or less disastrous results. Nothing but native bitumen free from decomposition products of manufacturing processes can be satisfactorily used for this purpose.

FORMS OF CONSTRUCTION OF ASPHALT PAVEMENTS.

Asphalt pavements generally in use in the United States at the present day consist of three parts, a base, a binder and a wearing surface. Depending upon local conditions the nature and thickness of these courses vary.

Under pavements to be subjected to heavy traffic or upon a weak subsoil a hydraulic concrete base should be, and usually is, provided. Its thickness depends upon circumstances and may be from 4 to 6 inches. This base supports the weight of the traffic on the pavement and is a most essential feature. Upon the base a binder course consisting of clean broken stone of a size that will pass a 1-inch ring, heated and covered with a coating of bituminous cement, is placed and compacted to a depth of 1 to 1½ inches. This course prevents the surface from moving or creeping on the smooth base and is an important element in preventing its pushing out of shape, as happens so frequently with rock asphalt surfaces. Upon the binder the gritty surface is placed and compressed into its interstices until the whole is a mono-

lithic mass. The depth of the surface may range from 1 to 2 inches according to requirements. Residence streets are satisfactory with an inch of binder and the same of top. On business streets $1\frac{1}{2}$ inches of binder and 2 inches of top are more suitable.

Oftentimes it is possible to use as a base some form of old pavement which has been consolidated by traffic into an unyielding mass quite as suitable to support an asphalt surface as a new hydraulic base. For this purpose old granite block, brick and macadam have been used. In New York City between 1,000,000 and 2,000,000 of old block pavements have been covered with asphalt and the old macadam surface on Broadway between Fifty-ninth Street and 118th Street has been resurfaced in the same way, some of the asphalt having been in place with slight repairs since 1890. Worn-out brick pavements have also been successfully resurfaced in Ohio. In such cases a binder course is laid upon the old pavement to bring it to grade, and upon this the surface is laid.

THE PERFECT PAVEMENT.

There is nothing which offers such good evidence of the well-being and the good government of a city as the condition of its streets. Their first appearance to a visitor is the foundation of his impression of a town, which it is difficult to dispel if unfavorable. When paved with a perfect pavement which is clean, the initial impression is favorable.

The perfect pavement has been defined as one whose cost and that of maintenance is reasonable, whose surface offers the least resistance to traction consistent with a good foothold for horses, which is impervious to moisture, offers no irregularities for retaining dust, produces no detritus itself, is easily cleaned, kept cleaned and is as noiseless as is possible.

Asphalt, I believe, approaches these conditions more nearly than any other form of pavement, and I shall endeavor to show that at the same time it possesses qualities which render it desirable in other ways, some of which are common to all smooth pavements but which are more strongly developed in asphalt than in other forms.

It is unnecessary for me to tell you that the defects of macadam pavements are that they make the most detritus of any kind of pavement, and in consequence, when dry, are dusty, when wet, muddy; that their resistance to traction is high; that the cost of maintenance is higher than that of any form of roadway; that it cannot be kept clean, but that to keep down the dust it must be watered and made muddy; that the cost of the best possible cleaning is high, and that storm water washes quantities of detritus from it into the sewers which must be removed at great expense. The only claim for its excellence is that it affords a good foothold for horses and this is very much exaggerated in comparison with asphalt. There is no doubt that for fast and careless driving macadam offers the safer footing, but when used for ordinary traffic the difference is slight.

Granite pavements are rough, very noisy, difficult to clean and do not admit of perfect repairs, although in other respects satisfactory. Brick have the same objections as granite to a smaller degree, and wood is inadmissible in our climate.

Our final recourse must therefore be, and has

been, as will be shown, to asphalt, both as a necessity and a luxury. I trust you will allow me to explain the reason for this in more detail.

COST.

Asphalt is eventually the cheapest form of pavement that can be laid when it is considered that it is guaranteed to be kept in repair by the contractor for five years or more, when opened for excavations can be repaired with greatest ease and perfection and maintained for the city after the expiration of the guarantee for a long period of years at a reasonable price, can be more cheaply cleaned and causes less wear and tear upon horses and vehicles than any other form of pavement, thus benefiting the community in a very general way.

It may originally cost double the price of a macadam surface, but the repairs upon the latter are so expensive that often in three years the cost has been equalized, while the asphalt pavement may be maintained for many years at a cost of from two to ten cents per yard per annum, and finally resurfaced for half its original cost. In Buffalo asphalt pavements are in use to-day which, with a few minor repairs, have been subjected to traffic for twenty years, and the same is the case in other cities.

We have in the asphalt pavement, therefore, cheapness and durability combined, because economical maintenance, and not cheap first cost, is the best economy.

This, however, is true of asphalt pavements only if, as has been said, the highest grade of material is used and the most skilled labor employed, because nothing is more worthless or expensive to maintain than an inferior bituminous concrete. The prices paid must be large enough to warrant good work. Too cheap pavements are the most costly in the end because necessarily inferior.

The success of asphalt pavements early led, as has been said, a large number of irresponsible persons to go into the business with a resulting demoralization of prices, and many pavements or imitations of them have been laid upon which more was expended for repairs than would equal the cost of original high grade surface. Imitations of asphalt have been introduced at frequent intervals to the taxpayer, who has only learned of their inferiority by experience. Washington years ago went through this experience with coal tar and to-day there is still too much similar experimenting going on with by-products of manufacturing processes.

The chief cause of failure in asphalt surfaces is, however, lack of skill and experience on the part of irresponsible contractors.

ASPHALT PECULIARLY ADAPTED TO PERFECTION OF MAINTENANCE AND REPLACEMENT OF CUTS.

The necessity of prompt repairs is a fact that is self evident on a railway, but is not always so carefully regarded in connection with pavements. Too many pavements, whether stone, brick or macadam, are allowed to deteriorate until they are in a bad condition, because they are not actually dangerous and because satisfactory repairs are expensive and generally impossible. It is not possible to replace a stone block or brick pavement in such a way that the repairs are invisible, but with asphalt this is quite possible, and, as the latter surface shows the smallest defects, attention

is attracted to its condition at once and repairs are not so readily neglected.

Repairs to asphalt pavements for the first five years are guaranteed by the contractor for any deterioration of the material other than cuts and can be again contracted for with him for a subsequent period at a reasonable cost. Cuts made for gas, water or sewers can be replaced in an asphalt so perfectly that the place cannot be detected, and if it is necessary to renew the entire surface of a street, this can be done by softening the old surface with heaters to the depth of one-half to three-quarters of an inch, removing the inferior material and replacing it with new surface. It is quite unnecessary, as in former times with asphalt and now with other pavements like granite and brick, to tear up the old surface to the foundation. The economy in this direction is immense.

Of course the cost of maintenance of a pavement, asphalt or stone, depends upon the traffic to which it is subjected. But an asphalt pavement can be maintained under the heaviest traffic at a reasonable expense.

FOOTHOLD FOR HORSES ON ASPHALT.

The surface of an asphalt is a favorable one for horses as compared with other pavements. It is gritty from the sand used in its composition, except in the form laid with bituminous limestone on the Continent and to a small extent in your city. There is no grit in this surface and its use has been abandoned in Washington, New York and other cities where it has been tried.

An investigation of the relative number of falls of horses on the surface made with sand and asphalt as compared with other pavements was made in 1885 by Gen. (then Capt.) F. V. Greene. The results were presented to the American Society of Civil Engineers in a paper read December 16th of that year, which contains a large amount of interesting information as to different pavements. General Greene showed that in 192 days on 32 different streets of 10 cities, and including 807,552 horses travelling 81,051 miles, the average horse would travel the following miles before falling: On asphalt, 583; on granite, 413; on wood, 272; I am aware that to many persons who have only had a limited experience in driving on asphalt this seems doubtful, but the figures have been confirmed several times, and in cities like Washington and Buffalo, where all the pavements are asphalt, no such feeling would be found. It is true, however, that horses which have been accustomed to travelling on stone pavements are not at home on asphalt, but soon become so.

Again, persons are tempted to drive much faster and more carelessly on asphalt than on stone or macadam, their own personal comfort on the latter pavements controlling the speed. Falls on asphalt are generally due to careless driving. It has been claimed that asphalt surfaces are injurious to horses on account of the continual pounding on such hard surface. An investigation in Washington some years ago disproved this.

In 1892 one of the street railroads introduced a new motive power doing away with horses. In renewing their tracks asphalt was placed between the rails and in the interval between its being put down and the final discarding of horses they were driven for several months over the asphalt surface. It was

held by the Society for the Prevention of Cruelty to Animals that this would injure the horses seriously and that it fell within their province to look into the matter. Every opportunity was given its agent to examine the animals before they were used upon the smooth surface, while they were travelling over cobbles and during the time they were on asphalt and afterwards. Although prejudiced against asphalt pavements, the observer was obliged to report that the horses were in better condition at the time they were removed from the road than when they were in use on stone pavements.

A personal friend of mine in Washington, a breeder of horses and careful observer, said to me in this connection: "If one drives with as much care on an asphalt surface as one would do for his own comfort on a rougher pavement, no injury would ever be done to the horses."

The very general approval of asphalt pavements by the engineers of our city fire departments is striking evidence of their desirability and the increased rapidity with which engines can reach fires greatly increases the efficiency of our firemen.

EASE OF TRACTION ON ASPHALT.

A characteristic of a perfect pavement is ease of traction. Numerous experiments have been made to compare the resistance to traction of asphalt and other forms of pavements, and show that the relative force required to draw a load upon different surfaces was

On tramway	1
" asphalt	1.55
" best granite block	3 to 4.1
" macadam, best	3
" poorest cobble	14 to 25
" ordinary road cobble	8 to 13
" sleigh, on snow	7

The economy of the cost of the transportation of the very large amount of material annually hauled over our city streets upon asphalt instead of rough surfaces is therefore enormous. Calculations based upon the above results show that, if they are right, by the introduction of asphalt pavement into a city previously paved with stone, the same amount of work could be done by one-half to one-third less vehicles at a money saving in our large cities of many millions, a large sum in comparison with the cost of the pavement. Or, looked at in another way, three times as much work could be done with the same number of teams.

THE HEAVIEST TRAFFIC IS SUSTAINED BY ASPHALT SURFACES.

Asphalt surface will sustain as heavy aggregate traffic and single loads as any form of pavement. Asphalt has been maintained on several blocks of Fifth Avenue, New York, for four years without a particle of repairs, and for three years on the entire avenue from Ninth to Fifty-ninth Streets with no repairs to the main mass of the pavement, but only along rails or around steam boxes at local points. Asphalt has been maintained on Chambers Street since 1886. This street has an aggregate traffic hardly exceeded by any business street in New York, and one so concentrated by a car track in this narrow street that it is made additionally severe. On Fifth Avenue in New York a cable weighing 42 tons on a truck weighing 9 was hauled over an asphalt surface in 1893 without damage or even marked depression, and since that time similar loads have been hauled without remark.

In addition to the capacity for resisting traffic under circumstances, asphalt surfaces are not disappointing in an emergency. In 1898 in Rockford, Ill., a gravel train of fifty cars left the rails and ran back upon the asphalt pavement of one of the streets through an open switch. The engineer reversed his locomotive and hauled them all back on the track with no damage to the train and no more to the pavement than a slight crease which soon rolled out.

There can be no question, therefore, but that asphalt surfaces when properly constructed have a capacity as great as any form of pavement.

INCREASE IN THE VALUE OF PROPERTY.

Asphalt pavements largely increase the value of property when placed upon unimproved streets or upon streets previously paved with noisy or dirty pavements. Before 1891 Seventh and Eighth Avenues in New York were very similar in their character, but in that year Eighth Avenue was paved with asphalt. To-day the contrast between the two streets is striking. Eighth Avenue is now a flourishing business street, horse cars have been replaced by underground trolleys and the traffic through it is enormous. Seventh Avenue, with its rough granite blocks, has little business or traffic, horse cars are the public conveyance, and the street is deserted for the superior conditions found in the next parallel street. Rents are, of course, correspondingly lower.

ASPHALT PAVEMENTS IN THEIR RELATION TO CLEAN STREETS.

The dirt in our streets is a mixture of various forms of mineral and organic matter. It contains: (1) The detritus of the surface; (2) the results of abrasion of vehicles and horse shoes; (3) dirt forced up through the joints of certain forms of pavements; (4) horse manure; (5) house and other refuse. In this mixture, when moist, organic growths of various kinds flourish, and when it is dried their growth is merely inhibited and they are not killed. In the latter form as dust, the street dirt is carried aloft by the winds and distributed through the finest crevices in windows and doors into our houses. An examination of the dust of our houses shows that it is the dust of our streets, and to do away with the former means removing the latter before it is blown about by the winds.

It is asked what kind of pavement makes the least dirt; that is to say, the least detritus. There is no question which makes the most; that is, macadam, and asphalt undoubtedly makes the least, since it practically makes none.

It is a common idea that on streets paved with asphalt a fine black dust derived from the pavement is found in the neighboring houses. It is an error to suppose that this dust contains asphalt, because for structural reasons the entire asphalt surface would go to pieces at once if any particles at all were detached from it, while it has been found on the contrary that after twenty years' use the thickness of asphalt surfaces is not appreciably changed from that which they had when they were laid. Of course surfaces which wear into holes will make detritus, but this should not occur in a first-class pavement, or, in the rare cases where it may happen, immediate repairs should remove the cause.

Dirt and dust will collect on asphalt pavement as it

does upon our polished dining-room tables and it is of course more noticeable there than on macadam, granite block and other surfaces, where dust is compacted in the interstices between its separate parts. In consequence the cleaning cannot be neglected. It *must* be done. If asphalt is not properly swept half of its advantages are lost.

The smooth surface of this form of pavement can, however, be kept as clean as a house floor by sweeping or by flushing, and if dust is to be avoided this must be done. Too often the cleaning is neglected, and then, of course, dust has a free sway on being moved over the surface by the wind. It is not the form of pavement alone which must be considered, but the perfection of the methods employed in cleaning it and the opportunities which the latter offer for its being done satisfactorily, quickly and economically.

Statistics collected by Byrne show that the dirt collected daily from different pavements will average per 1,000 yards

Asphalt	:	:	:	:	.007 to .04 cubic yards,
Wood	:	:	:	:	.04 " .20 " "
Granite	:	:	:	:	.015 " .25 " "
Macadam	:	:	:	:	.10 " .35 (50 times asphalt),

and that the relative cost of cleaning different kinds of surfaces is: Asphalt, 100; granite 150; Belgian, 160; cobble, 400; that is to say, asphalt can be kept clean for two-thirds of the cost of granite block and at a still greater economy over other forms of pavement.

Cleaning of asphalt can be readily accomplished either by hand or machine methods. By hand the surface is kept clean at all hours of the day at a cost but slightly larger than that of machine work done but once in twenty-four hours or more. Hand cleaning as introduced by Colonel Waring in New York is undoubtedly the only satisfactory system in streets of heavy traffic, such as Fifth Avenue in New York and Beacon Street in Boston.

NOISE.

Of the effect of noise upon the nervous system it is useless for me to speak to gentlemen of your profession. With perhaps the exception of macadam there is no surface less noisy than asphalt. Wood gives out a rumble which is quite as distinct as the click of asphalt, while brick is perhaps more noisy than stone. In cities paved with stone there has been a great demand that asphalt surfaces shall be laid about hospitals and public offices.

A comparison of the Fifth Avenue in New York of to-day and that of a few years ago with its rough granite blocks will convince any one of the desirability of asphalt. In the hours of busy traffic in 1895, conversation could hardly be carried on as two persons walked up the avenue. To-day there is comparative quiet. Asphalt is the friend of every one with nerves.

As a matter of pure luxury we have to-day rubber shoes for our horses and rubber tires for the wheels of our vehicles. With these auxiliaries and asphalt pavements traffic becomes at once noiseless.

With the advent of the motor vehicles and the so-called horseless age, the demand for asphalt pavements will undoubtedly increase. The combination of the two will then of course give us a street which will be the ideal for cleanliness and freedom from noise.

REPAIRS TO VEHICLES.

In 1880 M. Darcy, then Director of Public Works in Paris, made quite an elaborate calculation of the saving which would be effected in the wear and tear of the 48,000 vehicles in Paris by changing all the rough stone into smooth-surface pavements. The result of the calculation was a saving of \$1,092,000 per annum. M. Barrabant, the chief engineer of Paris in 1884, in citing these estimates, states that "if made to-day they would give without doubt figures more striking." His average saving, it will be noticed, is only \$23 per vehicle, which certainly would seem to be moderate. In New York in 1888 there were 20,441 vehicles licensed for public hire; this does not include the trucks, wagons and carriages owned by individuals, firms or corporations and used for their own business or pleasure. The number of these is not of public record, but it is probably at least double the number of vehicles licensed for hire. If so, the total number of vehicles in New York is about 60,000, and the saving in wear and tear as a result of smooth pavements, according to M. Darcy's figures, would be about \$1,500,000 per annum.

A similar calculation, according to the *Philadelphia North American* of October 12, 1885, showed that repairs to vehicles necessitated by their use on the old-time cobble-stone pavements of Philadelphia amounted to enough every year to pay the interest on the bonds which it would be necessary to issue for paving the city with Trinidad asphalt, the entire saving to owners being determined as over \$100,000,000 annually.

I have been informed by carriage builders that in cities where all the pavements are asphalt, persons buying carriages are much more critical and demand a higher grade of workmanship, as the slightest defects are revealed on the smooth pavements which are concealed by the noise of the rougher kind.

SPRINKLING.

The sprinkling of streets to lay dust should not be tolerated. It is a makeshift, and merely covers up the lack of cleanliness, at least with asphalt pavements. With those forms of pavement having large interstices which cannot be thoroughly cleaned, sprinkling may become a necessity. The only way that water should be used on asphalt pavements is in flushing them from a hydrant, and this is the ideal way of keeping them clean. It may be done with either salt or fresh water without injury to the surface.

HYGIENIC DATA.

The best evidence of the desirability of asphalt surfaces from a hygienic point of view is offered by the death-rate in various cities as compared with the class of pavements which are in use in them and the degree of cleanliness practised. The following list of cities furnishes some interesting data:

Berlin: Almost all asphalt pavements; death-rate per thousand inhabitants per year	19.6
Amsterdam: Stone and asphalt, streets washed	20
Rome: Streets nicely cleaned, much asphalt, hard climate	21.2
Vienna: Little asphalt, much stone and macadam	24.3
Dublin: Granite, cobble and macadam fairly cleaned	29.3
St. Petersburg: Cobble and macadam, notwithstanding cold climate, which kills germs	30
New York: 1892, with little asphalt	38.37
1894, more asphalt	30
1896, more asphalt and clean streets because easily cleaned	26

In addition to the above data it is of interest to note that the death-rate from bowel complaints in New

York City decreased from 11.5 in 1892 to 6 in 1896 per 1,000. This decrease is directly connected with the pavement of the tenement house district on the East Side of New York with asphalt, and also to the increased cleanliness of the streets which was possible with this form of pavement.

RELATION OF ASPHALT PAVEMENTS TO ILLUMINATING GAS.

It has been claimed that asphalt surfaces prevent the escape to the outer air of gas which has escaped from leaky mains, and that on this account the escaping gas is forced into our houses. This is quite a mistake, at least as far as the asphalt portion of the pavements is concerned. The hydrocarbons of illuminating gas are readily absorbed by asphalt and through the ordinary surface gas works its way, readily acting as a solvent and disintegrating the material. Asphalt therefore cannot in any way confine coal gas. The hydraulic base under an asphalt pavement may prevent to a certain extent the egress to the air of gas from leaky mains, but as such a base exists under all well laid pavements any such disadvantage is common to all forms of pavements and is not peculiar to asphalt surfaces. The asphalt surface, on the contrary, is the most desirable in this respect, as it reveals the leak at once by the disintegration which takes place and makes possible its correction.

In the light of these considerations it would seem that it would be profitable for Boston to abandon her macadam streets and the enormous cost of maintaining and cleaning them, without effectually doing away with the dust nuisance, and to lay asphalt pavements at an outlay which, with a sinking fund to pay for them, would eventually involve the expenditure of no more money than is at present laid out for the expense of their maintenance, for cleaning and watering them, and for excavating from the sewers the material washed into them from the macadam. The advantage to the health of the inhabitants is of course one which appeals directly to the members of your association.

THE TRANSPORTATION OF DISEASE BY DUST.¹

BY HAROLD C. ERNST, M.D., BOSTON,
Professor of Bacteriology, Harvard Medical School.

The possible injury from such a dust nuisance as we have had this winter may be looked at from two points of view: the irritant action upon the respiratory apparatus, and the transportation of pathogenic bacteria. Of the irritant action there can be no doubt, as is illustrated by the photomicrographs of the dust from the street and the window-sill of the laboratory. The fields shown are not picked, but are from the first that were found to be thin enough for photographic purposes. They show a variety of minute jagged particles, of mineral and vegetable origin, that it is manifest would be injurious in their irritant action upon inhalation and lodgment upon any weakened spot.

That this material also carries living forms is illustrated by the slides, so far as the higher bacteria are concerned, and by the cultures that Dr. Coolidge has been good enough to make for me. In these the

¹ Read at a meeting of the Boston Society for Medical Improvement, February 19, 1900.

amount of gas production is very great, and the number of bacteria as represented by several counts is 80,000 to the gramme, at a conservative estimate and under favorable conditions. There has not been time enough to make a qualitative analysis of these bacteria, so that it is not possible to say whether any pathogenic forms are present in these particular specimens. Two inoculation experiments showed only local necrosis. The subject of the possibility of the transmission of pathogenic bacteria by dust has, however, been elaborately studied by E. Germano.² He first took up typhoid, and showed that the typhoid bacillus is not able to resist complete drying, and is not transmitted by dry dust to man. In this respect the typhoid bacillus behaves as does the cholera spirillum — and certainly most of the epidemics are not to be ascribed to transmission by dust. The infection of the air for many hundred metres about, as suggested by Froidboise, is entirely improbable.

The next bacterium studied was that of diphtheria, and the conclusions are: (1) That this bacillus can resist drying for a very long time, as well in the membrane as in the tissues and in dust; (2) an acceleration of the drying process does not influence the resistance of the bacillus either in tissue or in dust; (3) this bacillus retains its vitality longer the greater the amount of the surrounding dust (it may thus be better protected against oxidation); (4) in a condition of complete dryness the diphtheria bacillus can retain its full virulence until its death; (5) air can carry this bacillus in the living condition.

Taking up the possibility of the transmission of erysipelas, pneumonia and other streptococcus diseases, Germano demonstrated the following facts: (1) The resistance of the streptococcus to drying varies with the variety as well as the material in which the drying is carried on; (2) the resistance is always high and may last for some months; (3) the rapidity of drying does not affect the length of vitality in any way; (4) the resistance of the streptococcus increases with the mass of the imbedding material, as this prevents the direct access of the air.

The diplococcus of pneumonia belongs among the bacteria that can resist drying for a long time. (1) This property varies between wide limits, and a special variety may be of little resisting power. Kruse and Pansini were right in explaining the discrepancies of various authors upon this ground; (2) the form lying between the streptococcus and the diplococcus may be extremely resistant; (3) in Germano's experiments, the diplococcus kept its properties better in the dry than in the moist condition; (4) in low temperatures, the behavior is the same as in moisture; cold hinders drying; (5) the rapidity of drying in medium temperatures has no influence upon the retention of vitality of the diplococcus; (6) since the diplococcus may, under some conditions, resist drying for some time, even if it cannot do this to the same extent as the streptococcus, the possibility of its transportation in the air, and of infection of man through the air must be granted.

Germano then took up the study of cholera, plague and cerebrospinal meningitis, and came to the general conclusion that there is little danger of the transmission of these diseases through dust in the air.

He summarizes his final results by saying that there

must be a revision of opinion as to the transportation of important disease producers. In general it may be considered as settled that they must be dry to render their transportation by means of dust at all probable, and the experiments upon drying are only of value when conducted with fine dust. As the result of such experiments the conclusion is that the finer the dust the quicker the bacteria die.

In relation to resistance to drying, the bacteria he studied divided themselves into several groups: The first included typhoid, cholera and plague. Experiments with these showed that they often sank in number of resulting colonies from 100,000 to 0 in twenty-four hours. Therefore the chances of transportation by the air must be considered as very slight. His experiments were controlled by the use of several races of each, so that the fallacy of working with one especially susceptible to drying might be excluded. Similar results were obtained with influenza and gonorrhoea.

A second group was formed by the streptococci, the pneumococci, and the diphtheria bacillus, which in various races showed great variation in resistance to drying, some dying almost at once, some living days, weeks, or even a month; most of them died quickly, only a very small number resisted for any length of time. The so-called sporadic cases of erysipelas, diphtheria, etc., may be explained by the occurrence of these resisting types.

In a third group may be placed, as still more resistant, the diplococcus intracellularis, and with it the staphylococci of suppuration, and the bacillus of tuberculosis.

The fourth and last group includes the spore-producers, — which in this way may resist drying for an indefinite period, — anthrax, malignant edema, tetanus, etc.

Our knowledge of the acute exanthemata is not great enough to enable us to know in what group to place them; they certainly do not belong in the first, but it may be doubtful whether they belong in the second or third.

It would seem to me, then, that the conclusion to be drawn is that the danger from such a dust nuisance as we have had is greater from the direct irritant quality of the dust itself than from the chance of the transportation of any infectious disease; the winter has been so exceptional, however, that the Board of Health has an opportunity to furnish some valuable statistics upon the comparative occurrence of infectious diseases in the affected area this year as compared with last, when the same conditions did not exist.

EFFECTS OF DUST UPON THE LUNGS.¹

BY VINCENT V. BOWDITCH, M.D., BOSTON.

WHEN asked to make a few remarks upon the "dust nuisance," with special reference to its effect upon the respiratory organs, I gladly assented, delighted that the medical profession had again taken this matter in hand. The lethargy which seems to have let the people of Boston endure this state of things is as extraordinary as it is exasperating to those of us who know that the effect upon the health of the community is baneful, and who also know that the remedy is

² Zeit. f. Hyg. u. Infektionskrankheiten, Bd. xxiv, S. 403; Bd. xxv, S. 439; Bd. xxvi, S. 66, u. s. w.

¹ Read at a meeting of the Boston Society for Medical Improvement, February 19, 1900.

not difficult to find, if our citizens will only insist that a better state of things shall prevail. Will you allow me at first to recall a little of the work done by medical men upon the question of street watering?

Several years ago a committee composed of Drs. F. I. Knight, J. C. Warren, Henry J. Barnes and myself represented to the gentlemen then in power at City Hall the views of the Suffolk District Medical Society upon the wretchedly inefficient methods of street watering and the intolerably filthy condition of the macadamized streets, not only through the winter, but during the summer months. We received the rebuffs that invariably meet attempts to change existing conditions, by the remark that there was not money enough, and were asked what we proposed to do about it.

To make a long story short, the matter was agitated sufficiently to induce the subsequent mayor to allude to it in his first address. He instituted a much more efficient service by taking it out of the hands of contractors, who mulcted private individuals to fill their own pockets, and the street-watering service for nine months in the year, partly by dint of constant and persistent efforts of the committee, collectively and individually, has slowly and steadily improved, so that during the nine months of the year when the temperature has been above the freezing point, the Back Bay in the last year or two, even though very far from satisfactory at times, has been made a more habitable section of the city, as far as dust is concerned, than it was several years ago. Last year even a new departure was made by Superintendent Wells, by occasionally sending out a sprinkler in the winter months on the day when the thermometer rose above 32°.

In order to improve still further upon existing conditions, petitions for asphalt pavements on Beacon Street beyond Massachusetts Avenue, the only artery for heavy teams from the Back Bay to the Allston and Brighton districts, were signed by the residents in that street with very few exceptions.

Mayor Quincy and Superintendent Wells both cordially endorsed the idea, but lack of proper appropriation has thus far failed to accomplish what large numbers of the residents have earnestly desired. In consequence of this lack of proper pavements the citizens of Boston, especially those of the Back Bay, the most exposed section of the city, have had to endure in this open winter a vile atmospheric condition, which is a standing disgrace to any civilized community.

As a striking example of a not uncommon occurrence, I have at home a twenty-pound butter firkin nearly full to the brim of filth collected from my own doorsteps, in four hours, after a high northwest wind had caused the usual dust storm, in spite of a heavy rain during the preceding night.

It would seem almost unnecessary to speak, gentlemen, of so self-evident a truth as the baneful effect of such a condition upon the health of the community, yet it is necessary to emphasize this point. Apart from any possibility of carrying disease germs from the powdered filth lying in our streets and blown into our faces and forced into our houses, the mere mechanical irritation upon the nasal and bronchial tracts of such an atmosphere as we have had to endure this winter is sufficient to be a fruitful cause of trouble to many people. I have patients under my care now, with delicate throats and lungs, unable to leave town for various reasons, who have to be housed absolutely

during these days when, were our streets in proper condition, they could enjoy out of doors the comparatively mild and bracing air of this moderate winter. Even in the houses with the windows shut tight, my patients have bitterly complained of the effect upon their throats of the dust which sifts through the windows and doors. What a mockery it seems with the constantly growing knowledge that fresh air and open windows are essential for health, more especially for the prevention and cure of our great scourge, consumption; what a mockery it seems that we should go on enduring such a condition of affairs in our city, of which we naturally feel so proud, the many advantages of which we are apt to boast.

Our city government is not wholly to blame for this state of things. Mayor Matthews, with far-seeing policy, advocated strongly the plan of paving the whole of Commonwealth Avenue with asphalt, and of gradually extending this process to the whole of the Back Bay. This scheme was defeated by a number of people, largely those who own horses, because of the occasional slippery nature of asphalt, and in consequence the Telford pavement was substituted. From personal questioning, I know that many of those who signed that petition to defeat the mayor's plan now deeply regret their action. In consequence of this mistake it has been impossible to drive or walk on this great avenue with any comfort for a large part of the winter on account of the sweeping clouds of dust.

That asphalt is an ideal pavement or without drawbacks, none of its strongest advocates would claim, but with proper care and regulation to prevent its being constantly torn up and replaced by inferior material, it has thus far proved in our American cities the one which possesses the greatest advantages and the fewest disadvantages of all pavements used here. This is the testimony of Colonel Waring in a personal conversation held not long before his death.

Huntington Avenue and the upper part of Columbus Avenue are constant proofs of the superiority of their pavements, if one will take the pains to walk through Massachusetts Avenue and witness there the clouds of dust in winter on a windy day, almost reaching to the house-tops, and then note the condition of the atmosphere in the former streets.

In mild, damp weather, moreover, the collected filth of Massachusetts Avenue in the spring and autumn causes often a nauseating odor, most marked in the evening, which has not infrequently compelled me to leave the street from sheer disgust.

That Boston now, in comparison with many other large cities in our own country, still more with those in Europe, is, to say the least, in a most provincial condition as far as pavements are concerned, I think no one can deny.

Gentlemen, for the comfort and health of our community, I trust that this meeting may be a strong factor in bringing about the improvements which we all so earnestly desire.

TUBERCULOSIS IN PARIS.—According to the *Journal of the American Medical Association*, nearly 26% of the deaths in Paris in 1899 were due to tuberculosis—12,314 out of a total mortality of 46,988. The percentage of tuberculosis mortality at various ages was as follows: One to twenty, 37.2; twenty to forty, 60.2; forty to sixty, 30.5, and over sixty, 3.3.

THE EFFECTS OF DUST ON THE UPPER RESPIRATORY TRACT.¹

BY SAMUEL W. LANGMAID, M.D., BOSTON.

FOR many years I had been observant of the fact that whenever a dust storm occurred there was an outbreak of sore throats, until in June, 1889, eleven years ago, I incorporated into a paper which I read at a meeting of the Medical Observation Society an account of the deleterious effects of dust upon the lining membrane of the nose and throat, and ascribed to this cause much of the suffering which I was called upon to mitigate. It was evident that I was not alone in my belief and observation, since other members of the society expressed their concurrence, and the condition of our city streets and the evil effects of so much dust was made the special subject of discussion at a subsequent meeting. Action was taken to abate the evil. A committee was appointed to confer with the mayor, and a certain amount of good accomplished. But the evil was by no means eradicated. Dust storms are still frequent and the results are quite as marked as ever before.

In looking through the paper which I have referred to I found the statements as true to-day as when they were made, and I shall ask you to allow me to quote briefly a few paragraphs which it seems to me are as forceful as any I could make to-night. When it comes to the matter of how dust storms can be prevented, it might as well be said that absolute prevention is impossible, because some of the dirt is blown into the city from a long distance, from some miles of suburban macadam, or, as I prefer to call it, dirt roads. But it is certain that a great abatement can be obtained by a change of pavement. It might be said also that the ideal pavement does not exist in the world; objections there are to all, but better pavement than dirt road is used largely in other cities and to a small extent in ours. It is time that our beautiful city should be free from the criticism of visitors, who cannot understand why such a condition of mud and dust is allowed. In the paper referred to I said:

"Another factor in the production of obstructive swelling of the nasal mucous membrane is the presence of large quantities of dust in the atmosphere, and this cause, I am sorry to say, has greater significance in our city than in any other with which I am acquainted. The condition of our streets during a large portion of each year has called out many remonstrances on the score of uncleanness and inconvenience; but to what extent the *health* of the inhabitants and visitors to the city is affected has not within my knowledge been commented upon by laymen or doctors. For many years I have been able to predict an immediate increase in the number who present themselves for treatment of throat affections from my observations of the atmosphere and the conditions of the streets of the city.

"I doubt if in any other region east of the Mississippi River an atmosphere so loaded with irritating dust can be found as in this beautiful and *expensive* city of Boston. This dust, or gritty dirt, is not only encountered in the open streets, but escape from its irritating effects is not possible even in our houses. After one windy day the contents of our houses are covered by it; it lies in heaps upon the inner window sashes; it fills our halls and chambers. We live the

greater part of certain months among sifting sands, and in clouds of pulverized mud and excrement.

"Another cause of our discomfort is the plan pursued in the care of the streets. Most of our streets south of Tremont are of the variety called macadamized. These streets so made are, for a few days, after months of labor, in a clean condition; but the constant watering, with almost no sweeping, together with the attrition of the surface by passing vehicles, soon pulverizes the surface, and leaves a layer of dirt which is again wet down and so kept in a condition which makes it impossible to preserve a decent looking carriage which has been driven from the stable to the residence of the owner. The next scene is the transformation of this layer of mud and bestial excrement into clouds of 'dust' under the influence of a wind sufficiently strong to dry up the moisture faster than the life-preserving watering cart can make its round. The mud on Boylston Street is frequently two inches deep along the sides. Does any one ask how this concerns the *sanitary* condition of the city? I have said that I could predict with sufficient accuracy what the effect of such dirt storms would be as shown by the numbers of patients who would present themselves for treatment. Have we not, all of us, observed the frequency of sore throats during the months of November and March, the months when high winds prevail and the ground is no longer covered with snow?

"I do not mean to say that other causes which are productive of irritation of the mucous membrane of the respiratory organs would not produce their legitimate effects during these months, but I do believe that this condition of the atmosphere of our city is productive of incalculable inconvenience, suffering and invalidism. One of the first symptoms, and one of the most troublesome to rid patients of during these dirt storms, is swelling and abrasion of the nasal mucous membrane; one need not be a rhinologist to bear evidence to this fact; almost all of us become observers in our own persons at such times."

The effects of so much dust are not alone upon the throat, as we shall doubtless hear from others who are to speak this evening. Certainly neither ears nor eyes escape.

One of the most terrible diseases of the throat is tuberculosis. In many cases modern treatment is of great service in mitigating the suffering which results from swelling and ulceration of the larynx, and not infrequently cure of the ulceration can be accomplished. When this can be effected, life is always prolonged and unspeakable agony is abolished. I have several such cases under treatment this winter and I can testify that recovery was made more difficult and great suffering was produced by the irritating effects of the dusty atmosphere, which, in the absence of snow, has been more continuous than usual.

It has been my intention to speak briefly of my own observations of the effects of dust. I shall leave to others to suggest what steps ought to be taken to abolish some of the evil.

W. S. HALSTED, F.R.C.S.—It is stated in the *Philadelphia Medical Journal* that during the recent centennial exercises of the Royal College of Surgeons, England, Professor W. S. Halsted, of John Hopkins University, was made a fellow.

¹ Read at a meeting of the Boston Society for Medical Improvement, February 19, 1900.

RECURRENT LUXATION OF THE ULNAR NERVE.

BY F. J. COTTON, M.D., BOSTON.

THE following examples are presented as belonging to a class of cases which have been definitely described but apparently not often mentioned, perhaps not always recognized. The cases were seen by the writer while acting as out-patient surgeon at the City Hospital.

CASE I. A woman, age twenty-five, fell and struck her elbow. Following on this she had much pain on attempting to use the arm. This state of things continuing for a week, she came to the hospital. Examination showed an elbow slightly puffy and tender all about the joint, but without any evidence of bone-lesions or of effusion into the joint. Attempted motion caused a good deal of pain at the inner side of the elbow, and a tender cord was to be felt lying in front of the internal condyle. On extension of the elbow this cord slipped back behind the epitrochlea to the normal position of the ulnar nerve. The nerve seemed thicker than normal to the feel and when it was rolled under the fingers the patient complained of local pain and of pain referred to the last two fingers and the ulnar side of the hand. This referred pain was, however, not severe, hardly more than was caused by like pressure on the ulnar nerve of the sound side, while the local sensitiveness of the nerve trunk was much increased.

The forward luxation of the nerve occurred with each flexion when a right angle was reached; the nerve slipped back spontaneously with each movement of extension; slight pressure over the internal epicondyle sufficed to prevent the luxation on flexing. The nerve in luxation came forward well in front of the epicondyle. Motion of the arm was painful, the pain, curiously enough, being referred rather to the thumb than to the ulnar distribution, but the prominent subjective symptom was pain at the elbow itself on motion. There was no paresis, no numbness, no paresthesia. The arm was put up in a splint at an obtuse angle, and a pad placed over the internal condyle to guard against luxation of the nerve.

After a fortnight's fixation there was little pain and sensitiveness and somewhat less tendency for the nerve to slip out of place, while the excursion of the nerve in flexion was somewhat less. The pad and bandage were continued, the splint omitted. Massage was begun and light use of the elbow allowed.

The subjective symptoms improved slowly but steadily, and the patient soon discontinued treatment. When looked up four months later, she could use the arm nearly as well as ever and complained only of occasional darting pains in the hand. There was no numbness, no paresis. On palpation, the thickening of the nerve trunk proved to be entirely gone. The nerve still slips out of its normal place when the elbow is flexed, but slips only inward to the tip of the epicondyle, not in front of it. At times on active flexion the patient is conscious of a more decided snapping of the nerve. No further treatment was carried out.

CASE II. A girl of eleven fell and struck the elbow in falling. Three days later she came to the hospital with an elbow slightly swollen but showing no synovial effusion. The bones were intact. Motion of the arm was painful and there was some

spontaneous pain in the middle and ring fingers but no referred pain in the ulnar distribution. On flexion of the elbow the ulnar nerve slipped out of place with each flexion when an angle of 30° beyond the right angle (that is, an angle of 60° of upper arm and fore-arm) was reached, moving inward and forward to a point a little anterior to the internal epicondyle, but the range of the luxation was much less than in the previous case. The nerve trunk was not obviously thickened; on pressure on it there was distinctly increased sensitiveness of the nerve itself, but no referred pain or tingling. This rather unusual insensitiveness was equally to be observed on the sound side. Motion of the injured elbow was only moderately painful.

The arm was put up in an internal angular splint at a right angle, in which position the nerve remained in place. After three days there was practically no pain, much less sensitiveness on manipulation and perhaps slightly less range of the luxation of the nerve. The splint was continued and massage begun. There was a gradual improvement in symptoms till an approximately normal condition was reached, except that the subluxation still occurred in flexion.

In this case there was a history of a fracture at or near the elbow at two years of age, and though there was no deformity to be made out, yet there is no evidence that the recurring subluxation may not have existed prior to the recent injury, though the subjective symptoms were evidently due to the recent hurt.

CASE III was a boy of about ten. Here also the luxation was the result of a fall—three days before—and amounted really only to a subluxation, the nerve not passing beyond the tip of the condyle. The symptoms were only local sensitiveness and some pain at the elbow on motion—there were no signs of damage to the nerve itself. The patient did not return, and the course of the injury is not known.

In searching the literature for recorded cases the writer has found a considerable number, only a portion of which, however, belong to the traumatic class.

Blattmann described a case as early as 1851. Gruber, in 1867, described anatomically, but not clinically, a luxation of the ulnar nerve. The first adequate accounts of the recurring luxation seem to be those of Lutz in 1879 and of Zueckerkandl in 1880.

The cases recorded group themselves into two classes—practically distinct—the "habitual" luxations, where there is no known exciting cause for the dislocation, which may or may not be associated with symptoms, and the traumatic series, where there are almost invariably accompanying symptoms of greater or less severity. The trauma acting as the cause may be direct violence or muscular over-exertion or simply habitual over-use of the elbow.

In all these cases of either class the external anatomical condition is much the same; when a certain degree of flexion is reached the nerve moves inward to the tip of the internal epicondyle, and in the severer cases snaps over it to lie on its anterior surface a centimetre or less in front of its tip only to return to its normal position when the elbow is again extended.

The exceptions to this type—the permanent luxations of the nerve—seem to be very unusual. Schilling reports a case (non-traumatic) where the luxation on one side was permanent, on the other recurrent; a report of Poncet's seems to imply, though it does

not state, a permanent luxation, and the same may be said of Cunningham's report.

Of the congenital or habitual luxation many cases are reported. As to symptoms: in Schilling's case there was marked weakness and considerable atrophy in the muscles supplied by the ulnar; in MacCormac's case there was numbness and weakness enough to prevent work and to necessitate operation; in Zuckerkandl's, local fatigue on exertion; in Poncet's, numbness and pain, etc. On the other hand there are many cases without other symptoms than those following an occasional blow or pressure on the exposed nerve or without any symptoms at all.

Collinet examined 500 patients with a view to settling the frequency of the condition and found 13 in whom the nerve luxated forward in flexion, in 5 of them on both sides. Drouard carried out a like investigation on 200 subjects and found the complete luxation occurring in 3 cases only, though 15 others showed an abnormal mobility of the nerve in flexion.

Part of these cases showed no symptoms whatever, in some there was numbness and tingling in the third and fourth fingers when the elbows rested on a table or when the nerve was struck. In this connection it is interesting to note that wood engravers who rest the elbow in working sometimes develop, according to Bruns,¹ a partial paralysis of the hand muscles, etc., as a result of the pressure of the bench on the ulnar nerve, so it would seem that such symptoms as just described are not quite special to the cases under consideration.

The sum and substance of this list of non-traumatic cases would seem to be that the luxation per se usually gives but little trouble and may exist unknown to the patient, to be found out (as were so many of those described) only by a systematic examination.

To pass on to the traumatic class, we find usually, though not always, a more considerable train of symptoms, least in the cases in which over-use or a single muscular strain is the cause. Cases of this sort are reported by Blattmann, Jalaguier, Holden, Lutz and Lange, which showed no symptoms beyond some pain at the elbow and moderate tingling and numbness (on pressure, or spontaneously) in the parts supplied by the nerve. In Drouard's case, on the other hand, though the nerve was simply snapped out of place by forcible flexion of the elbow, numbness, atrophy, and contractures of the last two fingers developed, leading to almost entire uselessness of the hand. The patient in this case was an alcoholic, and this may have had something to do with the development of the neuritis from relatively slight injury.

Where the trouble has been the result of a fall or a blow, there are usually nerve symptoms, not necessarily severe. In cases noted by Cunningham, Plicque, Smith and Tronson, in Anger's case (the result of a dislocation of the elbow), as also in the writer's cases, the symptoms on the part of the nerve which persisted after the local damage had quieted were comparatively slight—occasional pain or tingling and sensitiveness of the nerve-trunk to pressure. In Wharton's case there was a good deal of pain in the distribution of the nerve; in Schwartz's, considerable numbness. In Felkin's case there was, beside the local pain at the elbow, neuralgic pain and numbness, lasting for some weeks, and flexion-contractions of the third and fourth fingers. Annequin reports

pareisis of both sensation and motion, Andral loss of sensation in the area supplied by the ulnar, atrophy, and flexion-contraction of the little finger.

In looking over the histories of these cases, we find the nerve symptoms following directly on the injury, and subsiding gradually, more or less independent of treatment. This is important as showing the nerve damage due to the original trauma, not to the irritation from the slipping of the nerve. As to the actual pathological condition which the symptoms represent, the data are scanty. The only autopsy is Schilling's; in this case the nerve and its sheath were considerably thickened for about 4 centimetres of its length at the elbow. In Schwartz's account of his operation he speaks of the nerve being locally thickened and reddened, and Croft found it in his case slightly thickened. In Drouard's case and in one of the writer's there was apparent thickening on palpation.

In Drouard's case, in that of Schilling just noted, in those of Annequin and Andral, and perhaps in MacCormac's, it seems fair to assume secondary degenerative changes in the nerve, but in most of the cases it is probable from the data given that the pathological process is essentially perineural, primarily a damage to the structures enclosing and fixing the nerve with possibly mild interstitial neuritis, rather than any considerable damage to the nerve-fibres.

There has been a good deal of theorizing as to the gross anatomical conditions in these cases as well as in regard to the pathology. As for the congenital or habitual cases, there must evidently be much laxness of all the fibrous tissues closing the groove in which the nerve lies, for Raymonecq's experiments on the cadaver showed that it was necessary to cut away a good deal in order to free the nerve so that it could be dislocated. Given this laxity or absence of the fibrous tissues, the experiments on the cadaver by Zuckerkandl and Raymonecq have shown that the triceps, unless very small, spreads inward enough on flexion to shove the nerve in front of it over the tip of the epitrochlea and this irrespective of the existence of a small epicondyle or of a cubitus varus to favor its easy transit. This spreading inward of the triceps on flexion can readily be demonstrated on the model or on oneself and seems to explain fully enough what causes the recurring luxation when once the nerve is freed.

As for the smallness of the condyle, and more especially the cubitus varus, alleged as a cause, it is evident that neither of these can more than present a favorable condition. There seem to be only 2 cases where there was actually a cubitus varus (Zuckerkandl, Poncet). The writer's second case had had a fracture, but there was no deformity.

As to the action of trauma in producing the condition, it may be assumed that some of these cases had naturally weak or lax fibrous attachments in this region, but in approximately normal elbows a good deal of tearing must accompany the loosening up of the nerve. Jalaguier says at least the fibrous arch of origin of the flexor ulnaris must be torn, and Annequin, in the description of his operation, actually notes such rupture and also the finding of torn shreds of fascia higher up. It would seem that the rupture may result either from the tearing of the tissues by muscular overaction or from the ripping force of a blow from without.

The treatment carried out in these cases has been

¹ Bruns; *Neurol. Centralblatt*, 1895.

either fixation with or without massage, or operation. Nine cases are reported in which an operation was carried out.²

The operation has usually aimed at the re-formation of the groove to contain the nerve. Either fibrous tissues have been trimmed out and loosened to make the groove in which the nerve was laid (Annequin, Poncet, Smith) or the edge of the triceps has been carried across and hitched to the internal epicondyle, leaving the nerve beneath the bridge so formed (Croft, Smith) or a slip of fascia, dissected up from the covering of the epitrochlear group of muscles, has been carried outward and stitched to the triceps (Schwartz). Croft, beside forming a groove, stitched the nerve sheath down and Jopson laid the nerve in a groove made in the triceps, stitching the fascia over it. Andral, for some occult reason, resected two or three centimetres of the nerve; the function of the nerve returned, but the luxation was not cured.

The other operations were all successful in curing the luxation. In some of the cases the surgical interference was followed by increased symptoms of nerve irritation; luckily these symptoms proved only temporary (Croft, Jopson).

It is impossible to study the recorded cases without coming to the conclusion that the operation is one for the luxation only, and can cure only such symptoms as are really due to the luxation. The chance of a cure of the luxation itself by conservative methods is poor; only one such success is reported (Plicque), but in many other cases, including the writer's, conservative treatment has brought about a relief of all symptoms, at least as soon, probably, as if the region of the damage had been stirred up by an operation, and the persistence of the luxation has not seemed to be of any moment. Where the nerve damage is directly due to the irritation of the constant dislocation, or where symptoms on the part of the nerve persist unduly long after the first effects of the trauma have worn off, the question of operation comes up. The operative treatment seems, so far as it goes—that is, for the luxation—to be without notable drawbacks and effective, but the writer is impressed with the notion already voiced by Quenu in his paper on the subject, that it is the nerve symptoms, not the luxation in itself, that should first be considered in deciding between conservative and operative treatment.

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Medical Progress.

RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON.

(Concluded from No. 4, p. 92.)

MYELITIS.

HOCHE,¹⁰ recognizing that the term "myelitis" has often been applied to conditions which were not of inflammatory origin, has undertaken a series of experiments to determine more accurately the real nature of certain of the changes in the spinal cord. In the first series of experiments he produced embolism of the spinal arteries by the injection of aseptic substances into the aorta of dogs, using lycopodium, Kamala seeds, the pollen of typha japonica, etc. Such emboli caused hemorrhagic infarctions and necrosis of tissue in about thirty hours. This resulted in the formation of cavities which did not resemble those of syringomyelia. In the necrosed tissue were many granular cells, which were derived from leucocytes, neuroglia cells or connective-tissue cells, the large cells being always derived from connective tissue. The neuroglia showed a very sluggish tendency to produce new tissue to replace that destroyed, but the new tissue was chiefly of connective-tissue origin. The walls of the arteries plugged reacted to the mechanical and perhaps to the chemical nature of the emboli, and were thickened and infiltrated with small cells, which also invaded the perivascular tissue. The reaction varied with the substance injected. In a second series of experiments he injected cultures of various bacteria, Fränkel's diplococcus, staphylococcus aureus, bacterium coli commune, etc. The changes differed from those of the first series in the presence of mycotic emboli, and the more intense and more diffuse cell infiltration about the smaller blood-vessels, with many foci of round cells about the infiltrated vessels. There were also foci of leptomeningitis, especially after the injection of the bacterium coli commune. The alterations did not extend beyond the region of the cord reached by the bacteria, showing, therefore, that they were not due to the action of substances in the circulation produced by the bacteria. The changes were very similar to those of acute infectious myelitis in man. Acute myelitis, in the strict sense of an acute inflammation, is applicable only to a very limited group of cases of infectious origin. In the later stages of various pathological processes changes occur not unlike those of true inflammation, such as the formation of granular cells, the occurrence of swollen axis cylinders, etc.; and we very rarely have an opportunity to observe in man the early stages of any of these processes, in which stages alone can the true nature of the process be determined. We must exclude all cases of central softening from thrombosis in tubercular and syphilitic arteritis, the changes from compression, the rare changes from embolism, the cases of ischemic necrosis, as in caisson

¹⁰ Archiv für Psychiatrie, xxxii, 209, 975, 1899.

disease, and primary degenerative processes before we can speak of true myelitis. This is characterized in its earliest stage by alteration of the vessel walls, with or without hemorrhage, increase of the cell elements, proliferation of the glia and connective tissue and changes in the nervous parenchyma. In his experiments on dogs Hoche found that the central canal aided in the distribution of the inflammatory agents to various parts of the cord. In adults this canal is often partly closed by proliferation of the ependyma, but in children it is open throughout the length of the cord. This may be an explanation of the much greater frequency of infectious myelitis in children, since bacteria may through the patent central canal be more readily conveyed to the gray matter of the cord, especially the anterior horns, which lie nearest to the canal.

CHANGES IN THE SPINAL CORD IN CEREBRAL TUMORS.

Batten and Collier¹¹ have studied the changes in the spinal cord in 29 cases of cerebral tumor. In a preliminary review of the literature on the subject, they find that in 17 reported cases of cerebral tumor the cord was negative in only 2, and that in all the rest changes were found in the posterior columns. These changes were not due to early tabes, to secondary growths involving the posterior spinal roots, to meningeal thickening, or to secondary degeneration, and the changes were most marked in the lower cervical region. In their own cases 9 showed slight and 11 marked degeneration, and degeneration seemed more liable to occur with tumors in the temporo-sphenoidal region. Tumors situated behind the parietal region also seem more liable to give rise to degeneration than tumors more anteriorly situated. They conclude that degeneration of the posterior columns of the cord occurs in about 65 per cent. of the cases of cerebral tumor, and that it is more liable to affect the cervical region than the dorsal or lumbar regions, and is more marked in the postero-external than in the postero-internal columns. This degeneration is of root origin and arises from the point where the root enters the spinal cord; the posterior roots are always less affected than the posterior columns, and they may show no degeneration. The degeneration is due to traction on the posterior roots by distention of the arachnoid, owing to the increased intracranial pressure and especially such as tends to rapid dilatation of the ventricles and the subarachnoid space in the spinal cord. It is independent both of the situation and of the nature of the tumor, except in so far as their liability to give rise to the preceding condition is concerned. Optic neuritis bears no relation to the occurrence of posterior degeneration. Absence of the knee-jerks, except in the semi-comatose state, indicates posterior degeneration, but their presence does not negative such a condition, and the absence of the arm-jerks has the same significance. Degeneration may also occur in the direct cerebellar tract; such degeneration is due directly to pressure on the cervical region of the cord.

FREQUENCY OF EPILEPSY.

A statistical inquiry by Russell¹² in 5,000 patients as to the frequency of epilepsy gives some interesting results. Of these patients, 11.9 per cent., excluding

those attending directly for epilepsy or hystero-epilepsy, gave a family or personal history of fits, and 3.6 per cent. had themselves suffered from fits; of these, 5.2 per cent. gave a family history of epilepsy, and 1.8 per cent. had had epilepsy themselves. For various reasons, however, these percentages required some revision, so that he considers the average cases show 9.5 per cent. of fits in the family or personal history and 2.3 per cent. of fits personally, of which 4.3 and one per cent., respectively, were epileptic. Grouping the cases according to diseases, he finds an incidence of fits in patients who had little the matter with them of only 4.4 per cent., no personal fits being registered. This he regards as nearest the incidence in normal persons. Over one-half of the more definitely ailing patients show a fairly uniform average of epileptic incidence. Of the other cases, a group including acute (? also chronic) bronchitis, phthisis, chronic pneumonia, valvular heart disease, and acute and subacute rheumatism, shows a striking increase in the number of patients who have themselves suffered from epileptiform convulsions. Finally, the most marked epileptic incidence is to be found in the cases of chorea, functional headache and chronic nervous disease, in all of which the relationship reaches a high degree.

TREATMENT OF EPILEPSY.

At a recent meeting of the alienists of southwestern Germany, Fürstner¹³ spoke of the treatment of epilepsy. The results of treatment are difficult to estimate satisfactorily; in asylums severe and inveterate cases, complicated more or less with psychical symptoms, form the majority of the cases under observation, and in spite of favorable external conditions, such as constant medical observation, proper and long-continued treatment, and efficient dosage of drugs, the results are comparatively unfavorable, while in out-patient or private practice the patients are not sufficiently under control. The laity rarely have sufficient insight and perseverance to carry out a long-continued bromide treatment, they object to the alleged injurious effects of bromide and resort to secret remedies, thus lessening the chances of recovery. The dread of bromism, brought forward by many physicians, was regarded as exaggerated; in this Fürstner was in agreement with Binswanger. Using up to a drachm a day in children under ten and up to a drachm and a half in adults, he had seen only transitory symptoms of bromism. He holds that if these doses cause no improvement, larger doses will rarely be of benefit. We cannot predict in what cases bromides will be of benefit, and we must always experiment to see why it has no effect or in what cases it is especially beneficial. It is not always the old, severe cases in which bromide fails, but it may also fail in fresh cases. In such cases, however, diagnostic errors are possible. He had seen a considerable number of cases, chiefly in young persons, where the attacks apparently did not differ from epilepsy. They occurred chiefly by day, and four or five times in a day; the tongue was bitten and other injuries, although usually slight, were caused in an attack; the attacks were often excited by physical disturbances, constipation or external influences; after the attacks the patients were sleepy and irritable. There was often inequality of the pupils and increased reflexes. Under bromides the attacks were often increased in frequency, and on increasing the dose the patients be-

¹¹ Brain, xxii, 473, Winter, 1899.

¹² Loc. cit., 503, Winter, 1900.

¹³ Neurol. Centralblatt, December 15, 1899.

came dull and apathetic, and there were intestinal disturbances and acne. These attacks Fürstner regarded as not epileptic but hysterical, and by removal to different surroundings and isolation, with a cessation of bromides, the attacks diminished and sometimes wholly ceased. In another class of cases, observed chiefly in children, although only the symptoms of genuine epileptic attacks, including *petit mal*, were reported, there was probably some congenital or early organic brain disease. In many of these cases there had been a slight cerebral infantile paralysis with convulsions in infancy, then the convulsions ceased to recur between twenty and thirty. In these cases bromide is of uncertain benefit, and the attacks may increase in frequency under its use. Many of the cases classed as late epilepsy prove to be due to organic disease. Only those cases in which organic disease can be excluded should be so classed, but this may demand a long period of observation. In all these cases the effect of bromide treatment is an important aid in the diagnosis. Fürstner further holds that an improvement in the results of treatment for epilepsy may be obtained by a consideration of the convulsions of childhood. In 141 cases where epilepsy occurred before the age of eighteen there had been convulsions in infancy in 91; in 52 cases where it occurred between twenty and thirty there had been convulsions in infancy in 18. Attacks in childhood should be treated systematically with bromide, the treatment continuing after the cessation of the attacks. The best results were obtained where the treatment continued until after puberty. In the discussion Wildermuth confirmed the reader's opinions as to the value of bromide treatment for diagnosis, and the importance of early treatment.

SYMPHECTOMY IN EXOPHTHALMIC GOITRE AND EPILEPSY.

Considerable discussion has occurred, especially in France, in regard to the benefits to be derived from division or resection of the cervical ganglia or portions of the sympathetic nerve, particularly in epilepsy and exophthalmic goitre. Franck¹⁴ sets forth clearly the physiological conditions which might indicate such an operation. The cervical cord of the sympathetic acts as a propulsor of the eyeball, not by any vasodilator action, but by its action on Müller's muscle. Section of it diminishes exophthalmos. It acts upon the intra-ocular circulation both as a constrictor and as a dilator of the vessels; section diminishes intra-ocular tension, and thus it may prove useful in glaucoma. It does not dilate but it contracts the thyroid vessels; the dilator nerves are contained in the laryngeal nerves, especially the superior laryngeal. Section must therefore cause paralytic dilatation and increase the congestion of goitre. The sympathetic has no action upon the secretion of the thyroid. It has some influence in constricting the cerebral vessels; its section therefore increases the cerebral blood supply. As the influence of cerebral anemia in exophthalmic goitre and epilepsy is very problematical, the result of section must be equally problematical. It has no action upon the vessels of the pons, medulla or upper cord, which are supplied by the vertebral nerve. The accelerator nerves of the heart are derived only in small part from the cervical cord, the majority coming from the superior thoracic region; they are therefore suppressed only by total resection. The whole sympathetic apparatus is endowed

with direct sensibility and transmits to the medulla and upper cord the centripetal influences coming from the heart and aorta. Resection probably has as much action in suppressing the transmission of abnormal stimuli from the heart and aorta as in suppressing centrifugal impressions from the thyroid or brain. Aortic and cardiac irritation may provoke circulatory reactions like those of exophthalmic goitre, so that resection of the whole sympathetic may act by suppressing these centripetal irritations. This idea suggests the possibility of relieving angina pectoris by such an operation. Dastre¹⁵ rejects the idea that exophthalmic goitre is due to intoxication from hyperactivity of the thyroid, and goes back to the old theory that it is due to disturbance of the sympathetic—a theory which was abandoned because part of the symptoms were plainly due to vasomotor irritation and part to vasomotor paralysis. He and Morat claim that the sympathetic is complex, never containing both vasoconstrictor and vasodilator fibres. If we stimulate the right place we may obtain both irritant and paralytic symptoms. By stimulating the upper thoracic portion he obtained exophthalmos, acceleration of the pulse, thyroid congestion, etc. The operative results in cases of exophthalmic goitre seem to suggest these views. Gérard-Marchant¹⁶ has collected 37 cases, with 4 deaths from various causes in a few days, and 3 deaths later from nephritis, but without mention of the good results; in 7 cases of his own 2 were cured, 2 were much improved, 2 not improved and 1 died. In 2 other cases Schwartz reported considerable amelioration. Gérard-Marchant believes resection of the sympathetic is the best operative procedure, in view of the bad results of thyroidectomy, but he thinks that partial resection gives better results than total resection. Abadie¹⁶ also reports a complete and permanent cure in a case operated on in 1897. Jonnesco¹⁷ reports 5 recoveries. Chipault¹⁸ also reports satisfactory results in 1 case. On the other hand, Boinet¹⁹ did a partial thyroidectomy in a very severe case, followed by resection of both sympathetics with no benefit. Penguiez²⁰ practised resection of both sympathetics at a month's interval on a woman of twenty, with the three cardinal symptoms and profuse sweating. In a fortnight the goitre had disappeared, the exophthalmos was much diminished and the pulse had fallen to 116. Two weeks later she left the hospital nearly cured, but two weeks and a half later she returned, extremely emaciated, with so great exophthalmos that the lids could not cover the eyes, a temperature of 39.2° C., and suppuration in one eye. She became comatose and died in four days.

Sorgo²¹ still holds to the theory that exophthalmic goitre is due to an excessive or perverted action of the thyroid gland, and he considers that operation on the gland is justified in severe primary cases that do not do well under medical treatment. He has collected statistics of 172 operations; 48 were cured, 89 improved, 11 not improved, and 24 died. He considers that after resection of the sympathetic the exophthalmos is often much improved and that the other symp-

¹⁵ *Revue Neurologique*, May 30, 1899.

¹⁶ *Loc. cit.*, January 30, 1899.

¹⁷ *Gazette des hôpitaux*, No. 45, 1898.

¹⁸ *Revue Neurologique*, March 30, 1899.

¹⁹ *Revue de Médecine*, July, 1898.

²⁰ *Gazette méd.*, de Picardie, November, 1898.

²¹ *Centralblatt für das Grenzgebiete der Medicin und Chirurgie*, Bd. 1.

¹⁴ *Revue Neurologique*, September 30, 1899.

toms are not much changed. The operation he believes is more dangerous than its advocates admit, and its benefits are exaggerated.

While the benefits of the operation in exophthalmic goitre seem to have a certain physiological basis, they are still doubtful. In epilepsy, however, the justification of the operation is still lacking, in spite of Chipault's enthusiastic propaganda. Ferrarini²² resected the sympathetic on one side and caused permanent irritation by a ligature on the other side, in rabbits. Within three days the cortical cells on the side of the resection were profoundly altered, and somewhat affected on the other side. This alteration was due to the changes in the circulation from the vasomotor paralysis following resection. It is evident that a process which injures the cortical cells is hardly indicated in epilepsy. Laborde²³ produced epilepsy in the guinea-pig by hemisection of the cervical cord, and then practised resection of the sympathetic on one or both sides without the slightest effect on the epilepsy. Vedal,²⁴ however, in toxic epilepsy produced in the guinea-pig by tobacco, found that the quantity of poison required to produce convulsions depended upon the activity of the cerebral circulation. When the circulation was slow, after ligature of the carotid, a small dose sufficed; when it was accelerated, after resection of the sympathetic, a larger dose was required. Resection therefore had some efficacy. On the clinical side the most ardent advocate, as we have said, has been Chipault.²⁵ In 18 cases he claims that 5 were much improved, none were made worse, and 10 were unaffected. In a considerable number of cases the crises and mental troubles disappear or are permanently benefited. The results are better when both sympathetics are operated upon. The action is thought to be due to the acceleration of the circulation in the brain, washing out the toxic substances. The dangers and inconveniences of the operation are *nil*. Subsequently he reports²⁶ 4 other cases cured or relieved by the operation. They had been previously rebellious to medication, the improvement had lasted from four to twelve months, but bromides had been continued. Jonnesco²⁷ reports 9 cures, 4 improved and 2 unaffected in 15 cases where both sympathetics had been resected. On the other hand, Souques²⁸ and Ricard²⁹ each report failures. Jaboullais and Lanois,³⁰ after a study of 16 cases, decide that the operation is not warranted. It rests on the contestable hypothesis that the epileptic attack is accompanied by cerebral anemia, but the vascular change following sympathectomy is not permanent; the congestion of the face and mucous membranes ceases in two or three months after the operation, and clinical facts do not confirm the promises of the operation. In the discussion on Chipault's article, Dupuy and Gley protested in the name of physiology against the operation for epilepsy, and Dejerine dealt a heavy blow against the trustworthiness of Chipault's figures. In one of the cases reported by Chipault as successful the attacks had become much more frequent. The operation is useless and dangerous, several cases resulting fatally; the trouble may be made worse by it and men-

tal troubles may appear. In children the operation may lead to defective development of one side of the face.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, February 19, 1900, DR. E. H. BRADFORD in the chair.

The subject of the evening was

THE DUST NUISANCE.

DR. HAROLD C. ERNST read a paper entitled

THE TRANSPORTATION OF DISEASE BY DUST.¹

DR. VINCENT Y. BOWDITCH spoke on the

EFFECTS OF DUST UPON THE LUNGS.²

DR. SAMUEL W. LANGMAID described the

EFFECTS OF DUST ON THE RESPIRATORY TRACT.³

CLIFFORD RICHARDSON, ESQ., of New York, read a paper on

ASPHALT PAVEMENTS; THEIR NATURE AND DESIRABILITY.⁴

DR. CLARENCE J. BLAKE: So far as the organ of hearing is concerned its trouble from dust is incident to the irritation of the mucous membrane which has already been described, and I desire from my observation in regard to ear complications under the conditions mentioned to very heartily second the remarks which have been made. Like Dr. Langmaid, my attention was drawn to this subject several years ago, and wishing to learn the source of the dust which was blown over the Back Bay I made a series of experiments in the house which I then occupied in St. James Avenue, a house with a swell front and three stories. The experiments consisted in fastening in the window, raised three inches at the bottom on the windward side of the bay, on each story, a strip of cotton wool, the window on the opposite side of the bay being widely opened and the door of the room closed, so that an indraught on the windward side should be facilitated. These pieces of cotton were on several occasions exposed in the first, second and third stories simultaneously to dust storms blown from the west. At that time the Back Bay was but sparsely built upon, and the surface consisted largely of fresh gravel brought from the Dedham hills. Notwithstanding this fact, and although the fine gravel furnished a large part of the accumulation in the cotton, there was found also fine dust, containing particles of carbon soot, fine gravel and the chopped straw from horse droppings. The soot and fine dust were found in larger quantities on the third story, the coarser gravel together with the soot and dust on the second story, and on the first story the same ingredients of the dust cloud and the largest proportion of straw from the droppings from horses. Some of the chopped straw was found in the second and third story windows also, but the straw on the first story was evidently

²² Rivista quindicinale di psicologia, July 1, 1899.

²³ Revue Neurologique, February 28, March 30, 1899.

²⁴ Loc cit., September 15, 1899.

²⁵ Loc cit., March 30, 1899.

²⁶ Loc cit., September 15, 1899.

²⁷ Gazette des hôpitaux, No. 48, 1898.

²⁸ Revue Neurologique, July 15, 1899.

²⁹ Neurol. Centralblatt., July 1, 1899.

³⁰ Revue de Médecine, January, 1899.

¹ See page 107 of the Journal.

² See page 108 of the Journal.

³ See page 110 of the Journal.

⁴ See page 101 of the Journal.

heavier, and an examination under an ordinary magnifying glass showed that the particles of straw on the first story were loaded down with dust and sand, the presumption being that the sand blown upon the horse droppings had loaded a portion on the outer part of the ball dropped, and so weighting the straw the wind had not carried it to the upper story. I had hoped to repeat these experiments just before this meeting, but the snow storm prevented. The extent to which even large pieces of gravel can be carried by a strong wind blowing from the westward down our streets is evidenced by the effect on the glass in some of the windows in this same house in St. James Avenue. In two windows with westward exposure there were holes through the glass made by large pebbles. I remember in the old Blake house on Washington Street a similar hole through a window pane, the result of a pebble blown through the glass during the "great September gale."

It has been said that one of the best testing machines for determining the condition of a road is a man on a wheel, and I have made some other observations during this winter while bicycling. The dust blown over the asphalt pavement on Beacon Street is of the same character as that which accumulated on Dr. Bowditch's doorsteps; the smaller particles come from a considerable distance, but a great deal of the heavier part is contributed from the upper end of Beacon Street itself. That portion of Beacon Street is in very poor condition, is muddy when moist, freezes into hard ruts, and these frozen projections between the ruts are ground down by the wheels of the large wagons and teams coming in from Brighton, so that, going over that portion of the road on a bicycle in the morning after a rain of the night before and a fresh freeze, care would have to be taken to avoid the ruts. Going over the same road in the afternoon the ruts would have been ground down to a comparatively smooth surface. This grinding down of the frozen projections between the ruts meant merely a distribution of their material over the lower part of Beacon Street in a strong westerly wind. It is very plain therefore that with outlying dirt roads cut up by heavy traffic and swept by strong currents of air carrying three qualities of dust—the very fine dust, the coarser gravel and the result of the droppings of animals—there is a very serious menace to health, and I am much obliged, Mr. President, for an opportunity to be present at this meeting and to bear witness.

DR. C. H. WILLIAMS: I can only add a word to what has already been said in regard to the irritation of the mucous membrane of the eye which is caused by this irritating dust. I have noticed during the past winter, for instance, a considerable increase after each of these dust storms of acute conjunctivitis caused by the irritation of the dust getting into the eye. I remember one child on Marlboro Street who cannot go out in such weather, because each time she goes out on the street, although she may have a thick veil over the face, yet when she comes back the eyes are red and there is considerable lachrymation, and the child herself complains of the dust as "biting" her eyes, so that practically whenever there is one of these dust storms in progress the child is confined to the house. This is simply a type of a great many other cases. I think in considering the question we ought to see what some of our neighbors are doing in regard to the same conditions. It would be interesting to have a

careful inquiry made in regard, for instance, to the results which they have obtained in Buffalo. In that city, situated at the end of Lake Erie, they are exposed to violent winds, and they have found practically that the dust nuisance has been abated to a very large extent by the improved pavement which they have been putting in, largely of asphalt. In that way they have been able to reduce the trouble caused by the dust, and have materially decreased the amount of dust in the air. I am very glad this matter is to be taken up by the society.

PROF. C. FRANK ALLEN, Professor of Railroad Engineering, Massachusetts Institute of Technology; President Boston Society of Civil Engineers: I do not know that what I have to say on the subject will shed very much new light upon it after the paper you have just listened to, but perhaps cumulative testimony may be valuable to some extent, and it is also possible that my point of view may be slightly different. Unfortunately I have not been able to hear the papers of the earlier part of the evening. I understand, however, that the subject of the evening has been dust, and that there is a desire to get rid of it, and it seems to me that the pavement most effective for that purpose is certainly the asphalt pavement. The gain would be very much greater if we had much larger areas of asphalt pavement. The asphalt pavement is found by some to be slippery. I presume that it would not be anything like as slippery if there were more of the asphalt pavement. One serious difficulty with asphalt pavement, as we have it here, is that there is so little of it, and that it is so close to the dirt pavements of various kinds. If you consider the macadam pavement as a dirt pavement, the dirt from the macadam pavement or the gravel pavement can be carried by the wheels for a considerable distance and left on the asphalt street. The statistics, however, certainly show that asphalt streets are not slippery to the extent that has generally been believed. A macadam pavement, as you know, is made up of comparatively small particles of stone compacted as thoroughly as possible so that there will be as small an amount of void spaces as possible, but these spaces must be filled with some cementing material, and the best cementing material seems to be the material that has been worn from the stones, part of it in its passage through the crusher, but part of it from the wear on the street. If you will find a piece of pavement which is not watered much and which has very little travel on it, you will find that after a heavy wind a good deal of the cementing material has been blown away from between the stone. On Saturday I observed exactly that condition in front of the Museum of Fine Arts. In places on the curve where the carriage wheels seem not to have frequently passed, some of the stones were loose on the surface, and it is undoubtedly true that the carriages in passing over a pavement are continually providing fresh material worn from the stones to help keep the stones cemented in place. If the fine material of that sort is kept wet it does not do much harm in the way of dust, but this meeting is held perhaps at a favorable time to get the worst impression from dust from the fact that recently, on account of temperature, it has not been possible to keep the streets watered and the winds have been high enough, so that the dust has had a good deal its own way. Where the grades are low it seems to me the inevitable conclusion is the asphalt

roadway if you want to get the best thing to be had. The asphalt, as has been said, wears little or, substantially speaking, not at all. As to how far you can carry your asphalt streets there may be a chance for question. Some engineers would lay an asphalt surface up the long hill on Beacon Street, and some engineers would not dare to put asphalt on a hill as steep as that. I suppose that there would be at least three or four engineers who would refuse to put asphalt on this long hill on Beacon Street to one who would be willing to take the chances of the comparatively smooth surface of asphalt on a hill as steep as that. You understand of course it is largely a matter of experience and a matter into which judgment must enter.

When you go beyond the asphalt street it is a little more difficult for me to tell what you should take next, but I am inclined to the opinion that you would find a brick pavement good. I am not ready to say that definitely. I have not looked into it far enough to know on what grades you can use brick pavement, how far you can go on steep roads with brick pavement. I understand it has been fairly successful on some steep streets in Worcester. Brick pavements have been used in many places in the West where good material of other sorts is not readily secured, and the testimony in relation to brick pavement has been very mixed. In certain cities brick pavements seem to have given the very best of satisfaction. Other cities have tried them and been much disappointed. On the whole, the experience with brick pavements in Boston has been less satisfactory than many people had hoped, but I think there is no question of the fact that brick pavements are better to-day than they ever have been before, and I personally expect that brick pavements will perform a very important function among pavements. Where you have a road steeper than you think is safe for brick pavement you very likely might use a granite block of good quality, and just where the limit is between the asphalt and brick, brick and granite block I do not know. When you come to a very steep road I am inclined to think that most engineers would feel it necessary to use either macadam or gravel; they would be unwilling to trust granite block or brick or asphalt.

It seems to me that the desirable thing is asphalt on the level roads; on the easier hills also, as far as by experience you think it safe to carry it; on steeper hills perhaps brick; perhaps on somewhat steeper hills granite block, neither of them so clean as asphalt, the granite block probably not so clean as brick. Probably in some cases you will find it necessary in spite of your desires to use the objectionable macadam or gravel pavement. It is claimed by some, and it is probably true, that the pavement of asphalt is very good if it is dry or if it is thoroughly washed. The intermediate stages are bad, and largely in proportion to the amount of dirt that has been brought on to the asphalt from the other streets, so that in order to get the full benefit of asphalt I believe that you should have large areas of it. In relation to the slipping, my understanding is that horses that have to pass between asphalt and granite block back and forth are more liable to fall than on either kind of pavement alone, and this also furnishes an argument for greater uniformity, and for larger areas of asphalt.

MR. WM. E. McCINTOCK, Chairman Massachusetts Highway Commission, Instructor in Highway

Engineering, Harvard University: I don't see that there can be a great deal for me to say after listening to the very complete and interesting paper by Mr. Richardson and the remarks made by Professor Allen. I think I can in the main agree with what Mr. Richardson has said with reference to asphalt pavement. It is certainly clean, but the key to the whole situation lies in the fact as he stated it, that the surface is so smooth that it must be kept clean, must be swept, and I will say there is no type of pavement I know of which can be kept clean without constant work. Hundreds and thousands of loads are taken from the firmest and most solid pavement every year. This dirt does not come from the joints in the pavement. The statement Mr. Richardson made with reference to the asphalt is true of any kind of pavement. If the material from the foundation works upward through the joints, the surface must show a settlement, and yet it does not show such settlement notwithstanding the fact that hundreds and even thousands of loads of dirt, made up of the various kinds of material referred to before, may have been removed. My experience has been largely with macadam roads. I have often made the statement, and still adhere to it, that probably outside of the city streets, where watering takes place several times a day, fully 90% of the wear on a macadam road is due to the weather. One of the most difficult problems in building and maintaining State roads in the country parts of the Commonwealth is to prevent the wear and tear due to wind and weather. The very method of building the road must convince you of the truth of this statement. The road is built of fragments of stone rolled in place and covered with about one-half inch of fine detritus obtained while breaking the larger stones in the stone-breaking machines. This is spread over the coarser stones, watered and rolled into place until it becomes hard and smooth. The water is quickly evaporated from the surface, and then the fine dust is carried in all directions. I know of no way of preventing it, while it requires a great deal of intelligent care to reduce the nuisance to a minimum and properly clean a macadam street. After it has been down in the heavier travelled streets for three or four weeks the mud and dust begin to appear. This mud must be taken off with scrapers. Within a few weeks it must be cleaned again, and then it should be swept with a broom. The sweeping requires great care to prevent the fibres of the broom from throwing out too much of the fine binder material and loosening the small fragments of stone. In the less travelled ways outside the city the loss due to wind and rain is made good by spreading coarse sand over the surface. On many of the State roads this has to be done two to four times a year, a thin coating not over a fraction of an inch in thickness being spread over a width of from six to nine feet. Under the action of the wheels this sand is gradually ground up and is blown off by the wind. The cleaning and maintenance of macadam roads must begin almost with the opening to the traffic and must continue while the road lasts. Then, of course, as the stones grind up and the dust blows off, it is necessary to make good the loss by spreading small stones over the surface. At certain intervals, the length of which depends upon the traffic, the surface has to be broken up and resurfaced again; so that on a heavy travelled mainway of a city like Boston it is neither economical nor satisfactory to build a

macadam road. According to figures I made four or five years ago, 17% of all the roads of Boston were macadam or gravel roads, most of them macadam. The reports from the Street Department of the city indicate that more money is expended on our roads and streets than in any other city of its size and population in the country. One reason for the better pavements in Washington and around the Lake cities is that the abutters in most or all of those cities pay the entire cost of the work, while in Boston the entire cost, or nearly the entire cost, falls upon the general taxpayer. This means a heavy tax—a high tax-rate, and successful opposition by a large party. So long as this state of affairs exists it will be impossible for us to extend asphalt or brick pavements to any great distance outside of the thickly settled part of the city.

DR. DURGIX: I have been greatly pleased to hear the remarks which have been made to-night, in regard to the nuisance. There has been no doubt in my mind for many years as to the effect of this continual dust or mud in our streets, and consequent upon the macadamized street. I think that if we did not each of us have that personal discomfort in the dusty streets we should be convinced by the expert testimony which has been given here to-night by specialists who have observed the effect upon the eye, ear and throat; wherever the mucous membranes have been exposed this irritation has been observed. I think there can be no doubt whatever as to the discomfort and as to its far-reaching effect. I do not think it should be necessary to prove that this dust may convey the germs of infectious diseases. We believe that it may convey these germs, but if it did not, I think the general irritation of the mucous membranes and the extensive discomfort which is endured by our people would be sufficient to warrant this society and the people in general in calling for a remedy. Having made out a case which demands attention we naturally turn to the remedy, and we have heard expert testimony to-night. There can be no doubt but that the most expensive street in Boston is the macadamized street, and it is certainly the dirtiest. To-day we have it in a state of mud, and to-morrow in a state of dust. As soon as the filthy mud begins to dry and the temperature rises, the odor is nauseating. Then comes the dust; so that we have a continual source of nuisance and discomfort. There is no question whatever as to its being the most expensive street, not in first cost, but in the everlasting care necessary to keep it in a half decent condition. A macadamized street cannot be kept clean; that is an impossibility. As to the kind of pavement which we should urge, it seems to me there can be no doubt about asphaltum being the best material for a street—at any rate for a sanitary street. If properly done it becomes a smooth surface, easy for traction, pleasing to the teamster and every person who drives over it. It can be cleaned with trifling cost by sweeping or a smart shower of rain will do the same service and leave no mud, dust or odor. I believe that the objections which have been found to the asphalt pavement have been greatly exaggerated. Of course the horse will be fearful of a smooth surface until he becomes accustomed to it, but he soon becomes so and when used to it he takes care of his feet all right. I was much interested in the remarks of Mr. Richardson as to the difference between the cheaper kinds of asphalt pavement and the better

class, the one being extremely slippery and the other not so much so.

Much has been said in regard to the grades. I believe we should be surprised to see how well the horse would keep his footing on steep grade on dry asphalt pavement, the same upon a brick pavement which has been laid with close joints. A smooth brick surface where the joints are close gives the horse a good footing. He does not slip except in time of ice, and this has been demonstrated in other cities.

DR. KNIGHT: One thing occurs to me which was not dwelt upon by the medical men and which deserves consideration. It is not important really to prove whether there is any infection or not from the dust; the discomfort is enough to say we must have a pavement of some kind. In regard to the inhalation of pathogenic germs, for instance, of tubercle bacilli, I have often been asked: Are there any in the dust of the streets, and do we inhale them? I am obliged to say it is difficult to find tubercle bacilli in the dust of the open streets, because they are quickly destroyed, especially by sunlight, but, as we know, they live a long time in rooms, cars and dark places, but the inhalation of street dust and its sharp particles wounds the epithelium so that points of infection are made when the patient is perhaps half an hour afterwards exposed to these germs.

PROFESSOR McCLINTOCK: In regard to the use of oil on a macadam road, I think the Park Department of the city of Boston used it on a short section of road near the reservoir, and our board used it on a short bit of road in Cottage City. The trouble was that if mixed with dust it ruined the carriages. It had the same effect upon the clothes of the occupants of the vehicles; it spoils the tires of bicycles, and would have the same effect on the tires of the automobile. Its use is short-lived, and, so far as my experience goes, it is a dismal failure upon a road surface. Sprinkling with salt water seems to be the best way of allaying dust that I know of.

DR. DURGIX: In regard to watering the macadamized streets, one watering with salt water will last longer than two waterings with fresh water. With the salt water it packs down immediately into a hard, smooth surface; with the fresh water it does not pack down at all, and will immediately loosen up and fly in the wind.

Recent Literature.

A Manual of Obstetrical Technique as Applied to Private Practice. With a Chapter on Abortion, Premature Labor and Curettage. By JOSEPH BROWN COOKE, M.D. Philadelphia and London: J. B. Lippincott Co. 1900.

This small book of 169 pages is devoted essentially to a description of the author's routine method of taking care of his obstetrical cases before, during and after confinement and also to the outfit in use by him. The author's methods are as a rule good but not by any means ideal. They embrace nothing new which is of any special value to obstetric art, and in fact many of the best modern methods are not mentioned in the book. His personal antiseptic precautions are excellent, yet he takes no notice of the practice of abdominal palpation in labor for the diagnosis of

position and the determination of progress, instead of frequently repeated vaginal examinations, a point now considered of great practical importance in the prevention of puerperal sepsis. The outfit described seems unnecessarily elaborate, much of which in the way of basins and solutions may as well be provided by the patient or prepared by the nurse as to be transported by the doctor. In the chapters on operative labor Casarean section is not considered, but craniotomy, a less common and important operation in modern practice, is given a place. The history cards which are described and illustrated in the appendix are of value for the careful recording of the histories of obstetrical cases and are worthy of commendation and of general use.

Practical Text-book of Midwifery for Nurses and Students. By ROBERT JARDINE, M.D. (Edin.), M.R.C.S., etc., Physician to the Glasgow Maternity Hospital, Glasgow. Pp. 245, with 36 illustrations. New York: The Macmillan Co. Edinburgh: William F. Clay. 1899.

This small book on midwifery, intended primarily as a text-book for nurses, is based on the author's lectures to the nurses in the Glasgow Maternity Hospital. The author expresses the wish that the book may be of use to others and especially to those students who take their cases before they have had their lectures on midwifery. The book is well adapted for nurses and perhaps for the first reading of young medical students, as the text is well written, condensed and elementary. It contains all that the nurse needs to learn from a book on the subject of obstetrics. The treatment of sepsis and the use of antiseptics are particularly valuable for the nurse and are perhaps the best part of the work. One fact which we note with pleasure is that he decries the use of the vaginal ante-partum douche as a routine measure and says that it should be used only in occasional cases where the vagina is septic before labor, as in gonorrhoea, but that in the majority of cases the douche does more harm than good, because it destroys or removes from the vagina the protective organisms.

A Manual of Obstetrics. By A. F. A. KING, M.D., Professor of Obstetrics and Diseases of Women, Medical Department of Columbian University, Washington, D. C., and in the University of Vermont. One volume, 12mo. Pp. 612, with 264 illustrations. Philadelphia and New York: Lea Brothers & Co.

The first edition of this book appeared in 1882 and the successive editions have appeared in rapid order and now another edition, the eighth, shows the continued demand for the work and testifies to its merit and popularity. The book has not been changed materially from the last edition. It still retains its elementary character and the author says that no attempt has been made to develop it into a systematic treatise on the subject. A considerable number of new illustrations has been added to the book, most of which, however, are not original, but have been selected from works of American authors, due credit being given.

The teachings of the author are plain and the directions for treatment are concise and to the point, as should be in a book for students, and yet the text is not so abbreviated as to be of value only in cramming for examinations, as unfortunately is apt to be the chief function of most manuals.

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PROGRESS IN THE TREATMENT OF INSANITY.

IN speaking of progress made by the medical profession, we are apt to associate it with something of a scientific nature, but it must be remembered that there is also a humanitarian side, and an improvement in this direction may quite as well represent real progress. This is especially true of the insane, who suffer from a disease which should be investigated scientifically, and yet is one which it is necessary to treat in a humane and sympathetic manner. We believe that there are now evidences of a real advance in both directions in the care and treatment of this most unfortunate class.

We have in mind what has been done in Massachusetts during the last few years. It will be remembered that in 1896 a commission was appointed by the governor to investigate the charitable and reformatory institutions of the Commonwealth. As a result of the labors of this commission, the Board of Lunacy and Charity was divided and the Board of Insanity, composed of five members (two being experts in insanity), created. In the act establishing this board it was specified that it should make to the legislature of 1900 a report on "State Care of the Insane." After much study this was prepared, and at hearings before legislative committees its details were carefully considered. It speaks well for the character of this report that it received the unanimous endorsement of the medical profession, and was reported favorably on by all the legislative committees. Almost at the end of the session a State Care Act was passed, exempting, however, the Boston insane from its provisions.

This brief recital of several years' work means a great change for the better, for it commits the State to a policy which will in the future make it impossible for an insane person to be confined in an almshouse, and recognizes the truth of what was said so many years ago by Horace Mann, that "the insane are the wards of the State." It seems rather strange that the legislature of 1900 has been the one to complete the work inaugurated by Dorothy Dix, but such

is the case. The new act does not go into operation until 1901, but its prompt acceptance by the legislature is significant of the greater enlightenment of the community in regard to the true nature of mental disease.

In the same act there is another important provision made for the establishment of a colony for the chronic insane, the Board of Insanity being empowered to purchase from 1,500 to 2,500 acres of land, and money being appropriated to erect buildings. Such a colony as this must be an integral part of our plan of provision for the insane both now and when the State Care Act goes into effect, for it will provide a means of overflow from the existing hospitals, which in the future should be used as much as possible for the care of the more acute cases. In any proper system of scientifically treating the insane in a community, classification is of the first importance. If in this State there are hospitals to receive acute cases promptly, with possibly detached buildings for the convalescent and small colonies of their own for old cases, boarding-out places, and the large colony already referred to, we shall have the necessary basis to accomplish the object in the most satisfactory manner.

It is the bane of insane hospitals that far too much of the time of the medical officers is taken up with purely routine duties. Notwithstanding this, however, there are indications that the spirit of scientific research is awakened among these men in this State. When the better system of classification is established, it will be possible without additional expense to increase the staffs in the hospitals for acute cases, as the chronic cases demand far less medical supervision. By thus concentrating the efforts of our ablest men on the study of the acute cases, we shall see one of the final steps taken in the advanced treatment of insanity, which will follow logically those already mentioned.

POST-GRADUATE STUDY.

THE idea is rapidly growing and taking form that the short period of undergraduate medical study is but the forerunner of a period of study which is coextensive with the physician's active life. We still occasionally hear a man say that he obtained his medical education at such and such an institution, with the implication that with the ending of those three or four years his time of study was permanently over. He is living, and what is more unfortunate, practising, in the remembrance of what was told him years before. This reproach of unprogressiveness is happily growing less; of that there is little doubt. The so-called country practitioner, with our improved methods of speedy transportation, is too near the large cities to permit of his adherence to methods of which his more progressive city colleague would disapprove. In spite of his comparative isolation he is living in an atmosphere which demands that he shall not place too much reli-

ance upon means of diagnosis or treatment which he learned in his medical course years before. In short, physicians everywhere are coming to the realization that success in any true meaning of the word implies a constant vigilance and an unceasing willingness to learn new things. The result has been that courses for physicians have been multiplied at our large medical schools, some of which have a separate department known as the graduate school. These courses, both in the summer and during the winter months, are attended by physicians who are quite willing to give up the time required in order to keep abreast, in a measure at least, of the development of medical knowledge. This tendency is unquestionably a most valuable one and one demanding every encouragement. A still further phase of the general movement is the establishment of post-graduate schools of medicine, primarily designed for the instruction of men who have received a medical degree. Several, at least, of our larger American cities are provided with such institutions, which no doubt do a valuable work in their insistence upon the principle that one's study in medicine is never done.

The *British Medical Journal* publishes an address recently delivered by Dr. Wm. Osler, in London, on the subject: "The Importance of Post-graduate Study." The occasion of the address was the opening of the Museums of the Medical Graduates' College and Polyclinic on July 4th, and Dr. Osler was at his best in his remarks on the necessity of post-graduate study from the point of view of the teacher as well as of the student. The address is partly reminiscent of the past history of medicine and of certain men who have made notable contributions to its progress, as Hunter and Mr. Jonathan Hutchinson, but the value of the remarks lies rather in the shrewd estimate of present conditions and the hopes for the future. He finds that there are two general types of practitioners—the routinist and the rationalist. With the first of these he has little sympathy; he says: "Into the clutches of the demon routine the majority of us ultimately come. The mind, like the body, falls only too readily into the net of oft-repeated experiences." The rationalist on the other hand, as we should expect, he highly approves:

The rationalist, on the other hand, always approaches a patient as a mathematician does a problem. There is something to be found out; in each case, however trivial, there is something novel; and the problems of causation and the question of relief, while not, perhaps, of equal importance, are of equal interest. He may be just as busy as his idle brother, but he finds time to keep up a technical dexterity in the use of instruments of precision, and the stethoscope and the microscope are daily helps in diagnosis. These men are the delight of the consultant. To go into the country and find the diagnosis made in a case of mitral stenosis, a Friedreich's ataxia, a case of leukemia, or one of myxedema, gives a man a thrill of pleasure, such as Comte says he always felt when a student gave him an intelligent set of answers in an examination. It is this class of practitioners for which the post graduate courses

are helpful and necessary. They alone feel the need of keeping abreast with the times, and men of this type will return every few years, finding that a three months' course of study not only improves and helps them personally, but is most beneficial in their practices.

Himself a teacher of wide experience and recognized success, what Dr. Osler has to say about the need of constant intellectual refreshment among this increasingly important class in medicine — the teachers — is of more than passing interest :

After all, no men among us need refreshment and renovation more frequently than those who occupy positions in our schools of learning. Upon none does intellectual staleness steal "with velvet step, unheeded, softly," but not the less relentlessly. Dogmatic, to a greater or less degree, all successful teaching must be; but year by year, unless watchful, this very dogmatism may react upon the teacher who finds it so much easier to say to-day what he said last year. After a decade he may find it less trouble to draw on home supplies than to go into the open market for wares, perhaps not a whit better but just a wee bit fresher. After twenty years the new, even when true, startles — too often repels; after thirty, well, he may be out of the race — still on the track, perhaps, even running hard, but quite unconscious that the colts have long passed the winning post. These unrefreshed, unregenerate teachers are often powerful instruments of harm, and time and again have spread the blight of a blind conservatism in the profession. Safely enthroned in assured positions, men of strong and ardent convictions, with faithful friends and still more faithful students, they too often come within the scathing condemnation of the blind leaders of the blind; of those who would neither themselves enter into the possession of new knowledge, nor suffer those who would to enter. . . . Progress is an outcome of a never-ending struggle of the third and fourth decades against the fifth, sixth and seventh. Men above forty are rarely pioneers, rarely the creators in science or in literature. The work of the world has been done by men who had not reached *la crise de quarante ans*. And in our profession wipe out with but few exceptions the contributions of men above this age, and we remain essentially as we are. Once across this line we teachers and consultants are in constant need of post-graduate study as an antidote against premature senility. Daily contact with the bright young minds of our associates and assistants, the mental friction of medical societies and travel are important aids. Would you know the signs by which in man or an institution you may recognize old fogyism? They are three: First, a state of blissful happiness and contentment with things as they are; secondly, a supreme conviction that the condition of other people and other institutions is one of pitiable inferiority; thirdly, a fear of change which not alone perplexes but appals.

Conservatism and old fogyism are totally different things; the motto of the one is, Prove all things, and hold fast that which is good; of the other, Prove nothing, but hold fast that which is old. Do not suppose that you have here a monopoly of the article, which is a human, not a national, malady, for we see a very virulent type in America. In its illuiveness and in the disastrous consequences which have often followed its hunting, old fogyism is a sort of Snark in the medical profession. Before the Boojum, in the form of an entrenched variety, many good men and true have softly and silently vanished away, like the beanish nephew of the bellman, sacrificed to in-

tellectual staleness in high places. One of the best correctives is the plan followed at Harvard, which compels (?) every teacher to take the Sabbatical year, ensuring in this way intellectual rest of the mind, if not refreshment. To maintain mental freshness and plasticity requires incessant vigilance; too often, like the dial's hand, it steals from its figure with no pace perceived except by one's friends, and they never refer to it. A deep and enduring interest in the manifold problems of medicine, and a human interest in the affairs of our brotherhood — if these do not suffice, nothing will.

This sound advice is certainly meant to be no disparagement of the advantages of advancing years. If we interpret it properly it simply means that experience, so glibly talked of as a possession which the elderly alone can enjoy, is a dangerous and a futile guide in a teacher, unless tempered continually with the progress of knowledge. We are nowadays hearing less of experience and more of knowledge, of which, after all, experience should be merely the handmaid. Nothing is more fatal in a teacher than that complacency occasionally met with which comes with the passage of the years, and the accumulation merely of personal experience. Against this Osler vigorously protests and we are confident that his views will not fail of a general acceptance.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, August 1, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 57, scarlatina 13, measles 25, typhoid fever 8.

PATROL WAGONS AS AMBULANCES. — A decided improvement has recently been made in the police service of Boston, by converting patrol wagons into auxiliary ambulances. The wagons are now provided with rubber tires, and the seat so arranged that room may be made for a stretcher if necessary. It is said that new wagons which from this time on shall be added to the department will have dropped axles similar to those on ambulances. At one of the police stations an emergency room, properly equipped, has been fitted up, an example which might well be generally followed. Particularly during the excessive heat of summer are such added conveniences desirable.

DEATH FROM GLANDERS — A death from glanders has recently occurred in Fitchburg, Mass., and a son of the deceased has been very ill with the same affection. The infection came through attention to a favorite horse sick with the disease. An autopsy performed by Dr. G. B. Magrath on the body of the father showed the principal lesion to be in the nares; there were also multiple nodules in the lungs and skin, some of them in a condition of suppuration or ulceration, and abscesses of the thigh, leg and knee joint. The bacillus of glanders was recovered from the body.

TETANUS AT LOWELL.—Several cases of tetanus have been reported from Lowell, Mass., since July 4th. One of the victims died July 30th, the infection having taken place through a cut made by a cleaver.

SMALL-POX AT LOWELL.—Small-pox has again reappeared at Lowell, and a number of cases are now under treatment at the hospital for contagious diseases. A general vaccination has been ordered.

NEW YORK.

AN UNLICENSED MATERNITY HOSPITAL.—The Appellate Division of the Supreme Court has affirmed the conviction of one Louisa Wagner upon the charge of having violated a provision of the Penal Code prohibiting the maintenance of a maternity hospital without securing a license. The case was before the court upon appeal from an order to the warden of the City Prison dismissing a writ of habeas corpus. Justice Ingraham, giving the opinion, states that such an enactment is clearly within the power of the legislature. The requirement of the license, he explains, is to enable the public authorities to make proper sanitary regulations as to such institutions, so that their inmates may not be exposed to infection or other dangers arising from improper medical attention, and also to ensure that they shall not be perverted to improper uses.

AN AMBULANCE RACE.—The newspapers give an account of an amusing race the other day on East 26th Street between two ambulances on their way to Bellevue Hospital. One of the ambulances belonged to St. Vincent's and the other to Roosevelt Hospital. Neither of these institutions maintains a lying-in department, but in each ambulance was a woman in labor. The Roosevelt ambulance won by a neck, and succeeded in getting its patient into the Bellevue reception-room before delivery, but in the case of the other the baby was born in the ambulance just as the hospital entrance was reached. Mothers and children are reported as doing as well as could be expected under the circumstances.

DEATH OF ADOLPH SIMIS.—Adolph Simis, Jr., Commissioner of Charities for the Boroughs of Brooklyn and Queens, died on July 22d at his summer residence near Newburgh. For several years before the consolidation of New York he had served as commissioner of Charities and Correction for Kings County. His record is that of a faithful and efficient official, and he introduced many improvements in the hospitals and other institutions under his charge.

DEATHS FROM HEAT.—In the three weeks ending July 21st there were 143 deaths in the city directly due to the heat. During the corresponding three weeks of last year, when the weather was much cooler, the number of such deaths was only 11. The deaths from all causes were 266 in excess of the mortality in the corresponding three weeks of 1899.

ARMY NOTES.

CONDITIONS AT NOME HARBOR, ALASKA.—A late report from Major Ebert, chief surgeon in Alaska, dated June 29th, deals of conditions prevailing at Nome Harbor. He states that within two or three weeks the population had increased from 2,700 to 20,000, with tents and buildings located irregularly along the shore. The sanitary arrangements, very crude at the outset, became much worse with the influx of the new population. He states that the sanitary condition of the place is shocking, as there is no provision for cleaning the town and no provision for the destruction of garbage and filth. Upon the recommendation of the surgeon an order was issued by the department commander directing the removal of filth, but as there was no fund save that derived from voluntary contributions it was difficult to accomplish any improvement. Common laborers receive \$1.00 per hour, mechanics \$1.50 per hour and teams \$10 per hour, and with such prices it is almost impossible to improve the condition of affairs. All the commissioners, save one, had resigned or ceased to act. Water is very bad and sells at from 7 to 10 cents per gallon. Reports of cases of enteric fever vary from 175 to 700, but reliable information as to the exact number of cases cannot be obtained. There had been 13 cases of small-pox, with 1 death, and measles also had broken out.

YELLOW FEVER IN CUBA.—Yellow fever has broken out among the soldiers of the First Infantry in Pinar del Rio Province, Cuba. Nine deaths have occurred and 11 cases are now under treatment. This regiment is now under orders to return to the United States. All the affected commands have been moved into camps and quarantine is being enforced. Arrangements have been made by which all equipments belonging to this regiment will be disinfected and stamped by the Marine-Hospital authorities at Havana before being placed on board transports for return to this country.

FEMALE NURSES FOR SERVICE IN CHINA.—About 30 female nurses of the Army Nurse Corps, now en route to the Philippines on transports stopping at Nagasaki, will probably be diverted for service with the expeditionary force in China, serving at base hospitals. There are now in service in the Philippine islands, or en route thereto, 212 female nurses in the government employ.

ADDITIONAL ACTING ASSISTANT SURGEONS.—In view of the projected operations in China and the necessity for dividing the troops in the Philippines into small garrisons, 100 acting assistant surgeons, in addition to the 400 at present in the service, are required. The pay is \$150 per month, with allowances of a first lieutenant, mounted.

HOSPITALS FOR TROOPS IN CHINA.—In addition to the arrangements for the care of the sick with troops in China, already noted, plans are being matured for a general hospital at Nagasaki, Japan, while Col.

J. V. R. Hoff, who has just been relieved from duty as chief surgeon in Puerto Rico, is to establish a hospital of 1,000 beds at some point in China not as yet definitely selected. Every possible precaution to anticipate any unusual strain upon the hospital facilities is being taken.

Miscellaneous.

A HOSPITAL FOR TROPICAL DISEASES IN LIVERPOOL.

A HOSPITAL devoted to the treatment of tropical diseases is about to be founded in Liverpool. The hospital is to be erected in memory of the late Miss Mary Kingsley. Many handsome contributions towards the fund have been promised; amongst others Mr. A. L. Jones has given £1,000 and Mr. Blaize £500. The creation of a hospital for tropical diseases in Liverpool marks a new era in medical education in this country. The Seamen's Hospital Society's Branch at the Albert Docks is largely devoted to this purpose, but it shows that the subject of tropical medicine is attaining a still greater hold on the country when a hospital is to be specially built and devoted to this important department of medicine.—*Journal of Tropical Medicine.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 21, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York	3,654,594	1944	965	34.00	6.40	19.90	.55	1.55	
Chicago	1,619,226	—	—	31.14	3.24	18.00	.90	1.98	
Philadelphia	1,266,832	564	283	—	—	—	—	—	
St. Louis	623,000	—	—	—	—	—	—	—	
Boston	539,416	271	125	38.11	7.40	26.64	—	1.85	
Baltimore	506,389	286	143	43.75	6.65	32.55	2.80	1.05	
Cincinnati	405,000	—	—	—	—	—	—	—	
Cleveland	350,000	—	—	—	—	—	—	—	
Pittsburg	305,000	147	88	40.12	.68	31.28	3.40	1.36	
Washington	277,600	164	70	38.43	1.83	23.18	4.88	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	85	43	44.84	4.72	35.40	1.18	—	
Nashville	87,754	—	—	—	—	—	—	—	
Charleston	65,165	—	—	—	—	—	—	—	
Worcester	111,732	54	29	38.85	11.10	29.60	—	—	
Fall River	103,142	83	57	53.00	2.40	50.40	—	—	
Cambridge	92,520	29	15	55.20	—	48.30	—	—	
Lowell	90,114	66	42	54.36	6.04	49.83	—	—	
New Bedford	79,511	32	18	34.43	—	34.43	—	—	
Lynn	63,218	19	6	22.22	—	5.55	5.55	—	
Somerville	64,394	—	—	—	—	—	—	—	
Lawrence	59,072	43	27	53.36	2.32	44.08	—	—	
Springfield	58,266	43	20	43.72	—	32.48	—	—	
Holyoke	44,510	35	25	57.20	—	45.76	—	8.58	
Brockton	38,759	—	—	—	—	—	—	—	
Salem	37,723	16	8	31.20	6.25	18.75	—	—	
Malden	36,421	13	4	7.69	7.69	—	—	—	
Chelsea	34,235	21	11	—	—	—	—	4.76	
Haverhill	32,671	13	5	15.18	7.59	—	—	—	
Gloucester	31,426	6	4	33.33	—	—	—	—	
Fitchburg	30,523	7	3	12.84	—	28.56	—	—	
Newton	30,461	12	4	16.66	—	16.66	—	—	
Taunton	28,527	—	—	—	—	—	—	—	
Everett	28,102	8	5	50.00	—	37.00	—	—	
Quincy	24,578	11	4	36.36	—	27.27	—	9.09	
Pittsfield	23,411	—	—	—	—	—	—	—	
Waltham	22,791	4	1	25.00	—	—	—	—	
North Adams	21,583	4	2	10.00	—	50.00	—	—	
Chicopee	18,316	20	11	35.00	—	30.00	—	—	
Medford	17,190	4	1	25.00	—	25.00	—	—	
Newburyport	15,926	9	4	66.46	11.11	33.33	11.11	—	
Melrose	14,721	3	1	33.33	—	33.33	—	—	

Deaths reported 3,924; under five years of age 2,025; principal infectious diseases (small-pox, measles, diphtheria and croup,

cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 1,472, diarrheal diseases 959, consumption 315, acute lung diseases 199, diphtheria and croup 58, typhoid fever 41, measles 34, whooping-cough 28, cerebrospinal meningitis 15, scarlet fever 13, erysipelas 9.

From measles New York 23, Philadelphia 6, Pittsburg and Washington 2 each, Lawrence 1. From whooping-cough New York 16, Washington 6, Boston and Pittsburg 1 each. From cerebrospinal meningitis New York 9, Baltimore 2, Worcester, Lynn, Holyoke and Gloucester 1 each. From scarlet fever New York 5, Philadelphia and Boston 2 each, Lawrence 1. From erysipelas New York 6, Philadelphia 2, New Bedford 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,295, for the week ending July 14th, the death-rate was 14.5. Deaths reported 3,476; acute diseases of the respiratory organs (London) 160, measles 104, diarrhea 102, whooping-cough 96, diphtheria 72, fever 27, scarlet fever 24, small-pox (Liverpool and Oldam one each) 2.

The death-rates ranged from 9.6 in Portsmouth to 20.9 in Liverpool: Birmingham 19.5, Bradford 12.7, Cardiff 14.8, Gateshead 20.0, Hull 15.9, Leeds 14.0, London 14.2, Manchester 20.0, Newcastle-on-Tyne 19.8, Nottingham 18.7, Plymouth 16.8, Sheffield 18.5, Sunderland 17.3, Swansea 16.3, West Ham 11.1.

METEOROLOGICAL RECORD

For the week ending July 21st in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'thr.*		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S..15	29.92	73	82	64	55	68	62	W.	W.	7	4	O.	O.	
M..16	29.92	84	95	73	64	60	62	N.W.	S.W.	7	12	O.	C.	
F..17	29.90	86	95	78	55	64	60	S.W.	S.W.	10	15	F.	C.	
W..18	29.85	84	97	71	71	46	58	W.	W.	7	17	F.	C.	.21
T..19	29.98	76	87	65	57	38	48	W.	N.	9	8	C.	C.	
F..20	30.07	68	72	63	72	72	N.E.	S.E.	8	9	C.	C.		
S...21	30.04	71	79	63	80	87	84	S.	S.W.	12	11	O.	R.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

SOCIETY NOTICES.

ROENTGEN SOCIETY OF THE UNITED STATES.—This society will meet in New York City, December 13 and 14, 1900, at the Academy of Medicine.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.—This association will hold its thirteenth annual meeting in the Assembly-room of the Galt House, Louisville, Ky., Tuesday, Wednesday and Thursday, September 18, 19 and 20, 1900, under the presidency of Dr. Rufus Bartlett Hall, of Cincinnati, O.

BOOKS AND PAMPHLETS RECEIVED.

Albany Medical College Register of Students 1899-1900. Announcement for Session 1900-1901.

Erysipelas, and its Treatment. By Albert E. Carrier, M.D., Detroit, Michigan. Reprint. 1900.

A Text-book of Practical Medicine. By William Gilman Thompson, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1900.

Nineteenth Annual Announcement of the New York Post-Graduate Medical School and Hospital, University of the State of New York, for 1900-1901.

Report of a Case of Tumor of the Cerebellum with Drainage of Fluid through the Nose. Neurasthenia: Some Points in its Pathology and Treatment. By G. W. McCaskey, A.M., M.D., Fort Wayne, Ind. Reprints. 1900.

The Thompson Yates Laboratories Report. Edited by Rupert Boyce and C. S. Sherrington. Illustrated. Volume I. Reprints. 1898-1899. Volume II. Reprints and Reports. 1898-1899. University Press of Liverpool. 1900.

XIII Congrès International de Médecine, Paris, 2-9 août 1900. Résumés des Rapports Présentés aux Sections de Chirurgie Générale, Pathologie Interne, Chirurgie Urinaire, Médecine de l'Enfance, Chirurgie de l'Enfance, Laryngologie et Rhinologie.

Addresses.**NORFOLK DISTRICT RECORDS AND REMINISCENCES, 1850-1900.¹**

BY C. ELLERY STEEDMAN, M.D., DORCHESTER, MASS.

I HAVE been asked by the authorities who rule our destinies to write for its jubilee a history of the Norfolk District Medical Society, from the earliest times to the present day. In looking over the records for this purpose, it seems that such a dissertation would furnish forth rather a dreary half hour to you who listen, however much it might profit the future analyst. I have preferred therefore to cull from the minutes some of the principal events, and to recall a few sayings and doings of the chief actors on this stage. In these fifty years there has been a goodly share of strong men in word and deed, who have had their part in attack of abuses, in defence of rights, in imparting of their wisdom to their fellows. They brought to the meetings a whiff of salt air from the South Shore, of hayfields from the country, and the dust and mud of the suburbs of Boston; all hard workers by day and by night, with definite notions, and not to be fooled by new practices and ideas till time had ripened them. They proved all things and held fast that which was good. Most of the founders went to their graves having done good work for their town, for the State, for the country and for their neighbors, and each one, I believe, was laid to his rest carrying some one bit of knowledge, or one bit of method, which, perhaps without his knowing it, was wholly his own and could not be transmitted. Few rose to honor, fewer to wealth, but they left memories which still keep green, and we, their successors, are wiser and better for their lives.

Before we quote the records, it is well to know something of the men who made them. A few of them I present you, I fear, in rather a dim perspective. Especially I recollect old Dr. Alden, whose class at Harvard was 1808, with Dr. Walter Channing and the first Richard H. Dana, and who had his M.D. from the University of Pennsylvania in 1812. He died in 1870, and the resolutions offered to the society on that occasion truthfully speak of the dignity, courteous bearing and felicity of expression with which he participated in the proceedings of the society, and his faithful service in its behalf during many years of his life. His Johnsonian manner was deeply impressive to us younger men. One day in the train, speaking of the government of the Massachusetts Medical Society, "Sir," said he, "it is an OLIGARCHY." I knew little and cared less about it, but it was many years before I had any other notion of the society than that it was an OLIGARCHY. What sense of humor he possessed was subordinated to duty and business. A young man who was appointed secretary could not keep his freshness out of the records. After noting that the president called for the appointed papers from Drs. A, B, C, D, E, F, G, and no one was present and prepared but Dr. Edes and Dr. Edwards, the secretary went on to say that the other gentlemen called on were lucratively engaged in the practice of their profession, and were consequently unable to attend. When the records

were read at the next meeting, Dr. Alden suggested that, as the secretary could not know that those gentlemen were prevented from attending a meeting on account of their being lucratively engaged in the practice of their profession, it was hardly admissible to record such a statement. Dr. Jarvis thought it well to allow the secretary to record the proceedings in his own fashion, as the society had so courteously permitted him to do for twenty years. I know no other than Dr. Alden who in a session devoted to hygiene could have enthralled us as he did with details of his study and his marvellous air-tight stove, its construction and performances, by which his blessed old body was kept warm, while superfluous heat was turned into the room above, and perfect ventilation reigned throughout; so that the gentleman who just before had bewailed the closing of old fireplaces with sheet iron and brick must have gone home himself to install an air-tight stove in his study after Dr. Alden's plans and specifications.

There were many stories told about good old Dr. Edward Jarvis, but they all illustrated his quaint manner and speech, his benevolence, and his attention to business. A specimen of his accuracy of method may be, I hope, not tediously exhibited by an entry in the record of the first meeting: "Dr. P., of W., forgot to bring his diploma, but was admitted so far as to join the society socially, sit with them, hear the address, pay his assessment, partake of the public dinner, with the promise on his part to show his degree to the president or secretary, sign the bylaws and be admitted a member of the society." This same gentleman from W., it is remembered, was absent minded, and being bored in a meeting at Dedham, went out to the stable and asked for his horse. It was a full meeting, and there were many horses. He was unable to select his own, resignedly returned to the hall, ate (and presumably paid for) his dinner, waited till all had departed and humbly took the last horse. Showing Dr. Miller his stable one day, he stopped short and asked, "Patrick, what horse is that?" "Sure," replied Patrick, "it's the mare you bought last month."

Dr. Munroe, of Medway, must not be forgotten, one of our strong and sagacious men, of wide experience and sound judgment. He could not, however, away with the doctrines propounded by Dr. Jacob Bigelow and so ably set forth by Dr. Cotting. He believed deeply in the curative power of drugs, and defended his position with close argument and tenacity. On one occasion, hearing that Dr. Cotting was to hold forth on the subject of disease as part of the plan of creation, he rose from a sick bed, and lay on a sofa in the hall of a meeting that he might lift up his voice in defence of his cherished convictions. With all this he was polite and kind, and would never consciously offend, however much he might differ from his adversary.

Then there was Major-General Appleton Howe, M.D., whose burly presence and strong personality remain in remembrance, as does the perfect luncheon he gave us in his dooryard in Weymouth, under the spreading trees, one hot, overcast day in summer.

Give me leave to speak of Dr. Erasmus Miller, of Dorchester, and his vast obstetric experience, his early practice in gynecology, his uterine scarifier, his intense shrewdness, his horse Stargazer and his cranberry bog in Franklin. He used to say that whatever

¹ Delivered at the Semicentennial Meeting of the Norfolk District Medical Society, May 8, 1900.

his ability might have been on his first coming to Dorchester, his real and speedy success was due to a superb gray horse with flowing white switch tail, so handsome as to make every one turn to look and inquire who was the owner. But a more efficient factor was his own early acquisition of snowy hair and sweeping beard, which made him a conspicuous figure in any landscape or company.

Naturally his best friend, Dr. Holmes, of Milton, must next be named. There are yet many of us who love to recollect his round, rosy face, his martial bearing, his cheerful presence, his ready sympathy, his talent in practice, which rendered him beloved equally by factory hand and dowager of Milton Hill. No amount of work tired him either on the road, in the sick room or at the head of the Cadets. Dr. Miller used to say that Holmes had rather be driving round the country all night than be in his bed. Music and his beloved Cadets were his recreations, for he hardly ever left Milton for a holiday. Rest his soul! Every one of us in Dorchester and Milton lost a friend when Christopher Columbus Holmes was laid to rest in 1882.

No more brilliant character shone on this stage than William Cranch Bond Fifield. After finishing his studies in London and Paris he came to Dorchester in 1860, where he died in 1896. He was a man of prodigious memory, who appeared never to have forgotten anything. He could tell you on what part of any shelf in the Athenæum you could find the book you wanted, and very nearly the page which recorded the fact, phrase or case you were in search of. Indeed his mind was so stored with authors, precedents, operations, that he could not always find the pigeonhole in which the subject in view was packed. He made some marvellous diagnoses, but often would not see into an ordinary case, because his gaze was fixed on a visionary possibility far beyond. It was a treat to hear him detail a case or tell a story about one of his European teachers. The graphic touches with which he embroidered his subject fixed its details in your mind, while wit and humor played around it, so as sometimes indeed, it must be owned, to obscure the judgment and make you wonder how much was fancy and how much was fact. Besides he was an omnivorous reader; a new book of fiction, history, poetry, travel had not been long published but he could give you its scope, with apt quotations, and his opinion about it. Withal he was a musician of no mean ability and of fastidious taste. Many afflictions overtook him and cardiac disease obscured his last days.

Those of us who were honored with the friendship of Benjamin Cushing will call to mind no physician whose example they would sooner wish to follow. The gaunt frame carried a great heart and through the large spectacles beamed a steady and confident gaze. No more upright man ever stood in our society. He seemed silent and reserved. You had to know him. When he could not praise or offer comfort he was silent. Once he told me of a family who had lost a child, and the parents thought him hardhearted. As he spoke his eyes filled with tears. No young doctor who was in trouble ever left his presence without wise counsel and just sympathy. His charities were wide and unmaned. To many of us his judgment seemed unerring. He spoke well of every one when he possibly could, but meanness, underhand methods, harshness, he could not abide; and he was not slow to let

the offender know it. He had a well-developed New England conscience. One nasty night he sent a poor patient to a young neighbor. After the messenger had gone, he could not sleep, and, as he said, pictured to himself that when he next drove by the house he might see a string of carriages before the door. So he rose, dressed, took his instruments under his arm, plodded to the place through the rain, heard the voice of the youthful accoucheur inside, returned home and slept the sleep of the just. His practice was large and wide. A relative looking over his books found one day's work, where he had made twenty visits, no great number to be sure, but one patient lived near Pine-tree Brook in Milton, another in Beacon Street, both of whom had to be seen twice that day. And his driving was like the driving of Jehu, the son of Nimshi. A lady once asked him, "Why, Dr. Cushing, do you drive so fast?" He replied, "I never drive fast, but I will admit that I like to ride behind a horse that wants to go fast." Upon a call for surgeons after one of the murderous battles of the Civil War, he did some service. He was deeply grieved that his name was not mentioned by the authorities, the only reward he would have accepted, but he would take no steps to publish his claim to recognition. With this right judgment and skilful, conscientious work went a delightfully dry humor, and he enjoyed a good joke in every nerve. Once a young doctor related a case with fatal issue where every remedy known to modern science had been faithfully employed. When he finished Dr. Cushing quietly remarked that he once signed a death certificate on the wrong line, "Cause of death, B. Cushing." At an annual meeting he had been appointed to read the address. It proved to be a very lively meeting indeed, with altercations and personalities which prolonged the session beyond the hour set for the address. When at last he was called on, he remarked that as the society had chosen to turn the meeting into a bear garden he considered it small honor to address them. It was never ascertained that he had any paper beyond notes scrawled on the backs of envelopes, and it was conjectured that foreseeing the possibility of disturbance, he had never got any further in his preparations. He was nicely exact—almost finically so—in his relations with other practitioners. Often has he said to the writer, "While you were away I saw your patients, Mr. A and Mrs. B. I didn't waste any politeness on them." He had no opinion at all of a physician who would do otherwise. Therefore he had disappointments. He died in 1895, aged seventy-three, leaving deep regrets and a shining example.

How pleasant sounds the name of Dr. Maynard, of Dedham! Into how many chambers did his alert step, his blithe and debonair countenance bring solace and cheer. How, when seated in the president's chair, did he beam upon us—like a benevolent monarch on the throne, encouraging his devoted subjects. His invention of collodion made him widely known and reflected honor on the society. It was charming to listen to his story of the process of his discovery, and of his journey to New York to demonstrate it in the presence of the great surgeons of that metropolis, who bestowed due praise on the young doctor's science and ingenuity. As modest as he was expert, his memory will not soon die in the hearts of those who knew him.

No notice of the Norfolk District Society is complete without reference to Dr. Cotting and Dr. Martin, who filled the eye of the society for many years. Most of us knew Dr. Cotting, and the young men who did not should lose no time in making themselves acquainted with his "Reminiscences," which were read to the society and afterwards published in a pamphlet. He began his professional life in 1838 as a poor boy, although he could have had the same help that carried him through college, but he had determined to be independent till he reached the head of the profession in the district by the hardest work, joined to ability and good judgment. It is no disparagement to other distinguished men to say that no president of this association and of the Massachusetts Medical Society ever accomplished so much as he did for both, in raising them to the high position they now hold. He was the first to visit all the district societies and to stimulate them to careful observation, and the recording and collecting of their experiences. The extent of his early indefatigable labors, when communication was so difficult, may be appreciated when we read that in the third year of his life in Roxbury he attended 115 cases of obstetrics, "and so on, till he had a very large fraction of the whole number in town." And in one summer day he made 43 visits. For many years he did most of the surgery in Roxbury, refusing no case among rich or poor. He had very small belief in the efficacy of drugs, in antisepsis, in the contagiousness of puerperal fever, and in other doctrines now received, and the contradiction he met with before the practice was relinquished of writing a new recipe at each visit, and filling up the sick chamber with eight-ounce phials, may hardly be estimated. I have already mentioned Dr. Munroe, who left his sick bed to protest against such unsoundness in doctrine, but there was other outspoken and violent opposition. It was seldom that one of us could detail a case and its treatment that Dr. Cotting did not cap it with a similar one of his own that had recovered with little or no help from drugs, all which made the meetings interesting and entertaining. Dr. Cotting was most good and helpful to young men, never forgetting his own youthful hard experiences. He used to say in later life that he had given away so many patients that he had hardly any left. He did expect that those whom he knew well would stand by him and help him carry his measures through; and those who enlisted under his banner were called "loyal." His hospitality was lavish and proceeded from a generous heart. I have known few men who conferred more benefit on the profession than Benjamin Eddy Cotting.

Dr. Henry Austin Martin was as different a man as could be imagined. His enemies said that he had facility and not ability. But he had both in marked degree. He was a deep student, not only in medical but in general literature. His knowledge, skill and resource in surgery were great. The inventions of his rubber bandage and his adhesive plaster were known in the whole medical world, but his distinction lay in the introduction of animal vaccine, which he popularized, and by which he became the recognized authority on vaccination. His mastery of the English language was exceptional, and his speech in public and in conversation was most fluent. He was afraid of nobody, and was a born fighter. He fully believed in the efficiency of drugs in the hands

of an experienced therapist. Therefore we may hazard the statement that he could not be said to agree with Dr. Cotting. When he did not like anybody he was not skilful in hiding his sentiments. To those who were congenial he was most delightful, entertaining and instructive, pouring forth a stream of wit, humor and information. When the followers of two such men clashed, it may be fancied that there was music in the air. And many of the sessions were too stormy to more than refer to. But they have left lively recollections with many of us oldsters. In the list of names of those present at the first meeting — the only one whom I know to be now living — is Dr. George Faulkner, of Jamaica Plain. Nothing would more disturb his quiet and happy retirement than to be spoken of as he deserves. But we may assure him of the respect and affection which his long and useful service and his high character demand.

There is temptation to go on indefinitely with reminiscences of those delightful characters which loom up in the mist of departed years, but they must be phantoms to you. We shall all be phantoms by and by — some of us at no distant day — and I trust the centennial orator of 1950 may have a good word to say of our wisdom, or our characteristics, or, as a student of my day used to say, "some one of our principal fortes." To relieve these obituaries of the wise and learned, and kind and good, let me acknowledge that there were others. Dr. Miller used to tell with glee of one valued colleague, who consulted him one day to glean some hints concerning a case of prostatic disease. "How old is the man?" asked Dr. Miller. "Bless you," was the reply, "it isn't a man, it's a woman." It was a neat and skilful pathologist in the society who having, with what difficulty we may imagine, secured a post-mortem in his village, having finished his task, left portions of his patient in corners of the room, and desired the womankind to sweep them up with dust pan and brush. There is no date of the second autopsy in that hamlet. And I had deep sympathy with the polished and self-reliant rural practitioner who told, at great length, of a case of tedious labor, the only interest of which was the fact that the patient was the wife of a distinguished man, whom he did not omit to name. There was silence when he concluded, and a kind-hearted member, to let the speaker down easily, inquired, "Pray, doctor, why did you not apply the forceps — shorten the patient's suffering, and save your own time?" "Well," returned the doctor, "I suppose I might have, but my time's wuth about as much as a settin' hen's."

The convention of physicians of Norfolk County, being invited by the councillors of the State Medical Society resident in this county, assembled in Temperance Hall (happy omen), Dedham, on the 18th of April, 1849. The first meeting of the new society was held at the Phenix House, in Dedham, the 19th of November, 1850. Dr. Jeremy Stimson, of Dedham, was the first president, and Dr. Edward Jarvis the first secretary, a post which he held for twenty years. As is proper, there are pages and pages of constitution, bylaws, signatures, agreements, elections, committees, motions, amendments, reconsiderations, propositions, resolutions, recommendations, and such precautions as should surround the launching of a craft of such burden and promise. Dr. Jarvis was invited to prepare a paper for the next meeting.

This gathering took place in Dedham, in May, 1851. Dr. Jarvis, being an expert in insanity, as well as in statistics and hygiene, naturally read an exhaustive treatise about the lunatic hospital. There was a grievance in that the judge of probate in Dedham, being a lawyer in Boston, took the first train for that capital and did not return till late in the afternoon; so that a doctor who wanted to have a patient committed had to get to Dedham before breakfast, or late in the evening. A minute in a later record witnesses that after a contest in the course of which the judge proved conclusively that no other method than that in practice could be employed, that functionary had to give in and appoint a convenient hour for such business, while victory perched on the banners of Dr. Jarvis, and the Norfolk District Society thus early proved that it had not been born in vain. It is also noticeable that the early records make little or no mention of professional matters, but are filled with the dry-as-dust formulae of minutes, elections, motions, and the other necessary throes of a new birth. But when a subject connected with insanity or hygiene came up the good and venerable secretary let us have it in full.

At the November meeting of 1851, it is reported that Dr. Robert Thaxter, of Dorchester, died the 9th of February, aged seventy-five. He was one of the old school of country doctors, observant, diligent, unselfish, conscientious and skilful, and in his fifty years of practice is related never to have spent a night out of Dorchester, except in attendance on a patient. Also at this meeting we find the note that a communication from the Essex North declares that unless the State Society disencumbers itself of empirics, the Essex North District Society withdraws from the parent association. After earnest discussion the memorial is agreed to unanimously.

At the meeting of May, 1854, seventeen queries about consumption were sent out, the fourteenth and fifteenth asking, "Is the disease communicable?" the first instance, so far as the reader knows, of the question of contagion being raised in this vicinity in a formal way.

In November, 1857, there is a pathetic inquiry about means to make the meetings more interesting and the attendance larger. At the next meeting certain rules are adopted requiring certain communications. This worked by the gentlemen appointed finding themselves too busy—as above intimated—to come at all. On July 16, 1858, Drs. Allen, Bartlett and Burgess read papers on "The Contagiousness of Puerperal Fever," but the statements and arguments are not reported. Dr. Cotting presents to each member a copy of Dr. Jacob Bigelow's work on "Rational Medicine."

In May, 1859, Dr. Miller first tells about his method of application to the os uteri of ethereal tincture of iodine for excessive vomiting of pregnancy—a practice which has helped out many of our patients more than once.

In January, 1861, Dr. Warren, of Neponset, reports a case of rupture of the uterus in labor. Dr. B. Cushing saw the patient in consultation and the reader recollects his story of the case. He was able to thrust his fingers through the rent and feel their tips against the interior abdominal wall, while his other hand grasped the fingers on the outside. Some time after, driving by the house, he saw a

woman standing at her door, and asked, "Can you tell me what became of a Mrs. McCarty who used to live here?" "'Deed, then, I am Mrs. McCarty,'" was the reply, vindicating the recuperative powers of nature without surgical aid in a way which must have warmed the very cockles of Dr. Cotting's heart.

In May, 1861, the society petitions the legislature to establish a board of health. At this time we find names of members serving in the army and navy during the Civil War, and papers read about gunshot wounds and camp and ship diseases.

In November, 1862, we discover that patriotic ardor begins to be tempered with a wise discretion. For the record has it that it is "Voted, That the vote passed May, 1861, to attend officers and soldiers of the army gratuitously, be repealed." After discussion it was suggested that that vote was restricted in the letter or in intent to the President's first call for troops, and had accordingly expired by its own limitation. This sounds sophistical, but I don't believe that any soldier or sailor of that war was ever unduly pressed by his doctor in Norfolk County.

The 9th of May, 1866, is rendered memorable by a record signed A. H. Nichols, secretary *pro tem*, giving the first full report of professional subjects treated at a meeting. It records a case of ovariectomy done by the secretary *pro tem* when the operation had hardly gained a foothold. The president, Dr. Cotting, as yet an unbeliever, remarked on the need of reporting such fatal cases, two of which had lately happened in Roxbury. Then Dr. Munroe, of Medway, read a case of opium poisoning cured by the continuous dropping of cold water from a height on the epigastrium. Next, Dr. Cotting announced his operation, now so well known and which he believed to have been first conceived by himself, for ingrowing toenail. After that Dr. Bullard showed portraits of French physicians. The president showed a copy of the Annual Dictionary of Garnier, of Paris, and read a critique upon it. Then came the annual address, by Dr. Salisbury, of Brookline, on "The Habits of Social and Domestic Life." Dr. Munroe criticised the school methods of Horace Mann, which had done harm from the continuous application required of young children. Dr. Alden, of Randolph, inveighed against long school sessions from 9 A. M. to 2 P. M. Dr. Arnold, of Roxbury, exhibited photographs of a case; Dr. Stedman, of Jamaica Plain, a case of neuralgia of stump of the forearm. Dr. Cotting read a letter from Dr. Wucherer, of Bahia, on "Obstetric Practice in Brazil," citing the injurious use of ergot and the cutting of the perineum by midwives, who carry a rude instrument for the purpose, to hasten labor. Dr. Miller described his uterine scarifier, which he detailed at length at a subsequent meeting. Dr. Cotting held forth on the uselessness of splints; that they had less power to prevent shortening and deformity than was supposed. Dr. Stone reported a case of compound fracture without splints—only extension having been used. Dr. Alden sought to prove that alcohol was not food. Dr. Cotting showed a large packet of papers published which had first been read before this society. He did not believe that quinine cured intermittent fever, or that mercury cured syphilis, and in the course of discussion this day mentioned that the surgeon of the *Dreadnaught* used to show a bottle full of chancres which he had excised without preventing constitutional symptoms. This excellently reported

meeting, you see, was full of interest, and the talk was quite abreast if not in advance of the times. How much wisdom and science are buried forever by the silence of the records heretofore, about anything except the machinery of the society, we dare not conjecture.

In November, 1867, we find the first mention of the annexation of Roxbury to Boston, and it is resolved that the removal of the physicians of Roxbury to the Suffolk District would be disastrous to the Norfolk District Medical Society.

In July, 1869, Dr. Scavens moved that the secretary be authorized to permit a full and impartial report of the proceedings of each meeting to be published in the *Boston Medical and Surgical Journal*.

In May, 1870, Dr. Jarvis resigns, having been secretary twenty years and having been present at every meeting except two when in Europe, one when a witness in the Supreme Court and a fourth on account of his brother's funeral. Dr. Martin remarked that such clever and original men as Dr. Tully had always been snubbed by the mediocre majority. Progress has never been made in medicine without opposition from the rich and comfortable in the profession whose battle had been fought and whose position was attained, and who disliked being disturbed in mind or person, and from teachers and professors who abhorred altering the outlines and principles of their lectures. He applauded Dr. Amory for his paper (on inflammation) rejoicing that he was faithful among the faithless, and unadverted (in passing) on the practice, but too common, of the gentlemen who offered or agreed to subjects for the meeting absenting themselves from the session. Dr. Miller had had such success in his treatment of uterine diseases and his methods being generally unknown, it had been reported that he was using secret means. So he came to this meeting, on the suggestion of friends, and exhibited his scarifier. The record says, being questioned about endometritis, he replied that he knew less about that affection than he did four years ago, though he had had large opportunities for making it a special study. Dr. Martin had called him the originator of the treatment by scarification: he had adopted it as a common-sense method of depletion; certainly never having heard of it before, but questions of priority were not to his taste. He had certainly found the repeated incision of the uterine mucous membrane to be the only way of curing old inflammations of that organ. He quoted the case of a physician's wife—painful uterine symptoms; had lived on opium and stimulants for six months; no local disease discovered; immediately relieved by four incisions three times in ten or twelve days, and so on.

In November, 1870, it is recorded that Dr. Fifield showed a handsome cast made by his house surgeon, Dr. Bolles. Dr. Fifield had just returned from Europe and this was one of his field days. Among other things he said that 5-drop doses of Collis Brown's chlorodyne cured his seasickness and helped so many on board that the ship's surgeon borrowed his two bottles and never returned them.

In January, 1871, we find Dr. Campbell remarking that the term "skeptick" was too often applied in this society to those persons who ventured to swerve from the beaten path. At this meeting Dr. Alden mentioned a case of harikari which took place one hun-

dred years ago. A butcher ripped himself open from sternum to pubes, in a swamp, during a paroxysm of insanity. He rolled about in agony among the leaves, making also fruitless efforts to reach a neighboring spring, crawling on the ground and dragging his bowels after him; probably fainting, the bleeding was staunch and he so remained during the night. In the morning he was found alive, and the town bier being furnished with a straw bed, he was conveyed on it to his house. Dr. Moses Baker was in attendance; bathed the protruding bowels in warm milk and water, carefully cleansing them from the dirt and leaves and replacing them within the abdomen, secured the opening with sutures, compress and bandage. Dr. Baker was most assiduous in his attendance. By his request, Dr. Joseph Warren, a distinguished surgeon, who afterwards fell in the service of his country at the memorable battle of Bunker Hill, saw the case, but made no change in the dressing, kindly saying that he could not have dressed the wound more skilfully himself. "On examining the account books of Dr. Baker, now in my possession," continues Dr. Alden, "I find the last charge for attendance and dressings was thirty-six days after the injury. The recovery was perfect and the patient was able to labor as before, living forty-three years, till 1811, when he died at the age of eighty-one." None of the bold and great surgeons of my acquaintance, or in my reading, have yet attempted autolaparotomy. It seemed to have been thought worthy of record that after this meeting the society proceeded to dinner, when the landlord was discovered in a condition of exasperation because his first notification of thirty or forty friends to dine with him was their appearance in the office. He was, however, soothed by having it pointed out to him that his diners were better when constructed at short notice, and he was served with a copy of the bylaws to study the times of meeting. The repast, it was noted, was set forth with the profusion and costly elegance which marks the Everett House.

In May, 1875, there was a long wrangle about the methods of Dr. Heaton, who was at that time supposed to have a secret method of curing hernia. A member, however, reported the whole procedure and technique, which was published.

In January, 1877, Dr. D. D. Gilbert, of Dorchester, reported a remarkable case of interstitial pregnancy, with operation and recovery. I will not dwell on the particulars, but will say that the diagnosis having been made, and pains coming on, and no time given for consultation, Dr. Gilbert incised the membrane enclosing the head, through the os, with a Miller's scarifier, and the next day a child weighing four pounds was born, who lived four weeks, the mother recovering. When we consider the state of knowledge and practice in this most dangerous condition twenty-five years ago, I think you will agree with me that Dr. Gilbert's promptness, resource, decision and skill are worthy of high commendation.

January, 1877, also gives the first notice of Dr. Martin's adhesive plaster: in October of the same year of his rubber bandage, both of which have had such extensive use.

In March, 1878, appears the first reference to the aspiration of the bladder, which used to be so frequently done, but which now is seldom heard of.

November, 1879, in a discussion about puerperal convulsions, Dr. Fogg related several cases where

convulsions were controlled by atropia, which he preferred to morphia.

On the 4th of December, 1879, the secretary is instructed by the President of the Massachusetts Medical Society that reasonable doubts having been presented by one of the boards of censors as to legality of action of the councillors at their last meeting regarding the admission of women to the society until its confirmation by the society at large, the Board of Censors of the Norfolk District is hereby directed not to examine women for admission until further official notice regarding the matter shall have been received by the secretary. This is the first notice of the great woman question on record in our reports. It would be difficult to divine the nature of the sensations and exclamations of Dr. Jeremy Stimson, of Dedham, the first president, and of Dr. Alden, of Randolph, were they to join us in the flesh this day and see ladies seated in the conclave and cheering us by their presence. Dr. Martin spoke of the want of knowledge of diseases of parts about the pelvis, and told of a patient first treated in Philadelphia after the method now fashionable for increasing "blood and fat," and later failing to be relieved at a water cure of "plethora," when the case was really one of piles cured at once by a proper operation. Dr. Joseph Stedman mentioned a case of his that had fallen into the hands of a "specialist," who said the patient had a "tumor" and should have it excised. Some few months afterwards the patient was brought to bed of a healthy child, and the "tumor" was no longer to be found. The "specialist" received an invitation to the christening.

In December, 1880, we find in spite of the excerpts which have been just read to you, an expression of want of interest in the society.

In the meeting of November, 1881, Dr. Martin gave glimpses of the International Medical Congress in London. He said the germ theory met with a cool reception in the congress, and, in the speaker's own mind, in less than twenty-five years that now popular theory would be one of the exploded fallacies. As to antisepsis Mr. Keith and several of his assistants had suffered from albuminuria from carbolic-acid poisoning. Mr. Lister was considerably disconcerted by Mr. Keith's remarks. Because the allotted time for speakers in the congress was limited by rule to ten minutes, and Dr. Martin found the rule inflexible toward himself, although frequent exceptions towards some others were not wanting, he preferred to accept the opportunity offered by the British Medical Association of an excursion to Ryde, Isle of Wight. The opinions about the germ theory and antisepsis were largely shared by leading surgeons of the period, and are only quoted as illustrating the fact that brilliant speakers and scholars are not exempt from the rule that it is safest to prophesy after the event.

In May, 1882, the election of councillors appears to have turned on the question of the admission of women, Dr. R. T. Edes being the champion of the sex.

The last date brings the history of the society within the memory of living man. I have already exhausted my time and your patience, otherwise material could be brought to light of increasing interest in the records of following years. I thank you for the forbearance with which the garrulity of age

has been listened to, and I know that you would all bear even greater hardships, if they would ensure the prosperity and duration of our Norfolk District Medical Society, and light it along for another half century.

THE PROGRESS OF MEDICINE.¹

BY HAROLD C. ERNST, M.D., BOSTON.

PROBABLY no period in the history of medicine has been so prolific of changes and, as we believe, of progress as the last fifty years, and it is my pleasant duty, at the request of your committee of arrangements, to place before you as clearly as may be an outline picture of how this progress has been accomplished.

The great period of medical advance beginning with the application of ether to the relief of pain in surgical procedures in 1846 at the Massachusetts General Hospital and almost co-existent with the life of this society has accomplished so much that a brief review of the changes is necessary to enable us to realize what has been done. These are changes, too, that are of the utmost practical value, and in medicine we are little liable to the reproach of the search after useless knowledge, for we should believe, and most of us do, that "The knowledge which a man can use is the only real knowledge, the only knowledge which has life and growth in it and converts itself into practical power. The rest hangs like dust about the brain or dries like raindrops off the streets."²

Now progress in medicine occurs by the increase in means for study; the growth of hospitals and dispensaries for the care of the sick and the study of disease on the one hand, and by the enlargement of the means for presenting the material thus brought together to the students of medicine, as well graduates as undergraduates, on the other.

How this has been accomplished in our own vicinity I shall endeavor to show you, and then to give you a very brief review of what similar changes all over the world have done for our knowledge and management of disease processes in the human race.

It is exceedingly interesting to find that of the 110 (approximate) institutions in Massachusetts devoted to the care and treatment of the sick, but 13 of them were in existence previous to 1850 (Massachusetts General Hospital, incorporated 1811, open for patients September 3, 1821; McLean Asylum for Insane [name changed by trustees in 1892 to McLean Hospital], Department for Insane authorized in charter 1811, opened for patients October 6, 1818; Boston Lying-in Hospital, organized 1832; Eye and Ear Infirmary, started by John Jeffries and Edward Reynolds, who hired a room November, 1824, in Scollay's Buildings; Boston Lunatic Hospital, 1839; Smallpox Hospital, 1817; State Lunatic Hospitals, — Worcester, authorized March 10, 1830; Taunton, authorized May, 1851, — Massachusetts School for Feeble Minded, organized 1848; Barre Institute for Feeble Minded Youth, organized 1848; Essex County Receptacle for Insane; Lowell Hospital, organized 1840; Salem Dispensary, organized 1824; Boston Dispen-

¹ Delivered at the Semicentennial Meeting of the Norfolk District Medical Society, May 8, 1900.

² Osler's *After Twenty-Five Years*, p. 11, rep. from *Montreal Medical Journal*, November, 1899.

sary, organized 1796; Lowell Dispensary, 1836); that some of these were merely talked of at that time and were not carrying on effective work, and that a very large part of them were intended for the treatment of mental degenerates of one kind or another. Also that one of the very first acts of the Norfolk District Medical Society was to pass a vote, "That a committee be appointed to prepare, in the name of the society, a memorial to be presented to the next legislature of Massachusetts setting forth the want of further and better provision of means and authorities in Norfolk County for the admission of lunatics into the State Lunatic Hospital from Norfolk County." It would be a difficult matter to interpret this latter fact correctly. To some it might seem to indicate what has often been asserted—that the hard New England life of early days had a double effect in providing for the survival of the physically strong, but in producing an undue amount of mental strain in those who survived the other hardships. Other students would place no such interpretation upon these facts.

Studying the times by decades, when the various institutions for the sick have been established in this Commonwealth, the enormous increase of late years is a very noteworthy fact. From 1850 to 1860 there were but 5 new institutions founded (the Boston City Hospital, which was incorporated in 1858, but not dedicated until May 24, 1864; the Channing Home, May, 1857, incorporated 1861; the House of the Good Samaritan, incorporated in 1860; Taunton Lunatic Hospital, organized in May, 1851; Northampton Lunatic Hospital, authorized May, 1855). From 1860 to 1870 there were 12, of which the most important were: The Carney Hospital, established 1864, incorporated 1865; the Children's Hospital, incorporated February 26, 1869; the New England Hospital, incorporated 1863; Tewksbury Asylum for the Chronic Insane, 1866. From 1870 to 1880, 24: Danvers Lunatic Hospital, authorized 1874, opened 1878; Worcester Insane Asylum, 1878. In the last twenty years there have been no less than 58 public and private institutions for the treatment of disease opened, with others projected or under way. In other words, there has been made more provision for the sick and infirm in these last twenty years than in all the preceding existence of the Commonwealth.

What appears to me to be the most notable fact about this increase is the many small local hospitals that have been started. I mean by this the small town and city hospitals that are springing up in such numbers all over the State. Sometimes their foundation is due to the liberality and public spirit of one member of the community, sometimes to the affection of an individual for the place of his birth, but whose life has been passed entirely away from it; and very commonly again to the civic pride of the governing authorities, who thus wisely use some of the funds at their disposal for the care of the unfortunate and the protection of the well. There is no doubt in my mind that this establishment of local hospitals in small towns and centres of population is a movement to be fostered and encouraged in every possible way. For, although it is true that great institutions for the care of the sick can be managed more economically on the average, and that the collected wisdom of the staff of such an institution is greater than can be reached by one of less experience, it is equally true that all these

advantages are often much more than counterbalanced by the fatigue, exposure and delay to which patients transported from a distance are often subjected. So, also, provision must be made for the growth of population, and great and freely offered as are the facilities of our older and larger hospitals, they cannot ever begin to cover the entire need for the whole State.

Another most notable incident in the history of hospital building in the last ten years is the opening of the State Hospital for the Cure of Consumption at Rutland, which shows by its presence the recognition of the duty of the government of the State to provide for this scourge of civilized communities, and, by its work, the great benefit that may accrue to those affected with this disease by proper management and care. Its benefits, too, are not confined to those received under its roof, but through them when discharged some knowledge of the proper management of persons sick with pulmonary tuberculosis and of the infectious material coming from them is disseminated slowly but surely among the neighbors. The pity is that it is not possible to take care of *all* those needing it, instead of only a small portion.

Finally, as regards hospitals, in the last twenty years the phenomenal growth of the Massachusetts General and McLean Hospitals, of the Massachusetts Eye and Ear Infirmary, and of the Boston City Hospital is especially striking. The McLean Hospital, opened, as few of us realize, *before* the Massachusetts General, has made its move to the magnificent situation and plant where its usefulness is to increase and spread for years to come. The Massachusetts General Hospital has not made a change in site, but has been in a constant state of unrest, in tearing down and building up again, and when its present plans are completed is likely to present an incomparable surgical hospital to the world. These two institutions, which are really one, present the spectacle of the superb results from private benevolence that follow with years of accumulation of funds and continued wise management. The Massachusetts Eye and Ear Infirmary has within a few years entered upon an enlarged career of usefulness in its buildings, beautifully arranged and constructed for its special needs, furnished for the hospital in large measure by private gifts, but also aided by the State. The contrast is great between the present great charity and institution of instruction, with its staff of over 30 medical men, its yearly treatment of over 22,000 new patients with eye and ear disease, and the rooms in Scollay's Buildings of its founders, Drs. John Jeffries and Edward Reynolds, in 1824, where "in sixteen months 824 persons applied for treatment."

Finally, as an institution of which all citizens of Boston may be justly proud, the growth of the Boston City Hospital shines before us all, an institution still on the site first chosen for it, but so different that except for the central dome its originators would hardly know it. Supported wholly by the liberality of the city government, and commanding this liberality at need by the continued excellence of its management and beneficence, it is truly a model which we can all point to with pride as a demonstration of what a municipal institution of the kind should be. That this hospital will also in the future receive its share of private benefactions needs no further proof than the beautiful Ann White Vose Home for its nurses, which forms the last addition to its equipment. These are

the most striking illustrations of the growth of great hospitals that we can see around us, but the money expended upon and superb results obtained in the Boston Lying-in and the Children's Hospitals must not be passed by without mention, for their work is of too great value in itself and for the cause of medical progress to be neglected. This is true also of the Boston Dispensary, that for over a century has been doing the good that came to it to do among the sick poor, without ostentation and without display, but first in the field for the care of the sick, first in the field of instruction for the improvement of medical knowledge, and first today in the number of persons that are yearly benefited by its ministrations.

Another of the institutions for the advancement of medicine that has been born to usefulness since that first meeting of the Norfolk District Medical Society in Dedham, on November 19, 1850, is the Boston Medical Library. The importance of a medical library to the medical profession is no less than that of a general library to the general public, but, on the contrary, is greater, and this need of the profession has been recognized and attempts made to satisfy it from an early date. In 1805 the names of Drs. John C. Warren and James Jackson are found connected with an effort to form a library, as in connection with so many other good works of their time, and while their efforts did not result in a permanent foundation, this failure must rather be ascribed to lack of pecuniary power and numbers than of appreciation of the need. This collection of books passed to the Boston Athenæum, giving certain privileges in return, and the next collection formed was at the Massachusetts General Hospital, from the gift of Dr. J. C. Treadwell, of Salem, in 1857. The present Boston Medical Library Association furnishes a means of study and research that grows more and more valuable as the years go by, and, when the present hopes are gratified, and plans carried out, will before long be housed as becomes the library headquarters of the profession in this State.

Finally, as the instrument of instruction in which we are most interested, and from which most of us derived our early knowledge of medicine; as the means by which, if at all, all the institutions already spoken of may be made to fulfil their highest functions — of teaching — we come to the Harvard Medical School. It is difficult for us to realize the condition of the school and the college at that time when we see the condition of things at present. It would not take long to read to you the entire announcement of the Medical School of fifty years ago, and it is extremely interesting to those concerned in medical instruction, but a few extracts and comparisons will serve the purpose without making too great delay. The entire faculty of the Medical School of the year 1849-1850 consisted of eight gentlemen, including the president of the college: Jared Sparks, President; Walter Channing, M.D.; Jacob Bigelow, M.D.; John W. Webster, M.D.; John Ware, M.D.; John B. S. Jackson, M.D.; Oliver W. Holmes, M.D., Dean of the Faculty; Henry J. Bigelow, M.D. (succeeding this year Dr. George Hayward). This is somewhat different from the announcement in the catalogue of 1899-1900, where are the names of 34 members of the faculty, and 87 instructors and assistants engaged in teaching, but without seats in the faculty. The summary (of the entire university) shows:

PROFESSIONAL STUDENTS AND RESIDENT GRADUATES.	
Theological students	17
Law students	100
Students attending medical lectures	127
Special students in chemistry and mathematics, and students attending lectures in the scientific school	38
Resident graduates	3
Total	285
UNDERGRADUATES.	
Seniors	65
Juniors	69
Sophomores	76
Freshmen	87
Grand total	297
	582

After detailing the instruction offered to students in the special branches, the following statement is found: "Taking into view the amount of instruction given in this school, the extensive apparatus with which it is furnished, its connection with the numerous cases and operations of one of the best conducted hospitals of the United States, together with the general thorough acquisitions and high respectability of its graduates, it may be doubted whether any seminary in the country offers the means of a more complete professional education than may be obtained in the Medical School of Boston."

The statute regulations relative to medical degrees of the time are very interesting, showing as they do how comparatively little in the way of general training was then deemed necessary. The medical school of that day was essentially a school of medicine in its clinical aspect, and the great questions of the sciences allied to medicine were either not taught, because not in existence, or were brought under some general heading. The statutes (in part) were as follows: "The faculty of medicine consists of the president and the medical professors and lecturers, one of whom, to be chosen by themselves, shall always be dean." The faculty shall hold two examinations annually for the medical degree, at which three members shall be a quorum for business. The following are the conditions on which students are admitted to examinations: "(1) Each candidate shall furnish evidence that he is twenty-one years old. (2) He shall have attended two full courses of the lectures in this college. Nevertheless, a similar course in any other college or university approved by the faculty may take the place of one of these. A third course may be attended without fee. (3) He shall have studied three full years with a regular physician, and be of good moral character. (4) If not graduated in the arts, he shall satisfy the faculty in respect to his knowledge of the Latin language and experimental philosophy. Certificates of competent persons will be received as satisfactory proof of these facts." "Each candidate having complied with these statutes shall be examined separately in anatomy, physiology, chemistry, materia medica, midwifery, surgery, and the theory and practice of medicine, and upon his dissertation." (Seven examinations as compared with twenty-eight or nine today.) "The decision in regard to each shall be made and declared to him at the close of his examination, by the votes of the major part of the members of the faculty present and, if favorable, shall be recorded by the dean, and by him certified to the president, to be laid before the *Senatus Academicus*." It will thus appear that two members of the faculty might have had the opportunity of conferring the degree of M.D. at that time. The severity of the

examinations of today as compared with those of fifty years ago needs no comment. A further announcement is made that, "The lectures for medical students on the various branches mentioned in the statutes are delivered at the Massachusetts Medical College in Boston. They commence annually on the first Wednesday in November and continue four months." (!)

This is practically the entire announcement of the Harvard Medical School for the year 1849-1850. The school was then in the building on North Grove Street, recently completed, and in not a great many years after was suffering from the same overcrowding, and agitating the same sort of ambitious plans for the future as is the case today.

In the early seventies the faculty of the school took the radical step of grading the course of study and requiring students to pass from one subject to another in logical sequence and after examination, a step that was taken with many forebodings, and that resulted in a tremendous pecuniary loss to the school (by cutting off the number of students), but that was so necessary that the struggle to carry it through cannot be realized today. In the early eighties the school moved into its present building, and it was then thought that many years would pass before its needs could even occupy the space it then had. On the contrary, even with the help of the Sears addition, the most effective work for the students has been hampered for some time past, and some of the departments are and have been crowded to the extent of often being obliged to refuse special students. Four years ago the faculty decided to raise the standard of admission to the school by the requirement of a degree from a recognized college in arts, letters or science, or examinations equivalent to entrance to the junior class of Harvard College, and this regulation will go into effect in 1901. It has been looked forward to with much trepidation by many of the teaching force, and with lively fears that the school will lose so many scholars that it will be pecuniarily crippled. It cannot be doubted, however, that if such an unfortunate result should temporarily occur, the friends of the school will support it through any such trying period as generously as has always been the case. That this is practically certain is shown by the encouragement to the efforts making to bring about the greatest advance that the school has ever thought of—a scheme for securing its future for generations to come, together with the establishment of what will be, if it can be carried through, the most perfect university of medical science that the world has yet seen, a place where students of medicine in all its branches may come to find an equipment perfectly adapted to its uses, and teachers prepared to foster and encourage research in all its directions for the demonstration of new truths, as well as to give instruction in all branches of present medical knowledge.

With this brief review of some of the changes that have occurred in what is concerned with medical teaching, let us turn now to what must be a still more brief review of some of the great changes that new facilities have made in medical knowledge. The changes have been many and of vast importance, and it would seem, if our just hopes are gratified, that more important changes are still to come.

Necessarily, since the discovery of ether, no event has so profoundly influenced medical practice and teaching as the realization by the medical profession of the tremendous importance of the theory of bacterial infection. Ether itself would not have proved the blessing it has if the knowledge of surgical fever, of septicæmia, pyæmia, and similar processes had not been made as clear as has been the case. Of course the knowledge of bacterial infection does not in any sense cover the whole field of medical advance, but it is of itself the great step of the century, and our exact knowledge of etiology is practically dependent upon it. It is to this part of medical advance that I shall devote the remainder of this paper.

As I have just said, it is the general knowledge of etiology and public hygiene that has most benefited by the increase in our knowledge of the bacteria, and this increase in knowledge has been dependent upon the destruction of the old theory of spontaneous generation. Until this could be definitely done away with, it was not possible to secure much support for a belief in the assertions as to the specific nature of the bacteria. When it was possible for one of the most acute students of the day (Nägeli) to affirm that he had seen such varying processes as the fermentation of milk and wine, the souring of butter, anthrax, septicæmia, and so on, all produced by the same micro-organism—which also changed its form, as well as its results, and that easily—very little belief could be secured for the theory that each of these processes was due to one form of living organism, and one only, and that that retained its shape and general characteristics, or at least returned to a definite group of characters when placed under proper conditions. It was the recognition of the existence of spores in certain of the bacteria and of their extreme resistance to destructive agencies that finally did away with any support of the theory of spontaneous generation, and enabled the modern ideas of infectious processes to gain form and strength.

Through this theory of the action of the bacteria in the production of disease we have gained a practical working knowledge that is of incalculable value in the management of these processes, even though our hopes in securing a specific means of treatment have not yet reached their full fruition. What better illustration of this can be given than the absolute disappearance of hospital gangrene or of puerperal fever from the hospitals in which these diseases used to be a curse to the attendants and a frightful menace to the patients? Neither of them were the object of *specific* treatment in the sense in which we understand the word now; in neither of them has any "antitoxin" been worked out; in fact, as to puerperal fever, it is well known that more than one bacterium may take part in its production. But in both, the gospel of cleanliness, according to bacteriological methods, has done its work thoroughly, and these diseases have disappeared as a menace to sufferers liable to their attacks, because of our knowledge of the bacteria and their methods of action, and for no other reason. Cleanliness as it was formerly understood was thoroughly applied, but it was ineffective as compared with the results of today, because there was then no conception of what to guard against. It is ridiculous to claim, as a well-known English surgeon has done, that his very excellent results in abdominal

surgery were due to common sense and cleanliness and not to the knowledge of the bacteria, based upon all the experimentation of recent years. This is the very greatest result of the work, the simplest proposition of all, that properly applied cleanliness — meaning the exclusion of pathogenic bacteria from wounds — makes it possible for any surgical procedure to be carried out with absolute certainty that no unfortunate results will follow, so far as surgical fevers are concerned. And what a field has been opened to the surgeon by this fact! Operative interference of all sorts is justifiable now and is daily carried out, as was never the case before, and operations are now performed daily that were hardly dreamed of a few years ago, and if performed, were done as a desperate and last resort for the sake of the life of the patient. All this is due not to the knowledge that cleanliness is important, but to the knowledge of what cleanliness means, and how it is best secured. Indeed so brilliant are the results in surgery, and with such comparative ease have they been obtained, that the more complex problems still to be solved in the domain of clinical medicine have been somewhat neglected because the results seen in them have not been as brilliant. If this be so, it is because the conditions surrounding the solution of these problems are infinitely more numerous and confusing. On the one hand is a general fact that the tendency of all healthy tissue is to heal, and that it will heal if the injury to the vital parts be not too profound, and if bacterial activity be excluded; the rest is merely a matter of mechanical skill. On the other hand is a problem in which are included as most important factors racial and individual peculiarities, with all of their infinite modifications, with changes from the normal induced by bacterial activity already under way. The two problems are hardly to be compared more closely than a simple formula in arithmetic and a most abstruse astronomical calculation; both are concerned with the vital functions, but one depends upon allowing those vital functions to act without disturbance, the other requires that these vital functions shall be encouraged to act, while already subjected to adverse influences, in such a way that they may finally return to the normal balance, and while this is taking place, that they may resist the future encroachment of the attacking force. It is little to be wondered at that the results in the management of special diseases have as yet been so apparently slight — and yet they have really been very great. For although it is true that the only specific of wide applicability in human diseases is the antitoxin of diphtheria, the solving of this problem alone is as great an achievement as all the triumphs of surgery together.

For the rest, the management of other infectious diseases may be intelligently conducted as never before, and if our knowledge be properly applied, the spread of these scourges may be largely arrested, if not prevented entirely. Thus we know in typhoid fever, as we did not know before, that the infectious material of the disease is contained wholly in the dejecta; we know further that the specific cause of the disease is a non-spore-bearing bacillus, easily destroyed by chemicals, and so we have the problem of how to prevent the spread of this disease from an individual under our care most perfectly solved; all that is necessary being the proper management of the dejecta and articles soiled by them, and the danger from that patient is done away with.

Typhoid fever being produced by a non-spore-bearing bacillus, the infectious material is easy of destruction. But the case is otherwise with pulmonary tuberculosis. Here is an instance of the enormous value of the knowledge gained by the study of the bacteria. In the first place, the determination of the fact that this is an infectious disease; in the second, that being an infectious disease, the active principle in its production lies wholly in the expectoration, and that this being properly treated the danger from the individual attacked is reduced to a minimum. But here the laboratory studies of the bacillus of tuberculosis show that the conditions of the problem are different from typhoid fever, in that the bacillus resists destructive agencies strongly, although not known to be a spore bearer, so that different and more strenuous methods must be adopted in its management than is the case with the bacillus of typhoid fever. The principle, however, is the same, and as in these two diseases, so in many others of the infectious processes, the knowledge already given to us teaches us an intelligent method of management that has never before been at our command.

Though briefly stated, these results have not been reached without many failures, mistaken inferences and stumblings on the path toward the truth. It cannot be doubted that finally we shall reach the goal toward which they all tend, of securing a means for the arrest of the processes when once begun, but in the meantime our present knowledge is too valuable not to be applied to its fullest extent, and as in pulmonary tuberculosis and typhoid fever, so it is our duty in pneumonia, cholera, tetanus, and other diseases in which we know the specific cause and its site, to carefully apply our bacteriological knowledge in their management, as the studies in the laboratory make this knowledge clear. By inference, too, such management is made more easy in the case of the acute exanthemata, in which the specific cause has not yet been clearly demonstrated. For, although we may not know the actual agent in their production, we do know much by circumstantial evidence, which enables us to manage these diseases with much greater safety to our patients and ourselves than was formerly the case. The benefits accruing from our knowledge of bacterial processes are not confined to the management and diagnosis of disease alone. In the latter domain of medicine — that of diagnosis — it is hardly necessary to more than call to your attention the means for diagnosis dependent upon knowledge of the bacteria that have been perfected within the last few years. Every one of them is of the utmost value, either for life-saving or protective purposes. Tuberculosis, diphtheria, typhoid fever, glanders, anthrax, actinomycosis, gonorrhoea, and so on, can not only be discovered with much greater accuracy, but can be treated with much greater intelligence and precision than before.

Lest the list given above seem meagre in numbers, others of the diseases less common in this vicinity should be mentioned, for they are as important in themselves as any of the others, and all serve to show the wonderful activity in medical investigation of the last generation, and the marvellous fruits that are the results of that investigation. Tetanus and rabies, malignant edema, cholera, some few of us know from personal contact with them, and the same may be said of bubonic plague, Malta fever, Madura foot and

leprosy, the scourge of localities infected by it; malaria, brought to our special knowledge by the sufferings of many of those returning from the Spanish War; influenza, that has apparently become a permanent resident among us, and pneumonia, always with us, have each and every one become better understood and better amenable to treatment, by reason of the improved knowledge of their causation, methods of diagnosis, or treatment, directly due to the study of the micro-organisms.

So, too, have the studies upon the bacterial flora of the intestines—first begun in this vicinity by the late Dr. John Jeffries, in my laboratory—been productive of enormous benefit in the way of feeding, and the beginning of an understanding of the processes of intestinal digestion. The first baby I ever heard of as being fed upon sterilized milk, and as I believe the first one ever so treated, was a patient of mine, and the idea of sterilizing that baby's milk came as a direct result of laboratory knowledge. We had then begun to realize that milk formed the very best of natural culture media for bacteria, and especially for those saprophytic forms that are especially found in indigestion and other infantile diseases, and the procedure was intended to destroy them, and thus prevent adding fuel to the fire already blazing in the digestive tract of *sick* infants. The destruction of these forms, that are easily killed, is all that is accomplished to-day, without so changing the character of the milk as to make it unfit for food. Given a pure milk supply, and proper care of the milk to the time it is consumed, even this is not necessary.

I should weary you if I should go on to speak further of the application of the knowledge of the bacteria and of fermentative processes to the matters of general hygiene and to commercial purposes. The disposal of sewage by bacterial action in filter beds, the brewing of beer with pure cultures of yeast, the ripening of butter, and the fermentation of wines by special cultures, are all matters of common occurrence illustrative of what I mean.

A review of the ways in which it has been sought to secure a specific treatment for the infectious diseases may, however, prove interesting and instructive. The inference to be drawn is apparently that each process is a problem by itself, and must be worked out for itself by the combined efforts of every one competent to do so.

First, there is vaccination against smallpox; this is really the substituting of a mild type of disease (cowpox) for a malignant form of a similar but different disease, without reference being had to the actual causative agent in either.

Then came the efforts of Pasteur to secure protection against anthrax, based upon the fact shown in the laboratory, that cultures of the bacillus of this disease could be *attenuated* in virulence upon being subjected to certain abnormal conditions, and that when thus *attenuated* they merely made the animal sick, but did not kill after being inoculated; when the animal had recovered, he was found to be in a condition to resist the action of cultures in full virulence. In other words, here was a method of protection against a malignant form of disease by subjecting the patient to an attack of a mild form of *the same disease* (not a different disease, as seen in *vaccination*). This successful production of immunity by an attenuated virus led to many efforts in the same direction, without

great success in disease attacking man, except in rabies. And here the result is somewhat different, for we do not in this case deal with the actual specific cause alone, but with an emulsion of the tissue in which this cause is known to be present.

Then came tuberculin and mallein, both dealing with the intracellular products of growth of the specific causes of the disease, as seen in the test tube, for both tuberculin and mallein are prepared by making glycerin extracts of the bodies of the bacteria grown in pure culture. Their use is therefore an example of the employment of the chemical products of the bodies of the bacteria, and not the vital activity of the bacteria, as a means for fighting the diseases against which they are directed.

Finally, we have the antitoxins of tetanus and diphtheria, the former not so successful clinically as was hoped, because the disease is so slow in becoming clearly defined that treatment is too long delayed; the latter the final triumph of the scientific method of laboratory study as applied to the actual treatment of disease. How this triumph has been carried out to its extreme in our own community the statistics of the South Department of the Boston City Hospital will tell more eloquently than any words of mine could possibly do.

So much for the past,—how much this is, I have but feebly pictured to you,—but what of the future? What will the next semicentennial of this society have to look back upon? Which one of us does not feel sure that we are but upon the threshold of greater advances than those with which we congratulate ourselves now? It requires but little enthusiasm to look for the disappearance of tuberculosis, diphtheria, and the rest from among us as completely as of smallpox in the past—and which one of us is not proud to have had some share in obtaining or spreading the knowledge necessary to this great saving of human suffering? Which of us, after a thought of what has been accomplished, is not more ready and eager for the struggle and sacrifices that are to come?

Original Article.

ACUTE DILATATION OF THE HEART IN INFLUENZA OF CHILDREN.¹

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ACUTE dilatation of the heart has been observed in a number of infectious diseases either as the result of direct or indirect affection of the heart.

As direct affection of the heart may be considered those forms in which dilatation, and as a result myocardial insufficiency, is produced by primary disease or abnormal functional activity of the myocardium itself.

As indirect affection those forms may be considered in which the dilatation is the result of functional or diseased conditions of all those various apparatuses which in one way or the other have a direct influence upon the heart's activity—the respiratory apparatus, the nervous system, the blood vessels, the kidneys.

Under the first heading, then, we can take into consideration diseased conditions of the myocardium, its

¹ From Jacobi's Festschrift.

muscular or connective-tissue substance; and therefore, to a greater or less extent, the intracardiac nerve supply.

Under the second heading must be included the consideration especially of those conditions tending directly to change the intracardiac pressure as the result of increased resistance to the outflow of blood from the heart, and the changes that take place in the cardiac centres and the extracardiac nerves.

When the dilatation of the heart goes beyond certain limits, then we have produced symptoms of myocardial insufficiency. The appearance of these symptoms varies in individuals; and it is difficult in an individual case to state when the line of demarcation as between physiological and pathological dilatation has been passed. It has been my observation that children in most instances will recover from that which seems a pathological dilatation with incredible rapidity, in that respect differing greatly from the adult; again, this is largely a question of individuality, as we find some children who not only seem predisposed to this condition, but in whom not only all the symptoms of myocardial insufficiency develop as completely as in the adult, but also continue to do so upon comparatively slight provocation. While this is the case, yet the prognosis differs in the two periods of life, in that, once the great storm of symptoms has passed over, the child's heart recovers itself more quickly, and develops into what seems a normal heart, at least, without compensatory hypertrophy, while in the adult compensatory hypertrophy is the rule.

The clinical picture produced by acute dilatation of the heart in influenza has been known to nearly all the authors who have written upon the subject of influenza during the last twenty years; but it was left to Huchard (1890) to give a special name to this condition, *la grippe cardiaque*. For myself, I have always believed that terms like renal typhoid, or cardiac grippe, are of no especial benefit to us, in that, after all, in these conditions it is only a local manifestation of a general affection that we are dealing with; a fact that should be thoroughly appreciated and fully recognized at all times. For this reason I have preferred the title, "Acute Dilatation of the Heart," as it at least expresses the definite condition which is always present; one that we find in septicemias of all varieties, in the acute exanthemata, in whooping cough, diphtheria, influenza — in short, in nearly all the acute infectious diseases, either as the result of the specific, primary infection, or as the result of the secondary infections which we are so apt to find in all of these conditions. To the great Dublin clinician, Graves, is probably due the credit of having made a distinct clinical picture of the characteristic conditions, and which I am about to consider.² He says: "One of the most singular features of influenza is the extraordinary degree of dyspnea witnessed . . . and even in many cases when the bronchial mucous membrane is but slightly engaged, the amount of dyspnea is remarkably great . . . in many cases it is intermittent, or at least undergoes remarkable exacerbations and remissions at certain hours of the day and night. . . . It would appear that the respiratory derangement depends on the same general cause which produces the whole line of symptoms; and that it might exist even when there was no bronchial inflammation at all." This same condition is referred to with more or less detail by

the German authors, Biermer, Zülzer and Kormann, but it is to West³ that we owe a description of a more intense development of this train of symptoms. In the epidemic of 1856, West observed a combination of symptoms of which dyspnea was the principal one, disappearing in two or three days, followed by "extreme depression, cool, moist skin, a very feeble pulse, and labored respiration. . . . In this condition the children, though quite conscious when roused, lay generally dozing, while, though the somewhat livid hue of the lips and surface seemed to imply the existence of some serious mischief in the lungs, there was nothing to be heard but a large moist rale." He concludes by stating that "on several occasions," under increased depression, a fatal issue followed.

In this country we are now in the tenth year of successive epidemics of influenza; and the opportunity for study of its various manifestations and complications, both in private as well as in hospital practice, has been exceptionally favorable on account of the number of cases and the differing course of the disease in different epidemics. As a result, many of us have seen the conditions above described not infrequently. An infant or child is taken down, in the course of a house epidemic of influenza, with high fever accompanied by symptoms on the part of the respiratory or alimentary tract, possibly with a catarrhal or follicular angina tonsillarum, and within twelve to twenty-four hours there develops dyspnea, or, better, tachypnea, for it is perhaps more correct to refer to the condition of rapid breathing in this form of the affection as tachypnea, as all other evidences of dyspnea are wanting, such as cyanosis and movements of the accessory respiratory muscles. The child lies in bed, with congested skin, sleeps a great deal, yet is easily aroused; the tachypnea is represented by rapid breathing (60 to 70 or more per minute), without disturbance of the normal relation between inspiration and expiration, therefore neither inspiratory nor expiratory dyspnea. In some cases the breathing is not very much more rapid than the normal. The pulse is very rapid, depending upon the age of the patient, frequently intermittent, but otherwise normal. Physical examination of the chest reveals nothing, or possibly evidences of a bronchitis in the large tubes; the heart dulness is always found broadened, with no bruits as a symptom of this affection, although in one instance I found an endocarditis developing after the acute dilatation had run its course. The urine, which was examined in every instance, was invariably found to contain no albumin. In the course of from twenty-four to seventy-two hours all these symptoms disappear, the temperature, pulse, heart and respiration become normal, the whole condition of the child changes, it returns to its normal state, and then remains well; or the various symptoms of a more prolonged attack of influenza develop. I have never seen this mild form develop into the more severe one, as seen by West; all my severe cases have developed in a different way, as will be seen presently.

As to the etiology of this condition various and varying views have been expressed. Graves believes that the poison of influenza acts "on the nervous system in general, and on the pulmonary nerves in particular," and that the condition produced is one to be likened to the one following section of "the eighth

² Clinical Lectures on the Practice of Medicine, 1843, Influenza.

³ Lectures on the Diseases of Infancy and Childhood, Philadelphia, 1874, p. 281.

pair of nerves" in animals. Biermer⁴ thinks that the symptoms are due to a pulmonary congestion; Zolzer⁵ looks upon the condition as one akin to nervous asthma, more like a motor neurosis of the diaphragm and the bronchial muscles; Sansom⁶ says that "the cardiac crises during the acute stage of the disease might be due to involvements of the nerve elements in the bulb; the remote symptoms should be ascribed to a neuritis affecting the sympathetic ganglia, the vagus, and the sensorimotor nerve trunks."

Against the acceptance of congestion of the lungs as the cause of these symptoms speaks the fact that there are no physical evidences in the lungs which show the existence of this rather indefinite condition. These might have eluded detection on the part of one or more observers, but all those who have seen these symptoms remark upon the disproportion between physical signs in the lungs and the rapidity of breathing. It seems more satisfactory, therefore, to accept a nervous origin for these symptoms, although there is no direct evidence in favor of this view. Merklen and others, it is true, have found lesions in the vagus in cases of tachycardia; but we have here a condition producing especially tachypnea. Myocarditis can be excluded because of the transitory nature of the affection, although in the grave forms of dilatation this has been observed (Huchard). Neither does it seem possible that the cardiac branches alone are affected, otherwise the tachycardia would be the prominent symptom, while this is only relative, and the tachypnea the dominant symptom. It is, therefore, more reasonable to suppose with Sansom that there is some affection of the bulb affecting both the respiratory and the cardiac accelerating centres. The source of the irritation would be a toxin, hypothetical as far as the influenza bacillus is concerned, but positive as to some of the pus producers which habitually accompany influenza. It would be fully in accord with the nervous origin of these symptoms that we find broadening of the heart's dulness. The production of acute dilatation of the heart as the result of disturbance in innervation has been conclusively proven in many diseases. The second class of cases to be described demonstrates this more fully.

The grave form of the affection presents an entirely different clinical picture. Here there can be no question as to the origin of symptoms, at least, as all the manifestations can be satisfactorily explained by considering the heart. Huchard⁷ gives the following concise description of this condition (*la grippe cardiaque*): "The attack manifests itself by syncope and faintness, which may become fatal, by slow pulse, by arrhythmia, or intermittence, by grave symptoms of cardiac collapse, and sometimes by pains resembling angina pectoris." One of his patients had a very rapid pulse, with a feeling of suffocation upon making the slightest movement. How this form of acute dilatation of the heart presents itself in children will be best shown by the following histories of 2 of the 4 cases I have seen:

The first was in a girl twelve years of age, weighing about 130 pounds, who previously had had rickets, diphtheria, typhoid fever, pertussis and measles, from

all of which she had recovered without any sequelae. The family history is good. The child was taken sick with fever and sore throat on March 6, 1897, from which she recovered in a few days, and this attack left her with a cough which continued until I was called in to see her again on June 5, 1897. This cough, which I did not hear before the latter date, but heard too often afterwards, was the cough that we so frequently hear in influenza, and which has not inaptly been called pertussoid. On the morning of June 5, 1897, the child had fever (101°), and the cough, as far as number and intensity of paroxysms was concerned, had grown very much worse. In the evening the temperature had risen to 105°, with pulse and respiration in proportion; the cough was now so bad that with each paroxysm the child complained of pains about the lower region of the thorax and in the abdomen. Physical examination revealed the evidences of a bronchitis, large, moist and dry râles, and a large superficial heart, dulness almost to the right border of the sternum and to the mammary line to the left, the latter to be explained possibly by the obesity of the child. No evidences of consolidation in the lungs, nor were there any abnormal auscultatory phenomena to be found in the heart. The next few days passed in the same way, the temperature, pulse and respiration keeping up, the cough becoming worse, and vomiting taking place with nearly every paroxysm of coughing. As a result of this constant coughing, the abdominal pains became so great, constipation and vomiting being present, that a suspicion of abdominal inflammation arose, which, however, was soon dispelled; in other words, this child was now suffering from recrudescence of the influenza. On the morning of June 9th I was suddenly called to see the child, and found her in the following condition: She was in a state of collapse; she was lying in bed in a soporific condition, from which she was easily aroused; the skin moist, slightly cyanosed, the face swollen, breathing at the rate of 65 per minute without any effort apparently; the pulse had come down from 120 beats to 70 per minute, and was weak and intermittent. The slightest effort on her part, such as turning in bed, caused the frequency of respiration to be increased and the pulse to become more irregular and weaker. After an attack of coughing the pulse became almost imperceptible, and the breathing ran up to as high as 70 per minute. A thorough physical examination was not to be thought of on account of this condition; but auscultation of the heart showed nothing abnormal; while percussion, even in the recumbent position, showed the right border of the heart about one-half a centimetre to the right of the sternum. After two days the condition changed somewhat; large doses of colicia were added to the medication, as it seemed imperative to control the paroxysms of cough as much as possible, on account of their untoward effects upon the heart. Now the pulse gradually began to increase in frequency, going up to 140 beats per minute; the dyspnea was not so constant, there being a difference of between 15 and 20 respirations during the condition of being awake or asleep; but motion, swallowing or any excitement would make this difference disappear, and an attack of coughing would raise the number of respirations even higher than it was before (as high as 90 per minute). The pulse continued rapid all this time, never going below 120 beats per minute, and contin-

⁴ Virchow's Handbuch, V, Bd. vi.

⁵ Ziemssen's Handbuch, II, Bd. iii.

⁶ Medico-Chirurgical Transactions, 1891, p. 290.

⁷ Sur quelques formes cliniques de la grippe infectieuse, Bulletin et Mémoires de la Société médicale des hôpitaux de Paris, S. 3, vol. vii, p. 93, 1890.

ued intermittent, although not quite so weak as on the previous days.

Physical examination of the lungs did not reveal anything more than at first, but the heart showed remarkable changes. The superficial dulness was increased to 1 centimetre to the right of the sternum; and after attacks of coughing to as much as 2 centimetres, depending upon the intensity of the paroxysms; no appreciable change to the left. Over the tricuspid area, as well as at the apex, was heard a soft systolic bruit, which also was increased in intensity after paroxysms of coughing. Bruits were also heard at the base, especially after the paroxysms of coughing, but they were more difficult to localize, and were conducted in such a way that it was impossible to ascribe them to one valve or another. Gradually, as the result of treatment, all these symptoms began to disappear; the pulse came down from this time until September, 1897, so that its minimum was 87, and its maximum 120 beats per minute; the latter upon exertion. As soon as it was possible, graded exercises were used, and the patient was discharged as well the middle of December, having been ill for five months, with diurnal changes for better or worse, but on the whole with a constant tendency towards improvement. On May 7, 1899, I examined the patient for the last time. I then found her, having lost her fat, having grown four inches, and with a normal heart which was no longer insufficient under any conditions of exercise or fatigue.

One other case did not materially differ from the preceding except that the manifestations were not so severe and did not last so long. In addition, this last child was younger and not fat, so that the contributing cause of obesity of the heart was absent in her. In the former case there were some peculiarities that must be taken into consideration. The child was unusually fat for her age; it is, therefore, not unlikely that there was some obesity of the heart, rendering the myocardium less resistant to strain than it would have otherwise been. Three months of continued coughing certainly did not add to the strength of the myocardium, so that when a renewed invasion of influenza occurred cardiac collapse ensued, which first manifested itself by great asystole, and afterwards by a decided and distinct acute dilatation of the right heart, with relative tricuspid insufficiency.

It is difficult to decide upon the real condition which first caused this cardiac collapse; but it was my distinct impression at the time of first seeing this patient that I had to deal with an uncomplicated case of myocardiac insufficiency, the result of heart strain, the factors producing the heart strain being the obesity and the whooping-cough-like paroxysms of coughing. It is outside of the province of this paper to discuss the rôle played by the influenza in producing the pertussoid; the mechanism of production of heart dilatation in this case was the same as that found in whooping cough, to which so many authors have called attention. That the toxin had something to do with the improper innervation of the heart it is impossible to deny, but just as impossible to affirm.

The following case again illustrates peculiarities, but seems to prove especially that the myocardium is the part of the heart that is affected. The patient, a little boy two years and three months old, of good antecedents, artificially fed as an infant, had had influenza when four months old followed by acute otitis

media; in October, 1897, when fifteen months old, he had another attack of influenza, which was followed by the peculiar and irregular fever so common after this disease, which lasted for two months, and which resulted in great depression, anemia and loss of flesh (no malaria, no typhoid). In June, 1898, he contracted whooping cough, which ran its course in a very mild manner (maximum, ten paroxysms in twenty-four hours).

In October, 1898, he had another attack of influenza; as the little fellow had three attacks of influenza, the fact must be emphasized that, in every instance, all the members of the family were affected with one or the other form of the disease, so that the diagnosis was perfectly clear. In this last attack the pertussoid nature of the cough was clearly demonstrable, as would have been the case, in all possibility, with any cough which would have developed so shortly after an attack of whooping cough. Early one morning after an unusually severe attack of coughing, "he turned blue in the face and fell fainting in my arms," as the mother expressed it. Two hours after this I saw him and found him cyanosed, sweating, breathing very rapidly and with a rapid, irregular, weak pulse. Physical examination of the lungs showed the evidences of bronchitis. Inspection of the cardiac region showed pulsation over the whole area; in addition there was epigastric pulsation. The heart impulse was diffuse, felt most distinctly in the fourth interspace to the left of the mammary line; percussion verified this as the left border of the heart. Toward the right the dulness extended to one-half centimetre beyond the right border of the sternum, and above began at the fourth rib. There was no bruit. The tachypnea was influenced by the slightest exertion, but the heart did not increase materially in size. The patient was kept in bed and under treatment for five weeks and then made what seemed from physical evidence a rapid recovery. During the summer he had another attack of tachypnea, which, however, lasted only a few days. When brought back to me in the fall there was no evidence of cardiac trouble.

The following winter (1898-1899) was uneventful; but the mother, preparatory to leaving for the summer, in June, 1899, asked me to examine the child again, which I did, and found the heart normal. The fatigue of a very hot journey and an attack of illness, accompanied by fever and gastro-intestinal symptoms, again brought on the same train of symptoms described above, the latter being diagnosed by the local physician as due to heart trouble. This attack lasted for two weeks.

My notes made on September 2, 1899, show the following as the condition of the heart: Apex beat immediately below the nipple in the fifth interspace; superficial dulness begins at the apex, the lower border of the fourth rib and the left border of the sternum; no bruit. Since the last attack the child has been well.

The peculiarities of this case are: That the myocardium undoubtedly was weakened by the previous attack of whooping cough, although no evidences of this weakness could be detected, and that this weakness has continued, so that when sufficient demand is made upon the myocardium, high fever with gastro-intestinal infection, for instance, the same symptoms return. On account of the long periods of rest which the child has enjoyed, it does not seem reasonable to sup-

pose that the nervous system of the heart, except as implied in the myocardial structure, plays any important rôle in the production of these symptoms. Again, at no time during the course of the disease was there bradycardia. It seems that here again we are dealing with a purely mechanical dilatation of the heart due to increased resistance to the outflow of blood from the right side of the heart. The fourth case had no predisposing conditions of myocardium as had the other three; and developed after the febrile stage when the pertussoid was at its height. Here the symptoms came on just as rapidly; physical examination revealed an enlarged right heart; but the whole condition lasted only ten days, leaving the heart normal. The dominant symptoms in all these cases were on the part of the heart, and the peculiar respiration which I have only seen in two other conditions — in pericardial effusion and the fugitive edematous condition of lung that frequently precedes pneumonic consolidation in influenza without cardiac changes. It is this latter observation that has induced me to explain all the cases of the milder form by taking into consideration the effect of a toxin upon the nervous system in producing acute dilatation.

As to the grave forms, observations made on 4 cases are not sufficient to form a definitive opinion, although in all of them the direct cause of the trouble seemed to be heart strain, in 2 of them there being a predisposing weakness of the myocardium. It is possible that in those 2 cases a myocarditis was going on at the same time, although the short duration of the attack in 1 of the cases and the complete *restitutio ad integrum* in all of them seem to preclude this. Under all circumstances, it seems to me that we are justified in calling this condition acute dilatation of the heart.

All the reflections on the subject of affections of the nervous system of the heart in influenza are purely theoretical; as yet, no changes have been described in any of the various parts of the nervous system of the heart, as has been done for scarlatina and diphtheria. Until this is done it seems safer to hold fast to that which we can verify, which has been expressed by Goodhart⁸ in a similar case, as follows: "The only conclusion that seemed possible was that an acute dilatation of the heart had taken place."

According to my own observations we are justified in assuming two forms of heart dilatation in influenza: One presumably produced by the action of the toxin upon the nervous system of the heart and possibly upon the myocardium; the second form occurring in such conditions in which outflow of the blood is materially interfered with on account of mechanical conditions.

The first form, according to the excellent observations made by West, undoubtedly may end fatally, although this has not been the case in my own experience. The second form is one that lasts much longer than the first, but in children has a tendency to recovery.

HYDROTHERAPY IN BERLIN. — An official chair of hydrotherapy, according to the *Philadelphia Medical Journal*, is about to be established at Berlin. A hydrotherapeutic department in the Charité Hospital will be opened in the autumn under the direction of Professor Brieger.

⁸ Albutt's System of Medicine, vol. i, p. 602.

Medical Progress.

REPORT ON PROGRESS IN SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CURRIE, B.D., BOSTON.

GANGRENE COMPLICATED BY GLYCOSURIA.

WALLACE,¹ in an article on this subject, in which he cites a number of cases, comes to the following conclusions:

- (1) That it yet remains to be proved that true gangrene (excluding death from acute specific processes which may occur in any subjects and at any age) occurs in diabetic patients unaccompanied by such arterial disease as would of itself produce the gangrene.
- (2) That the glycosuria may or may not precede the gangrene, but is not usually accompanied by other signs of diabetes.
- (3) That septic wounds may produce a glycosuria which vanishes when the septic process is removed.
- (4) That individuals suffering from septic processes are often on the borderland of glycosuria.
- (5) That gangrene may aggravate a pre-existing glycosuria.
- (6) That the arterial disease is sometimes that which accompanies, or is produced by, chronic renal disease.
- (7) That it is yet to be proved that neuritis can produce any gangrene comparable to that of the so-called diabetic gangrene.
- (8) That the best chance of recovery is offered by removal of the limb near the trunk and that this measure should be undertaken before the patient is reduced by septic absorption.
- (9) That the presence of glycosuria may be an indication, instead of a contraindication, for operation.

ABDOMINAL SYMPTOMS IN PNEUMONIA OF CHILDREN.

A valuable article has recently been published by Dr. J. L. Morse,² Boston, in which he calls attention to those occasional cases of pneumonia in which the preponderance of abdominal symptoms (pain, tenderness, nausea, vomiting, dulness, constipation, etc.) may lead to serious errors in diagnosis. He has seen 2 cases where the abdomen has been opened by experienced surgeons, because appendicitis and not pneumonia was supposed to be the cause of the trouble. In these cases the physical signs may not be recognizable for several days. In the absence of physical signs the combination of symptoms should arouse a suspicion of the real seat of the disease. With an acute onset with high temperature and the rate of respiration increased out of proportion to that of the pulse, even in absence of a cough, Dr. Morse states the probable diagnosis will be pneumonia. By keeping in mind this combination of pulse, temperature and respiration, error may be avoided even when vomiting, abdominal pain, constipation, and at times also tenderness and distention, probably of reflex origin, are present. The cases accompanying the article are quite interesting, and seem to be illustrative of the subject under discussion. One, however, in which there was previous history of constipation and a blow on the abdomen, closely followed by the abdominal symptoms, would still be an anxious one for the attendant physician during the first forty-eight hours.

¹ *Lancet*, December 23, 1899, p. 1730.

² *Annals of Gynecology and Pediatrics*, vol. xiii, November, 1899.

KOCHER'S OPERATION FOR CARCINOMA OF THE LARYNX.

Butsch³ reports 15 cases of carcinoma of the larynx treated by Professor Kocher since 1890. Twelve of these were operable. The first 7 of the series were operated upon by Kocher's former method; that is, general anesthesia, tampon canula, total or unilateral extirpation of the larynx by means of the so-called T incision, and subsequent feeding with pharyngeal tubes. This technique was essentially altered in the later cases of the series. In place of general anesthesia, local anesthesia by the infiltration method of a 1-100 solution of cocaine was employed. The patient was placed in the Trendelenburg position and the use of the canula dispensed with. A median incision was made from the hyoid bone over the larynx, exposing the thyroid cartilage. The thyrocericoid ligament was perforated and the thyroid cartilage split vertically with scissors.

The halves of the cartilage were retracted, thus completely exposing the interior of the larynx and the tumor. The parts to be removed are anesthetized by pencilling them with a 1-per-cent solution of equal parts of cocaine and antipyrin, and the tumor excised widely with the knife, or, better, with the thermocautery. If possible, only the soft parts are thus excised, but in cases in which the cartilage is involved Kocher uses the scissors to remove the affected cartilage superichondrially. The bleeding surface is cauterized and powdered with iodoform, and an ordinary tracheal canula introduced. The wound is tamponed and left open. Special position of the body, as well as feeding by the tube, is not necessary.

Of the 12 cases operated upon, 1 died as a result of the operation; 2 are considered cured, 1 four years and a half, the other two years and a half after the operation; 3 are free from recurrence, but have not been observed for a sufficient length of time to consider them definitely cured. These good results would not have been possible had not the diagnosis been made early in the majority of the cases.

The paper concludes by advocating simple mesial section of the thyroid cartilage, and circumscribed excision of the new growth in the Trendelenburg or in Rose's position without general anesthesia.

[Pieniazek⁴ removed a number of endotheliomata and also several carcinomata from the larynx without general anesthesia, employing essentially the same procedure as followed by Kocher. Rose's position is perhaps better adapted to these cases than Trendelenburg's.]

RESECTION OF THE CERVICAL PORTION OF THE ESOPHAGUS FOR CARCINOMA.

De Quervain,⁵ after a résumé of the literature and a careful study of 14 cases, including a report of 1 of his own cases, comes to the following conclusions:

(1) All carcinomata of the esophagus that have not involved the surrounding tissues, and the lower borders of which do not extend below the upper margin of the arch of the aorta, are suitable for extirpation through the neck. The lowest point of the upper margin should not be less than 20 centimetres from the teeth.

(2) Tracheotomy is seldom employed as a preliminary operation. If an opening into the trachea is found necessary, it should be made as late in the operation as possible.

(3) A preliminary esophagotomy is generally replaced by a gastrostomy.

(4) A gastrostomy is the best means of securing rapid healing after the esophagus resection. It is absolutely essential to operations upon deep-seated strictures, and advisable in those situated higher up.

(5) If it is impossible to fix the upper end of the lower portion of the esophagus in the wound, it can be ligated, where this is possible, and allowed to sink down into the thorax. A permanent gastric fistula is better for the patient than the dilatation of a constantly contracting scar-tissue stricture in the region of the aortic arch. Where it is impossible to unite the esophageal ends a salivary fistula is to be expected in the neck.

(6) In the after treatment the free changing of an aseptic gauze dressing is of the greatest moment, with great care to separate the pharyngeal from the mediastinal ends of the wound.

CANCER OF THE BREAST.

Abbe,⁶ in a paper read before the New York Academy of Medicine in February, states that progress towards the cure of mammary cancer has come from the recognition of the following anatomical distribution of the lymphatics:

(1) Those which drain the mammary gland directly towards the axilla, through parallel channels in the cellular tissue, coursing from the axillary edge of the gland to the axillary vein, interrupted by occasional lymphatic glands, finally concentrating in several channels lying upon the axillary and subclavian veins, mostly upon its anterior surface and entering the neck at the junction with the jugular.

(2) A series extending from the mammary gland directly outward to the overlying skin communicates with the lymphatics of the skin itself.

(3) A series from the deep aspect of the gland passes directly to the bed of cellular tissue between the gland and the pectoral muscle, where it is joined by lymphatics emerging from the pectoral muscle, and these together travel toward the axilla upon the pectoral fascia.

(4) Another series extends towards the sternum and is associated with the veins, penetrating the sternal part of the pectoral muscle and thus enters the mediastinum.

HERNIA OPERATIONS IN INFANTS.

Franckel's⁷ article on this subject, in which he recommends very early operation, and according to the Bassini method, attracted the attention of F. Kerewski in Berlin, and the latter has published his experience and conclusions relating to the same subject.⁸ He notes among his operations 13 reducible and 6 incarcerated hernie in infants with 1 death. No recurrences recorded. Duration since operation: Two cases over eight years, 3 over seven years, 2 over five years. He considers the Bassini method as too complicated and long for so young patients and in all children younger than three years simply frees the sac and ligates it as high as possible. The opera-

³ *Deutsch. Zeit. f. Chir.*, Bd. i, S. 481; *Annals of Surgery*, December, 1899, p. 752.

⁴ *Centrbl. f. Chir.*, 1894, S. 131.

⁵ *Archiv. f. klin. Chir.*, 1899, Bd. lviii, Hft. 1-1; *American Journal of the American Sciences*, January, 1900, p. 94.

⁶ *Medical News*, April 7, 1900, p. 521.

⁷ *Centrbl. f. Chir.*, 1899, Hft. 47.

⁸ *Loc. cit.*, Bd. xxvi, S. 1337.

tion should be done as rapidly as possible and by the least complicated method. He states that he completes this operation usually in three to five minutes. He regards an operation indicated where a truss cannot be worn or when it does not hold the hernia, and the hernia is increasing in size in spite of truss treatment or becomes incarcerated. In the case of older children the probability of a spontaneous cure is much less, and therefore an operation is much more frequently indicated. The writer does not agree with Fraenkel that a spontaneous cure in an infant leaves the canal relaxed and patent, so that the hernia is liable to recur. He has failed to meet such a recurrence in all his experiences.

A NEW METHOD OF SUTURE IN OPERATIONS FOR INGUINAL AND OTHER FORMS OF HERNIA.

Freeman,⁹ in a paper read before the Wyoming State Medical Society in October, 1899, describes a new method of suture in operations for inguinal and other forms of hernia as follows: Previous to the operation, two or three needles are threaded with long loops of silkworm gut (silver wire may be used), and two pieces of stiff, silvered wire are procured long enough to reach the entire length of the inguinal canal, cut through the external ring and beyond the surface of the skin (small probes answer the purpose well).

The internal ring is exposed, the sac ligated and cut off or knotted upon itself,¹⁰ and the cord held out of the way. One of the silkworm-gut loops is passed from without inward through the muscular tissue on the umbilical side of the ring, well back from the margin, and fairly close to the point of exit of the spermatic cord. The loop is then carried through Poupart's ligament from within outwards, some distance from its free edge. Another loop is similarly inserted near the pubic limits of the opening.

One of the previously prepared wires is now run through the loops, which are pulled tight enough to hold it in place. The other wire is laid along Poupart's ligament between the free ends of the loops, which are firmly tied over it, thus approximating the wires and bunching a quantity of muscular tissue against the ligament. Before finally inserting the wires they should have been bent upward at their pubic extremities, so as to protrude through the external incision, thus facilitating their removal. The ends of the wires furthest from the pubes must be so placed that they leave the new internal ring neither too large nor too small.

The cord is now dropped in place over the line of union, and the aponeurosis of the external oblique united above it, the upturned ends of the wires passing through the external ring. As the aponeurosis is not subject to tension, its accurate union is not of so much importance, and Harris's removable suture may be employed if desired. Catgut, however, is not so objectionable as it is in the deeper portions of the wound, as it comes away more readily in case of suppuration. In uniting the skin, the free ends of the loops and the ends of the wires are brought out through the incision between the stitches.

In from ten days to two weeks, which is long enough to procure reasonably firm union, the wires are removed by pulling on their protruding ends. This frees the loops, which are likewise readily

extracted. It should not be lost sight of in this connection that after union has taken place sutures are of little or no utility; if there is no tension they are superfluous, and if there is tension they are equally so, because they will cut through the tissues.

The author has employed this method three times with satisfaction—in a boy of twelve, a man of fifty-five, and a young man with a very large internal ring. The technique is simple, and it is especially indicated when the internal ring is large or where tension is feared. The method may be readily adapted to umbilical or to ventral hernia, and would probably be particularly useful in cases where the opening is large and tension correspondingly great.

To the author's mind the procedure described presents the following advantages: (1) It is simple and quickly executed; (2) any reasonable amount of tension can be readily overcome, which is of paramount advantage when the internal ring is large; (3) the sutures cannot cut through, which must frequently occur in other procedures, especially if vomiting or coughing should supervene; (4) a large amount of muscle can be bunched up against Poupart's ligament, thus increasing the likelihood of permanent cure; (5) the sutures can readily be removed, leaving nothing to give rise to irritation or to a sinus.

(To be continued.)

Reports of Societies.

MAINE MEDICAL ASSOCIATION.

FORTY-EIGHTH ANNUAL MEETING, HELD AT PORTLAND, JUNE 13, 14 AND 15, 1900.

THE association met Wednesday, June 13th, at 10 A. M. in the Common Council Chamber, City Building, and was called to order by the president, DR. B. T. SANBORN, of Augusta. Prayer was offered by the RT. REV. ROBERT CODMAN, JR., Bishop of Maine.

After the reports of the treasurer and various matters of committee business, DR. C. B. SYLVESTER, of Harrison, read a paper on

SURGICAL PRACTICE IN THE COUNTRY.

The great need of the country physician is to be a good surgical diagnostician and able to do most of the surgery which now leaves the country for the city hospitals. Emergency surgery must be attended to in the country, and upon his ability to secure asepsis with ordinary facilities will depend his success.

DR. F. H. GERRISH, of Portland, thought the country doctor needed to be everywhere, on the whole, a better equipped and better informed man than his brother of the city, because he has not the same facilities of consultation and assistance. Dr. Gerrish commended the appreciation of the younger generation of country practitioners of the fact that no surgery which was not aseptic was good surgery; in that belief they were certain to have an advantage over their elders who were reluctant to accept it in detail.

DR. W. K. OAKES, of Auburn, was most impressed with the references of the paper to hospitals in competition. Present methods of receiving patients were unsatisfactory and unfair to country and city doctors

⁹ *Annals of Surgery*, March, 1900, p. 286.

¹⁰ Duplay and Cazin: *Semaine méd.*, November 11, 1899.

alike. Patients ought to be required to present some evidence of their inability to pay the same fees as others for the same service in private practice. These patients benefited by the lower rates of the hospitals ought to appreciate the fact that they are receiving charity.

Dr. SARAH W. DEVON, of Boston, read a paper on

A CASE OF REMOVAL OF THE SPLEEN.

AFTERNOON SESSION.

The session was held at three o'clock, Dr. S. C. GORDON, of Portland, in the chair.

Dr. J. J. HEALEY, of Newburyport, was welcomed as a delegate from the Massachusetts Medical Society and invited to participate in the discussions.

The President's Address followed. It dealt with the progress of the last decade in psychology and psychiatry, upon which his long experience as a superintendent of the Maine Insane Hospital qualified him to speak.

Dr. W. L. COUSINS, of Portland, read a paper on
A NEW OPERATION SUGGESTED FOR OBSTRUCTIVE
DYSMENORRHEA.

The operation consisted essentially of sectioning the bent cervix at point of constriction, dilating and maintaining the uterus in a straightened position by means of a shouldered glass tube.

Dr. J. D. COCHRANE, of Saco, read a paper on

LITHEMIA.

Salicylic acid and salicylates, phosphate and sulphocarbonate of soda were offered as the best solvents of uric acid, as well as hepatic stimulants. The lithia salts were condemned as forming insoluble compounds with ammonium and sodium acid at the expense of the alkalinity of the blood.

Dr. J. G. GEHRING, of Bethel, read a paper on
THE SUBJECTIVE CONSCIOUSNESS IN ITS RELATION
TO PRACTICAL THERAPEUTICS.

The report of the neurologist gave the following list of members deceased: Enoch Adams, Litchfield; A. J. Billings, Freedom; J. Gould Dyer, Portland; Theo. L. Estabrook, Rockland; Geo. Googins, Millbridge; Alfred Hitchcock, Farmington; Jerrie K. Phillips, Bangor; J. W. Turner, Gardiner; S. A. Patten, Skowhegan; Francis G. Warren, Biddeford.

EVENING SESSION.

The session was held in the rooms of the Portland Society of National History, on Elm Street, at eight o'clock.

Dr. GEO. HENRY FOX, of New York, exhibited by invitation a series of lantern slides illustrating

THE DIAGNOSTIC FEATURES OF CUTANEOUS SYPHILIS.

SECOND DAY.—MORNING SESSION.

Dr. EDW. J. McDONOUGH read a paper on

THE THERAPY OF THE FUTURE.

It was most hopeful for new possibilities in the physiological treatment of a larger number of diseases by serotherapy and the use of animal extracts.

Dr. A. E. BESSEY, of Waterville, read an exhaustive paper on

TUBERCULOSIS.

In discussion, Dr. A. G. YOUNG, Secretary of the State Board of Health, and Dr. D. A. ROBINSON, of Bangor, laid special stress upon the advantage of the Maine climate for sanitarium treatment of this disease.

Dr. CHAS. D. SMITH, of Portland, read a paper upon

THE MANAGEMENT OF CONTAGIOUS DISEASES BY
LOCAL BOARDS OF HEALTH.

It was the writer's opinion that the present law was adequate in its provisions, but that efficiency of administration could be improved by (1) better supervision of cases declared isolated; (2) medical inspection of school children; (3) the establishment of suitable isolation hospitals; (4) more efficient public disinfection by the use of improved methods.

AFTERNOON SESSION.

The association met at two o'clock. Drs. G. P. CONN, of Concord, N. H., and E. N. WHITTIER, of Boston, were introduced as delegates from their respective State societies.

The annual election of officers followed. The list for the ensuing year is: President, Dr. E. H. Hill, Lewiston; First Vice President, Dr. H. B. Palmer, Farmington; Second Vice President, Dr. J. F. Manning, Ellsworth; Treasurer, Dr. Aug. S. Thayer, Portland; Recording Secretary, Dr. Chas. D. Smith, Portland; Corresponding Secretary, Dr. C. A. Peaslee, Wiscasset.

Board of Censors: Drs. John F. Thompson, Portland; Arthur S. Gilson, Portland; Hiram Hunt, Greenville; G. M. Elliott, Brunswick; H. E. Snow, Bucksport.

Committee on Publication: Drs. Chas. D. Smith, Portland (*ex officio*); Willis B. Moulton, Portland; E. M. Fuller, Bath; E. J. McDonough, Portland; J. D. Cochrane, Saco.

Business Committee: Drs. S. P. Warren, Portland; W. L. Cousins, Portland.

Dr. H. T. CLOUGH, of Bangor, read a chapter on
ASTHENOPA AND GLAUCOMA OF THE CLIMACTERIC.

Dr. A. PALMER DUDLEY, of New York, read a paper entitled

THE MODERN CESAREAN SECTION AS AN IDEAL
METHOD OF TREATMENT FOR PLACENTA PREVIA.

He argued the possibility of detecting by vaginal touch the existence of placenta previa before hemorrhage takes place, by noting a less conical shape of the cervix, the feeling of dense tissue between the finger and the contents of the uterus and the placental thrill communicated to the finger. Gas and oxygen mixture was to be used for anesthesia, the uterus compressed by elastic rubber tubing and the operation to be made under constant hot saline irrigation without the use of sponges. The uterus to be closed by three rows of catgut sutures, closing separately the mucosa, the muscular wall and the peritoneal covering.

Cesarean section was urged as in every respect superior to rapid manual delivery, for the interest of both mother and child.

Dr. F. N. WHITTIER, of Brunswick, read a paper on

THE VALUE OF BACTERIOLOGY TO THE GENERAL PRACTITIONER.

Dr. S. C. GORDON, of Portland, read a paper on
GALL STONES.

At 4.45 o'clock the association adjourned to the Falmouth Hotel for the exercises attending the annual banquet. Dr. JOHN F. THOMPSON, of Portland, presided, and Dr. D. A. ROBINSON, of Bangor, acted as toastmaster. The speakers were Drs. S. C. GORDON, of Portland; PROF. F. C. ROBINSON, of Bowdoin College; Dr. G. P. CONN, Secretary of the New Hampshire Medical Society, and Dr. J. COLLINS WARREN, of Boston.

EVENING SESSION.

The annual oration was delivered by Dr. J. COLLINS WARREN, professor of surgery in the Harvard Medical School, upon

A REVIEW OF RECENT STUDIES ON THE NATURE AND ORIGIN OF CANCER.¹

THIRD DAY.—MORNING SESSION.

The association met at nine o'clock, and after the disposal of routine business, received the final report of the Board of Censors as follows:

The following recommendations and appointments were made. The next annual meeting of the association will be held at Portland, on the first Wednesday, Thursday and Friday of June, 1901. The selection of orator was left to the next Board of Censors with power. Following are the appointments:

Visitors to the Maine Insane Hospital: Drs. J. E. Walker, Thomaston; D. A. Robinson, Bangor; A. S. Gilson, Portland.

Visitors to Portland School for Medical Instruction: Drs. F. A. Chandler, Addison; G. M. Woodman, So. Windham.

Visitor to Medical School of Maine (two years): Dr. F. O. Thayer, Waterville.

Visitors to Eastern Maine Insane Hospital: Drs. G. M. Woodcock, Bangor; S. B. Hunter, Machias; John F. Manning, Ellsworth.

Delegates to American Medical Association: Drs. Alonzo Garcelon, Lewiston; M. C. Wedgewood, Lewiston; B. T. Sanborn, Augusta.

New Hampshire: Drs. J. F. Thompson, Portland; J. Z. Shedd, No. Conway.

Vermont: Drs. J. B. O'Neil, Portland; H. C. Bartlett, Norway.

Massachusetts: Drs. Chas. D. Smith, Portland; E. J. Marston, Bath.

Rhode Island: Drs. A. K. P. Meserve, Portland; N. M. Marshall, Portland.

Connecticut: Drs. S. R. Warren, Portland; S. B. Overlock, Pomfret, Conn.

New York State Medical Association: Drs. A. Palmer Dudley, New York; E. F. Clymer, Ithaca, N. Y.

New Brunswick: Drs. E. H. Bennett, Lubec; S. E. Webber, Calais.

Committee on Annual Banquet: Drs. H. F. Twitchell, Portland; R. D. Small, Portland; R. W. Bucknam, Portland.

Twenty-four new members were elected on recommendation of the board.

Recent Literature.

Tuberculosis; Its Nature, Prevention and Treatment.

With special reference to the Open-Air Treatment of Phthisis. By ALFRED HILLIER, B.A., M.D., C.M. Small 8vo. Pp. 243, with 31 illustrations and 3 colored plates. London: Cassell & Co., Ltd. 1900.

As the author states in his preface, this is "a concise manual, dealing with all the hydra heads of tuberculosis." It is largely a compilation but nevertheless a valuable and interesting summary of the whole subject, suggestive rather than exhaustive. There is little in it of the personal experience of the author except some references to his observations in South Africa regarding the climate and its influence upon consumption. The nature, pathology and transmission of tuberculosis are briefly considered, which is all that could be expected upon these subjects in so small a manual; for an exhaustive treatise one must look to Straus's and Cornet's great works. Under prevention the author advocates "the periodical application of the tuberculin test to all milch cows, and the *exclusion*—not necessarily the destruction—of all tuberculous cows from that portion of the herd from which the public milk supply is derived." In this opinion both the profession and the public for the most part coincide, and in view of the known facts it is the only safe and consistent course to pursue. Under this head also there are valuable suggestions regarding the care of children, in which is emphasized "the folly of so dressing children as to leave them with naked legs"; the prevention of atmospheric impurity by overcrowding in workshops; the disposal of sputa, and spitting, where the sensible suggestion is made that spittoons should be provided in workshops and crowded offices.

A chapter is devoted to Prevention by Legislation and Public Action, in which inspection of meat, milk supply, the housing of the working classes, and notification of phthisis are considered. Under the last head the author observes that "as public opinion becomes educated as to the true nature of tuberculosis it is quite probable that notification and supervision of cases will be insisted on." (In the United States compulsory notification already exists in several cities.)

The chapter on treatment is perhaps the most valuable one in the book, and is chiefly devoted to the open-air and sanatorium treatment. All phthisis therapeutists will concur in the author's conclusion that the benefit derived in every case (by the open-air treatment) is chiefly dependent on the extent to which the patient is continuously kept in pure air. Numerous interesting illustrations of sanatoria and various forms of open-air shelters are given, but, unfortunately, they are scattered throughout the book without regard to the text. In the description of sanatoria, Dr. Walther's at Nordrach, about which the English seem to be particularly enthusiastic, is given a prominent place and the author quotes a remark of Dr. Waltier's which is worth repeating: "Sanatorium treatment," he says, "should be largely educational, to teach what can be practised hereafter." The object to be attained in sanatorium treatment is well summarized as follows: "Pure and abundant open air by day and night, indoors and out; such good and

¹ See No. 2, p. 25, of the Journal.

plentiful food as the simple, open-air life may enable a patient to digest; rest—frequent and complete rest.” The majority of phthisis therapeutists will agree with the author that the sanatorium treatment of consumption gives results “equal to if not better than the health resorts of high altitudes, such as Davos.”

A short concluding chapter treats of the national movements against tuberculosis, and there is a valuable appendix in which are reprinted the leaflets distributed by the National Association for the Prevention of Tuberculosis, upon the prevention of consumption; fresh air and ventilation; rules for consumptive patients and those looking after them, from the Victoria Hospital for Consumptives, Edinburgh; the method of using the tuberculin test with cattle, and the recommendations of the second Royal Commission of Tuberculosis regarding meat and milk inspection, the care of milch cows and the elimination of bovine tuberculosis.

A Treatise on Surgery by American Authors. For Students and Practitioners of Surgery and Medicine. Edited by ROSWELL PARK, A.M., M.D., Professor of the Principles and Practice of Surgery and of Clinical Surgery in the Medical Department of the University of Buffalo, Buffalo, N. Y.; Member of the Congress of German Surgeons; Fellow of the American Surgical Association; Ex-President Medical Society of the State of New York; Surgeon to the Buffalo General Hospital, etc. Condensed edition, with revisions. With 625 engravings and 37 full-page plates in colors and monochrome. New York and Philadelphia: Lea Brothers & Co. 1899.

This condensed edition of Park's Surgery is a skillful cutting down of the two-volume edition, which is still on the market, and its compression into one volume. Practically all of the important matter of the two-volume edition has been retained and in its present form it makes a very practical single-volume work on modern surgery. It has been revised and considerable new material has been added. It is profusely illustrated, is an excellent piece of bookmaking, and makes one of the best textbooks on surgery.

The Modern Treatment of Wounds. By JOHN E. SUMMERS, JR., M.D., Surgeon in Chief to the Clarkson Memorial Hospital; Attending Surgeon, Douglas County Hospital; formerly Professor of the Principles and Practice of Surgery and Clinical Surgery, Omaha Medical College; Ex-President of the Western Surgical and Gynecological Association, the Nebraska State Medical Society, etc. Omaha: Medical Publishing Co. 1899.

This is a small octavo volume of 134 pages, which has a few illustrations of some value. The author has written a practical book, with but little theory; in fact, many of the statements are dogmatic, and are clearly the result of the author's strong conviction and the result of a large personal experience. As a whole the book shows that the views of the author are sound, but the meagreness of detail and technique gives the general impression that the book is written for lay instruction. Some of the mechanical devices that the author has brought forward are well worth knowing. The book can be safely placed in the hands of students and young surgeons, and many old surgeons will benefit by reading its pages.

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MEDICAL LITERATURE.

THAT more persons, whether qualified or not, are writing for medical periodicals than ever before appears to be an established fact. If one is doubtful on this point, one needs merely to look over the files of our weekly or monthly journals, and then to realize that each year new ones are being added, with no diminution in the size of their longer-established rivals. Of the quantity there can be no question, but of the quality possibly something remains to be said. Various tendencies are observable, some of which are certainly good and others as surely bad and demoralizing. The idea is growing that a young doctor's reputation, if his lot be cast in a large city amid much rivalry, is determined largely by what he writes, and by his additions therefrom to the sum of medical knowledge. This tendency we must in general approve. It cultivates the mind of the writer, and if he be possessed of intelligence as well as of ambition, what he writes is likely to prove of some value to his readers. An early application to the demands of original work, however small the problem may be, is without question a most desirable frame of mind for the aspiring doctor. There is danger, however, that this otherwise admirable frame of mind may be perverted to unworthy ends. With the small opportunity for self advertisement allowed a doctor who is beginning his career, it is small wonder that he writes at times for no other end than to bring his name before the eyes of his colleagues. Such writing is extremely apt to degenerate into a conscienceless filling of space with facts already known, and details in which no one can or ought to be interested; nevertheless, the author is apt to derive, at least, a reputation for industry from the mass of his often too uncritical colleagues. This sort of writing should be persistently discouraged. Mere self laudation should not be permitted to fill the columns of our medical journals, however artfully it may be disguised. The better medical journals are now, however, in great measure free from this worst type of medical writing, and an educated public taste will hardly longer permit the repeated publication of such articles without

at least an inward protest against the author and his methods.

By far the larger class of those who write papers are actuated by higher motives than unqualified self laudation. They sincerely believe themselves to be adding, by their literary efforts, to medical knowledge. They are writing "scientific papers," which are intended to be a source of edification to others, as well as of advantage to themselves. These are the writers who show many propensities which are very much to be deprecated. They are apt to be under the impression that many words are better than a few; that length of exposition is a merit; that irrelevant details are essential; that tabulations are invariably more expressive than statements; that uncritical bibliographies are an indication of thoroughness, and so on through a long category of faults which should be apparent to any well-trained scientific mind. A German professor of high standing in his special line of work, when a foreign pupil about to publish a paper was bemoaning his inability to write idiomatic German, said that if the meaning could be expressed, the idioms would take care of themselves. In spite of this excellent advice, which was duly followed, the fact remains that the German method of superabundant detail expressed in language of complicated indirectness has done much to influence our American writing. The idea has grown that thoroughness and verbosity are in some mysterious way synonymous, and we are finding more and more our new medical literature overburdened with detail which tends to obscure the kernel of originality for which alone the paper is of value.

In view, however, of all we owe to the laborious work of German investigators, it might appear invidious to take them to task for any shortcomings, were we not supported by the opinion of that most respected of authors and editors, Professor Virchow. Virchow, writing in a recent number of his *Archiv*, sounds no uncertain note in his criticism of modern methods of medical writing. Coming from such a source, we need no excuse for referring to a few of the warnings and bits of advice, which not only have a distinct bearing upon the author and his work, but also upon the editor, who is responsible to his readers for what appears in the columns of his journal. Speaking of the length of articles, Virchow says: "Avoid everything which is not necessary for the presentation and proving of the subject. But this, experience shows, is very difficult to attain." The lengthy details of history and autopsy he deprecates as unnecessary and often prohibitive of a reading of the paper. What he alludes to as the new custom of introducing comprehensive and often un instructive tables, he regards as unnecessarily increasing the difficulties of the reader as well as of the printer. The careless writer who collects a worthless bibliography, which he has never properly verified, but which still occupies valuable space, Virchow has no sympathy whatever for. He also questions the growing custom of numerous illustrations and particularly of those in

colors. "If the contributors would only inform themselves what a single colored plate costs, they would then experience how exorbitant their demands upon an editor are, who is obliged to pay the cost." Finally, he positively declines to accept articles for his journal beyond a certain length.

All these complaints which Virchow from his long experience makes are no doubt shared in, to a greater or less degree, by editors everywhere. What we need now more than ever before to get at, for the benefit of all concerned, is brief statement of essential facts. To accomplish this means unremitting effort on the part of writers to introduce into their communications nothing extraneous to the main issue, and to apply, as far as possible, such forms of expressing their points as will most certainly, if not most showily, bring this about. At times numerous illustrations and elaborate tables may be the best means to this end, but we are inclined to think that the cases are not few in which no one would find fault with their omission. It is at any rate certain that the burden which often lies heavily on the editor's shoulders would be materially lightened if contributors would bear in mind the warnings which Virchow has seen fit to express.

THE RED CROSS IN CHINA.

THE advance of the allied forces on Peking means much more than the usual difficulties incident to a campaign through an enemy's country. Apart from the inevitable hardships and deaths in action and from disease, it may be expected that the arrangements for the care of the wounded will have to be considerably modified, owing to the fact that China is said not to have been a party to the Geneva Red Cross convention. This, of course, implies that the medical and nursing staffs accompanying the army will not be regarded as noncombatants, and will therefore be exposed to dangers from which the medical arm of the service of armies has been free almost from the time of the Crimean War. This naturally will not concern the base hospitals, to which we understand the female nurses are chiefly to be apportioned. It will, however, modify the situation on the field of battle considerably and necessitate far greater precaution than is ordinarily required in the care of the wounded. We have already commented on the lack of medical organization, and on the rudimentary medical knowledge among the Chinese. In view of all these facts, the possible situation of the wounded is not pleasant to contemplate, but it is particularly hard for us to look with equanimity upon the fate of those who through the accidents of war may fall into the hands of the Chinese. Even were the intentions of the captors the best, which unfortunately we have every reason for doubting, the lack of hospital facilities and medical knowledge would go far toward making immediate death preferable to the treatment the captives would be likely to receive. Recent experience in South

Africa, as well as in our own war with Spain amply testifies to the difficulties which the medical corps of an army is called upon to meet when an unexpected strain is made upon its resources. The complete absence of medical organization in the Chinese army is a fact which makes our hope the more ardent that no unfortunate foreign soldiers may fall a prey to the ignorance and fanaticism of their enemies in the momentous movement toward Peking which is now being undertaken.

MEDICAL NOTES.

AMERICAN FELLOWS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND. — At the recent centenary meeting of the Royal College of Surgeons of England, the honorary diploma of the Fellowship was conferred upon Dr. W. W. Keen, of Philadelphia; Dr. Robert F. Weir, of New York; and Dr. J. C. Warren, of Boston, as well as upon Dr. W. S. Halsted, of Baltimore, already announced. The Canadian physicians, Sir W. H. Hingston and Dr. T. G. Roddick, of Montreal, and Dr. I. H. Cameron, of Toronto, likewise received the diploma.

THE MEDICAL PROFESSION IN ITALY. — The statistics of the medical profession in Italy, as given in the *Philadelphia Medical Journal*, present something of the same state of overcrowding as elsewhere in the world. In 1876-1877 there were 2,035 students of medicine, in 1896-1897 there were 6,922. But it is puzzling to note that while the number of practising physicians in 1878 was 18,044, their number was only 20,000 in 1899. About 900 men leave the universities yearly, but only about 500 physicians are reported as dying in the same limit. In Italy there are some 9,000 town physicians (or health officers); of these about 5,000 have a yearly salary, which in only 500 cases exceeds 3,000 lire a year.

TOO ILL TO BE NURSED. — The following taken from a daily contemporary has in it an element of grim humor not without significance: "It is the *London Chronicle* that says, apropos of Mr. Burdett-Coutts's melancholy view of the South African hospitals, it is still lightened by humorous touches. A lady nurse rushing fervidly to her patients in a Cape Town hospital ward, found her favorite soldier fast asleep. Pinned to his coverlet was a scrap of paper on which he had laboriously scrawled: 'to il to be nussed today respectfully J. M.'"

THE RAVAGES OF PLAGUE. — It is stated in the *Indian Medical Gazette* that from the beginning of plague in Bombay, September, 1896, till May 11, 1900, there had been in all 392,578 recorded cases, and 308,172 deaths, in the Bombay Presidency alone. Out of this large number there had been only 202 cases and 59 deaths of Europeans in the same presidency.

LEWIS STEPHEN PILCHER, LL.D. — The degree of Doctor of Laws has been conferred by the University of Michigan and Dickinson College upon Dr.

Lewis Stephen Pilcher, of the Methodist Episcopal Hospital, of Brooklyn, and editor of the *Annals of Surgery*.

LANE LECTURES, COOPER MEDICAL COLLEGE, SAN FRANCISCO. — The fifth course of lectures for 1900 will be given by Sir Michael Foster, from August 20th to August 24th, inclusive, on various subjects connected with the history of physiology.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, August 8, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 51, scarlatina 15, measles 26, typhoid fever 8.

SMALLPOX AT LOWELL, MASS. — Smallpox at Lowell still claims a certain number of victims. The disease is supposed to have been brought from Canada by a family of French Canadians, and is limited in Lowell to the French Canadian settlement. The patients are being cared for at the contagious hospital, and further means have been taken to hasten the work of vaccination.

NEW YORK.

A LUSTY CENTENARIAN. — John Paul Carroll, a centenarian residing in Brooklyn, has just been made a member of the Grand Army of the Republic, being mustered into the G. K. Warren Post, No. 286. He was considerably over age when the Civil War broke out, but he was accepted as a recruit of the Seventy-first Regiment, New York Volunteers, in May, 1861, because he was so robust, although he was then nearly sixty-one years old. He was born in the county of Meath, Ireland, on June 20, 1800, and the extraordinary vigor of his constitution is attested by his having passed the century mark, notwithstanding the fact that he still carries in the tissues of his neck a bullet received in the battle of the Wilderness and also that on his head is a silver plate covering the spot where a trephining operation was rendered necessary on account of another wound met with during the war.

NEW SUPERINTENDENT OF THE ELMIRA REFORMATORY. — Dr. Frank W. Robertson, of New York, who was recently appointed senior resident physician at the State Reformatory at Elmira, has now been appointed acting general superintendent of that institution, in the place of Superintendent Brockway, who was forced to resign on account of his reputed harsh treatment of the prisoners. While the latter has now retired, the resignation does not take effect until the end of the year, when it is probable that Dr. Robertson will be appointed permanent head of the reformatory. Dr. Robertson received the appointment of resident physician on the recommendation of a large number of prominent New York medical men. He is a graduate of the College of Physicians and Surgeons, and for five years prior to his going to Elmira was chief of the pavilion for the insane at Bellevue Hospital.

WORK OF THE CHILDREN'S AID SOCIETY. — The Children's Aid Society is doing admirable work during the summer. Since the 18th of June some 4,000 children from its industrial schools in the city have been sent to its summer home at Bath Beach. The girls remain for a week, and the boys go for one day, all alike enjoying the benefits of salt-water bathing. Nearly 1,800 mothers with sick children have been cared for at the Health Home at Coney Island, the larger portion remaining for one week; and a large number of crippled children have been afforded vacations of three weeks each at the Bath Beach Home. In addition to giving the day excursions for boys the society every Monday conducts a company of 100 little lads to the Farm School in Westchester County, where each company remains for one week.

A NEW CITY HOSPITAL. — On July 31st Deputy Commissioner of Charities Glennan, in the name of the city of New York and the Department of Public Charities, took formal possession of the old Brooklyn Homeopathic Hospital. This has hitherto been a private institution, but after the needed alterations have been made will be conducted in the future as a city hospital.

PRIZE AWARDED DR. KNOPF. — A dispatch from Berlin, dated July 31st, announces that the prize of 4,000 marks offered by the Tuberculosis Congress for the best essay on the subject, "How to Fight Tuberculosis as a Disease of the Masses," has been awarded to Dr. S. Adolph Knopf, of New York. Eighty-one essays are said to have been offered in competition.

INSANITY AMONG PRISONERS. — In the first two days of August no less than 6 inmates of the State Prison at Auburn, 3 men and 3 women, were adjudged insane, and they will be transferred to the hospital for insane criminals at Matteawan. No special reason is assigned for this sudden and unusual development of mental disease.

ADDITION TO ST. CATHERINE'S HOSPITAL. — St. Catherine's Hospital, in Williamsburgh, Brooklyn, is about to erect a new wing for the care of consumptive patients. The estimated cost is \$30,000, and of this amount \$18,000 has already been raised by the hospital society.

ARMY NOTES.

AN ISLAND FOR SEGREGATION OF LEPEES. — General MacArthur has convened a board of officers, of which Major L. M. Maus, Surgeon U. S. Army, is president, to select an island in the Philippine Archipelago for the segregation of lepers, to prepare plans and estimates for suitable buildings thereon, and estimates of salaries for the necessary officials and employes. The board is also charged with fixing the ration and other allowances for the support of this leper colony. This action was taken in view of the

large number of lepers in the Philippines, now under no restraint and a constant menace to the public health. It will be remembered that the army authorities are in Puerto Rico on a small key to the north of that island, while in Cuba the lepers have been carefully collected at the San Lazaro Hospital, near Havana.

ASSISTANT SURGEON LIPPITT WOUNDED. — Press reports state that Assistant Surgeon Lippitt, U. S. Navy, who has been serving with the detachment of marines guarding the United States legation at Peking, has been severely wounded.

Miscellany.

TABES DORSALIS IN INFANTS.

TABES DORSALIS is a rare disease in infants and the cases recorded in literature amount to 6 in all — namely, 3 cases published by Remak, 1 by Strümpell, 1 by Mendel, and 1 by Bloch. Dr. L. Dydynsky gives an interesting account of a seventh case — namely, that of a boy eight years of age, in whom the tabes had its onset at the age of five years and gave rise to bladder troubles. The patient has since then suffered from incontinence of urine and sometimes from retention of urine. He showed Romberg's symptom while standing, the pupils were of the characteristic Argyll-Robertson type, and Westphal's sign (loss of knee jerk) was pronounced. There were muscular hypotonia and feebleness but no atrophy or manifest inco-ordination. He had lightning pains and paresthesia in the lower limbs, as well as patches of hypoaesthesia and hypoaesthesia. The personal history of the patient showed a remarkable freedom from any infectious disease and there was not any direct sign of hereditary syphilis. The family history was as follows: The child's father had had syphilis when a young man, aged twenty years, and was at the time of recording of the child's present illness suffering from incipient tabes with characteristic knee symptoms and pupillary conditions. The child's mother had had five miscarriages before the present child was born. Following him were three other children (infants) who so far appear to be well. Dr. Dydynsky insists on the fact that in all the cases observed of infantile tabes and juvenile tabes (Raymond, Homen) syphilis has been noted in the parents, especially the father. Hereditary syphilis is undoubtedly the cause of infantile tabes dorsalis, just as it is also the cause of the characteristic cerebral degeneration, which may bring about juvenile general paralysis (Thiry, Alzheimer). It is interesting to note that in nearly all the recorded cases of infantile tabes the symptoms began with bladder troubles and troubles of micturition, after which ocular symptoms followed. Troubles of sensibility of the skin followed next in order of time, whereas ataxia and loss of the power of balancing and walking supervened late or did not appear at all. Considering the syphilitic etiology it is a question whether the prevention of both tabes and general paralysis in juveniles might not be effected were appropriate antisiphilitic treatment adopted in the case of every infant subject to heredi-

tary syphilis. The questions opens up one of the most important departments of preventive medicine. — *Lancet*.

Correspondence.

SPREADING OF DISEASE IN BARBER SHOPS.

BOSTON, August 3, 1900.

MR. EDITOR:—In view of the recent efforts of the Boston Board of Health to limit the spread of disease in barber shops, the following circumstances are of interest: D. H., age thirty-one, a laborer, early in June last was shaved for the first time in a certain Italian barber shop where the price of a shave is five cents. The barber cut his face and the cut did not heal. About three weeks later the cut became an ulcer, and at about this time a similar lesion appeared on the chin. On July 30th an eruption appeared all over the body. I saw him for the first time on August 1st. The sores on the face are typical hard chancres and the eruption is the secondary eruption of syphilis.

Yours truly,
H. F. R. WATTS, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 28, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York . . .	3,654,594	1394	664	33.60	5.46	18.90	.28	1.89	
Chicago . . .	1,619,226	—	—	—	—	—	—	—	
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—	
St. Louis . . .	623,000	—	—	—	—	—	—	—	
Boston . . .	539,416	227	97	43.12	3.08	24.20	.44	3.96	
Baltimore . . .	506,389	230	105	35.69	6.88	27.72	.21	.86	
Cincinnati . . .	405,000	—	—	—	—	—	—	—	
Cleveland . . .	350,600	—	—	—	—	—	—	—	
Pittsburg . . .	305,000	121	55	41.50	5.81	19.92	4.15	—	
Washington . . .	277,000	136	54	26.61	—	18.50	1.48	—	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	63	27	32.97	7.85	25.12	1.57	—	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Charleston . . .	65,165	34	8	23.52	—	11.76	2.94	5.88	
Worcester . . .	111,732	41	28	66.12	2.44	46.36	—	—	
Fall River . . .	103,142	55	44	65.52	1.82	61.88	—	—	
Cambridge . . .	92,520	41	23	61.00	2.44	48.80	2.44	—	
Lowell . . .	90,114	43	26	30.29	9.32	30.29	—	—	
New Bedford . . .	70,511	39	24	51.20	—	43.52	2.56	—	
Lynn . . .	68,218	—	—	—	—	—	—	—	
Somerville . . .	64,394	20	6	40.00	5.00	20.00	—	—	
Lawrence . . .	59,072	33	25	36.36	3.03	36.36	—	—	
Springfield . . .	58,266	22	14	45.65	4.15	41.50	—	—	
Holyoke . . .	44,510	—	—	—	—	—	—	—	
Brockton . . .	38,759	—	—	—	—	—	—	—	
Salem . . .	37,723	16	9	56.25	—	37.50	6.25	6.25	
Malden . . .	36,421	12	9	50.00	—	41.65	—	—	
Chelsea . . .	34,235	8	4	12.50	—	—	—	—	
Haverhill . . .	32,651	7	1	42.84	—	14.28	—	—	
Gloucester . . .	31,426	8	3	12.50	—	—	—	12.50	
Fitchburg . . .	30,523	12	5	25.00	8.33	—	—	—	
Newton . . .	30,461	16	7	6.25	6.25	—	—	—	
Taunton . . .	28,527	27	16	59.20	—	51.80	—	—	
Everett . . .	28,102	8	3	10.00	—	25.00	—	—	
Quincy . . .	24,578	4	3	75.00	—	75.00	—	—	
Pittsfield . . .	23,421	—	—	—	—	—	—	—	
Waltham . . .	22,791	6	2	50.00	—	16.66	—	—	
North Adams . . .	21,583	6	3	16.66	—	16.66	—	—	
Chicopee . . .	18,316	14	10	35.70	—	35.70	—	—	
Medford . . .	17,190	4	2	25.00	—	—	—	—	
Newburyport . . .	15,036	3	2	66.66	—	66.66	—	—	
Melrose . . .	14,721	3	—	—	—	—	—	—	

Deaths reported 2,666; under five years of age 1,293; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 989; diarrheal diseases 620, consumption 241, acute lung diseases 128, diphtheria and croup 42, typhoid fever 22, whooping cough 22, cerebrospinal meningitis 15, measles 15, scarlet fever 6, erysipelas 5.

From whooping cough New York 13, Washington 5, Pittsburg 3, Boston 1. From cerebrospinal meningitis New York 7, Fall

River 2, Boston, Providence, New Bedford, Somerville, Newton and Everett 1 each. From measles New York 8, Pittsburg 4, Boston 2, Baltimore 1. From scarlet fever New York 3, Boston 2, Providence 1. From erysipelas New York 4, Washington 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending July 23d, the death-rate was 16.4. Deaths reported 3,662: acute diseases of the respiratory organs (London) 169, diarrheal 214, measles 118, whooping cough 91, diphtheria 69, fever 37, scarlet fever 26.

The death-rates ranged from 10.0 in Huddersfield to 23.6 in Liverpool: Bradford 12.9, Croydon 14.7, Gateshead 16.2, Hull 16.2, Leeds 16.1, London 16.1, Manchester 21.0, Newcastle-on-Tyne 17.4, Nottingham 12.2, Portsmouth 11.8, Sheffield 18.7, Sunderland 23.0, Swansea 17.3.

METEOROLOGICAL RECORD

For the week ending July 28th in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S. . . 22	30.16	68	72	63	64	85	74	N. E.	E.	12	6	F.	C.
M. . . 23	30.08	79	90	68	68	46	57	W.	S. W.	6	6	C.	O.
T. . . 24	29.98	80	83	71	78	77	78	S. W.	S. W.	10	12	O.	C.
W. . . 25	29.79	78	86	71	73	93	83	S. W.	S.	13	5	C.	R.
T. . . 26	29.89	68	72	63	100	95	98	N.	E.	6	3	R.	O.
F. . . 27	30.03	68	74	63	85	65	75	N. W.	S.	7	3	O.	C.
S. . . 28	30.11	70	81	60	56	60	5-	N. W.	S. W.	6	8	C.	C.

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECENT DEATH.

ELISHA CHENERY, M.D., M.M.S.S., died in Boston, August 1, 1900, aged seventy years.

BOOKS AND PAMPHLETS RECEIVED.

- Differentiation in Diabetes. By F. W. Pavy, M.D., LL.D., F.R.S. Reprint. 1900.
- Medical Legislation in Nebraska. By H. Winnett Orr, M.D., Lincoln, Neb. Reprint. 1900.
- A Contribution to the Technique of Modern Uranoplasty. By James F. McKernon, M.D. Reprint. 1900.
- Rampancy, the Fervor of the Forehead: A Study of the Anterior Metopic Lobule. By Wallace Wood, M.D. Reprint. 1900.
- Educational and Legislative Control of Tuberculosis: Degenerative Results of Deficient Ventilation. By Chas. Denison, A.M., M.D., Denver, Colo. Reprint. 1900.
- A Manual of Personal Hygiene. Edited by Walter L. Pyle, A.M., M.D., Assistant Surgeon to Wills Eye Hospital, Philadelphia, etc. Illustrated. Philadelphia: W. B. Saunders. 1900.
- Report of the Mortality Records of the Mutual Life Insurance Company of New York, for Fifty-six Years from 1843 to 1898. By Elias J. Marsh, M.D., and Granville M. White, M.D. New York. 1900.
- Clinical Examination of the Urine and Urinary Diagnosis: A Clinical Guide for the Use of Practitioners and Students of Medicine and Surgery. By J. Bergen Ogden, M.D. Illustrated. Philadelphia: W. B. Saunders. 1900.
- Atlas and Epitome of Gynecology. By Oskar Schaeffer. Authorized translation from the second revised and enlarged German edition. Edited by Richard C. Norris, A.M., M.D. Illustrated. Philadelphia: W. B. Saunders. 1900.
- Atlas and Epitome of Diseases caused by Accidents. By Ed. Golbiewski, of Berlin. Authorized translation from the German, with editorial notes and additions. By Pearce Bailey, M.D. Illustrated. Philadelphia: W. B. Saunders. 1900.
- XIII Congrès International de Médecine, Paris, 2-9 août 1900. Résumés des Rapports Présentés à la Sections d'Otologie, d'Histologie et Embryologie, d'Anatomie Descriptive et Comparée, de Stomatologie, de Gynécologie, d'Obstétrique, d'Anatomie Pathologique, de Médecine et Chirurgie Militaires (A. Chirurgie; B. Epidémiologie et Hygiène; C. Médecine Navale; D. Médecine Coloniale), de Thérapeutique Pharmacologie et Matière Médicale, de Dermatologie et de Syphiligraphie. Paris. 1900.

Address.

SURGICAL PAIN.¹

BY G. RYDER, M.D., MALDEN, MASS.

"Every pain has its distinct and pregnant significance, if we will carefully search for it."—HILTON.

IN acknowledging the honor of this hour, the reader is reminded that we are living in the closing days of a glorious century, a hundred years that will forever be remembered by medical men as the period of their greatest conceptions, their finest discoveries and their most precious boon to humanity. The temptation in this valedictorian time to flush your cheeks with the pride that justly emanates from an enumeration of this century's achievements in medicine is indeed strong, and might, if indulged in, lead to an hour's agreeable entertainment; but the reader asks your indulgence in listening to a more painful subject, a subject which will for eons of time elicit, at least, the sorrowful attention of its victims, unless, forsooth, Christian Science finds some shorter cut than it now possesses to that Utopian state of curing "while you wait."

The child of the twentieth century will awaken at night, and toss in agony, thinking himself a living refutation of his father's fairy story about the nineteenth century being the one hundred years in which the bitterness of the primal curse was abolished and the horror of pain mitigated.

Pain will always exist. I invite you, then, today, to consider it as our ally, the one prominent symptom of all acutely dangerous processes within the abdominal cavity, rather than an enemy we would single out for destruction. To learn its import, to comprehend its value in the early discernment of disease, is our task and duty. The present drift of surgical thought since the triumph, during the last decade, over the terrors of appendicitis and pelvic disease is to apply the same reasoning and treatment to other similar, yet more dreaded, pathologies of the abdominal cavity.

And what is pain? Cicero believed it was a disagreeable movement in the body independent of the senses. Savage calls it one thing, Erb another. Whatever the neurologists may say, you and I believe the word to be sufficiently descriptive in itself.

Every increase of ordinary sensory stimuli above the physiological limit produces pain; excessive stimulation is the only prerequisite in its development. Beyond this the reader finds nothing clear and proven. There is no department in neurology which affords so unique a symptom in diagnosis, the relief of which requires discernment and ingenuity of so high an order. Very powerful nerve irritation, such as is produced by extreme shock, is painless, the higher degree of irritation destroying function.

The reader trusts he may not be thought to assume a too dogmatic tone in the presence of those whose experience overshadows his if in the following pages statements are made which challenge discussion.

We would not imply that pain *per se* is of sufficient importance to call it pathognomonic, except in certain few instances, but we would advance the suggestion that a more minute study of the subject may be the means of making an earlier diagnosis, and the saving of much time and life.

Gesture of pain.—In appreciating the value of pain

¹ Annual Address delivered at the Annual Meeting of the South Middlesex District Medical Society, April 18, 1900.

as a diagnostic symptom, which, we claim, is the most important and instructive of all subjective signs, we are thrown upon the sincerity and intelligence of the patient to accurately and truthfully depict his suffering. Any outward manifestation displayed by him in the description of his pain oftentimes affords the strongest clue to its seat, its nature and its character.

An investigation of a case characterized by pain should first elicit from the patient where the pain first began, where it is at present and what kind of a pain it is. Verbal descriptions of pain are often so indefinite in the ignorant, or so verbose, exaggerated or inconsistent in the hysterical and neurotic, that their gestures are more valuable as testimony than their word pictures. When a pain is due to inflammation of an external part, the patient will be observed to approach it in a very respectful way, if he does not actually avoid touching it, so that in a peritonitis his hand hovers over the part without touching it.

In mucous membrane inflammation like intestinal functional disturbances, the whole hand is laid upon the abdomen and passes over and across it to denote the diffuse general soreness. The localized pain of an appendicitis is indicated by the open hand, shielding it as it were from the observer's touch. There is an absence of gesture in meningitis, because such movement causes pain while in myelitis both hands pass from the spine to the umbilicus, indicating the sensation of pain or constriction.

In the gestures indicative of pain elicited only on pressure no such timidity of touch is noted as in inflammatory pain. Tumor, aneurism or abscess pains are indicated by pressure over the painful area. An extended thumb pressing into the back, indicating the area of a fixed pain, is said to be suggestive of aneurism. In the contractile muscular pains of a hollow tube, like the hepatic ducts, ureter or bowel, as in hepatic, renal or lead colic, the sufferer grasps or presses the part in contrast to his attitude in the inflammatory pains of pyelitis or cholecystitis.

Your attention is called to three great characteristics of inflammatory pain, with which this paper has largely to deal. The first is that pain is elicited or provoked by pressure and is greatest, as a rule, at the seat of the inflammation. This fact is of special interest in interpreting the diagnostic value of pain. You may move at will a limb the seat of pain without causing an objection on the patient's part, but pressure excited over the course of a nerve the subject of neuritis will provoke a distinctly painful sensation.

The second characteristic of inflammatory pain is that movement of the part even in the maintenance of its own function causes pain. Thus it is that an inflamed appendix is kept quiet by the contraction and rigidity of the overlying muscles, which act somewhat as a splint. If in the case of epigastric pain there be present no rigidity, one may exclude a gastritis or a localized peritonitis. Probably the best type of inflammatory pain which nature seeks to quiet, because thereby it keeps the part at rest, is the pain of vertebral disease. The child no longer bends his spine, but seeks to keep the spinal muscles at rest by bending the knees should occasion call for any stooping.

The third characteristic of inflammatory pain is that it is accompanied by a disturbance of the normal function of the part, as seen in the case of meningeal headaches, with the intolerance to light, delirium, etc

Such is not the picture of a neuralgic headache. But inflammatory pain, besides these characteristics, differs somewhat according to the part involved. Mucous membrane pain is rather a soreness, and when severe, it is styled burning; when griping, colicky pains ensue, it is because the inflammation is no longer confined to the mucosa, but has involved the muscular structures of the viscus. Serous membrane inflammation is more apt to be acute and stabbing. Fibrous tissue inflammation, of moderate, is of a dull, aching character, but violent and throbbing with each heart systole if the tissue is much inflamed.

Referred pains.—Inflammatory pain is either local or radiated along the course of nerves in direct communication with the seat of the inflammation, and this statement brings us to a consideration of referred pains, to whose study no better contribution has been made than the now aged but scientific and classical monograph of Hilton. A characteristic of these referred pains is the fact that movement and pressure do not elicit any objection on the part of the sufferer, or increase the pain, and so they can be proven not to belong to that part. You may press the sixth and seventh dorsal vertebrae without increase of pain, when, as it often happens, such pain is referred to that region from an ulcerative gastritis, the association having been maintained through the terminal ends of the sixth and seventh dorsal nerves. Likewise you may press, without increasing the pain, at the pit of the stomach, when such pain has been conducted there by these same nerves from a diseased vertebra.

Hepatic inflammation of the convex surface of the liver may send a nervous message along the right phrenic on the under side of the diaphragm, and then to the top of the right shoulder or the interscapular space, but pressure and movement do not affect the intensity of such pain. This brings us to an explanation of many of the pains situated between the scapulae dependent on visceral lesions. The fourth, fifth and sixth dorsal nerves are distributed over the inferior angles of the scapulae and the interscapular space, and are the particular nerves in question involved. If you will follow these sensitive peripheral filaments of the skin to their connection with the great splanchnic nerve, you will remember that the latter, passing down through the thorax, then enters the solar plexus, and that its abdominal ends are distributed to the liver, pancreas, duodenum and stomach, and hence supply us with a positive route for the transmission of inflammatory pain from these viscera to the scapular region of the back; such at least is one such nerve channel.

To the mid-dorsum may be referred pains of the kidneys, abdominal aneurism and the small intestines. In the lower back, likewise, we frequently find pains referable to the pelvis and lower abdomen. Referred pains from the pelvis come by way of the hypergastric plexus, travelling along the pelvic splanchnic, and enter the cord with the second and third sacral nerves.

Abdominal brain.—No definite or satisfactory comprehension of referred pains can be obtained without reference to that marvellous mechanism of the abdomen which presides over organic life, the abdominal brain. Although it was discovered by Galen, who was born 130 A. D., you could not spend a more delightful evening than by reading the recent works of Fox and Robinson.

The two great functions of the visceral mind are nutrition and rhythm. Here nutrition and secretion are controlled. Here visceral function and rhythm are begotten and sustained or prohibited. It receives sensation and transmits motion; it controls circulation and gland secretion; it presides over the organs of generation and has a master hand over the peripheral automatic ganglia of the viscera.

The abdominal brain is situated at the base of the celiac axis and the renal and superior mesenteric arteries. It lies, therefore, along the aorta, just behind the stomach, and consists of a meshwork of ganglia, comprising the splanchnics, the pneumogastric and phrenics. The abdominal brain, therefore, has brain centres, conducting cords, and a peripheral nerve apparatus, just as the brain proper has these parts. The abdominal brain can live without the cranial brain, but the cranial cannot live without the abdominal. This great visceral centre is connected with and is a part of the lateral chains of the sympathetic system, which range along the sides of the vertebrae, from skull to coccyx, and so gets its direct connection with the spinal and cranial nerves.

There are two interesting and practical features of this system instrumental in the production of the pain we are considering. Between the longitudinal and circular layers of muscle in the viscera lies a system of nervous ganglia known as Auerbach's plexus. This is the peripheral apparatus which induces intestinal peristalsis or vermicular motion. Overstimulation of this plexus causes colic, while insufficient stimulation is productive of constipation and paresis. Just under the mucous membrane there lies a still more delicate system of ganglionic brains, called Meisner's plexus, whose office is to preside over the secretions of its viscus; they induce a secretion of the digestive fluids and preserve a nice balance between over and under secretion.

The automatic menstrual ganglia of Robinson are situated along the ovaries and Fallopian tubes, and so preside over monthly rhythm. The uterine set of ganglia affect the muscle of the fundus only, the neck being supplied with spinal nerves, which inhibit rhythm, hence the powerful preservative action of the uterine neck against any undue stimulation tending to cause miscarriage.

Auerbach's and Meisner's plexus of the stomach, being the nearest and largest of the peripheral visceral apparatus, are generally the ones most readily responsive in all abdominal lesions, and hence we meet with nausea and vomiting so constantly as early accompaniments of abdominal pain, or of fermentation and indigestion in less acute abdominal disorders. When the peripheral apparatus of the small intestine becomes involved, constipation or diarrhea and tympanites result. If these little bodies are excessively stimulated, as in appendicitis, strangulation, etc., we get the colicky periodic pains characteristic of all abdominal tubular organs.

Pelvic stimulation is transmitted by way of the ovarian or hypogastric plexus, which latter, situated in the post-peritoneal membrane, is clinically the more sensitive and important as explanatory of the severe pain of tubal perforation.

Classification of pain.—Before proceeding to a consideration of visceral lesions themselves, the reader would refer you to a classification of pain by Lomer, of Hamburg, whose monograph on gynecological pain

appeared about a year ago, and which adds another most charming treatise on pain at a most opportune time, when pelvic surgery has become a question less of surgical technique than of sound surgical diagnosis. He divides pain into (1) traumatic; (2) contractile; (3) inflammatory; (4) neuralgic; (5) hysterical. This classification applies very well for practical purposes to all visceral lesions.

Simple uninfected *trauma* of the viscera is causative of comparatively little pain. It is recognizable as wound pain and soon subsides. Visceral nerves in the absence of inflammatory states are so little sensitive that pure and simple trauma of the peritoneum in these post-Listerian days is causative of little pain, as the reader has had occasion to notice in several cases when completing a section, with the patient in full consciousness. The tying of a pedicle, comprising the ovarian plexus, causes momentarily severe pain, and even under ether, you all have noticed the altered respiratory rhythm of the bowel reflex.

Contractile pain, of which examples are afforded by any abdominal viscus, as the hepatic and renal ducts, the intestine, appendix, Fallopian tubes, stomach, uterus and bladder, is typical in its recurrence, and is rhythmical in character, due to contraction and dilatation of the organ, and dependent on the peculiar peripheral nerve apparatus of Auerbach. At times it is the most intense in character, is paroxysmal and colicky, and ceases only when the obstruction which clogs the lumen is removed, or the muscles become overstretched, ruptured and worn out. An aborted ovum, a tubal pregnancy, an enterolith in the appendix, a stone in the renal and hepatic ducts, an intussusception, or an offending fecal mass causing obstruction, are all common illustrations in the causation of colicky pains. It is, therefore, the implication in diseases of orifices having contractile cavities behind them which is most calculated to make pain a prominent symptom in clinical histories.

Inflammatory pain is caused, we are taught, by the swelling of the tissues and the consequent pressure on nerve ends, but since the birth of bacteriology we know full well that the chemical action on the tissues of the toxins is by far the greater cause both of inflammation and its pain, and the reader believes it fair and essentially accurate to say that the colon communis and streptococcus cause more pain than most other germs, unless the nervous system is so steeped in poison as to be utterly demoralized.

Neuralgic pain is due to a neurosis of the sympathetic system, is paroxysmal with distinct intermissions, and, like the same pain elsewhere, is often accompanied by trophic disturbances, and lightning-like, lancinating pains. Enteralgia, as such exists, is a distinct lesion, but more often is an expression of some nerve reflecting a pain from a spine of ataxia, an inflamed ovary or an enteritis.

The most perplexing, annoying and interesting pain of the abdomen is the *hysterical*. Its seat and course are independent of any nerve zone or division of nerves, its course frequently forming geometrical figures. It depends on psychological changes, and is not influenced by rest or inflammation. It is subject to suggestion and referable to some central lesion. "It is generally a burning pain, and may occupy any part of the abdomen and its contents," says Charcot. Pains of the lumbar and sacral back, or of the abdominal wall, intensified by the slightest touch, are gen-

erally hysterical. As these pains have been the cause of much blundering in diagnosis, and the reason given for opening the abdominal cavity without finding a sufficient causative lesion, and, therefore, bringing calamity on the head of the operator, the reader would remind his hearers that Charcot's so-called *stigmata* are the essential means of differentiating them from genuine pains. In such hyperesthesia there is always present some other manifestation of altered nerve force, like the anesthesia of the conjunctival bulb, or the soft palate, or some anesthetic zone in the face, leg or back. Pinching the muscle and so locating the pain in the abdominal wall is a simple yet efficient method of discrimination. Thus the terrible pain of an hysteric, supposed to be suffering from gastric ulcer, perityphilitis, ovaritis, enteralgia, or gall stone, is soon converted into a skin hyperesthesia, whether due to a rheumatic myositis or a central hysterical lesion, and is amenable to other measures than the scalpel.

Clinical significance of acute abdominal pain.—He who starts out to elucidate the clinical significance of abdominal symptoms of an acute character, in which pain is the prominent one, meets at once on the threshold of his investigation the confession that the abdominal cavity is a veritable grab box, in which anything may be found from a simple innocuous cyst to a rare yet verified teratoma; while the number of mechanical instruments, wearing apparel, vegetable and chemical sundries that have been removed from the human intestines would suggest the propensities and capacity of a Harlem goat.

We acknowledge the impossibility of correctly diagnosing, before the abdominal incision is made, many even of the common forms of disease. Only the minute study of the early individual symptoms seems, at present, to promise much assistance in reaching a prompt diagnosis in that great class of diseases which suddenly threaten life from mischief brewing within the peritoneal sac. In the symptom complex—pain, vomiting, rigidity of abdominal wall, meteorism, collapse, etc.—called peritonism or peritonismus, pain is the one constant and foremost symptom.

Location of pain.—The more common localities of visceral pain are, first, the umbilical region, to which are referred all the early transmitted pains of the various types of obstruction, appendicitis, acute miliary tuberculosis, lead colic, twisting of tumor pedicle and thrombosis of the mesenteric vessels; the superior mesenteric plexus being the nearest box from which an alarm of intestinal fire is rung in to the central station, or abdominal brain. The second common locality of abdominal pain is the appendicular, in which region are found the secondary pains of appendicitis, obstruction, inflammation and right-sided pelvic disease, neuralgia of superficial branches of lumbar plexus and myalgia. The third locality is the hepatic and renal area, generally the localized seat of renal and hepatic colic, acute hepatitis, cholecystitis, aneurism of the mesenteric artery, aortic disease and subphrenic abscess. The fourth area is the pelvic, the peculiar seat of tubal pain; and finally the epigastric area, in which latter region are located the pains of gastric, duodenal and pancreatic ulcer with perforation, acute pancreatitis, malignant growth, diabetes, locomotor ataxia and reflex pelvic pain.

To further localize pain is impracticable without the

aid of pressure. Pressing the abdominal walls elicits frequently a localized pain, an expression of a localized inflammation, and is of the utmost importance.

Rigidity of muscle wall is the next important aid we possess in suggesting a localized pathology, it being the result of reflex irritation from involved viscera to the spinal cord, reflected back through the lower intercostals, governing the muscles, and hence frequently distinguishes purely abdominal from purely pelvic trouble, since the latter, for reasons before mentioned, has no such reflex before the peritoneum becomes involved.

Obstructions.—The great class of obstruction emergencies, which include bands, hernia, volvulus, intussusception, foreign bodies, stricture, tumor, fecal accumulation and perforation, are all characterized by sudden onset without apparently exciting cause, by severe abdominal pain, generally localized about the umbilicus, with at first little or no tenderness, but careful and attentive pressure by the first physician summoned very frequently evokes a localized tenderness of inestimable value to the surgeon who comes later.

The pain is colicky and constant, due to the disordered rhythm, provoking violent peristalsis, then comes vomiting with stomacheic, later bilious and finally brown, offensive products. It is copious, persistent and gives no relief; constipation is absolute from the first, with the single exception of intussusception; tongue furred, thirst intense, temperature subnormal, urine diminished; then appears collapse, weakness, pallor, sunken eyes, feeble and rapid pulse, cold sweat and sighing respiration. As the case persists unrelieved, the dry tongue becomes brown, the face has the aspect of horrible anxiety and the patient dies within three days from the start of these symptoms of septic peritonitis, which even modern surgery has failed to control. Vomiting is the more persistent, pain the more pronounced symptom, until exuded serum and lymph or pus bathe the roughened peritoneum.

The pain of intestinal obstruction depends on the futile, wild and irregular peristalsis and is measured in severity by the suddenness of the strangulation, the amount of bowel involved, the seat of the obstruction and the age of the person. The small bowel, when the seat of the lesion, causes greater pain and collapse than the colon, and naturally being severer as the jejunum is approached. The sigmoid flexure possessing a very susceptible and responsive nerve apparatus as compared with the rest of the colon, and being generally involved in its entirety when the seat of volvulus, causes great pain and collapse. The young adult, full of life and vigor, is the subject of more pain and collapse than the aged.

The periodic peristaltic waves may frequently be seen in a thin person hurling themselves against the seat of obstruction, like gallant Englishmen against Spion Kop, and with usually a like result. Tympanites arises in exact proportion to the peristalsis above the obstruction. The patient experiences a sense of fulness and of dragging at the bowels, and frequently says that he feels the movement in his abdomen arrested at the same spot.

In these cases of obstruction there is a feature of the pain which demands especial attention, namely, that when obstruction is complete the pain is constant though liable to exacerbations; while in partial ob-

struction the pain is distinctly intermittent, and the sufferer enjoys intervals between the attacks. If, for instance, an obstruction due to stricture becomes suddenly complete, the pain will as suddenly change and become continuous where before it was intermittent. Pressure frequently relieves the pain of obstruction at first, stopping the nervous telegram, but later aggravates it, a trustworthy sign of beginning peritonitis, or at least a peritoneal hyperemia. A diminution of pain toward the end of a fatal case is due to collapse, a sensorium steeped in the lethal septicemia, or upon extensive paralysis of the intestine, while its cessation is synchronous with perforation.

It is impossible to localize obstruction in the small intestine from pain alone, as the coils are continuously changing their position, but pressure aids materially. The stomach and colon being more fixed, it is quite possible to localize the painful lesion in them. The frequent site of abdominal pain in sigmoid obstruction is a point a little to the left of the umbilicus, the site of the inferior mesenteric plexus. In those rare cases of appendicitis and obstruction where pain is referred to the corresponding area of the left side, pressure over the right hypochondrium increases the referred pain of the left side. Icticanuria, as an accompanying symptom of pain, is of some considerable value in localizing obstruction to the small bowel, and is a pronounced symptom; when the small intestine is involved in obstruction cases the pain is more severe, begins earlier and is more persistent.

Strangulation by bands and apertures.—Strangulation by bands and apertures, one of the most difficult matters to diagnose as well as the most painful, constitutes about one-third of all intestinal obstruction. A history of previous peritonitis affords a strong presumptive proof of this variety. The subnormal temperature and weak, rapid pulse are not significant; the pain, agonizing at first, becomes more diffuse and continuous. There is no tumor. Pressure relieves. It may be said of such a status that a patient between twenty and forty years (the subject of previous peritonitis) presenting no evidence of stone, no gas per rectum, no tumor or hernial swelling, but a sudden, severe, colicky, abdominal pain with marked constipation and tympanites, with vomiting which does not relieve, demands surgical attention, for, with all these conditions, many feet of small intestine may exist as red as an autumnal sunset; and the reader ventures here a surgical axiom, that whenever a patient is suffering from any grave abdominal disease characterized by these symptoms, *without* a previous peritonitis, which cannot be accurately interpreted, an early exploratory incision is demanded, for in just these cases before pressure necrosis and peritonitis have set in surgery is the most successful.

Intussusception constitutes, also, about one-third of all intestinal obstruction. Here age is the primal consideration, for nearly one-third of this class occurs before the completion of the first year, and the majority of these, again, occur under six months. In 80% blood or bloody mucus occurs; vomiting is never severe at first, nor does it occur so early as in other obstruction, because the bowel is not completely blocked. Seventy per cent. of these obstructions are ileocecal. The sausage-shaped tumor is felt in only about one-half of the cases. Tympanites not reliable. Pressure at first relieves, afterward aggravates, the pain. (The invagination may be present at the anus.)

"After a few hours in a child, or a longer period in the adult, pain ceases as suddenly as it commenced, and there is an interval little suggestive of the continuance of the pathological condition." The pain returns with renewed energy and at shorter intervals.

Given a child under one year, especially a boy, suddenly seized with acute periodic pain, passing little else but bloody mucus, the subject of tenesmus, suffering from shock, and an incision to the right of the right rectus muscle would not be bad surgery, for, while undoubtedly many cases of invagination occur in infancy which nature herself relieves, and include many of the more persistent forms of belly colic, yet less harm is done by interference than by delay. A noteworthy feature of this pain is that while the invagination is increasing the pain is acute, but when adhesive inflammation sets in and fixes the part, or gangrene occurs, the pain subsides or is absent. The ileocolic variety is the most painful. The amount of intestinal contents has nothing to do with the amount of pain. As the invagination advances, and especially as a definite tumor appears, the pain becomes more localized, generally in the ileocecal region, and is increased by pressure. Vomiting is a less conspicuous ally of pain than in other forms of obstruction, and generally gives relief, contrary to the fact in complete obstruction.

Volvulus constitutes only about one-fortieth of all obstructive cases, and is generally located at the sigmoid flexure, occurring more frequently in the male between forty and sixty years. Its onset is sudden, pain referred to the umbilicus not increased by pressure, but there is no form of obstruction in which pain on pressure is elicited so early. It soon locates itself. The abdomen is early and frightfully enlarged, mostly from dilatation of the sigmoid itself, which facts, occurring in a case of marked chronic constipation, are so prominent in contradistinction to obstruction due to bands and invagination as to make a suspicion of *volvulus* quite probable. Hemorrhagic infarction may give rise to these symptoms.

In abdominal pain produced by the very infrequent obstructions of gall stones, salol enteroliths and other foreign material, it may be said that the seat of the obstruction is either in the duodenum, jejunum, or more usually in the lower ileum, with a previous history of hepatic colic, or the swallowing of foreign bodies, as in the insane. Their presence and location is usually detected by the Röntgen rays.

Stricture obstruction pain differs from these preceding dolores in that it is extended over a long course of time, and becomes progressively worse, until the complete occlusion of the bowel causes the typical symptoms of peritonismus characteristic of all obstruction cases. The pain becoming colicky announces the beginning of the last chapter of the patient's life unless surgically treated. Non-cancerous stricture occurs about middle life, cancerous beyond. The clinical fact of note in reference to the pain is that it comes on regularly some three or four hours after food, in paroxysms which occur at intervals, and is the constant feature of the disease. These attacks appear monthly, later weekly, daily, and finally the pain becomes continuous.

Fecal accumulation may cause obstruction and sudden acute abdominal pain, referable to the umbilicus, with absolute constipation. Tympanites and tenesmus suggest a *volvulus*, but the presence of a rounded fecal

tumor, the history of the prolonged constipation, and the aggravation of symptoms by the taking of food, the capability of the mass to be changed and flattened by pressure and the occurrence of these phenomena in the female neurotic present a much less obscure lesion than in other obstruction cases.

Twisting abdominal tumors, a not very uncommon form of intestinal obstruction, can usually be correctly diagnosed by the history and other examination, and do not differ in their symptomatology from that of other sudden obstructions.

Peritonitis. — Abdominal emergencies characterized by inflammation have all one common and timely feature, that pain is increased by pressure. Just at this point in the case history, if not before, a final decision must be made for or against interference, for to ignore it is to court disaster, to heed it may result in the saving of another life. The pain is localized at first, but soon becomes diffused and constant; nothing else simulates it but the pain of an acute enteritis. At this stage all the classical symptoms are present, and intervention is generally too late; even at this point, however, with an abatement of symptoms and an arrest of the inflammatory extension, a successful laparotomy is frequently possible. Pain ceases in the final stage of poison intoxication, and all succor is hopeless.

Let us simplify the manifold causes of peritonitis, and say they are due to extravasations of some visceral contents and abscesses or the escape of germ life. Of these, appendicitis, salpingitis, cholecystitis, gastritis and intestinal ulcers are the more common lesions in the order named, while traumatic, pancreatic, renal, tumor and fat necrosis inflammation are the less frequent.

Appendicitis. — Although much good ink and the futile display of functioning gray cells have been wasted in voluminous writings on this little part of our anatomy, yet as it is a type of inflammation yielding to improvement in recent surgical treatment, the reader ventures a few suggestions and the repetition of some established facts. Because at times this inflammation has been mistaken for every other possible lesion in the abdomen, and even for pneumonia, it does not detract from the importance of its initial symptoms. The initial pain, rarely elsewhere than over the solar plexus, is sudden, colicky and severe, and simulates at this stage renal and hepatic colic, acute pancreatitis, perforations of the digestive tract, functional colic, the crises of locomotor ataxia, embolism of deep, mesenteric artery and acute obstructions. This pain, the most important of the cardinal symptoms, settles into the right iliac fossa within thirty-six hours, generally much sooner. It is due, in the first instance, to overstimulation of Auerbach's plexus, by retained mucus, an enterolith, or by the swelling and pressure of the inner tube by interstitial serum, causing appendicular peristalsis, and is reflected to the superior mesenteric plexus, thence to the abdominal brain, causing umbilical pain and nausea. A few hours later, by an increasing stimulus, vomiting ensues, and a transmission of nerve irritation to the spine reflects back the muscular message of the external oblique through the intercostals, and so rigidity of the abdominal wall becomes the second most trustworthy symptom of this disease.

If it be remembered that beside the smallness of Gerlach's valve, the male appendix lies more closely

in contact with the psoas muscles, while in the female it is more dependent, one finds an easily understood explanation why the traumatism in a young male of the psoas muscles is more frequently provocative of trouble than in the female, and why an appendix is so frequently found agglutinated to a tubo-ovarian exudate.

Pressure in the neighborhood of McBurney's point elicits pain rather early and is caused by the ensuing movement of inflamed peritoneal surfaces. In only about one-fifth of his cases does the reader find the initial pain of appendicitis so referred to the seat of the trouble. Some writers lay considerable stress on the location of pain under the sternum, as significant of cecum inflammation or so called catarrhal appendicitis, rather than an appendicitis proper, and hence regard it as a favorable omen. The pain reaches its intensity in from twelve to twenty-four hours, while the appendix is trying to extrude its contents. It soon becomes more general over the right abdomen, which is hard and tense. Constipation is hard to overcome, except by salines, and combined with vomiting is apt in the first hours to suggest obstruction. Germ life and blood count aid much in the interpretation of appendicitis pain and its progress. In general it may be said that the streptococcus causes greater release of animal force in the form of heat, while the colon bacillus tends to depress the temperature even to normal, but they overstimulate the sympathetic nerves until the heart cannot well relax before each contraction, and thus we get, instead of an increase of temperature, a small, rapid, feeble pulse. The streptococcus and the mixed infections cause more temperature; the colon bacillus, a smaller pulse and greater pain owing to its more destructive nature.

The spasm of the external oblique muscles, near their costal attachments, when the region of the appendix is tapped in the early hours of trouble, is an accompaniment of pain that is very valuable in the diagnosis of appendicitis, and the progress of the case. The tonic spasm of these muscles, while continuing to guard the contents within, soon becomes tired and exhausted, and their relaxation before the normal decline of the disease, while other symptoms are increasing, is a bad omen for the patient's strength. Pain is continuous throughout the disease, colicky and spasmodic at first, but localized afterward, until the general diffuse pain of a peritonitis ensues. So long as nature can keep the Cronje of the abdomen within its surrounding defences, the ileocecal region becomes a veritable river of Paardeberg, where final surrender and starvation are sure, and the pain of the bombardment remains localized; let the enemy escape through the lines, and the surrounding country becomes the seat of a destructive conflagration, in which friend and foe are exterminated. The pain is everywhere; destruction general.

The pain frequently radiates to the testes and bladder, and indicates an entanglement of the hypogastric plexus, exciting bladder symptoms, or radiates down the leg and back, denoting an appendix posteriorly and deeply seated and difficult of enucleation. The persistent pains after the convalescence from an appendicitis are due, according to Morris, to nerve filaments being caught into the scar tissue, undergoing chronic sclerosis, following a neuritis, and therefore inhibiting the peristaltic movements of the

colon, and predisposing to constipation, intestinal fermentation and dyspepsia.

The secondary pain of appendicitis is to be differentiated chiefly from acute obstructions, floating kidney, renal and hepatic colic, the pains of pelvic disease with shock, and from cholecystitis, where the gall bladder is extended low down, an ether examination being frequently demanded in the latter case. When hepatic colic is epigastric in location, it frequently radiates to the midscapular region or the shoulder. It is not generally so violent or sudden, but is aching and tearing; when the calculus has entered the duct, it is tearing and cutting; is seated in the hepatic area.

The entrance into the duct of an hepatic stone starts a rhythmical or periodic pain, which begins slowly but rises to a maximum. When appendicitis pain becomes secondary, and thereby in close relation to the hepatic area, it generally becomes constant. Before the duct or bladder has perforated, patients are better able to locate a gall-stone pain than most other acute abdominal pains. Jaundice when present is decisive.

The referred pains of a renal stone, the course of the pain along the ureters and the tenderness on deep pressure in the kidney region are usually quite sufficient for a diagnosis of renal trouble. The pain of appendicitis increases progressively; nephritic colic, coming on suddenly, very rapidly attains its height. Appendicular pain ceases gradually; nephritic, suddenly. Suppressed or bloody urine decides a doubtful case. Ralph says that "aneurism of the aorta or mesenteric artery causes pain similar in amount and location to renal pain."

Pelvic pain.—Most pelvic pains, being more definitely located and more amenable to examination, are of less interest to us at the present time than the foregoing. The sudden, acute abdominal pain, however, of a woman of child-bearing age, referable to the pelvis, means usually a ruptured tube filled with pus or an ectopic pregnancy, is of extreme importance and is the one lesion of the pelvis most apropos to our subject. The sudden, severe colicky pain in a woman of this age, suddenly ceasing, followed by shock, rapid pulse, low temperature, usually means hemorrhage or pus escaping into the abdominal cavity and demands immediate relief, with a few exceptions where shock is extreme, in which case, after the filling of the vessels with normal salt solution, a rise of temperature and a falling pulse indicate the propriety of interference.

The question of interference in all abdominal hemorrhages, whether pelvic, post-operative, traumatic, cystic, gastric or intestinal, depends upon the early recognition of such a catastrophe and the state of pulse and temperature, the pulse being the better guide. "The combination," says Richardson, "of a temperature that does not respond to stimulants and artificial heat, with a pulse that still rises, calls for intervention in strongest terms, for it means the patient is bleeding to death." Sudden pelvic pain, at any age, accompanied by grave general symptoms of pyrexia and septicemia and followed by a rather abrupt cessation of the pain, points to purulent peritonitis.

Perforative peritonitis with sepsis occurs so suddenly, is so rapidly fatal, barring the few cases where Nature has been successful in her walling-off process, that the attendant has little time to lose. The pain is severe and constant, no longer colicky, followed by

symptoms of severe shock, local pressure, tenderness and rigidity. When extravasation and hemorrhage occur, the pulse begins to rise and we have then imperative indications for interference; a few hours' delay tips the scales unfavorably.

The call for surgical consultation is imperative in all cases of gastric perforation, for operations to be successful must, according to Lund, be performed within twelve hours of the accident, 79% recovering of these early operative cases.

The general conditions, according to Warren, under which surgery may become necessary in gastric and duodenal ulcers are perforative hemorrhage, persistent spasm of the pylorus with pain and dilatation, and, finally, perigastritis with the formation of adhesions and abscesses, the cause of death in these cases being septic peritonitis, retrogastric and subphrenic abscess.

In all perforative cases where pain is continuous, or when it revives after a period of freedom from it, the call for aid must be heeded immediately, Nature showing that she cannot resist the invasion.

General abdominal distention and immobility are the two other most important allied signs calling for outside aid. If the general distention does not pass away after the use of rectal tube, turpentine enema, etc., by the second day, it indicates a progressive case and a surgical one. In perforative appendicitis general distention with pain and pressure tenderness, but without localized tumor, is a grave condition; if in such a case the temperature constantly rises, the prognosis becomes worse and death is imminent within four days, unless surgically treated. Leucocytosis, as you know, increases and is marked before the perforation of an appendix or ulcer, but afterward suddenly drops, and when general peritonitis supervenes, it may disappear entirely. Its presence serves to differentiate appendicitis from typhoid, aneurism, simple obstruction, floating kidney, uncomplicated renal or hepatic colic, functional colic, fecal accumulation and ataxia. A steadily increasing leucocytosis in appendicitis is always a bad sign though other signs improve.

Typhoid perforations.—As from 10% to 20% of typhoid fatalities are caused by perforation, the majority of them occurring in the region of the cecum, a recent list of 103 operative cases, including Dr. Keen's, is of some interest, showing that 21 were saved when done within twenty-four hours. Semm writes, relative to his experiences in the Santiago campaign, that a bullet may penetrate the abdominal cavity at or above the umbilicus without causing lesions which demand surgical attention, but that if it penetrates below the navel, one to fourteen perforations will occur. Did time allow it would be profitable to discuss Professor Manley's aphorism: "When in doubt don't operate." We would rather say, first consult, then if in doubt, the patient being in fairly good condition but with symptoms growing progressively worse, give him the benefit of the only plausible course and operate. Of these cases of perforation it may justly be stated that the experience of Professor Semm at Santiago, and of Sir Wm. MacCormac in South Africa, points to the advisability of non-interference in visceral wounds below the umbilicus made by the modern bullet, while in civic life the traumatic cases of abdominal blows and crushes offer a much less successful surgical field than the purely pathologic.

When the term peritonitis can be relegated to the same oblivion as has the term bedridden in connection with pelvic disease, then will the physicians of the twentieth century have as much cause for just pride as we of today in the triumph of Lister, Tait and others, but as the decreasing mortality of operative cases progresses, with the intelligence and promptness of the family physician, it behooves us to abolish the fictitious line between medicine and surgery, and learn whatever we can of the early signs of abdominal disease. The bulk of all successful practice depends upon an early and accurate diagnosis.

From what has been said, one general conclusion may be drawn, best stated in the language of Dr. Richardson: "Is it not a duty, therefore, for those of us who see many of these cases to demonstrate again and again, as far as human error and frailties will permit us, those signs by which possible impending disaster may be recognized, to emphasize on every occasion the one great cause of disaster in these formidable lesions—the unnecessary loss of time; and to shorten, as much as possible, the interval which must elapse between Nature's first call for help and the surgeon's response?"

Finally, it may be said that while many a life can be spared by timely care and the knowledge of the just value of painful symptoms, we must confess to the large mortality of all acute, painful abdominal diseases. Those of you who will this summer visit that historic old pile, Westminster Abbey, will be reminded of the very common fate of this class of cases by reading the epitaph, in the Poets' Corner, of William Shakespeare:

"The cloud-capped towers, the gorgeous palaces, the solemn temples, the great globe itself, yea, all which it inherits shall dissolve, and like the baseless fabric of a vision leave not a wreck behind."

Original Article.

THE PSYCHIC FACTOR IN DISEASE.¹

BY ROBERT W. GREENLEAF, M.D., BOSTON.

A STUDY of the cases occurring in one's private practice leads to the conclusion that many of them present aspects of a mentoneural relation worthy of consideration. This relation, for want of a better term, we may call the *psychic*. The term is somewhat objectionable because it is burdened with diverse popular meanings. I use it simply in a plain medical, and in no sense a mystical, meaning.

We probably all remember the stories our teachers of physiology told us of the pranks the nervous system plays; of how a wise man on being asked to tell which of a set of servants was guilty of theft arranged them in a row, placed some rice in the mouth of each and then on calling for the rice found that one returned it dry. This one, perturbed by his consciousness of guilt, had failed to secrete saliva. It would be well if we paid more heed to such teachings of physiology, but in the interest attaching to pathology and to our diagnoses with instruments of precision, these less conspicuous factors easily escape our attention. What I have to say may seem commonplace

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and trite, but it appeared to me desirable to have a discussion on certain topics relating to the rôle the nervous system plays in such diseases as ordinarily fall to the care of the general practitioner rather than of the neurologist.

It is my purpose to cite briefly a few cases illustrative of certain propositions, and I invite your discussion to these propositions rather than to the cases. The propositions are as follows:

(1) That some cases of illness are simply neuroses without appreciable pathological lesions.

(2) That causes capable of producing such neuroses may act while disease is present and should be guarded against.

(3) Purely psychic causes, as shock, grief, and the like, may pave the way for, if not directly cause, profound pathological disturbance.

(4) Attention to the psychic is capable under some conditions of so turning the scale to health that it may arrest, even perhaps cure, otherwise fatal pathological conditions.

(5) Attention to the psychic should be considered a routine measure in the treatment of delirium from toxic causes, as alcohol, belladonna, ether, and the like.

(6) Attention to the psychic should also be considered a routine measure in the treatment and in the prevention of delirium in febrile states, as of typhoid.

(7) Nurses should be able to enter into psychic relations with their patients; otherwise the value of their services is much lessened and may be harmful.

Taking these propositions in order, the first is that certain cases of illness are simply neuroses without pathological lesions. Such perturbations of function as that illustrated by the rice story are of frequent occurrence. Bad news may inhibit digestion and the resulting morbid waste products may produce their systemic train of symptoms. Muscular fatigue may produce cramps, mental effort insomnia, etc., and on removal of the cause the nervous system will go on its usual way as if nothing had happened, or possibly the disturbance may have been so profound that a "habit neurosis" will have been established where a train of perverted nerve functions will be set up by other than the original exciting cause.

I have selected the cases to illustrate my first proposition because they represent disturbance from definite causes. The whole relation of cause, effect and simple treatment is a little clearer in these cases than in those representing other varieties of this group. The principle is practically alike for all.

CASE I. A girl, fifteen years of age, had been in pain for hours on account of severe cramps in her leg, causing it to be strongly flexed on the abdomen. The cramps were due to overfatigue in dancing during the preceding evening. Efforts for their relief had thus far been futile. Gentle massage, careful extension of the leg, distracting her attention and aiding her self-control, were the measures which relieved her. The whole procedure took about ten minutes. Normal nerve control was re-established and no recurrence took place.

CASE II. A nurse of about thirty years of age was much overworked and debilitated. She had been subject to minor cramps. On this occasion both arms and legs took part in the excessive cramping. The toe, calf and upper leg flexor muscles all suffered. The arms were even cramped across the chest. Psychic measures were not equal in my hands to restoring the equilibrium, and not till the patient was etherized could the cramps be controlled. Rest, tonics and change of scene restored her to

health. Nothing was heard of the cramps again after the attack referred to.

CASE III. A phantom tumor in a woman of about thirty-four years of age. It came on after a severe fall. A mass suggesting a flattened orange could be obscurely felt in the left side of the abdomen. The case had been sent to the hospital for operation, but it was finally decided not to operate, as the mass disappeared when the patient's attention was diverted.

CASE IV. A girl of eighteen years, in excellent health, but of a nervous, excitable temperament, was much frightened by the noise and flames from the blowing out of a fuse in an electric ear. She, with others, jumped from the car and fell or was pushed down. She was, however, able to get up and walk about. On reaching home she became hysterical and complained of pain in her left leg. In three days this became anesthetic and partially paralyzed. This condition lasted about two weeks with sufficient distinctness to confine her to bed; then, on being up and about, it gradually wore away. Dr. James J. Putnam, who saw the case in consultation, considered it hysterical hemianesthesia and pointed out its similarity to those cases of pseudoparalysis following injury that are bedridden for months, or until a suit is settled.

The second proposition is that causes capable of producing neuroses in health may also operate when disease is present. The points I wish to call attention to are that we should be especially on our guard against such causes, first, to recognize them as not necessarily factors in the disease pictures at hand, and, secondly, to ensure measures to prevent their occurrence. When one is weakened by illness discussion of a business question may induce a sleepless night (for which the discussion and not the illness of itself is responsible). The visit of an injudicious friend may cause emotionalism, irritability or other depressant factor, hence should be guarded against in the sick room. It is surprising how slight a cause may sometimes disturb a patient. A creaky rocking chair, a starched dress, a whispered conversation, are familiar illustrations.

I have twice seen a temperature of 106° come suddenly from purely psychic causes and depart as suddenly as it came after remaining but two or three hours. One of these cases of psychic temperature, if I may so call it, was in a lad convalescent from typhoid fever and the other was in an hysterical woman who had had pelvic peritonitis. I have no doubt that some cases of post-operative febricula are of psychic rather than of infective origin.

My next proposition is that purely nervous causes, as shock, grief, and the like, may pave the way for, if not directly cause, profound pathological disturbance. I have never happened to have attended a case where such results as the whitening of the hair or the loss of the mind has suddenly followed shock or grief. But Case V illustrates other phases of the same possibilities.

CASE V. A young woman, who had been under treatment for enlarged cervical glands for several years, gave birth to a fine child, which survived the dangers of a breach presentation, also of a summer diarrhea when two months old. Otherwise the child was perfectly well till the tenth month. Then it had what appeared to be a slight cold, from which it was recovering. At this time, the great-grandmother, who lived in the same house, sickened and died. Grief so affected the mother that her milk entirely upset the child. Nothing that I advised was of any avail. In one week more the little one also died. This second fatality completely prostrated the mother. She declined visibly day by day. She became despondent. Her sleep was much broken. Muscular pains in the feet were so troublesome that she could not walk. The cervical

glands began to grow rapidly and she developed a severe bronchial cough. Tubercular trouble was feared, but as the signs in the lungs were not localized and as the sputum was negative, I felt justified in giving the assurance that such was not the case and that she could get well. This strong assurance combined with removal to fresh scenes and the invaluable iodide of iron then began to result satisfactorily. She was soon able to walk. The cervical glands diminished to one-third their size and the cough practically ceased. She, at the present time, a year from her twofold grief, is in fairly good condition.

Passing now from a consideration of the general topic of the psychic as a causative factor of disease, I will next briefly summarize certain cases which illustrate its power from a therapeutic standpoint. Cases VI and VII illustrate this in relation to my fourth proposition, namely, that the psychic is capable under some conditions of so turning the scale to health that it may arrest, even in some cases cure, otherwise fatal pathological conditions.

CASE VI. A gentleman, sixty-four years of age, who had suffered for several years with rheumatism and chronic bronchitis, was seriously ill with interstitial nephritis, to which was superadded an acute parenchymatous process. He was emaciated, having lost by estimate about seventy pounds. Edema, ascites and jaundice were present. He had a marked cachexia, which with the examination of the blood suggested malignant disease. The opinion of the three physicians who saw him was that he was not likely to live more than three or four weeks. In this illness the patient was remarkably calm. Following a well-known precept never to permit the news of a fatal ending to come directly from the physician, indeed not to allow such a disquieting thought to be discussed with the patient at all, I refrained from telling him how ill he was. On the contrary I availed myself of the psychic by keeping up his courage as best I could. In addition, which of course was a most important factor, though I do not believe it would have sufficed alone, I gave him nothing but the simplest of diet and medicaments, chiefly malted and peptonized milk, with *fel bovis* as a laxative medicine. Much to my surprise the scale began to turn. The acute symptoms gradually disappeared and he practically recovered. In the two years since that attack he has regained some fifty pounds; is able to devote several hours daily to business and is hardly aware of the renal disturbance, which has subsided to a moderate amount of interstitial process.

CASE VII. A gentleman, age forty years, was ill with advanced pulmonary tuberculosis. One lung was everywhere invaded and had an extensive cavity in the upper third. The other lung was moderately affected. The patient's digestion was much disturbed. He was emaciated and had a daily hectic. This patient had been under the care of skilful physicians in his own town. He had consulted specialists in our city, but his condition had gone on from bad to worse. My relation to the case was a very limited one. It seems that shortly before I saw the patient the family had transferred their allegiance to a mental healer. Friends had then made such an outcry that the family were induced to have at least one more opinion from a Boston doctor. I happened to be the one asked to see him. I made a critical examination, and on stating that I knew of no measures of any avail towards prolonging his life beyond six months at the outside, the family concluded to reinstate the mental healer, who, if nothing else, had already given the sufferer a sense of calm he had been a stranger to for months. Much to my surprise the man lived a year. His wife told me that up to a few weeks before his death, when suddenly he became seriously ill as if with an acute attack of grippe, he had been doing very well, that his dyspeptic symptoms had entirely subsided, that for a while he had gained in weight, and that he had been outdoors for months. The point is that he lived twice as long as I expected he could and had been kept in a fairly comfortable condition most of the

time, the only therapeutic measure in his case being the psychic, which had favorably influenced his nutrition.

While it is only in a most general way that anything approaching definite rules can be formulated to govern cases like those thus far cited, and while details as to measures for the avoidance of fatigue, or, on the other hand, words of encouragement, must from the very nature of the case be largely questions of tact on the part of the physician and of the mental habit of the patient, in the next set of cases a more definite line of action may be formulated. The proposition is that attention to the psychic should be a matter of routine in toxic cases with delirium.

CASE VIII. A typical case of alcohol delirium in a young man is here represented. Among his delusions were those of water bugs in his coffee cup. His efforts to remove them were absolutely true to life. If left to himself he would have starved rather than have taken any food.

In such cases the psychic may be advantageously and definitely applied as I applied it in this case. One should fall in with such delusions. Instead of arguing that no bugs are present when the patient is perfectly sure his cup is teeming with them, help him empty them out, then give him a fresh cup of beef tea and get him to take even a sip while he has the assurance that his cup is bug free.

Authorities are agreed, I believe, that restraint in such cases is not as well as the calming control of a judicious nurse. Though this man was of a turbulent disposition and a boxer there was not the slightest difficulty in leading his delusions, so that he was kept quietly in bed. Then with the aid of sedatives and eliminants he passed safely through the attack. Without the psychic factor in his treatment there would have been much increased risk of physical harm to himself or others.

CASE IX. Here is represented a somewhat similar condition in belladonna poisoning. A young woman had taken five A. S. B. pills. Besides having the dry throat and dilated pupils, she was completely unbalanced. She had a busy delirium. Prancing horses were trying to catch her. Every noise as of a passing train would startle her into efforts to escape fresh terrors. There was constant risk of her being seriously harmed, as she was ready to dash through a window or anywhere. She mistook her physician for her mother and his efforts quieted her. Her mother, usually most welcome, was mistaken for an acquaintance for whom she had an aversion and the mother could not approach her without adding to her fright. In this case availing one's self of the psychic by maintaining a protective calm was an important factor in the treatment. Nerve sedatives, eliminants and systemic tonics were also important factors, but their action was certainly much aided by the psychic.

The same condition is also shown in the following case of salicylic acid poisoning, and emphasizes the importance of sympathetically falling in with the delusions incident to delirium as a means of controlling the victims of such delirium.

CASE X. A man, of about forty-five years of age, entered the Boston City Hospital, where I was house officer, with acute articular rheumatism. He was given the usual routine dose of salicylate of soda, which consisted of — if I recall correctly — five-grain hourly doses till the physiological effect was produced. I never felt satisfied that it was a case of pure salicylic poisoning or whether previous alcohol was not a factor. The point for this paper is with relation to the peculiar transitory delirium and its psychic as-

pects. About midnight I was hurriedly summoned to the ward (Ward T) and a most bizarre spectacle was presented, one not soon to be forgotten by those who witnessed it. The patient had been given permission to continue wearing his precious red flannels. These were in full evidence as he, in his delirium, undertook to escape his fancied foes. He imagined the woods (that is, the ward) were full of devils; the ward master was their chief. All the lights were on, and the patient, quite unmindful of his previously painful joints, was dodging about from bed to bed. The ward master, usually a most efficient nurse, was quite unable in this case to meet the psychic relation necessary for its successful treatment. Expressed in terms of electricity he exerted only negative or repellent attraction. Fortunately for the sake of the patient and the peace of the ward, I happened in this case to illustrate "positive affinity." The patient at once recognized me as his doctor and came to me for protection. I fell in with his delirium, told him I would take him to a place of safety (namely, his bed) and gave him a quieting dose of bromide of potassium and chloral. The psychic was of great importance in this case. It was very easy to exercise if one happened to be the right one for it. It was positively pathetic to see this strong man yielding in his delirium implicit obedience to my simplest command. He helped himself into a camisole as trustingly as a little child would get into a nightgown. Sleep soon came, and nothing further was heard of the delirium.

Ether delirium deserves a word of mention, not on account of the gravity of the condition, for it is neither severe nor prolonged, but every case of etherization has a period when attention to the psychic means the difference between struggles, unseemly speech, etc., and a calm, quiet, almost natural falling to sleep. This latter condition is readily obtained if the operator has the confidence of the patient at the outset and takes care to exert his own control when the patient is going through the stage of anesthesia of the inhibitory centres. This is the moment when trouble may be apprehended, and when it will surely come in injudicious hands.

The delirium of fevers bears a close resemblance to that of many drugs and it is natural to infer that such delirium is due to toxin poisoning. The presence of toxins, chemically much like certain of the alkaloids, also suggests this relation. Whatever the exact processes involved in the causation of such delirium, it is certain that it frequently accompanies high fever, and that among the best measures for its prevention and its mitigation are the psychic. The following cases will illustrate this proposition.

CASE XI. A young man, ill with typhoid, distinguished himself early in his stay at the City Hospital by jumping out of the window and dashing about the grounds. Fortunately he was not harmed by the experience. For safety he was placed in a guarded room. One evening when the lights were put out he became very much alarmed and aroused us all by his frightful screams. He did not know the other physicians and they simply intensified his fears. He recognized me and a word sufficed to give momentary quiet, which was continued by the help of bromide and chloral.

CASE XII. This case illustrates the possibility of preventing delirium of fevers by attention to the psychic. A young woman, ill with typhoid fever, started out as if she were to be extremely ill. The temperature reached 105° and she had a moderate delirium. She was very averse to going to a hospital, and on finding a suitable nurse she remained at home. This nurse was a treasure. She exerted a wonderfully soothing effect on the patient; delirium did not come again. To be sure, baths were used and these tended to avert the liability to delirium. But quite apart from this I am of the opinion that the calming, quiet atti-

tude of the nurse was of great value in the treatment of this case. Besides being free from delirium throughout the seven weeks of her illness, a pregnancy of three months went on satisfactorily and the woman has since been delivered of a fine healthy boy.

The cases thus far instanced also illustrate the next proposition, namely, that nurses should be able to enter into psychic relations with their patients; otherwise their influence is much lessened and may be positively harmful. Do we give this factor enough attention? Are our nurses sufficiently trained in it? No amount of training can qualify the unfit. But training can greatly improve the fit. I am continually hearing of nurses who delight in telling of their experiences in other cases; how this pneumonia died, or that typhoid had hemorrhages.

CASE XIII. One type of trained nurse is here illustrated, unfit though possessed of the best of training. The patient, a young lady of an especially refined and sensitive nature, was ill with empyema. Medicines were all given on time, the clothing was duly changed; in other words, the nurse was perfect in technique. But she offended the patient in numberless little ways. She was constantly chattering uninteresting stories. Her hands were not always clean when serving food, and though clothed in spotless white she would not think of any harm in coming into the room at the patient's meal time when her clothing was redolent with odors from adjoining rooms. The patient, rather than offend by word of hers, endured it for days and days. Her appetite suffered and her spirits fell, nobody could quite see why, but I believe it was largely because the nurse failed to enter into helpful psychical relations with the patient. Had this relation been well met at a time when good nutrition was in process of establishment the fatal result in this case might have been averted.

Why one person should repel and another attract is a problem. Explain it as we please the fact remains that such relations exist. Moreover, a person when in good condition or at a particular time may attract and at the next occasion exert just the reverse relation. As a rule, however, a nurse with the proper fitness for nursing should exercise this quality in most instances. When illness has overtaken her or she is too fatigued, the sick room is no place for her. A sick doctor is bad enough for the patient. However, he may be able to give a moment's trustworthy judgment under such conditions, or be endured by the patient for that brief length of time, but with a sick nurse the case is different. If one looks over his successes and failures, while we all gladly recognize our great indebtedness to the nurses who have helped us towards success, yet we can also probably point to some failures where the psychic was important and the nurse utterly failed to meet it. I make it a rule never to accept a sick nurse if I can help it, no matter how much I may otherwise value her and wish to see her employed. Moreover, I believe that where a nurse cannot get into an acceptable psychic relation with her patient so as to be able to soothe and make everything tend to health, that she is not the nurse for the place and should be exchanged.

It is a question whether the average graduate of a small hospital is likely to be better than the average from a large one. Few nurses can rise above the tendency to routinism engendered in the large hospital. So that even if they escape the bane of overwork it is difficult to have acquired all the little delicacies and refinements of nursing which add so much in private practice. Where large hospitals do not give abundant

opportunities for service as "specials," and where they do not take proper care of their nurses' health, I am sure their graduates cannot compare with those from the smaller hospitals.

Our attention to the importance of the psychic is forced upon us today from another quarter, namely, the comparative success of various kinds of pseudo-practitioners. I foresee one good result, if nothing else, from the present craze for Christian Science, mental healing, homeopathy, and the like. They emphasize the importance of the psychic. There are a sufficient number of persons in our midst today, once ill, now well, who owe their recovery to the psychic relation, however blindly exercised, of some pseudophysician. It is an encouraging sign of the times that we, as physicians, no longer cry out, "This fad is totally bad; have nothing to do with it." Instead, when occasion permits, we say, "Yes; this is a fad. It owes its existence to certain well-recognized medical principles, is capable of much good within certain limitation, but is also capable of much harm through ignorance of other laws."

It would be interesting in connection with the subject of this paper to discuss the relations of electricity and hypnotism to the psychic. These agents have already demonstrated their value in certain limited lines as therapeutic agents, but it seemed to me that such discussion would unduly prolong this paper. I therefore thought it better to confine my remarks simply to two main thoughts, namely, the psychic as a causative agent, and the psychic as a remedial measure.

Clinical Department.

A BRIEF REPORT OF A CASE OF CEREBRAL ABSCESS OF OTITIC ORIGIN; OPERATION; DEATH.¹

BY GEORGE L. RICHARDS, M.D., FALL RIVER, MASS.,

Otologist and Laryngologist to the Fall River and Emergency Hospitals; Fellow American Laryngological, Rhinological and Otological Society, etc.

M. D., male, twenty-eight years old, was admitted to St. Luke's Hospital, New Bedford, September 16, 1899, at 8.30 p. m., with a temperature of 100.4° and the following history: Two years ago had earache in the right ear followed by a discharge. Since that time has not been conscious of any trouble with the ear up to September 3d of this year, when he had his hair cut. This was followed by pain in the head, loss of appetite and general weakness. For the last ten days has suffered from severe pain in the right ear, and there has been a slight discharge from this ear; has not been able to work.

On examination a small perforation was found in the drum of the right ear, while the left was normal; watch tick not heard in right ear. The ear was poulticed and boric-acid solution applied in it.

On September 17th his temperature was 99.2° and pulse 88; he was perfectly rational and general condition seemed good. On September 18th, the day following, he was allowed to go home, his temperature being normal and pulse 76. This was at his own request. He was told to present himself at the office of

Dr. Whitney for examination of the ear. He did not go to the doctor's office or to his home, but was found late in the evening in a dazed condition in a swamp some distance from his home. During the night he became unconscious, and Dr. Whitney saw him at his home early the following morning, at which time he was semiconscious and partly paralyzed on the left side. He was taken back to the hospital in the ambulance, less than twenty-four hours after he had walked out.

I saw him at 2 p. m. of the same day by invitation of Dr. Whitney and of Dr. Hough, in whose service he was admitted, and we operated on him at once. At this time he was absolutely unconscious, and his pulse was 104 (I do not find any temperature record on the hospital chart until after the operation), the right pupil was much dilated, the left normal and the whole left side paralyzed, not responding to any stimulus. I made a probable diagnosis of cerebral abscess, advised operation and gave an unfavorable prognosis. It seemed better to give an anesthetic, and ether was used, though I afterwards wished that we had either used none at all or else had used chloroform. I first did the usual mastoid operation. A very hard mastoid was found with no pus in the cells; the lateral sinus was then uncovered and found to be all right; the attic wall was cut away and a little foul secretion and purulent debris found, which was thoroughly removed. Not having found sufficient to account for the patient's condition, I next removed with a small trephine a button of bone, making the cut one inch above and behind the bony auditory meatus. The dura was wounded slightly, but no bleeding followed. A probe was passed along the point of wounded dura and the underlying tissue lightly explored, when a foul smell of gas easily apprehended some feet away followed. The dura was then slit and a director pushed down into the soft, nowhere bleeding, brain substance. At the depth of a quarter of an inch, perhaps a little more, a large pus pocket was reached, and two ounces of as foul pus as I have ever smelt evacuated. The cavity was washed out with sterile water, drainage tubes inserted, and patient put in bed, and a decidedly unfavorable prognosis given. The temperature four hours after the operation was 105°, pulse 140, respirations 72.

Directly after the operation, that is, within a few hours, there appeared a severe bronchitis which Dr. Hough regarded as due to the ether, but which may perhaps with as much justice be ascribed to the exposure of the day before in the swamp. He was given strychnia and other heart tonics hypodermically, with alcoholics, and the wound was frequently washed out of the accumulated purulent secretion and debris. The day following the operation he was unconscious, with temperature of about 106°, a pulse of 150, and a respiration of 48. The temperature being so high, antipyrin was given, and under this the temperature was kept from 101° to 103°. On the second day the bronchitis became a bronchopneumonia, and oxygen, which had been administered from the start, was given more frequently, and the dressings were changed three or four times a day, the discharge continuing considerable in amount. He was by this time partially conscious, the inequality of the pupils less marked and the paralysis not absolute, and had it not been for the pneumonia it seemed as though there might have been a chance of recovery. As it

¹ Presented at the Annual Meeting of the American Laryngological, Rhinological and Otological Society at Philadelphia, May 31-June 2, 1900.

was the temperature went higher, he grew rapidly worse, and died on the third day following operation, with a temperature at the time of death of 107.8°. Every effort was made to obtain an autopsy, but permission was denied.

The special point of interest in connection with this case lies in the fact that a man with destruction of very nearly the whole of the middle lobe of his right brain was able to go out from a general hospital at his own request, and with the house officer thinking him in sufficiently good condition, within less than twenty-four hours of his being brought back to the same hospital unconscious and paralyzed and with two ounces of fetid pus in his brain. When it is recalled how the very slightest hemorrhage into the same area will produce symptoms as marked, it is remarkable that nature in this case bore so great destruction for so long a time before she showed any positive signs of its presence.

PURGATION WITH OPIUM.

BY J. W. WAINWRIGHT, M.D., NEW YORK.

A VERY interesting case of intestinal obstruction came under my observation some years since, which I have often thought to report because of the treatment adopted, and the satisfactory termination of an illness which promised to demand operative procedure as the only means of affording relief.

R. W., age five years, male, very active, nervous, well nourished and with good family history, was found to be suffering from obstruction, but without distress. Inquiry revealed the absence of bowel movement for forty-eight hours. Laxatives were administered, but after twelve hours and no results cathartics were given together with enema. These measures not bringing relief, intussusception was diagnosed. There was no fever, tenderness or nausea. Broths and milk, which had been allowed, were now forbidden, and the patient placed under chloroform anesthesia, an enema with a long flexible rectal tube given, together with massage over the abdomen. Still results were *nil*. There was no escape of gas, no vomiting, other than could be ascribed to chloroform, and still no pain, circumscribed or otherwise. The case by this time—as ninety-six hours as near as could be ascertained had elapsed since the last stool,—was thought to be serious, and consultation sought. Consultants were not agreed as to diagnosis or line of treatment. Another effort to relieve the little patient was to be made before resorting to abdominal section.

Just at this point the patient's father, himself a physician, upon questioning him, learned that he had eaten a handful of small squares of American cheese, about two ounces. The servant was questioned, and remembered that upon entering the dining room just before announcing dinner, she had caught the little fellow "hooking" some cheese from the table, and that upon being caught, he forced what he had in his hands into his mouth and left the dining room, and this episode was traced to the day previous to the discovery that his bowels were not acting.

It was now believed that the cheese had lodged at the ileocecal valve and was causing all the trouble. The patient was again anesthetized with chloroform,

held up by the feet, and as much of an enema administered as the bowels would retain. While being held head down, completely anesthetized, massage was again used over the valve, but without effecting dislodgment of the obstruction. At this time—five days after a movement of the bowels and after every effort had failed—an operation was thought imperative in order to save the patient, and his father was so informed. The father, however, declined to have an operation at that time, believing that even were the operators able to remove the obstruction, the patient would succumb to shock. All this time there had been no nausea or fever. The patient had not complained nor once cried. The manliness of the little fellow and his perfect willingness to submit to anything his father suggested appealed to all the consultants, six in number. At the request of the father of the patient, a surgeon residing in a distant part of the city was now brought into the case, who, after hearing the history, making an examination and listening to the father's reasons for objecting to an operation, suggested one more effort to dislodge the obstruction before operating. His instructions were carried out to the letter by the father, and were as follows: A quantity each of *tinctura opii deodorati* and *tinctura belladonnae* was procured and two drops of the *tinctura opii* given on the tongue with a medicine dropper every half hour. This was kept up until there was complete coma with stertorous breathing, and this condition maintained for two hours, during which there was contracted pupil, insensible conjunctiva, threatened paralysis of the muscles controlling the tongue, etc. At the expiration of the two hours the patient was allowed to recover from the effects of the drug, taking about four more hours, with the aid of small quantities of *tinctura belladonnae*, which had been held as an antidote to the effects of the opium if needed. His first words upon regaining consciousness were to ask for "his chair" (stool), when there was a free stool. Upon examining this, a knuckle-shaped mass was found which proved to be cheese. The patient made an uninterrupted recovery. The cathartic action of the opium was rather the complete muscular relaxation which chloroform had not succeeded in bringing about, extending to the muscular coat of the intestines, thus allowing the mass to pass through the ileocecal valve by gravitation.

A CASE OF VOLVULUS COMPLICATED BY PERITONITIS; OPERATION; RECOVERY.

BY W. P. GIDDINGS, M.D., GARDINER, MAINE.

THE case here reported I have thought of sufficient interest to merit attention of the profession.

S. P., of Richmond, Maine, age fifteen, on Monday, February 2, 1899, at 4 P. M., was playing "snap the whip" in company with a number of his schoolmates. He being at the end of the line lost his hold on the hand of the next boy and was thrown some distance, but did not then realize he had received any injury. About five o'clock on his way home he began to have some pain in his abdomen, which was described as more diffused than localized. During the night his suffering so increased that early on Tuesday morning the family physician was called in. The doctor immedi-

ately recognized the case as one of intestinal obstruction and made search at the usual sites for hernia; but finding none was inclined to view the condition as due to impaction. Through the day attempts were made to induce an action of the bowels by saline cathartics and high enemata without other results than rejection of the remedies by the stomach and expulsion of enemata minus feces. Efforts were continued at intervals up to Wednesday night to get a movement of the bowels, when marked peritonitis supervened and the vomiting, which had occurred only occasionally, became almost constant and the pain greatly increased.

On Thursday morning, the case having become extremely grave, I was sent for by Dr. C. W. Price, the attendant, to do laparotomy. At 11 A. M., when I arrived, I found the patient's condition as follows: Countenance pinched, pale and anxious; pulse 108, rather thready; arrhythmic; temperature $97\frac{1}{2}^{\circ}$ F.; abdomen quite fully distended, tender and tympanitic with capillary stasis; vomiting occurring every few minutes, mostly bile and mucus; pain constant, with paroxysms centring around umbilicus. It being an emergency case aseptic precautions were made as thorough as circumstances permitted, the only delay being a wait for boiled water. Fortunately sanitary conditions were excellent. The whole abdomen was scrubbed with hydronaphtol soapsuds; shaved and rinsed off with boiled water and finished with an ether bath. The field of operation was surrounded with clean — not sterilized — towels. On opening the abdomen a bloody fluid poured out freely; estimated a quart. The whole peritoneal investment of intestines and parietes was deeply injected and lymph deposits scattered over surface; no agglutinations. It was found necessary to remove fully one-half of the small intestine upon towels hastily wrung out of boiled water before the twist was found, which was finally located a little below and to the left of the navel. There was no apparent redundancy of mesentery so common in cases of volvulus. The twist was easily corrected and intestines returned. The toilet was first made by washing out the cavity with a normal salt solution and fully a pint of it left inside. The abdominal incision was closed by three tiers of stitches and usual dressing applied.

Report made to me the following day: "Patient rallied rapidly from the operation; passed a comfortable night; no nausea or vomiting. Pulse 84, temperature 99.5° . Bowels moved naturally and he had a desire for food."

From this on recovery was rapid and uneventful. The interest in this case consists in the rapid subsidence of the peritoneal inflammation and establishment of convalescence. Query: What part, if any, was played in resolution by the salt solution left in the abdomen? Was the inflammation influenced by and absorption of its products promoted, or was the natural shock lessened in any degree and better circulation stimulated by its resorption? These are questions I am unable to answer satisfactorily to myself, but having pursued the same course in quite a number of serious abdominal operations from which the patients made unusually quick rallies, followed by rapid recoveries, I am persuaded that the normal salt solution does have decidedly stimulating qualities when so used, and that the favorable symptoms so soon manifest are something more than a mere coincidence.

Medical Progress.

REPORT ON PROGRESS IN SURGERY.

BY H. L. BURBELL, M.D., AND H. W. CRUSH, M.D., BOSTON.

(Continued from No. 6, p. 141.)

HERNIOTOMY UNDER LOCAL ANESTHESIA.

H. CRUSH¹¹ presents interesting data on herniotomy under local anesthesia. General anesthesia is still preferred, but there are certain cases in which it would be a source of danger, as in advanced age, chronic bronchitis and emphysema, pulmonary or laryngeal tuberculosis, marked cardiovascular changes, chronic nephritis, and, above all, shock and vomiting in strangulated hernia. Previous to the use of local anesthesia many patients with hernia were discouraged from seeking operative interference because of the immediate danger of the anesthetic. Bull and Coley¹² regard sixty years of age as, in general, a contraindication to operation. During the past few months at Johns Hopkins Hospital there have been 14 cases of herniotomy done under local anesthesia on patients ranging from sixty to eighty-four years of age. For strangulated hernia local anesthesia is specially adapted, for, by avoiding the dangers of the general anesthetic, both primary and secondary, one may keep the balance in favor of an organism almost overcome by shock, by toxins from the bowel, by depletion from repeated vomiting and lack of nourishment. Under a local anesthetic, with danger to the patient, the sac may be exposed, the constriction relieved, and the gut treated according to its condition. If it is viable and the patient's general condition warrants it, a radical cure may be done; otherwise the radical cure may be left until a later day. If the gut is not viable the establishment of an intestinal fistula is the safest procedure. This is readily done under the local anesthetic, and intestinal suture is done later, with far less risk. To succeed in major operations with local anesthesia, an accurate knowledge of the course and situation of the nerves to be encountered is essential, since accidental division of an unexpected sensory trunk often overcomes the inhibition to pain and renders complete narcosis necessary. The hernia skin incision divides filaments of the twelfth dorsal and first lumbar nerves above and of the iliohypogastric nerve below. Of the deeper nerves, the ilio-inguinal and genital branch of the genito-crural nerves are usually found as one trunk in the deeper part of the canal, and the early cocainization of this after splitting the aponeurosis is perhaps the most important step of the operation. The usual anesthetic result is a complete loss of sensation of the entire scrotal contents, cord, sac and testicle, and the inner side of Scarpa's triangle. There is no surface anesthesia of the scrotum itself. Sometimes there is sensation left in the lower attachments of the testicle, supplied by the superficial perineal nerve. If the lower border of the internal oblique muscle is to be cut it must first be injected to anesthetize the trunk of the iliohypogastric nerve which is found there. Schleich's solution No. 2 (cocaine mur., .10; morph. mur., .02; sodii chlor., .20; aq. dest., ad 100) was used. It is practically non-toxic and may be sterilized

¹¹ *Annals of Surgery*, January, 1900; *Medical News*, February 3, 1900, p. 181.

¹² *Annals of Surgery*, 1898.

without dissolution. For the undivided nerve trunks one-half to 1 per cent. cocaine was used. Preparatory to operation, patients of advanced age are kept in bed several days to see if they can endure recumbency, and to train them to void urine in bed. Three-quarters of an hour before operation one-tenth to one-eighth of a grain of morphine is given hypodermically and repeated shortly before going to the table. The patient is cleansed, the line of incision infiltrated with the cocaine solution and the incision immediately made through the linear wheel, the bleeding points clamped and the field kept dry. Only the upper end of the incision is carried down to the aponeurosis, which is opened, and the ileohypogastric and inguinal nerves cocaineized with 1-per-cent. solution. The lower end of the incision may then be painlessly completed. No further use of the anesthetic is needed. The ilio-inguinal and genital nerves should not be damaged because of resulting cremasteric and scrotal paralysis. The remainder of the operation may be completed according to the preference of the operating surgeon.

When, in large hernia, the two rings have become concentric and the conjoined tendon therefore absent, Bloodgood (Johns Hopkins Hospital) opens the rectus sheath and transplants the muscle to form a posterior wall to the inguinal canal. No additional cocaine is needed. If, as occasionally happens, the patient begins to feel pain and loses self-control, a few whiffs of chloroform relieve the pain without the loss of consciousness. There have been no "after pains," and healing has been absolutely unaffacted. The advantages of the method are: (1) No post-anesthetic sequelae; (2) urinary disturbances are less frequent; (3) diet is unchanged; (4) dressings may be applied originally to suit the comfort of the patient; and (5) above all, the dangers of general anesthesia are avoided. Disadvantages: (1) The operation is a little more prolonged and difficult; (2) some pain is inflicted, but this does not compare with the discomforts of recovery from ether anesthesia.

OPERATION FOR GASTROPTOSIS.

Several operations have been proposed for the treatment of gastroptosis. Gastro-enterostomy and various means of infolding the anterior wall of the stomach by a single row or many rows of sutures have been advocated. Rosving¹³ has hit upon a method of suturing the stomach to the anterior wall of the abdomen at the same time that he puckers it upon itself. He does this by making a median incision, stretching the lips of the wound apart and passing the needle first through one side of the wound, then with it catching up several points of the anterior wall of the stomach, and finally bringing it out through the other side of the abdominal wound. Several sutures passed in this manner will not only shirr up the anterior wall of the stomach, but will hold the whole organ firmly up in its place and so help it to empty itself. Two of 3 patients operated upon in this manner recovered their normal weight promptly. The third, whose symptoms had lasted for four years and who had wasted from 140 pounds to less than 60 pounds in weight, improved for a few days after the operation, and then died without reaction seven weeks later, an illustration of the serious character of gastroptosis if

allowed to go too long, for no other pathological lesion could be found to account for the death of this patient.

SURGICAL TREATMENT OF HEMORRHAGE FROM GASTRIC ULCERS.

Andrews and Eisendrath¹⁴ discuss this subject from its historical and clinical aspects and report two successful clinical interventions in addition to experimental work, which lead them to the following conclusions:

(1) The result of the practice of the best modern surgeons warrants the statements, previously made on theoretical grounds, that only operative interference can save the lives of a part of the patients affected with bleeding ulcers of the stomach, namely, those not improved by internal medicine.

(2) Surgical intervention is to be recommended, (a) in small, repeated hemorrhages; (b) in severe ones occurring more than once, especially if more than 500 centimetres are lost at each hemostasis.

(3) A single copious hemorrhage is not necessarily an indication for operation.

(4) In ulcers at or near the pylorus pyloroplasty (Heineke-Mikulicz) is ideal. It makes local treatment possible and gives all of the benefits of gastro-enterostomy and is safer.

(5) Canterization and curetting of the ulcer should give place to resection whenever the stomach wall can be reached from without.

(6) If adherent posteriorly and at the end of the stomach, canterization, curettement and ligature *en masse* are the best substitutes for excision.

(7) Ligature *en masse* is shown by their experiments to endanger perforation except when supported by external sutures.

THE WISDOM OF SURGICAL INTERFERENCE IN HEMATEMESIS AND MELENA FROM GASTRIC AND DUODENAL ULCER.

Armstrong¹⁵ reports 2 cases, 1 successful, 1 in which he operated and 1 in which he assisted in the consultation, but in which he believed the patient was left too long before the operation was undertaken. This latter case leads him to the conclusion that operative interference is often too long delayed. He makes the following clinical division: those in which occur frequently repeated small hemorrhages, and those in which the loss of blood is in large quantities; and it would seem that each class has a distinct pathological lesion, and this should be borne in mind in the consideration of the treatment of hematemesis, medically or surgically.

If we can exclude aneurism, which should generally be possible, and leukemia or cirrhosis or other cause of portal obstruction, he holds that the surgeon should interfere in these cases (1) of frequently repeated small hemorrhages which persist in spite of medical and dietetic treatment, and which threaten to destroy the life of the patient, and (2) in all cases of hemorrhage which, in spite of medical and dietetic treatment, recur. In these cases he advocates operation after the second hemorrhage. For hemorrhage occurring in cirrhosis and portal obstruction he does not think that the surgeon can accomplish any good. In

¹⁴ *Annals of Surgery*, October, 1899; *American Journal of the Medical Sciences*, January, 1900, p. 95.

¹⁵ *British Medical Journal*, October 21, 1899; *American Journal of the Medical Sciences*, April, 1900, p. 469.

¹³ *Arch. f. klin. Chir.*, Bd. ix, S. 812; *Medical News*, February 3, 1900, p. 176.

these cases the hemorrhage is generally from a varicose esophageal vein, a part difficult of access and secondary to a pathological lesion, but little amenable to any form of treatment.

In cases of gastric and duodenal ulcer, however, the conditions are totally different. The lesion is primary and local, and in addition to securing the bleeding point a more smooth and rapid convalescence is secured, the likelihood of perforation removed, and if found advisable the performance of a gastro-enterostomy or pyloroplasty secures to the stomach the rest which favors the healing of the ulcer and insures against subsequent occurrence of narrowing and obstruction at the pylorus.

APPENDICITIS.

Richardson,¹⁶ in an article on this subject, gives the following summary:

I. Should every case be operated upon as soon as the diagnosis of appendicitis is made? As a rule, the appendix should be removed if the diagnosis is made in the first hours of the attack.

After the early hours operation is advisable: (1) If the symptoms are severe, and especially if they are increasing in severity; (2) if the symptoms, after a marked improvement, recur; (3) if the symptoms, though moderate, do not improve.

The wisdom of the operation is questionable: (1) In severe cases in which an extensive peritonitis is successfully localized and the patient is improving; (2) in cases which are at a critical stage, and which cannot successfully undergo the slightest shock.

II. Should the appendix be removed in every case? It should not be removed: (1) In localized abscesses with firm walls; (2) when the patient's strength does not permit prolonged search. It should be removed whenever the peritoneal cavity is opened, unless the patient's condition forbids. The appendix should be removed in all cases as soon as the inflammatory process has had time completely to subside — in from two to three months after the attack. In cases simply drained the scar tissue should be excised, the appendix removed, and the wound securely sutured.

ACUTE PERITONEAL EFFUSION AS A SYMPTOM OF INTESTINAL STRANGULATION.

Bayer (Prague) in 1898 called attention to this fact, which has also been noted by Braum,¹⁷ who claimed that the effusion present in cases of internal strangulation was analogous to that which occurs in a hernial sac. Bayer¹⁸ has again called attention to the clinical significance of this condition and now emphasizes two points.

(1) That the effusion is a valuable aid in the diagnosis of strangulation and peritonitis and is direct proof of strangulation. Peritonitis may be present and increasing, and the initial dulness may be concealed by the increasing distention of the well-known paralytic character. If, however, a rapid increase in the area of dulness should be noted, becoming more marked hour by hour, and clearly shown by percussion, the presence of internal strangulation is demonstrated. If the case is a recent one this rapid increase of the effusion indicates strangulation.

(2) The importance of the acute nature of the

effusion as indicating strangulation. The writer publishes a case illustrating the correctness of his views on the diagnostic value of this symptom.

TREATMENT IN PERFORATION OF THE BOWEL IN TYPHOID FEVER.

Keen, in a paper on this subject read before the New York State Medical Association,¹⁹ states that since Mikulicz in 1884 performed the first operation for perforation of the intestines from typhoid ulcer, up to the end of 1898, 83 cases were operated on, and 19% of them were saved. During this last nine months 67 additional cases have been operated on, and 26% of them have been saved. The author states that if doctors would but remember that the healing process during typhoid fever is quite as good as in health, surgeons would get more chance to operate, be called sooner to the cases, and very soon the statistics would show at least 1 in 3 saved.

He states that the surgeon should operate in practically every case. The better the general condition the better the chance. One case was operated on three times and survived. Two cases have been operated on twice. One case was operated on successfully for post-operative obstruction. In cases under fifteen years of age, where operation has been done, 50% have recovered. From fifteen to twenty-five years of age is the most unfavorable period. Women have perforations less than half as often as men, and recover twice as often from operation, according to the statistics. The later in the disease that perforation occurs the better is the prognosis.

The surgeon should not operate during the primary shock. This means usually not during the first twelve hours. The author states that he has seen fit to correct this original expression of opinion, and to say not during the first eight hours. There would seem to be two rules: (1) Operate as soon as possible; but (2) do not operate during profound shock. The improvement of the statistics in the future will depend not so much on any perfection of the technique, but on advance in diagnosis. If the perforative stage can be recognized with any assurance, then perhaps it will be possible to prevent perforation entirely. In any case a surgeon should be called in consultation as soon as any abdominal symptoms appear that point even to impending perforation. An exploratory incision may be made under cocaine anesthesia with very little inconvenience to the patient. After this exploratory incision, bacteriologic specimens may be taken and examined to see if there is any peritonitis.

The Halsted mattress suture should be used rather than continuous suture. If the perforation is very extensive, a resection of the intestine may be done. Two recoveries have been reported after such an operation. If at any point there seems to be impending perforation the spot should be sutured. Such points should be looked for carefully, as a number of cases have terminated fatally after operation, owing to the occurrence of a second perforation. The abdomen should be closed without drainage. Speed is an important factor in the success of the operation. There are cases in the literature of the subject now which show that the surgeon need never despair of any case, no matter how low the patient may seem in vitality, and no matter how many other complications have

¹⁶ American Journal of the Medical Sciences, December, 1899, p. 629.

¹⁷ Verhandl. d. deutsch. Gesellsch. f. Chir., 1891, S. 376.

¹⁸ Centrbl. f. Chir., 1899, Bd. xxiii, S. 665-667.

¹⁹ Medical News, November 11, 1899, p. 633.

occurred before. Most unpromising cases have ended in recovery.

A NEW METHOD OF TREATING GENERAL PERITONITIS WITH DRAINAGE IN CASES OF DIFFUSE PERITONITIS.

Bode²⁰ reports a new and thorough method of treating cases of diffuse peritonitis. He employs large quantities of normal sterile salt solution. The intestines are delivered *en masse*, and while they are covered with sterile towels soaked in hot sterile salt solution, the abdominal cavity is thoroughly scrubbed and flushed. The intestines are then all carefully washed and any wounds sutured. When they are replaced, a drainage tube having perforations in the middle is introduced, and the ends carried over the colon on either side and out through openings in both lumbar regions. Through these openings drainage tubes are carried into the pelvis or any other portion of the abdomen that has been the seat of a focus of suppuration. Drainage is also inserted through the laparotomy wound as in ordinary methods. A peculiarity of the after treatment is that the cavity is flushed out through these drainage tubes in the daily dressings by means of large amounts of normal salt solution. When the symptoms of peritonitis subside, usually after three or four days, the tubes are withdrawn gradually and the wounds allowed to heal. The success of the treatment has been very marked, patients with very grave symptoms having recovered rapidly.

COLOSTOMY, WITH THE FORMATION OF A SPHINCTER FROM THE LEFT RECTUS MUSCLE.

Von Haecker²¹ (Innsbrück), has attempted to improve the Witzel method in the following manner. The preliminary steps of the operation are the usual ones, the inner angle of incision exposing the outer border of the left rectus muscle. The loop of intestine is stitched to the parietal peritoneum and fascia to close off the peritoneum. The rectus muscle is now split from left to right, into an anterior and posterior portion to such an extent that the loop of intestine can be passed through the opening thus formed, after being slightly twisted. The skin is incised over the point where the loop emerges at the median border of the rectus and the latter is then brought out through the cut and supported in place by the rod. The main incision wound is then sutured in layers. Continence equal to a normal sphincter has never been obtained by any method, and perhaps would cause discomfort, since it could not be voluntarily relaxed. Von Haecker's method from the results reported as observed in 3 cases is such as might justify a trial of it. It requires that the mesentery shall be of sufficient length, hence it is not adapted to all cases. In 1 case where it was too short the loop was passed through the rectus anteroposteriorly instead of laterally.

FECAL IMPACTION AND ATROPIA.

Batsch²² has called attention to the very satisfactory result obtained in intestinal obstruction from impacted feces from the action of atropia. He injects the drug subcutaneously. In 2 cases the result was quite striking. His explanation of the action of the

atropia is that it overcomes the spastic-like contraction of the muscular fibres caused by the inhibitory action of some of the fibres of the splenic nerve and at the same time stimulates the motor fibres of the paralyzed intestinal muscle.

EFFECT OF IMPLANTATION OF THE URETER INTO THE INTESTINE ON THE INTESTINE AND KIDNEY.

J. Kalabin, Moscow, has studied the results of the above procedure by experimenting on dogs. The details have been reported.²³ He operated on 4 dogs in the spring of 1898. Through an abdominal incision he implanted the ureter into the intestine. Three dogs died, 2 from peritonitis, 1 from uremia. The fourth lived one year and was apparently well and in a normal condition. He was killed and examined in May, 1899. The results of this examination have been recently published.²⁴ Macroscopically nothing abnormal was noted in the kidney, ureter or intestine. The ureter had remained fixed in its new position and its implanted end was patent. The mucous membrane of the intestine was normal. The microscopic examination showed also that the ureter and intestine were apparently unchanged, but that marked changes in the kidney had taken place, the details of which (appearances suggesting cirrhosis, cellular infiltration, degeneration, etc.) are specified in the writer's report. If the above results are corroborated by other investigators, the facts so obtained will have an important influence on this operation, which of late years has attracted considerable attention.

ON THE PROPER WIRE FOR INTRODUCTION INTO AN ANEURISMAL SAC.

Reeves, Jr.,²⁵ in an article on this subject, gives a series of experiments which he made with various kinds of wire to ascertain which would be the most suitable wire for introduction into an aneurismal sac, and he concludes that a silver or gold wire, about .0085 inch in diameter and of sufficient temper to retain its coil, would seem to be all that is required to fill, when carrying the positive galvanic current, an aneurism with clots, and is not so thin as to be in danger of breaking. He suggests that the easily obtained music wire — a fine-tempered steel wire made for musical instruments and called Hartmann's combination spool, No. 00 — be taken as a sample.

AN EXPERIMENTAL INVESTIGATION OF THE TREATMENT OF WOUNDS OF THE HEART BY MEANS OF SUTURE OF THE HEART MUSCLE.

Charles A. Elsberg,²⁶ has contributed a most interesting paper on this subject. It is divided into three parts: I. Introductory, consisting of the history and literature of the subject; II. Experimental Investigations; III. Historical Changes that Occur in the Process of Healing of the Cardiac Wounds. He draws the following conclusions, which are summarized as follows:

(1) Suture of a wound of the heart as a final resort is an operation worthy of consideration in some cases and often justifiable.

(2) Suture of wounds of the heart in animals and

²⁰ Centrbl. f. Gynäk., September, 1899.

²¹ Loc. cit., 1899, Bd. xxvi, S. 1339.

²² Annals of Surgery, December, 1899, p. 704.

²³ Journal of Experimental Medicine, September–November, 1899, vol. iv, Nos. 5 and 6, p. 479.

²⁰ Centrbl. f. Chir., January 13, 1900; American Journal of the Medical Sciences, April, 1900, p. 464.

²¹ Beiträge f. klin. Chir., Bd. xxiii, Hft. 3.

²² Centrbl. f. Chir., 1899, Bd. xxvi, S. 1351.

also in man is devoid of the danger of sudden arrest of the heart, due to the manipulation of the heart incident to the procedure, unless Kronecker's co-ordination centre be injured.

(3) The suture should be an interrupted one of silk, applied in most cases so that the epicardium and superficial layers of the myocardium should be the only ones penetrated, and tied, when possible, during diastole.

(4) No stated indications can be given as to the cases that are operable or the time when the operation should be done. Each case must be considered by itself for symptoms which would justify operative interference.

CERVICAL SYMPATHECTOMY IN THE TREATMENT OF EPILEPSY, GRAVES'S DISEASE AND GLAUCOMA.

Jonnesco (Bucharest) has been investigating the effects of this operation on the above enumerated conditions, to which he first called attention in 1897. Since August, 1896, he has operated on 63 patients: Epilepsy, 43; epilepsy and chorea, 1; epilepsy and Graves's disease, 1; Graves's disease, 8; Graves's disease and glaucoma, 1; glaucoma, 1. There was no mortality from these operations. The transitory symptoms which followed the operation were congestion and increased surface temperature on the side from which the sympathetic was removed, increased lachrymation, increase of nasal mucus, sweat, saliva, slight conjunctival congestion. The permanent effects were stenosis and paralysis of the pupil, ptosis of the upper lid and retraction of the eyeball. No remote evil effects or trophic disturbances were recorded. The writer's report of his work²⁷ describes the character and extent of the operations performed, the rationale of the procedure, the physiological and pathological reasons for its results, and finally the permanent effects of his operations. The technique of the operation is simple and is as follows: The operator should incise the free anterior border of the sternomastoid, draw it aside, cut through its deep fascia so as to expose the carotid sheath, open the latter and separate the jugular vein from the carotid and vagus. The ganglion will be found in the space between; it should be excised above and below and detached. The operation is practically bloodless, and can be finished in about fifteen minutes. For full details the reader is referred to the original article or an excellent review by Dr. R. S. Fowler.²⁸ In general the results have been favorable enough to attract careful attention to the operation and its effects.

THE REMOVAL OF THE LYMPHATIC GLANDS IN THE INGUINAL REGION AND THE ILIAC AND OBTURATOR VESSELS IN ONE OPERATION.

Lennander²⁹ has described an operation which he believes is essential to any radical intervention in cases of malignant disease which tends to involve these lymphatic regions. He believes it to be indicated in case of carcinoma or sarcoma of the lymphatics in the inguinal region on the condition that the primary tumor can be readily dealt with and where no other inoperable lymphatic involvement is present. In the second place, it is valuable in cases

of severe tubercular lymphadenitis in this region and the iliac fossa, where there is no contraindication to a severe operation. In the latter instance the extent of the operation differs in that only diseased lymph glands and surrounding tissue are removed. Sound tissues and fat are allowed to remain, in order that later, by the development of the lower lymphatics, a collateral lymph circulation can be established. The same is true in cases of operation for suppurative lymphadenitis.

The operation which the author has developed and employed commences with an incision from the symphysis pubis along Poupart's ligament to the anterior superior iliac spine and then along the crest of the ilium for one-third or one-half its length. An incision from this over the femoral vessels gives access to the lymphatics of that region. This incision is carried through the muscles and fascia, and by retroperitoneal dissection gives access to the glands in the iliac fossa along the iliac arteries and into the true pelvis. Poupart's ligament is severed from its attachment to the pubic bone. Drainage is provided from the iliac vessels through the posterior portion of the wound. Poupart's ligament is carefully sutured in its original position and the muscles and fascia united except where left open for drainage. This operation does not in the least endanger the integrity of the abdominal wall, as it is entirely freed, and its bony and fascial attachments are afterward reconstructed. No motor nerves are in any way injured.

The author has employed the operation successfully in 2 cases. In cases of suppurative adenitis this incision cannot be carried to its full extent, since primary union of the attachment of Poupart's ligament cannot be depended on.

THE OPERATIVE TREATMENT OF EPILEPSY.

Schar³⁰ comes to the following conclusions as to the result of his study of the literature of this subject, and his observation of the cases occurring in Koch's clinic:

Operation is to be undertaken in cases of epilepsy whenever internal dietetic treatment has failed to produce results in a short time. The slight mortality from such operations makes the danger inconsiderable. It is better to operate too often than too seldom. The surgeon who treats a case of traumatic epilepsy by internal medication for a long period, and only resorts to operation when he finds he cannot produce a cure by other means, does not do the best for the patient. Epileptic patients should be examined by the surgeon as well as the physician at an early period. It is best for them to make the examination together. In asylums the surgeon should from time to time examine the cases and determine which require immediate treatment.

The surgeon should not forget, however, that internal medication and dietetic treatment are of great value, and that without them, even after operation, the patient could not recover. Alcohol must be avoided, and special care given to the diet of children who have suffered from traumatism. Epilepsy due to traumatism can be greatly benefited by operation at the site of the trauma.

(To be continued.)

²⁷ Centrbl. f. Chir., 1899, 161, 170.

²⁸ Annals of Surgery, 1900, vol. xxx, p. 121.

²⁹ Centrbl. f. Chir., 1899, Hft. 37; American Journal of the Medical Sciences, December, 1899, p. 727.

³⁰ Archiv. f. klin. Chir., 1899, Bd. lxx, Hft. 3; American Journal of the Medical Sciences, November, 1899, p. 607.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY.

SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, February 21, 1900, DR. H. F. VICKERY in the chair.

DR. ROBERT W. GREENLEAF read a paper entitled

THE PSYCHIC FACTOR IN DISEASE.¹

DR. E. W. TAYLOR: We are certainly very much indebted to Dr. Greenleaf for bringing forward in this tangible fashion this really important subject. So far as I am aware a paper of this exact description has not been presented at the medical societies of Boston before, a paper which takes up the matter candidly and discusses it from various points of view. I think all of us would be in practical agreement as to the general propositions Dr. Greenleaf advances regarding the possible effect of the mental element in the production of disease, and, in the second place, in the efficiency of the mental element, properly applied, to alleviate various symptoms of disease. What Dr. Greenleaf said in regard to the treatment of delirium struck me as of particular interest. What we certainly need in this whole question of so-called mental therapeutics is system. The matter has been brought to the attention of the medical community in Boston through various papers of late, through Dr. Putnam's oration at the Massachusetts Medical Society, through the numerous writings of Dr. Prince and through the admirable work of the late lamented Dr. Russell Sturgis. All these men have attempted to outline in more or less definite form the effect of the mind upon the body in its practical aspects and the possibility of treatment of the body through the mind. We need more than the mere recognition of the fact of the possible relationship of these two forces. It is not enough to say the mental factor is an important factor and must be used in all cases. What we must recognize, and what is an exceedingly difficult matter to recognize, is how we are going to use this particular agent in individual instances. It is a great mistake to think it is a simple thing to do. Dr. Sturgis had an idea which appealed to me very much, and which I think in certain cases in my experience has acted well. He felt it was always necessary to get at the cause and the associated conditions, and that if this was impossible his treatment was often unavailing. In a number of cases I have found by careful questioning that one could find a certain cause so far back in the life of the individual that it has practically become subconscious. When found it is often possible to trace from that original cause a long series of circumstances which through association have built up a definite neurosis. I remember a young woman who for years had not slept on her side. This was a comparatively simple matter in itself, but the consequence of it was unfortunate, namely, that she had gradually developed a condition of insomnia with all its accompanying nervous disturbances. On careful questioning it transpired that a physician on one occasion had said that a certain pain in her side which

she complained of was induced by the stretching of a nerve. That statement had sunk deep into the patient's mind, with the result that she was always conscious of the stretching of that nerve whenever she attempted to lie on the side. The inability to sleep on the side was easy to remove when she was assured that it was an anatomical impossibility to stretch a nerve in that fashion.

Another point is our lack of courage in these cases. We frequently hear physicians say they must give this or that patient something if only as a placebo. It is a mere tradition of medicine that it is necessary to give some tangible drug in order to relieve the condition. If we had more of the courage of our convictions we should frequently feel justified in declining absolutely to give any drugs, confining ourselves solely to the mental treatment of the case, with unquestioned benefit to the patient.

In regard to what Dr. Greenleaf said of nurses I should entirely agree. The success of the nurse depends largely upon the element of personality, as the success of the physician depends more upon that element than any other. We speak of the personality of the physician as being efficacious in bringing him success. We fail to see in a great number of cases that it is a matter which may be to a great extent cultivated by a recognition of the matters which Dr. Greenleaf has brought out.

It seems to me desirable, as Dr. Putnam very strongly stated in his address at the Massachusetts Medical Society, that more attention should be paid to this matter in our medical teaching. Unquestionably it is a very much neglected subject, and the reflection of medical teaching as seen in textbooks bears this out. We find scarcely any systematic method advised of treating persons through the mind in any of our books on medicine. This should be changed, and there is considerable evidence to show that a change is coming. A certain amount of teaching to meet this indication unquestionably should be conducted in our medical schools. That this want is felt not only by certain practitioners but by students is becoming more and more apparent of late. A number of students have spoken to me and expressed this opinion. They felt that here was a subject about which they had no definite knowledge, which they recognized was important, but which was neglected as a distinct branch of their medical training. It is, no doubt, possible to introduce a practical course in the psychology of the treatment of disease or whatever term you wish to apply to it, the object of which should be an attempt to give the student a systematic idea of the possibility of mental treatment. I do not mean to say these matters are not alluded to in the medical school. They are discussed at considerable length in the course in neurology, but we want a broader application of the principle. We should have it taught from the chair of therapeutics. It should be presented from the general point of view and not from the point of view of a special branch. It is not to be limited to a certain group of diseases, but is a method to be applied whenever we are brought in contact with a person who is ill, exactly as in all relations in life we must constantly bear in mind the fact that we are individuals who have certain definite mental relations with our fellow beings.

DR. PUTNAM: Dr. Greenleaf's interesting and practical paper has certainly touched upon a subject

¹ See page 155 of the Journal.

of immense importance which, as Dr. Taylor says, ought to come before us far more frequently than it does, and I look forward to the change in the requirements for admission to our medical school as likely to afford us a class of students who have been better trained in the essentials of psychology, and therefore will come better prepared to look these subjects clearly in the face. The best physicians have not paid this matter the attention it deserves. This is due to many causes, but I think the chief of them are two which Dr. Taylor and Dr. Greenleaf have both partly indicated. On the one hand, they feel the great difficulty of systematizing their ideas upon the subject; on the other hand, they have shrunk from the use of methods which have been in the hands of classes of practitioners in whose company they did not like to find themselves, not only the Christian Scientists, strictly speaking, but the large class of medical practitioners who have shown a willingness to impress and hoodwink their patients in objectionable ways. But physicians ought to go to work and substitute better methods for those they disapprove, while not failing to learn what they can from such as already exist.

Many of the mental influences which lead to disease and many of those which are used in the cure of disease are particularly difficult of recognition both of the doctor and the patient, because they seem to belong to a part of the mental life which lies outside the ordinary consciousness. Every person is evidently under the influence of a lot of memories, for example, which he cannot control and the source of which he no longer knows with his personal knowledge. It is, of course, very important to bear this fact in mind in treatment, and often essential to use special means to seek out and meet these hidden memories, many of which originate with "accidents," or special illnesses, or painful experiences which have been ostensibly but not really forgotten. At the same time I must admit that I think the treatment based on hunting out hidden causes, although very important, may be overrated. There are certain of the foreign writers who have dwelt upon it a good deal, and others, on the other hand, who have found their method of much less utility. I am inclined to think that if we can get the patient to adopt as a cause something we suggest to him it is almost as good as if we find the real cause. There is one practical notion which was suggested to my mind in reading an extremely interesting book by the physician and psychologist Janet, namely, that many of the notions which lead to so much trouble in the mind and seem to be associated with feelings of such intense and serious character may really come to be maintained by comparatively slight "mechanical" tricks of mind. The particular case I have in mind is one mentioned by this writer where a woman was filled with terror at the idea of infection by cholera to which she thought she had been exposed. This followed her and became a spectre. He became convinced after a time it was more the word than the idea which was controlling her mind, and so he changed this word to others of similar sound but different meaning, got her out of the habit of saying "cholera" to herself and succeeded in breaking up this sort of spectral notion which had filled her mind, and I feel quite sure that many classes of terrible morbid fears can be treated more or less successfully by an ingenious physician on similar principles. If a patient, instead of calling himself a

"wreck" or a "degenerate," can be got to look at his illness in a commonplace way, and if his sense of humor can be excited, success will often be gained.

I think that the evening should not close without a few more words being said about the subject of hypnotism. Although I have no special gift in that direction and have not practised it very much, still I have done so to an increasing degree, because I have found it to be very important. At the Massachusetts Hospital we have used it with great benefit in certain cases. We all do hypnotize whether we will or not. It is a matter of degree between these things we have spoken of and the influence of hypnotism. There are, however, certain classes of cases where we ought to do our best to use hypnotism pure and simple, to get the full effect of the necessary sort of influence. We have had at the hospital a very successful case of enuresis—difficulty of controlling the sphincters of the bladder and rectum—in a well-grown boy, and I had a similar case in my office which was very successful as long as I could keep control of the patient. At the present moment I am treating in a similar way a case of restless sleep in a somewhat nervous young woman who for many years has twitched all night long. I can easily get her into a hypnotic sleep in which she also at first twitched. Now she does not twitch in that and I confidently hope she will get to sleep more quietly and restfully at home also.

DR. VICKERY: I feel that there is a great deal that can be done in the daily treatment of all our cases. We can treat them in a sort of dry, perfunctory way or make a continual effort to impart a buoyancy to their feelings. I know a man who goes through his professional career with that in his mind. I think he is loved as much as any man I know, and I believe the secret of it is that influence, exerted not merely upon persons who have the misfortune to be a little queer in their mental condition, but toward all suffering humanity with whom he comes in contact. Watching him has certainly been an inspiration to me.

DR. LINCOLN: The mental influence in delirium was spoken of by the first speaker, which I desire to extend with the idea that there are possibilities in the case of insanity. I should like to repeat an instance which was given me by Dr. Stephen Smith, of New York, at the time he was commissioner of lunacy in New York State. At one of his visits to an insane hospital he found a man in a state of violent apparent mania. Dr. Smith saw something in that man that did not fully justify the diagnosis of insanity that had been made. He took the case in hand, got near the man and succeeded in attracting his attention and putting himself in the light of a friend. He took the man one side and said he had something to tell him. He said: "If you will be quiet and listen I know I can get you out of this place." The man's confidence was awakened, and by degrees his self-control was also awakened. Dr. Smith took him into a private room, and by quieting him and by putting him down from time to time whenever his violence reasserted itself, he finally got at his history. He suspected his wife of improper relations with a priest, the fact being that the priest was acting from the best of motives as family counsellor. Dr. Smith told him he knew from his knowledge of human nature and the knowledge of his wife's character that such a thing never happened, and after a certain amount of asseveration the man broke down in tears. All his violence and oppo-

sition was gone in an instant, and he submitted himself to Dr. Smith's advice. Dr. Smith said: "First write a letter of most abject apology to your wife, then to the priest, then to your creditors telling them the circumstances, and that you will make arrangement with them that will be satisfactory. Now, if you want to get out soon, be ready tomorrow morning early, get your best clothes on, wash your face, comb your hair, present yourself in a cheerful, smiling attitude when the warder knocks at the door and ask him if you can do something for him." Dr. Smith called again later and found the man in his best clothes with every symptom of mania gone. Here is an instance of a state of nervous excitement diagnosed as insanity, and which would probably have run into insanity in a short time, cured by this form of suggestion in the hands of a man who possessed a great deal of that form of self-consciousness which goes so far with patients. The man got well and was discharged in a week. My object in saying these things is to apply what has already been said in a suggestive way to the treatment of insanity, and I would leave with you all the question in your minds as to what extent in certain cases suggestive treatment is applicable. Some authorities think very strongly in the treatment of paranoia of getting at the root of the matter and eradicating it. The practical application is to the incipient stage of insanity and you doubtless are acquainted with Dr. Peterson's plans to put patients under the charge of men who are specialists. I can conceive no measure that is likely to increase the number of cases of cure of insanity more than that. Dr. Smith, twenty or thirty years ago, made the suggestion that every patient on entering the hospital should for a number of days be under the charge of a special attendant selected for the purpose, a nurse able to enter into the mental state of the patient and become intimate and if possible get at the root of the matter. I can conceive of nothing more rational, only it costs a little more at the beginning.

Dr. GREENLEAF: The discussion has brought out certain points that I hoped would be emphasized. Dr. Taylor referred to one which, it seems to me, is quite important—the fact that these nervo-mental conditions are incident to cases of ordinary illness as well as to purely nervous states. We should recognize this more generally than we usually do. Another point Dr. Taylor made, it seems to me, should be emphasized, namely, the need of calling attention to it in our student days. Most of us have learned it as far as we are acquainted with it through the brunt of experience. It would certainly help our early efforts in medicine to have our attention called to it more distinctly in our school days. I do not recall a single statement to this effect except from the teachings of the physiological and neurological departments when I was a student.

In regard to hypnotism there is no doubt that benefit in certain classes of cases is to be derived from this agent. It is a surprise to many of us to learn of its power. Its usefulness, however, is limited to certain lines, requiring especial training for their proper interpretation. I have tried to confine my remarks to conditions within the province of the general practitioner, and cases requiring the use of hypnotism, as well as cases like those referred to by Dr. Lincoln, I should be inclined to refer directly to specialists in these directions. I am glad, however, to see that the

neurologists who have spoken agree with me as to the importance of such remedial measures along psychic lines as I have presented in this paper.

Recent Literature.

Therapeutic Electricity and Practical Muscle Testing. By W. S. HEDLEY, M.D., M.R.C.S. (Eng.), in charge of the Electrotherapeutic Department of the London Hospital. With more than 100 illustrations. Philadelphia: P. Blakiston's Son & Co. 1900.

This book of 278 pages is an excellent treatise of sufficient conciseness to be of generally practical use on a too much neglected phase of therapeutics. It is safe to say that an exceedingly small proportion of intelligent physicians has anything more than a most rudimentary idea of the indications for electrical treatment, and of the means of carrying it out. This book is designed to give just such information. It is divided into three parts, with an appendix on means of testing for faults in a circuit, and is provided with a good index. Part I deals with the theory of electricity and the laws governing its action. This is sufficiently simple for the general reader and comprises only such knowledge as should be commonly known. Part II concerns itself with the more practical aspects of the subject, the electrotherapeutic outfit and various anatomical and physiological matters in relation to the action of electricity on the human body. The special treatment of a large number of diseased conditions concludes the volume, with the exception of the appendix, to which we have alluded above. This is done in considerable detail and for the most part in a judicial spirit, though often we think an undue importance is attached to the treatment by electricity. In general the book is a safe guide to the more or less inexperienced practitioner, and taken with a certain degree of conservatism we have no doubt the measures of treatment advocated will prove useful and efficient. The illustrations are abundant and well chosen and the binding and presswork entirely satisfactory.

Normal Histology. By EDWARD K. DUNHAM, M.D., Professor of General Pathology, Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, New York. New (second) edition. Octavo. Pp. 319, with 244 illustrations. Philadelphia and New York: Lea Brothers & Co. 1900.

This second edition of Professor Dunham's textbook on normal histology, which this volume alone concerns itself with, will be welcomed by teachers and students. The advance of knowledge has rendered certain changes in the text necessary, and the author has seen fit to add a chapter on technique, which certainly is never amiss in these days of laboratory instruction. The book is well printed and illustrated.

THE BLIND IN RUSSIA.—It is stated in the *Medical News* that there are more than twice as many blind persons in Russia as in the whole of the rest of Europe. They number 190,000, which is equivalent to 2 in every 1,000 of the population. In France and England the proportion is not quite 1 per 1,000.

THE BOSTON

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AMERICAN ROUTINE; GERMAN ORIGINALITY.

THE words American and German in our title have not been misplaced by the typesetter! The state of things indicated by this phrase may sound odd to our ears, it may be erroneous in other professions, but in laboratory work and medical research the phrase conveys a large element of truth. Much of the evidence goes to support the general statement that originality is the distinguishing characteristic of the German work and a too persistent routine of the American.

On the other hand, the American clinic undoubtedly presents many points of superiority. It is usually conducted with more system, the practical welfare of the patient being kept more steadily in view, the patients receive more personal and medical attention and the refined methods of diagnosis are more generally employed. The sense of duty to the patient is certainly stronger with us, but besides this the American doctor has cultivated to a high degree what he believes to be his duty to science. In pursuit of this end, however, he has made the mistake of confusing a vast amount of drudgery conscientiously performed with real scientific work. Indeed, at first, such labor may be granted the rank of second-class scientific work, but later it degenerates into the third class and finally into mere mechanical routine.

It is positively pathetic to look at the records of thousands of "blood counts" which have been made on people a glance at whose blood under the microscope would assure any ordinary practitioner that it was normal. The excuse is always the same. "It is the routine to make a blood count in every case." When in addition to the blood count in such patients a differential count is insisted upon, that only too often is empty routine, but it now ceases to be pathetic; it is a futile waste of time. Still the young doctor at our medical centres is so anxious to do good work that he will count blood corpuscles "till he can't see" — all the time under the impression that he is making a contribution to science. And the same thing holds good of much of the urinary work. In the most pains-

taking manner he estimates earthy and alkaline phosphates, sulphates and uraphein because he wishes to learn all he can of his patient and such determinations are in the routine "complete examination." That this work is of any practical value is more than doubtful.

But it may be answered that this work does no harm — that it trains the house officer, student or young practitioner. We reply that it does do harm, and great harm, too. In the first place, the worker forms the pernicious habit of putting this slavish method in the place of active work when he should tax his own unaided mind with the demands of each case as it comes. Again, the routine method not only offers no stimulus to original thinking, but its influence is positively deadening to the mind already wearied with its monotony. Thirdly, it consumes an enormous amount of time on researches of slight value.

The German refuses to do such work day in and day out. He may put heart and soul into it for a short time, until he has dug to the roots of a subject, after which he drops it except in those special cases where it seems indicated. In its stead he is working out fresh problems, enlarging the grasp of his mind to take in obscure causes and effects. Routine occasionally is neglected, but this is atoned for by mental keenness and an occasional original discovery. While we Americans are occupied with our wonderful routine, the Germans are producing Widal reactions and anti-toxin.

ORAL SEPSIS A POSSIBLE CAUSE OF DISEASE.

ATTENTION has of late been directed to the mouth cavity as a focus from which various septic conditions may arise, not only in the immediate neighborhood, but also at times affecting the body as a whole. We have been, perhaps, rather too apt to consider that the bacteria of the alimentary tract are, under all conditions, harmless. It goes without saying that many of these bacteria are wholly innocuous and no doubt positively useful to the bodily economy, but this fact in no way proves that under certain conditions most serious consequences may not arise through a careless hygiene of the intestinal tract. We are glad therefore to see that more careful work is being done upon the bacteriology of the mouth, and we have no doubt the results in this difficult field of research will amply justify all the time that may be spent upon it. An interesting paper has recently appeared in the *British Medical Journal* from the pen of Dr. William Hunter, senior assistant physician of the London Fever Hospital, on the subject of "Oral Sepsis as a Cause of Disease." Dr. Hunter has long been much impressed with the importance of the subject and is inclined, no doubt with justice, to reproach the medical profession for its neglect of it in practice. In his opinion, many of the disorders to which the stomach is subject are attributable to the irritative action of swallowed pus.

The origin of the infective material is by no means always due to the commonly attributed cause, pyorrhea alveolaris, but in the great majority of cases to other dental and oral conditions of sepsis. Apart from various diseases of the gums, stomatitis due to septic toothplates, and to the bridge and crown work now much in vogue among dentists, must be taken into account. The fact that these various septic processes due to the presence of pus organisms are in many cases associated with dental caries adds to their virulence, for Dr. Hunter's experience has been that no pus organisms are so virulent as those grown in connection with necrosing bone. No physician or surgeon, he says, would tolerate for a moment that a patient with a foul septic ulcer, say in his forearm, should from time to time apply his lips to the ulcer to clean it. Yet this is — pathologically — precisely what happens in the case of patients with necrosed teeth and stomatitis. Moreover, the swallowing is constant, and goes on for years, unheeded both by patient and doctor.

The matter is important, however, not only in relation to gastritis, but in relation to the whole group of infections caused by pus organisms — *local*, for example, as tonsillitis, glandular swellings, middle-ear suppurations, maxillary abscesses; *general*, for example, ulcerative endocarditis, empyemata, meningitis, nephritis, osteomyelitis and other septic conditions. Whence do they gain entrance into the system? They are not ubiquitous, as was formerly thought. Nor are they necessarily disease producing from their mere presence; for example, on skin, in the mouth or in the intestinal canal. But given the suitable conditions, namely, diminished resistance on the part of the tissues, or increase of dose on the side of the organisms, they are disease producing. These are precisely the conditions brought about in long-continued necrotic and septic conditions of the mouth.

It is, of course, acknowledged to be an impossibility to keep the mouth absolutely free of pathogenic germs, but Dr. Hunter insists that the possible danger should be recognized and far greater care taken than is ordinarily thought necessary to prevent the conversion of the mouth, as he expresses it, into a perfect hotbed for the development and propagation of bacteria. The paper concludes with the following statements and suggestions: "In relation to the whole group of internal conditions caused by pyogenic organisms, I consider there is a wide field of preventive medicine open by the exercise of oral antiseptics, a field that can be worked in, with the most surprisingly satisfactory results, alike by the physician, surgeon, dental surgeon and patient. And by oral antiseptics I mean no mere rinsing of the mouth with mildly astringent and antiseptic mouth washes, but (1) the direct application to the diseased tooth or inflamed gum of carbolic acid (1 in 20), repeated daily for just so long a period as the patient will persist in keeping his necrosed tooth or fang; still better (2) the removal of all diseased, useless stumps; (3) the most scrupulous daily sterilizing by boiling of every toothplate worn and (4) on the

part of dentists the avoidance of too much conservative dentistry and the use of contrivances like 'bridges' which cannot possibly be kept aseptic."

It is at least probable that Dr. Hunter goes rather too far in his apprehension regarding the significance of oral sepsis and its far reaching consequences, but the vigorous expression of such a view will certainly do no harm and should direct renewed attention to conditions, the treatment of which is too often deferred, if not wholly neglected.

MEDICAL NOTES.

DEATH RATE IN HAWAII. — It is reported from Honolulu that the health statistics for the months of June and July show alarming increase in the death rate, especially among native Hawaiians and Japanese of the Island of Omaha, which alone has complete records. In June the number of deaths per thousand was 45; in July, 49.68. In 1896 the deaths numbered 48. Since then the figures have jumped to 59, 75, 93 and this year 114. Consumption heads the list of diseases, causing deaths in almost every month, and there is agitation for strict measures to quarantine patients. The Board of Health is discussing a quarantine against consumption, owing to the visits of tourists in search of health. Typhoid fever has also claimed a number of victims.

ANTIRABIC INOCULATION IN GREECE. — The number of patients who underwent the treatment for hydrophobia at the Pasteur Institute of Athens from the foundation of the institute in 1894 to the end of 1898 was, according to the *British Medical Journal*, 1,300. Of these 1,200, or 92.8%, had been bitten by rabid dogs, 58 by cats similarly afflicted, 7 by asses and mules, 4 by pigs, 2 by cows, 2 by wolves and 1 by a horse. In 18 cases the disease was transmitted by human saliva and in 1 by the bite of a man suffering from hydrophobia.

SIR WILLIAM MACCORMAC RE-ELECTED PRESIDENT OF ROYAL COLLEGE OF SURGEONS. — For the fifth time Sir William MacCormac has been appointed President of the Royal College of Surgeons of England. This is the longest term of service which has ever fallen to the lot of one man. Sir William Savory was at one time president for three successive years.

A PHILADELPHIA DENTAL INSTITUTE. — It is reported that by the will of the late Dr. Evans, the Paris dentist, \$3,000,000 is left for the establishment of a dental institute in Philadelphia.

RESIGNATION OF DR. EDWIN KLEBS. — It is reported that Dr. Edwin Klebs has resigned the professorship of pathology in the Rush Medical College, Chicago.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, August 15, 1900, there were

reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 57, scarlatina 10, measles 13, typhoid fever 13.

NEEDS OF THE FLOATING HOSPITAL.—Owing to the somewhat exceptionally hot weather, the Floating Hospital has been crowded to its utmost limit with patients, and in certain instances it has been necessary to refuse treatment for want of room. The need of larger accommodations is becoming more and more urgent. The season is so short a one that it should be possible to give all those who require it the benefit which such a method of treatment affords.

NEW YORK.

MORTALITY STATISTICS.—The reports of the Bureau of Vital Statistics show that, notwithstanding the intense heat of a portion of the month, the death rate in July was slightly lower than last year. In July, 1899, the mortality represented an annual death rate of 23.01, and in July, 1900, a death rate of 22.98. For the very hot week ending July 21, 1900, the rate ran up to 27.75 against 22.91 for the corresponding week last year; but with this exception the mortality was materially smaller than in 1899. The weekly average number of deaths from diarrheal diseases in the four weeks ending July 28th was 313.75, and from this class of affections in children under five years of age, 290.5, against 73 and 68.25 respectively in the four weeks ending June 30th. The culmination of the deaths from diarrheal diseases was in the week ending July 21st, when they amounted to 398. In the following week the mortality from this cause fell to 270. It is noticeable also that the excessive heat had a marked effect in increasing the number of deaths from phthisis. In the week ending July 21st the deaths from this disease reached 181, against an average of 139 for the other three weeks. This increase brought the weekly average of the month up to 149, against 143.5 in June. The weekly average of deaths from pneumonia declined to 101.25 from 139.5 in June, and the weekly average from diphtheria to 30, from 40.25 in June. During the four weeks ending July 28th, 154 deaths were reported from sunstroke, and 94 of these were in the week ending July 21st.

COSTLY EXPERT TESTIMONY.—On August 9th, Controller Coler made public the bills of the medical, chemical and handwriting experts for work on the Molineux murder trial, the total amount reaching \$50,476. Of this sum, claims amounting to \$8,687 have been paid after reductions of \$1,800 were made by the controller, and the other accounts still remain to be settled. The largest claim is that of Prof. Rudolph A. Witthaus, who made the principal analyses, and on whose testimony the conviction of the prisoner was secured; its amount is \$18,550.

ADDITION TO INFANT ASYLUM BUILDINGS.—The Board of Managers of the New York Infant Asylum have filed plans for the construction of an addition to the buildings of their institution on Amsterdam Avenue which will practically double its capacity. It is to

cover an area of 100 by 56 feet, and the estimated cost is \$100,000. It will be four stories in height and is designed in such a way that three additional stories may be added in the future. The additional accommodations have been greatly needed since the old Second Avenue Lying-in Hospital was consolidated with the asylum about a year ago.

A NOVEL SUIT AGAINST THE STATE.—A militiaman of Poughkeepsie has brought rather a novel suit against the State, having filed a claim for \$30,000 for the loss of a foot in consequence of injuries received while participating in a sham battle when he was on duty at the State Camp of Military Instruction at Peekskill in the summer of 1899. He fell into a hole and the injury was so severe as to call for amputation.

Miscellany.

THE FINSEN TREATMENT OF LUPUS.

THE *Medical Press* comments as follows on the recently introduced Finsen treatment:

“It was long the practice to laugh at John of Gadesden's treatment of disease by the use of the red rays of the solar spectrum, nevertheless from 1492, when his ‘*Rosa Anglica*’ was published, the treatment held its ground in public favor until the middle of the eighteenth century. Defoe refers to it in his novels as a usual domestic method of cure. The curative property of both the heat-giving red rays and of the chemical rays is strongly corroborated by Dr. Finsen, of Copenhagen, whose hospital is attracting patients suffering from lupus from every country in Europe. He has found that the chemical rays of the solar spectrum, blue, violet and ultra-violet, have a marked bactericidal power, and on this he bases his treatment. The technique adopted is thus described: On bright, sunny days the patients are carried into the garden. They each have a nurse of their own, who during the hour they are under treatment presses an odd-looking little apparatus on the part of the face or hand that is diseased. It consists of a plate of quartz and a plain convex lens of quartz, both framed in a conical brass ring, and with two tubes fixed between them. Cold water is kept running in one of these tubes and out at the other. The use of the apparatus is to force the blood from the skin on which it is pressed, and thus enable the chemical rays to penetrate it more readily, while the water is there merely to keep the skin cool. By the side of the patient there is another apparatus, a large movable lens, fixed in a stand in such a position as to be in a direct line between the sun and the piece of skin requiring treatment. This lens is composed of two glasses, one plain, the other curved, framed in a brass ring, the space between them being filled with a weak solution of sulphate of copper. It condenses the sun's rays that fall on it, while the water it contains, together with the salt solution, intercepts the ultra-red, red and yellow rays. Thus, practically, the only rays that pass through the lens, and therefore the only rays that reach the area of the skin requiring treatment, are the chemical; and, as they are highly condensed, they destroy the bacteria on which they fall.

In the absence of sunlight, Dr. Finsen falls back on the use of electric light. He has found that the chemical rays intensify inflammatory skin diseases; and he confirms, from his own experience, the value of the red rays in the treatment of smallpox. Thus after five hundred years, he confirms the accuracy of that conscientious observer, John of Gaddesden, and by an extension of his principle of light treatment confers a distinct blessing on suffering humanity."

LEPERS IN FRANCE.

It is estimated, according to the *Medical Record*, that there are about four hundred lepers in France, many of whom are missionaries and nurses who have contracted the disease caring for sufferers in distant countries and also soldiers and officials from the colonies. They are now scattered about in Brittany, in the Pyrenees, on the shores of the Mediterranean and in Paris, where there are one hundred and fifty. A committee has been formed at the instigation of Dom Santon, a member of the Benedictine community of Liguge, and also a doctor of medicine, to further measures for the care of lepers in France and to prevent further spread of the disease. Dom Santon has studied leprosy for a number of years in the course of his travels about the world for this purpose and his plans to deal with the disease in France have received the approval of the French Government. He has acquired property in the Vosges, where he purposes to establish an asylum for lepers, to be called the St. Martin Sanatorium.

BOOKS AND PAMPHLETS RECEIVED.

Medicine as a Business Proposition. By G. Frank Lydston, M.D., Chicago.

Should Military Medical Science be Taught in Our Medical Colleges? By Edmund Cone Brush, A.M., M.D., Zanesville, O. Reprint. 1900.

Surgery: Its Theory and Practice. By William Johnson Walsham, F.R.C.S. (Eng.), M.B. and C.M. (Aberd.). Illustrated. Seventh edition. Philadelphia: P. Blakiston's Son & Co. 1900.

Cancer of the Uterus: Its Pathology, Symptomatology, Diagnosis and Treatment; also the Pathology of Diseases of the Endometrium. By Thomas Stephen Cullen, M.B. (Toronto), Associate Professor of Gynecology in the Johns Hopkins University. Illustrated by Max Brödel and Hermann Becker. New York: D. Appleton & Co. 1900.

METEOROLOGICAL RECORD

For the week ending August 4th in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer Daily mean.	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
		Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		8.00 A. M.
S.. 2)	30.08	76	86	65	59	69	64	W.	S.	3	14	C.	C.
M.. 30	29.99	74	81	66	80	72	76	S.W.	S.W.	10	6	F.	C.
T... 31	29.94	76	87	66	89	71	76	W.	S.W.	10	13	C.	C.
W... 1	29.90	72	81	64	72	52	62	W.	N.	8	11	O.	C.
T... 2	30.00	67	77	57	58	60	59	N.W.	S.	5	14	C.	C.
F... 3	30.05	66	76	56	63	52	58	W.	N.	8	16	C.	C.
S... 4	30.21	62	71	52	62	51	56	N.	S.	8	5	C.	C.

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Men for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, AUGUST 4, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1250	565	24.80	6.56	14.96	1.12	2.56
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	240	114	36.96	4.20	19.32	.42	2.94
Baltimore . . .	506,389	199	87	40.00	6.50	22.50	2.50	2.50
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	113	55	45.76	3.52	24.16	1.60	1.28
Washington . . .	277,000	111	42	42.30	4.50	16.20	9.00	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	66	32	38.00	4.56	28.78	—	—
Nashville . . .	87,754	—	—	—	—	—	—	—
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	111,732	49	32	48.90	4.08	40.80	—	—
Fall River . . .	103,142	43	26	55.92	6.99	2.33	—	—
Cambridge . . .	92,520	21	12	57.12	—	52.36	—	—
Lowell . . .	90,114	35	25	60.00	4.72	47.48	—	—
New Bedford . . .	70,511	33	23	51.51	9.09	45.45	—	—
Lynn . . .	68,218	21	9	28.56	—	14.28	—	—
Somerville . . .	64,394	18	9	38.88	—	27.77	5.55	—
Lawrence . . .	59,072	33	17	60.60	6.06	45.45	—	—
Springfield . . .	58,266	20	9	44.44	—	38.88	—	—
Holyoke . . .	44,510	—	—	—	—	—	—	—
Brockton . . .	38,759	5	5	80.00	—	80.00	—	—
Salem . . .	37,723	—	—	—	—	—	—	—
Malden . . .	36,421	23	13	20.90	—	39.15	4.35	—
Chelsea . . .	34,235	13	7	7.69	—	—	—	—
Haverhill . . .	32,651	15	3	20.00	—	20.00	—	—
Gloucester . . .	31,426	5	1	20.00	—	20.00	—	—
Fitchburg . . .	30,623	17	8	47.04	—	41.16	—	—
Newton . . .	30,461	9	4	22.22	—	—	—	—
Taunton . . .	28,527	18	9	49.99	—	44.44	—	—
Everett . . .	28,102	—	—	—	—	—	—	—
Quincy . . .	24,578	15	10	66.66	—	60.00	—	6.66
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	3	—	66.66	—	33.33	—	—
North Adams . . .	21,583	10	5	50.00	—	50.00	—	—
Chicopee . . .	18,316	8	5	37.50	—	12.50	—	—
Medford . . .	17,190	2	—	—	—	—	—	—
Newburyport . . .	15,036	8	4	37.00	12.50	25.00	—	—
Melrose . . .	14,721	6	4	16.66	—	—	—	—

Deaths reported 2,417; under five years of age 1,129; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 921, diarrheal diseases 512, consumption 251, acute lung diseases 131, diphtheria and croup 60, typhoid fever 40, cerebrospinal meningitis 18, whooping cough 17, scarlet fever 11, measles 7, erysipelas 5.

From cerebrospinal meningitis New York 7, Boston, Baltimore and Lynn 2 each, Worcester, Somerville, Lawrence, Newton and Waltham 1 each. From whooping cough New York 10, Pittsburg and Washington 2 each, Boston, Providence, Worcester and Melrose 1 each. From scarlet fever New York 6 and Boston 5 each, Pittsburg 1. From measles New York 6, Washington 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,206, for the week ending July 28th, the death rate was 19.4. Deaths reported 4,313: acute diseases of the respiratory organs (London) 196, diarrhea 662, whooping cough 88, measles 76, diphtheria 66, fever 27, scarlet fever 24, smallpox (Blackburn) 1.

The death rates ranged from 11.1 in Derby to 28.0 in West Ham; Birmingham 19.0, Bradford 13.6, Cardiff 14.0, Huddersfield 11.5, Hull 13.8, Leeds 22.0, Liverpool 28.0, London 21.0, Manchester 16.8, Newcastle-on-Tyne 17.8, Nottingham 14.6, Salford 24.1, Sheffield 23.1, Swansea 12.9, Wolverhampton 16.9.

RECENT DEATH.

JOHN FRANCIS BURNS, M.D., of Long Island City, died on August 9th, in St. John's Hospital, of meningitis, after an illness of one week. He was born in New York on December 5, 1863, and was a graduate of the Medical Department of the University of the City of New York. He afterwards served on the house staff of the City Hospital and of the Maternity Hospital, Blackwell's Island, and later was associate superintendent of the Asylum for Inebriates at Fort Hamilton. At the time of his death he was one of the attending surgeons at St. John's Hospital.

Address.

MEDICINE AS A SCIENCE AND MEDICINE AS AN ART.¹

BY PHILIP H. FYE-SMITH, M.D., F.R.C.P.,
Consulting Physician to Guy's Hospital, London.

MR. PRESIDENT AND GENTLEMEN:—It has sometimes been disputed whether medicine should be regarded as a science or an art; but there is no doubt that the original meaning of medicine, and of the corresponding terms in other languages, is the art of healing. Medicine is so defined by Aristotle, and the art of curing, to which we may add the art of preventing disease, has all the characters of an art. It depends upon experience and skill; it deals with individual cases, and the perfection it aims at is practical, not speculative; the knowledge how to do and not the knowledge how things happen. Nevertheless, as practical navigation is founded on astronomy, meteorology and physics; as the art of agriculture rests on botany, geology and vegetable physiology, so the art of medicine depends on the science of pathology, the practice of physic on the principles of physic.

On the other hand, then, we must never forget that we practise an art; we must never allow theories, or even what appears to be logical deduction, or explanations however ingenious, or statistics however apparently conclusive, or authority however venerable, to take the place of the only safe rule of practical medicine—observation and experience. We must never treat the disease without considering the patient, for the art of healing is the art of healing individually. Nor need we wonder if vast knowledge, profound learning and the best scientific training sometimes fail to make a successful practitioner; for beside adequate knowledge to save us from gross blunders and a strenuous endeavor to do our best for each individual patient, however uninteresting the case or however irksome and thankless our toil; beside these first requisites for our art, there is ample room for those personal qualities which ensure success in every department of life—power of observation and insight, the personal influence by which a strong character will secure obedience and inspire hope, the judgment which divines what kind of remedies are suited to each patient, what kind and of what strength, and the sympathy which puts one in the patient's place, and not only meets, but anticipates, his wants.

If, however, medical science without art is inefficient, medical art without science is not only unprogressive, but almost inevitably becomes quackery. As soon as we treat our patients by rule of thumb, by tradition, by dogmas, or by metaphysical axioms, we do injury to ourselves as well as to them. The bone setter who is ignorant of anatomy, the wise woman who cures by charms, are not more irrational or less successful than was the physician of the seventeenth century who, in obedience to the doctrine of signatures, advised an infusion of roses for hemorrhage, and saffron for jaundice, and lungwort for consumption; or the astrologer who prescribed salts of silver, of iron, lead, or mercury in accordance with the horoscope of the patient and the planet under which he was born. Not less mischievous and in the true sense of the word unscientific were the systems of medicine known as

the iatromechanical and the iatrochemical, which in their turn had their vogue. The Brunonian system, explaining all diseases as due to laxity of fibre, was no better; for indiscriminate use of "corroborants," or, as they would now be called, tonics, is as irrational as that of hydropathy, of alcoholic stimulation or of electricity. There is no such thing as a tonic or strengthening medicine, the only source of strength is oxidizable food, and bitter medicines can only give strength by improving the appetite. The last of the systems of medicine founded on a dogma is homeopathy, of which the theoretical absurdity is somewhat concealed by the more obvious nonsense of infinitesimal doses. It, like the other systems which preceded it, is not a rival to rational medicine; they are not mistaken answers to a legitimate question, but attempted solutions of a problem which does not exist, attempted answers to a riddle which has none.

Apart from these exploded systems of treatment, our profession has often suffered from lack of the scientific, inquiring, sceptical spirit, and has often been led too easily by authority, by tradition, and by fashion. The reckless abuse of venesection in the last century and the former half of this led to almost complete disuse of a valuable means of treatment; the misabuse of mercury in the treatment of syphilis led to denial of its unquestionable efficacy. Have we not seen the value of stimulants in a contest with fever lead to their indiscriminate use in almost every ailment? Has not the immense value of careful and thorough nursing sometimes ended in its exaltation to an independent place, as if good nursing was anything more than an intelligent carrying out of the physician's directions? Have not the remarkable powers of electrical stimuli led to a blind, unscientific and mischievous employment of this remedy, as if it had some mystic efficacy apart from its demonstrable physiological effects? May we not say the same of hydropathy, of massage, and of hypnotism?

It is significant that the irrational exaltation of any of these particular modes of treatment into a panacea, while it begins in want of scientific intelligence, invariably ends in imposture and deceit. Our only safeguard against the spirit of quackery and the deserved loss of public confidence in the profession which it brings with it is continued recurrence to the scientific basis on which the practice of medicine rests. Our art is most satisfactory and efficient when most closely resting on science. The surgeon is continually guided by anatomy and mechanics in dealing with injuries or deformities. The physician is often able to apply his knowledge of chemistry and natural history to the direct and satisfactory treatment of disease. Generally we can appeal to the same test as that which proves astronomy or chemistry to be a true science; we can predict and our predictions are borne out by the event. But to take examples, the detection and treatment of plumbism, the diagnosis and cure of scabies and ringworm, the treatment of poisons by chemical antidotes, and of specific diseases by attenuated inoculations are all instances of strictly scientific medicine. Nor can I refrain from citing the most recent and one of the most remarkable advances of our science in the discovery of the origin of malaria. This heavy tax upon national as well as individual vigor and happiness has been known and treated from the dawn of medicine; but although by a happy accident its efficient treatment was discovered, it is only

¹ Address delivered at the Annual Meeting of the British Medical Association at Ipswich, July-August, 1900.

lately that by the combined labors of scientific physicians, Frenchmen, Italians, and our own countrymen, that the origin of the disease has been discovered, the mode of its transmission traced, and the diagnosis of its several forms established.

We know that treatment of symptoms without a diagnosis is always unsatisfactory and frequently worse; but we know also that diagnosis must rest upon accurate knowledge of morbid anatomy and of the natural history of the disease. Scientific medicine based on observation and experiment is always practical as well; but empirical medicine, whether based upon fanciful speculation or working by rule of thumb, is the most unpractical thing that can be.

ETIOLOGY AND PREVENTIVE MEDICINE.

That important and constantly growing branch of medicine which deals with the prevention rather than the cure of disease depends no less upon science, for tracking the dependence of one event upon another is the essence of inductive science. All efficient measures for the preservation of health, whether by individuals or communities, rest upon exact knowledge of the natural course of diseases. In fact, disease may be defined as the reaction of the human organism under conditions which make for its destruction. We must never forget that no irritant will cause inflammation in a lifeless skin; that no bacteria can produce fever without a nervous system to play upon; that no meal, however gargantuan, and no potatoes, however deep, can produce their wonted effect without a stomach to react. The infection of smallpox, of diphtheria, or of tubercle exerts a very different influence upon vaccinated or unvaccinated subjects, upon one who has received and one who has not received the prophylactic serum, upon an organism which is predisposed to or refractory against the invasion of the enemy.

How closely natural science is related to preventive medicine is shown by the history of Jenner, who was a naturalist, and Pasteur, who was a chemist. How dependent we are upon science is well illustrated by the history of myxedema. The cretinoid condition in adults which was discovered by the clinical acumen of Sir William Gull, unintentionally produced by the surgical skill of Professor Kocher, and reproduced in animals by Mr. Horsley, is now cured by the eminently scientific method due to Dr. Murray, of Newcastle, and to Dr. Hector Mackenzie, of St. Thomas's Hospital.

Such examples of accurate tracing of causation by observation and experiment admonish us to give up the perfunctory explanations which so often do duty for investigation. If we ascribe every inflammation to cold, and every doubtful symptom to gout; if we acquiesce in the popular ascription of disease to overwork, mental strain and the nervous tension of modern life, we shall make no progress in true etiology. I see many patients suffering from idleness, few, or none, from hard work. "Nerve prostration" from "worry" and "brain tension" generally proves to be a decent veil to the effects of gambling and drink. Contrary to popular belief, I hold that modern life is easier, safer and smoother than it was a hundred years ago, that our young men and maidens are healthier, stronger, better grown, less emotional, less hysterical and sounder in mind and body than their great-grandparents; and I hold that the duty of a physician is not

to flatter the selfishness of neurotic patients, but to inspire fortitude and to prescribe regular and steady work as the best cure for a thousand nervous ailments.

As another point in scientific etiology, allow me to warn against the temptation to assume that because many diseases are now proved to depend upon the presence of bacteria that this must be true of all. Science does not anticipate but waits for proof. We have complete scientific evidence, according to the criteria so well formulated by Koch, of the absolute and constant cause of anthrax, of relapsing fever, of tubercle and of several other diseases in both men and animals; but we must not forget the preliminary difficulty of identifying the specific bacillus, as in the case of enteric fever and diphtheria; nor the difficulty of finding one of the lower animals which is susceptible to the disease, as again in the case of typhoid fever and of cholera; nor the difficulty in the same anatomical and clinical conditions being produced by different organisms, as in the case with pneumonia and ulcerative endocarditis. Moreover, while in some diseases which are undoubtedly infective and specific no constant pathogenic microbe has yet been determined, as in typhus, measles, smallpox and syphilis, we have on the other hand in the case of leprosy and of lupus examples of disease unquestionably specific and bacterial in origin, but very unlike other infective maladies in clinical course and natural history. At present it is surely undesirable to speak of "the undiscovered microbe of rheumatism." Science has to do with proved facts and our language should never outrun our knowledge.

PROGNOSIS AND STATISTICS.

Another important branch of medicine — prognosis — depends as an art upon experience and insight. In making an individual prognosis, shrewd powers of observation are needful; and in this, of all branches of our art, it is true that

"Old experience doth attain
To something like prophetic strain."

Yet here also rational prognosis rests on the science of statistics.

It is to Louis and the French school of the second quarter of this century that we owe the application of this important method for learning the natural history of disease, a method which not only supplies a foundation for prognosis but also a criterion of treatment. We know, however, how many pitfalls there are in deducing conclusions from statistics. The morbidity or incidence of a particular disease upon the whole community is often confused with the mortality or the fatal cases of it compared with the population, and this last confused again with the case mortality. The return of deaths from a certain disease in a town or kingdom has been applied to the population which existed eight or nine years before. The success of treatment of a disease occurring in barracks, that is to say, among picked subjects, all in early manhood, under strict discipline, and sent to hospital as soon as they are unwell, has been compared with that of other measures carried out in totally different circumstances. As examples of statistical misuse take these facts: The numerical returns of the lying-in charity of a London hospital led to the conclusion that more women are delivered of a second child than of a first. A physi-

cian, to inspire confidence in an anxious patient, assured him that the mortality of the complaint from which he was suffering was only 1%; and in answer to the further inquiry whether he had seen many cases, said: "Yes; I have looked at my notebooks and find I have seen 99 and they all recovered."

But, apart from the corrections and limitations of statistical science, we are sometimes in danger of forgetting that to be of any value statistics must be based upon cases which are both numerous and accurate. A small number of cases is useless. It led to the conclusion that myxedema was peculiar to women and that insular sclerosis was rare in men. It was only after hundreds of cases had been observed that we learnt that infantile paralysis sometimes befalls adults and that osteo-arthritis may occur in children. This defect may be remedied by time, but the defect of inaccuracy is without remedy. If diagnosis is perfunctory or careless and nomenclature arbitrary and inconstant, the more cases observed the less do they teach. It is disappointing, after the immense labor, time and trouble devoted to the compilation of the official *Nomenclature of Diseases* of the Royal College of Physicians, that, although adopted in the navy and army and by the registrar-general, it is constantly neglected, not only in conversation but in systematic treatises. How can statistics be anything but misleading when made up of cases of one and the same disease under such different titles as chronic rheumatism, rheumatic gout, rheumatoid arthritis, arthritis deformans and osteo-arthritis? Of what value are statistics when such different diseases as acute lobar pneumonia, bronchopneumonia of children after measles, pulmonary tuberculosis, cirrhosis and septic suppuration of the lung are all labelled "pneumonia"? One difficulty is put in the way of the practitioner in making an accurate return by the well-meant but, I think in practice, unfortunate provision for returning a primary and a secondary cause of death. Sometimes this corresponds to facts and gets over a difficulty, but if a patient dies of enteric fever there is nothing gained by adding congestion of the lungs as the secondary cause, still less do we learn from a return of primary cause a chill, secondary cause debility; or primary cause an accident, secondary cause dropsy. As a matter of fact, in looking through hundreds of death certificates, one arrives at the valuable conclusion that a frequent cause of death is "exhaustion" or "cardiac failure."

Another and opposite mistake is often made by attempts at too great precision in diagnosis. To say that a man died of apoplexy or of paraplegia is to state a fact within any competent practitioner's knowledge, but, in the absence of a post-mortem inspection, to say that he died of cerebral hemorrhage or of myelitis is not a fact, but a more or less doubtful inference. It is surely better to be satisfied with a statement that there were ascites and enlargement of the liver when the cause of enlargement is altogether uncertain, than to be more exact and less true. I have again and again seen diseases the existence of which no experienced physician would assert without a necropsy returned as if they were common and easily recognized conditions—pernicious anemia, syringomyelia, cancer of the lung. It would, I venture to submit, be a great improvement if the return of one cause of death only were demanded; if certainty and definite statements were aimed at rather than speculative minuteness of vague generalities; if a query were allowed to qualify

deductions as distinct from observations; if the fact or the absence of a necropsy were always stated, and, lastly, if the authorized nomenclature were always used.

SCIENTIFIC MEDICINE AND EXPERIMENT.

There is one aspect of scientific medicine so important that it must not be wholly omitted: the necessity of experiments for the progress of pathology, and through it for the prevention and cure of disease. It requires no argument to convince any one who is the least acquainted with the principles of inductive science that experiment is no less necessary than observation. In physics and in chemistry this is obvious and universally acted on. The same method is indispensable for the progress of animal and vegetable physiology, and to such practical applications of science as engineering, agriculture, and medicine. Nor can experiments be restricted to rare, occasional and solemn occasions; they must be carried on in large numbers by many different experimenters and under every variety of conditions. Any attempt to abolish, to check, or to limit this experimental work is, in the degree that it is successful, fatal to progress. Happily it can never be successful, for the impulse to increased knowledge of the works of creation is too deeply implanted in man. Investigation must and will go on by the only path which it can follow. The method which was preached by Bacon and followed out by his great contemporary, William Harvey, which was continued by Lower, Hooke, and Mayow, in the early days of the Royal Society, by Aselli, Malpighi, and Haller, by Hunter and Hewson, by Hales, by Edward Jenner, by Sir Charles Bell, by Johannes Müller, by Claude Bernard, by Ludwig, and by the many eminent physiologists and pathologists in Germany, in France, and throughout the civilized world—this method of investigation must and will continue. As its objects and methods are better understood, it will secure the enlightened patronage of all who desire the effusion of human knowledge and the further spread of human happiness. Fortunately this very progress of science has brought with it the removal of the one drawback which every right-thinking man must have felt as a grave disadvantage to these experiments upon living animals. Inflicting pain upon the humblest of God's creatures is repugnant to our feelings, though no one, unless maintaining a thesis, would contend that it would be wrong to exact the most painful efforts, or even the death from exhaustion, of a horse, in order to carry help to a human being. The discovery of ether, chloroform, and other anesthetics, and the improved methods that we owe to the genius of Lister, have not only relieved the surgeon of the most repulsive part of his duties, but have relieved the experimenter also. Except in the investigation of the action of new remedies or in the inoculation of infective diseases, both of which inflict discomfort of a limited degree and duration rather than anything that can be described as pain, the experiments of the laboratory, whether physiological, pathological, or therapeutical, are conducted without inflicting suffering. The opposition to them has not succeeded, and is sure to diminish. However mistaken our opponents, we are glad to find there is exaggerated jealousy to avoid anything approaching to cruelty. This legitimate object our more candid critics may be assured is already amply provided for.

THERAPEUTICS AND SCIENCE.

Lastly, how far is the final end of our art — the cure of disease — immediately and directly dependent upon science? It rests, we know, on that sure basis, but even in its practical carrying out we are bound to take with us a scientific spirit. The administration of digitalis for cardiac dropsy, of mercury for syphilis, and of thyroid extract for myxedema is as truly scientific as prescribing a chemical antidote for poison, or nitroglycerin for angina pectoris, for it rests on a sure basis of observation and experience. But because in many cases we cannot as yet explain how remedies act, we should never prescribe them without watching the effects of the experiment. The foolish cry against hospitals as places where they experiment on patients is meaningless just because it is true. Every prescription we give either to rich or poor is an experiment and ought to be watched with critical and scientific eyes. And here let me say that our practice is often ineffectual, not for want of an accurate diagnosis or an adequate means of treatment, but merely for want of the needful treatment being thoroughly carried out — a want which inevitably prevents success, and therefore leads by a vicious circle to scepticism and want of thoroughness on the next occasion. A man who believes everything he is told of the action of remedies not only in the serious treatises of Garrod or Wood or Binz, but in the partial assertions of advertising druggists, is sure to be unsuccessful; and, beginning with credulity, is apt to end in unbelief of such remedies as colchicum, salicin and opium. Such a man will prescribe and will never see that his prescription is carried out; by the habit of giving multifarious mixtures of drugs in ineffectual doses he allows what he has prescribed to be taken three times a day for a fortnight to be really taken twice or once a day for a week, and still less often for the second week. He will prescribe exercise or lying down, abstinence or feeding, and never trouble himself to see that his directions are carried out. Who shall blame the patient if he ceases to believe in remedies to which the physician obviously attaches no importance? If we would sometimes prescribe no drug at all, but insist upon abstinence from certain articles of food or drink, or upon more frequent or less frequent meals, upon regular exercise or absolute rest, should we not secure more obedience from our patients when we prescribed really necessary drugs — just as a clergyman who desires to get a liberal collection would do wisely to begin by insisting on the sin of giving to charities which one believes to do more harm than good? How can we expect success in treating an obscure nervous affection if we apply galvanism to the spine without making sure of any physiological effect, nay, sometimes without making sure that a current is passing through the electrodes; or if we send the patient to drink the waters of such and such a fashionable watering place without remembering that there are two or perhaps three springs, one of them inert and the other very possibly injurious? What success can be anticipated if we order ointment for a weeping eczematous patch where it floats on the secretion and never reaches the inflamed tissue; or if we prescribe a lotion to be applied twice a day to skin well protected by its sebaceous secretion? We all know this half-hearted, ineffectual mode of action in everyday life; the man who wipes his shoes as a cere-

mony never looks to see if he has got rid of the mud; the groom who feeds his horse but never sees whether the oats are eaten; the nurse who washes the child and still leaves dirty places. Now much of this weak and therefore useless treatment is only the indolence to which we are all prone, and against which we must struggle as a temptation; but much of it, I am sure, is the offspring of incredulity and this again springs from half belief in quackery and imposture. Much of our ineffectual treatment again depends upon want of belief in our diagnosis. Until we make up our minds whether a certain eruption is psoriasis or a scaly syphilide, we shall never deal with it successfully. If we only suspect syphilis, we shall give our remedies in inadequate doses, and relinquish them if we do not see immediate benefit; whereas if our diagnosis is real and thorough, we shall use our remedies with confidence, increasing the doses, varying the form, but always persevering until we obtain their physiological effect, and then we may reasonably hope to cure our patient.

Another source of failure in therapeutics is the legion of new remedies, the eulogiums of which fill our waste paper baskets and light our fires. It is astonishing to find apparently rational men forsaking the drugs which have been proved effectual by the experience of long past time and of all civilized nations to take up with remedies the very composition of which is often unknown, the use of which they have never learned and of which the value rests upon the interested or credulous assertions of those who try to sell them. It takes a man long years of practice to learn how to prescribe an opiate. Why throw away this priceless knowledge to dabble in quack cures of which the very praises inspire distrust? New remedies are no doubt discovered from time to time — in this generation we have had several — and all probable claimants should be tested in pharmacological laboratories and in hospital wards. But I am speaking of drugs which have never passed either of these tests. Surely in this age of advertisements which disfigure and defile the beauties of land and sea, of town and country, of literature and art, the most credulous must be convinced that costly and pertinacious advertisement is evidence of the lack, rather than the possession, of genuine worth. No, sir; so far from our profession being carried away by this noxious and degrading habit, let us hope that we may not only stamp it out from among ourselves, but spread our own standard of conduct to other pursuits, until some day an honest tradesman shall be ashamed to push his sales by self-laudation and the wealthy manufacturer shrink from offending the eyes and deafening the ears of his fellow creatures by scribbling his name on blank walls and screaming it in every street.

In another popular branch of treatment it seems very desirable that the scientific spirit should be somewhat more freely admitted — I refer to treatment by baths and waters. That both are valuable modes of treatment no one will deny, but will any one be so bold as to assert that it makes any difference whether patients take a bath of water heated as it comes from the soil or heated to the same degree in a kettle? Who would pretend that so many grains of laxative or alkaline salts will act differently when occurring in natural solution and when dissolved in the same proportion in the druggist's shop? That benefit is obtained by change of air and scene, by early hours,

regulated rest and exercise and copious draughts of water is beyond dispute; but it is surely a pity when, instead of rational explanation of a "cure" treatment, we suffer our patients to be deceived by unscientific and more or less untruthful statements.

Is it not a mistake for so many of us to prescribe the made-up drugs offered us by wholesale manufacturers instead of our own combinations? It leads our patients to ascribe their recovery not to our skill, but to this or that pill or tablet. It would be an excellent task for this great association to set some of our skilled analytical chemists to strip the veil from mysterious remedies and tell us the exact composition of the many patent medicines, some of which are inert and some injurious.

RATIONAL MEDICINE AND ITS WAGES.

Lastly, we may ask whether our profession obtains the recognition that is due at the hands of the public. I believe that on the whole it does, or if in any degree it fails, that the failure is due to ourselves. We cannot expect that any but the most educated and enlightened should look at our science or our art from a rational point of view. The popular notion of a doctor among our patients is a man who has got some wonderful cure in a bottle which will make them well. The more educated patients suppose that, knowing what is the matter with them, or, as we say, having made their diagnosis for themselves, their next business is to choose the doctor who has devoted his exclusive attention to the malady of which they suppose they are the subjects, or if they chance to suffer from what they call a complication of diseases they will consult a heart specialist to cure palpitation, a throat doctor to cure hoarseness, and a rising young surgeon to "a special hospital for diseases of the knee," to cure weakness in that joint. If they should find no relief after these consultations—*Flectere si nequeo superos, Acheronta movebo*—they denounce legitimate medicines as useless and go to the lowest impostor, and will afterwards tell their friends that after being "given up by the faculty" they found instant and miraculous relief in a single box of wind pills, a galvanic belt, or a pad of "oriental herbs" worn on the pit of the stomach. Among the more enlightened the rule seems to be that they believe in surgery, they believe in nursing, in change of air, in tonics, and in stimulants, but they have long since given up faith in doctors or in medicine.

The fact is that we cannot expect our patients should understand the scientific basis of medicine, the meaning of etiology, or the possible degree of efficiency of treatment. What they frequently ask of us is to allow them to continue the very course of life to which we have laboriously traced their symptoms, and to give them some medicine which, as if by a charm, will break the inevitable sequence of cause and effect. They are slow to understand that this world gives nothing for nothing, and that we can only subdue Nature by obeying her laws.

There is, in fact, only one way in which we can obtain what we call our just recognition. Our services, however great, are services to the individual, not to the community. It is therefore absurd for us to expect the honorific or more solid rewards justly assigned to statesmen, to generals, or to judges, but from individuals we may expect—and I venture to say that as a rule we receive—the trust, the honor, and the grati-

tude which we have earned. Few of our patients will ever understand our principles or our methods, the reason for our successes, or the explanation of our failures; what they do understand is personal character, honesty and sense, kindness and sympathy, liberality and benevolence to rich and poor. These are the qualities which have always gained and still gain the respect of our fellow men; and I venture to say there is not a town in the three kingdoms where such respect is not widely and deservedly earned. In every cathedral, in almost every parish church, we see tablets bearing witness to the esteem in which the local practitioner lived and died. He spent his life in the constant exercise of his best faculties, intellectual and benevolent—a sure path to happiness; every day brought fresh interest and left no time for melancholy; he earned not only money but money's worth, in respect and influence; and when the practitioner became the patient—as we all must one day be—he had pleasant memories of a life spent in the service of God and man. He lives in the hearts of those who knew him,

"And there sepulchred in such pomp doth lie
That kings for such a tomb might wish to die."

Original Articles.

REPEATED ECTOPIC GESTATION IN THE SAME PATIENT, WITH OPERATION IN EACH CASE.¹

BY MALCOLM STORER, M.D., AND M. T. THURBER, M.D., BOSTON.

I. PREVIOUS HISTORY OF THE CASE, BY DR. THURBER.

IN bringing to your notice this evening the interesting features of the following case I will endeavor to give only a brief clinical picture from the commencement of the abnormal conditions up to the time of the patient's entrance to the hospital. I am indebted to Dr. Joyce, of Kingston, N. H., (formerly of Dorchester) who had the patient under his charge during her first illness, for many particulars of the case.

A young woman, twenty-three years of age, small in stature, weight 110 pounds, of a nervous temperament; born in Canada, of the physical development characteristic of the French-Canadian girl, and married three years; never pregnant; ceased to menstruate October 20, 1898, having begun on the 17th. Her period was expected again November 14th, but was missed and, as she had always been on time, she concluded she was pregnant. She had nausea during the morning at different times, which was quite unusual for her, and this confirmed her belief.

Aside from "morning sickness" she felt as usual up to the early morning of November 26th, when immediately after coition she began to flow profusely. Soon severe pains began, located low in the pelvic region. She feared she was about to miscarry and at eight o'clock she was seen and examined by Dr. Joyce about half an hour after the hemorrhage began. Believing that a miscarriage was threatened, he administered remedies with the hope of checking the flow and to continue if possible the pregnancy. One visit only was made, as the above conditions soon passed away and the patient was as well as before.

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March 28, 1900.

The doctor was again called December 7th for pain, but no hemorrhage. Relief was soon obtained by morphia given hypodermically.

Five days after this visit, December 12th, Dr. Joyce was called for the third time and as he was out of town the husband asked me to see her. When I arrived I found the patient, to use her own words, "suffering agony." Her temperature was $99\frac{2}{3}^{\circ}$ F. and her pulse 104. Hemorrhage was profuse. There was marked tenderness over the lower part of the abdomen, especially on the left side of the median line, where the slightest pressure produced sharp, cutting pain. She had had several chills, each leaving her in a more nervous condition than the preceding one. For three days previous to my visit she had had a bloody discharge which had an offensive odor. In attempting to pass my finger into the vagina the rectum was found to be loaded with a hard fecal mass, which was removed by a copious enema. Proceeding with the examination I found the parts very hot and exceedingly painful to the touch. The uterus seemed to be unusually low in the pelvis and was somewhat enlarged. The os was not dilated at all. In the cul-de-sac an oval, painful mass could be felt. This mass was soft and seemed to fluctuate like pus in an abscess. Rational signs of pregnancy were present. I could not satisfy myself with a positive diagnosis.

I gave an anodyne, ordered absolute rest in bed, with liquid diet. On the following day I found her quite comfortable.

Two days later her condition was worse than ever. I thoroughly sterilized a sound and carefully explored the uterine cavity, finding nothing. Dr. Joyce returned in the afternoon, and in consultation with him, everything was ruled out excepting ectopic gestation, which we believed must be the true condition, and operative interference the proper way to treat the case. She was sent to the Carney Hospital, December 19, 1898, just nine weeks from the date of her last menstruation.

REPORT OF FIRST OPERATION, BY DR. STORER.

On December 17, 1898, I was asked by Dr. F. L. Johnson to see at the Carney Hospital Mrs. J. L. Examination under ether showed the posterior pelvis filled by an apparently solid mass, with only one small area of doubtful fluctuation, the size of a ten-cent piece, directly behind the cervix. In the left pelvis a harder mass was to be felt that was adherent, while to the right was a movable tumor, rounded and somewhat smaller. The mass was so densely adherent to the uterus that it was extremely difficult, without the sound, to be sure that the fundus lay forward. The uterus was only slightly enlarged.

My diagnosis from the pelvic examination—not having heard the clinical history, and not seeing the patient until she was under ether—was that it was a case of old salpingitis with much exudate. Examination without ether must in this case have been quite hopeless. As at that time I was trying to persuade myself that the vaginal route offered advantages over the abdominal, and also perhaps because I did not have the patient's consent to a laparotomy, I determined to attack the mass by the vagina. On incising the posterior vaginal wall I came at once upon black, shining peritoneum, which when opened gave vent to several ounces of sweet blood. The finger then came upon a hemothecoele nearly filling the pelvis, and a

rounded mass that was apparently the gestation sac. I met great difficulty in bringing this down, as the patient's vagina was extremely small and the hemothecoele very much in the way, and as now manipulations were causing free hemorrhage and the patient beginning to be in very poor condition, I packed the pelvis with gauze and opened the abdomen. A large amount of fresh and old clots were turned out and the left tube, which was somewhat adherent, was found to be ruptured and bleeding freely though not alarmingly. The tube and ovary were removed. The fetus was not found. In spite of the entire lack of previous preparation for an abdominal operation, and in spite of the immediate preparation being of the most superficial nature owing to the probability of active hemorrhage being present, convalescence was as uneventful as if the most elaborate aseptic precautions had been observed.

I regret very much that I cannot show you the specimen of this pregnancy, but as I had no reason to suppose that the case would be one of especial interest it was not preserved. As I remember it the sac was about the size of a walnut, situated near the middle of the tube. I examined the other tube and ovary very carefully, having in mind a paper I had read a few days previously in which the writer advised that the other ovary should always be removed to avoid the possibility of an ectopic pregnancy on the other side. But as the right appendages were apparently perfectly healthy, except that the large old blood clot was adherent to the ovary, I decided to leave them for two reasons. I felt that being a young woman recently married she was entitled to at least the chance of giving birth to a child, and furthermore, I did not have her permission to sacrifice both ovaries.

HISTORY OF SECOND ECTOPIC PREGNANCY, BY DR. THURBER.

Mrs. L. came to my office on the 20th day of May, 1899. She informed me that menstruation had been regular after the operation, but that she had now passed her period about one week and thought she must be again pregnant. Presumptive signs of pregnancy were present, morning sickness, etc. She was feeling well and had no complaints to make, but wished to place herself under my care as soon as she found herself to be in an interesting condition. I felt quite sure I could make out Hegar's sign, and ventured a positive opinion that she was pregnant, and asked her to notify me at once if anything went wrong. Two days after her visit to the office, the 22d, she sent for me. She had a slight pelvic pain which soon passed off after administering an opiate.

On May 24th I received another call. At this time there was a slight hemorrhage but no pain, although there was some tenderness over the lower part of the abdomen, and, as in her previous illness, the left side was the more tender to pressure. I could make out nothing satisfactorily. She stayed in bed, and by the next day the hemorrhage had ceased. She was comfortable on the following day.

My next visit was in the early morning of the 27th, and I tried again to find the cause of the trouble. Her temperature and pulse were normal. In the cul-de-sac there could be found a small mass, very tender when pressed. This mass was soft and oval, and did not feel much unlike the fundus of a retroflexed uterus. I presume my previous experience with similar condi-

tions in this patient led me to believe that ectopic gestation was repeated.

The next day, the 28th, Dr. Storer, in consultation, confirmed my diagnosis and advised her immediate removal to the hospital for operation. She was admitted to the Carney Hospital that afternoon, six weeks from the date of her last menstruation.

REPORT OF SECOND OPERATION, BY DR. STORER.

On May, 1899, five and one-half months after the previous operation, Dr. Thurber asked me to see Mrs. L. again, as she thought that she had another extra-uterine pregnancy. Examination now showed a somewhat enlarged, retroflexed and rather soft uterus with a prolapsed and somewhat thickened tube. There was no exudate or boggy mass. The diagnosis of an extra-uterine pregnancy was made more from the history of the previous attack, the recent symptoms and the foul flow rather than from what I felt in the pelvis, which without the history to guide us suggested a retroflexed gravid uterus as much as anything. I have often noticed a similar hardness of the cervix in gravid retroflexions, from disturbances with the blood supply probably. I advised immediate removal to the Carney Hospital. After my previous experience with the vaginal route in this patient I had no desire to try it again, and so opened the abdomen at once. The uterus was found retroflexed and adherent with rather fresh adhesions, and the prolapsed tube showed a fusiform enlargement at about its middle. A considerable amount (half a basinful) of free blood and clots was found in the pelvis, all of which was perfectly sweet. The tube was found to be practically unadherent, and on bringing it up carefully it was found to be intact, but blood was coming from the ostium in rapid drops. I removed the tube, but left most of the ovary stitched close to the stump of the tube, not wishing needlessly to remove the only remaining ovary in so young a woman. Although there was in my mind some question as to its subsequent nutrition, Nature had no trouble in attending to that. I tied this tube off with chronicized catgut; and the many cases in which tubes have become patulous, no matter how carefully they have been tied off, will naturally cause me to ask Dr. Thurber to watch this case with great care to see whether a third pregnancy ever takes place. There is really no great reason why she should not become pregnant again, and from the shortness of the tubal stump the chances are that another pregnancy would be uterine rather than interstitial. Menstruation, I may say, took place after the patient left the hospital in normal amount, and has continued as usual and without pain, although she has no tubes.

According to Dr. Whitney's report upon this second specimen, it will be seen that he is unable to state with any certainty that he found any evidences of an extra-uterine pregnancy, but the clinical picture of the case given by Dr. Thurber fits in so perfectly with the gross conditions present in the abdominal cavity that I think we are justified in regarding it as one, especially as some cells were found recalling very strongly decidual cells, and as there were no symptoms of any previous inflammatory condition in the pelvis. Dr. Whitney's report was as follows:

MARCH 25, 1900.

DEAR DR. STORER:—The specimen of the tube and portion of the ovary consisted of the fimbriated end of the tube for about 4 or 5 centimetres, which was opened and

to the inner surface was adherent a small, firm clot of blood about 5 millimetres in diameter. The outer surface was also roughened and a few clots adherent. Microscopical examination through the wall and attached clot showed the papillary folds of the tube of about normal size, but with enlarged lymph spaces, prominent blood vessels and here and there a little hemorrhagic extravasation. The blood clot seemed to be in the outer part of the fold and looked as if it could have originated from the rupture of some of these vessels. At one place on the wall, just beneath the adherent clot, was a little clump of large mononucleated cells with rather clear protoplasm, recalling very strongly decidual cells. But this was the only place that pointed to a change that could have been produced by pregnancy. Nowhere was there the slightest trace of chorionic villi, nor were the folds of the tubal mucosa infiltrated with small cells, as is frequently the case. A rather loosely attached piece of hemorrhagic tissue proved to be full of very many thin-walled blood vessels, which were also present in the adhesions on the outer surface. Aside from the one little group of large, decidual-like cells, there is nothing which proves the condition of pregnancy. The hemorrhage can be explained by the rupture of the enlarged vessels in the folds of the tube and from the thin-walled ones associated with the chronic inflammatory process of the peritoneum.

Yours very sincerely,

W. F. WHITNEY.

That repeated extra-uterine pregnancy is of more frequent occurrence than was formerly thought is attested by the cases reported in recent years, but authentic ones are still sufficiently rare. Zangenmeister in a paper published last year has gathered together some 40 cases. A careful examination of the literature shows, however, that in only 17 was the condition proved by actual operation [J. Veit, 1889; Olhausen, Hermann, Abel, Beck, Harrington, Bennington, Frankenthal, Ross, Brosin, Kokman, Schoolfield, Falk, Dührssen, Zangenmeister (2 cases), Thomson]. To these may be added the cases of Winckel, who in 1888 demonstrated the specimens from a patient in whom he had destroyed an extra-uterine fetus in 1885 and again in 1888, and the case of Tait in which an operation for extra-uterine pregnancy was followed three years later by the death of the patient from the rupture of another extra-uterine sac. The number of surgeons to whose lot it has fallen to have had an opportunity to operate twice upon the same patient for this interesting condition is naturally extremely small, limited as far as I can find to the following: Veit, Olhausen, Hermann, Harrington [1893 (the first, and with the exception of Ross the only one in this country)], Ross, Brosin, Dührssen, Zangenmeister (twice), Thomson and myself. My case is also noteworthy in that she was in each case under the care of the same physician as well as of the same surgeon. In this case the diagnosis was naturally easy with the history of the first ectopic gestation to aid us, and I would emphasize the importance of a previous extra-uterine pregnancy as rendering more probable the recurrence of the condition should in a second suspicious attack any or most of the classical symptoms be wanting.

A patient who has been operated upon for extra-uterine pregnancy and in whom the other ovary has not been removed should be carefully warned of the extreme importance of reporting herself to her medical attendant should she go a single day over her normal period. The earlier the diagnosis can be made the better are the chances for the patient, and in a case in which extra-uterine pregnancy is suspected before rupture has occurred, the fact that the patient

had previously been operated upon for this condition would with me turn the scale in favor of immediate operation. I feel that nothing is gained by waiting for symptoms to develop. The removal of a tubal pregnancy before rupture of the sac offers no dangers in comparison to an operation after rupture has taken place with probable inflammatory results.

With the history of this case in view we are met with the question of whether or no it is the surgeon's duty in operating upon an extra-uterine pregnancy to remove the other tube or not, lest it later become the seat of another ectopic gestation. This question cannot be answered offhand, as many writers have done, that the other tube should be removed. Of course it by no means follows that pregnancy will ever take place in the other tube, although it is probable that the same conditions that produced a tubal pregnancy in the one tube also exist in the other. Any greater degree of mutilation than is necessary should be avoided. Should the woman be a nullipara (which is the case in about 1 case in 5 of extra-uterine pregnancies), and children be greatly desired, we should at least leave her to decide (should she be in condition to do so) whether she is willing to run the risks of a second extra-uterine pregnancy on the bare chance of giving birth to a living child. We can encourage her by citing the cases of Tait and Kokman, in each of which a normal pregnancy intervened between two tubal ones, and that of Dührssen, who reports 2 cases of normal pregnancy after operation for extra-uterine.²

It is, of course, possible that should the extra-uterine pregnancy be due to kinks, etc., in the tube, caused by inflammatory adhesions, as, according to most writers (Virchow, etc.), is generally the case, they may exist only on one side, or if bilateral they may in the course of the manipulations incident to the removal of the one tube be so broken up as to permit the free passage of ova from the ovary to the uterus. Our willingness to leave the other tube may, however, be modified by other considerations. Inflammatory bands which we may possibly break up satisfactorily are not the only causes of extra-uterine pregnancy. It may also be caused, according to Freund, by the persistence of the infantile convolutions, or by diverticula in the tube, or, according to Klob, in a failure in the normal peristaltic wave towards the uterus, or even in default of other cause upon which we can lay our finger, to a failure in the proper working of the cilia lining the tube due possibly to a catarrhal salpingitis. To be sure Webster argues very ingeniously that the site at which pregnancy takes place in these cases is determined by its being the seat of greatest receptivity — showing the greatest decidual reaction — probably because of some fault in development, but I think most observers still cling to mechanical causes as the most plausible explanation of ectopic gestation. Such cause may or may not be amenable to treatment; the tube may possibly be laid open and everted and straightened out if necessary or diseased portions resected. A case of mine shows well to what an extent plastic operations upon the tube are feasible:

R. G., twenty-two, one child two years previously; ill since then. In June, 1898, I resected a cyst the size of a small orange from the left ovary, together with about a third of that organ, and after removing the outer half of the catarrhal and cystic left tube

built a new ostium for it by suturing its mucous membrane to the peritoneum and divided the various peritoneal bands that bound it down so as to leave what was left of it a straight tube instead of being much twisted and kinked. The remnant of the ovary was stitched close to the ostium. On the other side the tube was apparently perfectly normal at its two extremities, but in its middle for the distance of an inch and one-half it was much thickened, convoluted and entirely impervious. This impervious portion was excised and the small proximal end of the cut tube introduced into the lumen of the larger distal part, and the peritoneal coats stitched together with two anchoring sutures from the proximal end running up through the wall of the distal part of the tube from within. Five small cysts of the right ovary were punctured with the cautery, and a ventrosuspension completed the operation. About a year later she became pregnant and last month gave birth to a child at St. Elizabeth's Hospital.

The question of the treatment of the other appendages, then, must in each case stand by itself, and the surgeon must decide from the conditions present whether he is willing to allow the patient, even knowingly, to run the risks of another extra-uterine pregnancy. In my case the tube that I left in the first operation had certainly no macroscopical appearances that would have suggested its likelihood to become the seat of another ectopic gestation. Should, however, it seem best to remove the other tube I would urge that at least one ovary be preserved, or a part of it, to avoid the discomforts of the premature menopause.

This case is also I think of some interest as bearing upon the vexed question of whether to approach an ectopic pregnancy in the early weeks from below or from above. In the first operation I had to abandon the vaginal route on account of free hemorrhage, stirred up by possibly unskillful manipulations. Be that as it may, I found I had to open the abdomen to stop the bleeding. In general terms I would confine the vaginal operation to women with a large pelvis, yet even in them should there be urgent symptoms of active hemorrhage I should personally prefer the abdominal route, being confident that with the aid of the eye I should be able to find the source of the bleeding and control it much sooner than if working in the dark. Under some conditions every drop of blood saved is of value. When the diagnosis has been made before rupture the vaginal route may have its advantages, and after rupture, when actual suppuration has taken place, it lessens the risk of sepsis and therefore may be preferable, especially as in such late cases the danger of active hemorrhage is not so very great, but even then I think that in every case of extra-uterine pregnancy in which the operator prefers to begin by the vaginal route he will be extremely wise to have everything ready for a celiotomy in case he should find it necessary to abandon the vagina in a hurry, and a celiotomy without proper preparation is not conducive to a surgeon's peace of mind.

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THE MORTALITY OF HYSTERECTOMY FOR FIBROIDS.¹

BY F. H. DAVENPORT, M.D., BOSTON.

THE question of the mortality of any operative procedure has an important bearing upon the advice we give a patient who consults us for the relief of disease. It modifies very materially the advice given. How important it is depends upon the character of the disease present, as, for instance, in the case of ovarian tumors, where the outlook, if nothing is done for the patient, is absolutely unfavorable. In such cases we are therefore justified in taking great risks for the sake of cure. That was the state of affairs from twenty-five to fifty years ago, when abdominal operations were in their infancy. Then, even though the physician could not assure his patient that the operation was practically without risk, as he can today, he could still urge it, knowing that the risk of the operation was less than from the disease left untreated. The same is true of cancer today. Any operative measure, however severe, which holds out the least chance of success is to be advised.

The case stands differently with fibroid tumors. In themselves they are benign, that is, they do not necessarily endanger life. In their early stages they rarely give rise to any serious symptoms except hemorrhage, and even when they attain considerable size the symptoms may be unimportant. The frequency of their occurrence, their slow growth and the fact that in a large proportion of them hemorrhage is not an essential feature, has, in my opinion, led the profession to put too light an estimate upon their importance. The fact, too, that the operative measures for their removal were in the early stages of operative work accompanied by a considerable mortality has led to a very conservative course of action on the part of a good many surgeons. It could not fail to have a marked effect upon the opinion of the profession when so prominent an abdominal surgeon as Dr. Keith, of Edinburgh, only ten or eleven years ago, made the following statement: "Hysterectomy is a hazardous operation for the removal of a tumor that of itself rarely shortens life. For myself I have always had grave doubts if I were justified in performing such operations at all, especially hysterectomy, for the mortality attending this operation is out of all proportion to the natural history mortality of uterine tumors, and the results of it are out of all proportion to the benefits received by the few." These sentiments expressed the grounds which led Dr. Keith to abandon all operative treatment of fibroids in favor of the electrical treatment after the method of Apostoli, of Paris. There is no question but that the technique of hysterectomy has made great strides in the last de-

cade, and yet the mortality even then must have been, in the hands of Dr. Keith, a comparatively small one. He speaks of a fibroid tumor as one that of itself rarely shortens life. It seems strange that an observer of so large an experience could look upon fibroid tumors as such innocent affairs. In a series of cases, such as would naturally fall under the observation of a practising gynecologist, there must occur a certain number which would clearly demonstrate that fibroid tumors bring with them distinct dangers and not infrequently threaten life.

Before discussing the question of the mortality of hysterectomy for fibroid tumors, I desire to point out causes of danger which are operative in case the tumor is left alone. These are, first, hemorrhage. This may become a source of danger no matter what the size of the tumor, and it not infrequently happens that insidiously, and almost unconsciously on the part of the patient, a condition of anemia is produced which may affect the prognosis in case of operation, or exceptionally may be fatal. The second cause is the size of the tumor. A large tumor may so press upon the other abdominal organs as to induce serious disease. A third cause is death of a part of the tumor, from what is known as anemic necrosis. A fourth cause is the development of malignant disease in connection with the fibroid. It may be said that these are rare conditions, so rare that they need not really enter into the calculation in considering the prognosis of these tumors, yet, as will be seen later, they are found too often to be ignored. In the light of the occurrence of these various conditions, it seems almost absurd to speak of a fibroid as almost never shortening life. Such being the case with regard to these tumors if left to themselves, is it not our duty to revise our opinions with regard to their early removal? It is just here that the question of the mortality of operative measures is of importance. If, with the improved methods of operating now at our command, it can be shown that the mortality, if the operation is done in the early stages and at a time which the operator can select, is practically nil, should not we advise our patients to submit to such operation, and get rid of a condition which has such very serious possibilities if left to itself? In order to see what bearing my own statistics have upon this question, I have looked over the cases of hysterectomy for fibroids occurring in the last 100 abdominal operations which I have done for all conditions. I find that they number 19. This comprises both small and large tumors, and of these 19 cases 2 died. Both of these cases were large tumors which had existed for a great many years, and which presumably could have been successfully removed if taken earlier. The histories of these cases show some very interesting points.

CASE I. Mrs. A., fifty-two years old, married, two children, consulted me in July, 1898, for an abdominal tumor which began on the right side about twenty years ago. It grew slowly, but about six years previous to my seeing her had become so large as to occasion her a great deal of annoyance from its size and weight. She then placed herself under the care of an irregular practitioner, who promised her that he could cure her by such simple measures as massage, electricity and tampons. For six years she faithfully continued the treatment advised, all the time being buoyed up with the hope of relief which was always promised, yet all the time conscious that the tumor

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March 28, 1900.

was slowly increasing. There had been slight hemorrhage, but it was not an important factor. There was some swelling of the feet and ankles. Her general health was fairly good and there was no especial trouble with micturition, defecation or digestion. She was not especially anemic. She was a small woman, and, by contrast, the size of the tumor constituted a great deformity. She measured 45 inches around the tumor at its largest circumference, distance from the sternum to the umbilicus $10\frac{1}{2}$ inches, and from the umbilicus to the pubes 13 inches. In view of the size of the tumor, which would render an operation hazardous, the fairly good condition of the patient, and the fact that if possible she wished to avoid an operation, it was concluded to postpone operative interference for the present. She was again seen in October of that year. There was a slight increase in the size of the tumor as shown by the measurements. Early in November she began to suffer from what seemed to be peritonitis. There was fever, increased pain and sensitiveness in the tumor, tympanites and inability to lie down for any length of time. The tumor sagged more and pulled upon the abdomen and the patient's condition was pitiable in the extreme. She could remain but a very short time in one position and it was hard for her to move without assistance. Her sleep was only in snatches, the longest period being half an hour. Two or three hours a night was all the rest she could get. There was a constant formation of gas in spite of large dejections. The abdominal walls became tense and shiny and she said she felt as if the skin were bursting. The veins in the lower abdomen stood out in cords as large as a pencil.

On November 15th Dr. Maurice Richardson saw her in consultation with me. In spite of the gravity of the situation, he felt that an operation held out her only chance, and it was therefore decided upon. The operation was done on November 17th. As her condition was so critical, and it was important to save all time possible, I asked Dr. Bennett, of New York, to superintend the anesthesia. Everything being ready for the operation, she was placed upon the table and anesthesia begun with nitrous oxide gas, for which ether was substituted as soon as unconsciousness occurred. Within three minutes after the beginning of the administration of the gas the operation was begun. On opening the abdomen there were evidences of acute peritonitis. The tumor was adherent extensively over its anterior surface, and there were small collections of turbid fluid at various points. The tumor had so filled up the pelvis that it was almost impossible to get any pedicle, so the capsule was split all around as low down as possible, and the tumor shelled out of its bed, and it and the uterus quickly removed, all bleeding points being clamped and tied as they appeared. Owing to the patient's enfeebled condition, the operation was hastened, and a large amount of shreddy fragments of the capsule and peritoneal surfaces was necessarily left adherent to the stump. As there was considerable oozing, and so much bruised tissue left, a Mikulicz gauze packing and drain were introduced and the incision closed except the lower two inches. The whole operation lasted fifty-five minutes, and the marvellous skill of the anesthetist was shown by the fact that less than two ounces of ether were used. The patient was in fair condition when put back to bed. At the afternoon visit her pulse was from 110 to 120. There

had been no vomiting, only slight nausea, and for the first time in years she was lying on her back without discomfort. The day following the operation an enema was given, with the result that enormous quantities of gas were passed. The patient complained of no pain, but was apprehensive and could not sleep. Quantities of serum oozed away from the abdominal wound. On the 19th, that is, two days after the operation, the drain was removed. A large amount of pink fluid without much odor was aspirated, and in the evening the abdomen was washed out and a glass tube inserted. The patient took nourishment freely, and the bowels moved at intervals. The temperature gradually rose, however. It reached 104° on the evening of the 19th. It was lower on the 20th, the patient's tongue was cleaner, and her general condition better. Following this, however, there was a gradual sinking of the patient. The discharge from the wound became very foul, the edges of the abdominal wound looked gangrenous, and in fact, it seemed as if there were no life in the abdominal wall. The appetite failed, the temperature gradually sank, while the pulse increased in rapidity, until the patient died on the morning of the 24th, just a week after the operation.

Dr. Whitney reported that the tumor weighed 32 pounds after being cut open and considerable fluid escaping. There was no evidence of any degeneration.

CASE II. Mrs. H., forty-two, no children, consulted me December, 1896. She first noticed five years before an abdominal tumor which had grown steadily, until now it was about the size of the pregnant uterus at term. The symptoms she complained of were irregularity of the menstruation, with more or less constant flowing, generally scanty. She had pain in the left side at night. For the last six months there had been a more rapid increase in the size of the growth, and greater weight. An operation for its removal was advised, and it was done on December 31st. The abdomen was opened, and the tumor, which was found to be free from adhesions, was removed in the usual way, leaving the cervix. On the right side the growth had pushed into the broad ligament, and had so dislocated the right ureter that it was cut when the broad ligament was tied off. As the upper portion was too short to be brought down and inserted into the bladder, an end-to-end suture of the ureter was made with fine silk. Fearing that the suture might not hold, and that there might be leakage of urine into the peritoneal cavity, a drain was employed. There was a good deal of shock following the operation. There was absolute suppression of urine for thirty-six hours. It then began to be secreted, and for the next two days there was a normal amount passed. Symptoms of peritonitis appeared, although apparently the suture of the ureter held, and the patient died from septic peritonitis on the fourth day.

These 2 cases whose histories I have given are the only fatal ones occurring in a series of 19, and it will be seen that they were both large tumors, presenting conditions which made the operations much more serious than if they had been smaller. Could these patients have been operated upon at an earlier stage there is very little doubt but that they would have recovered. The lesson that these cases has taught me is that there are distinct dangers in delay, and that a fibroid tumor which is giving rise

to symptoms should be removed, and that the mortality from such operations is practically *nil*.

The prominent feature and the element of danger in the 2 cases whose histories have been given was the size of the tumor. There are, however, as I have said before, other dangers which are no less to be feared. Thus in these 19 cases there were 2 where there was found malignant degeneration. I say malignant degeneration, though I believe pathologists are in doubt whether such cases are the occurrence of cancer alongside of a fibroid, independently, or an actual change of a fibroid into a cancer, with the probabilities in favor of the former. At least, Dr. Whitney says he never has seen a case where there seemed to be an actual change of one tissue into the other. Dr. Whitney's report of one is as follows: "The examination of the tumor of uterus removed June 11th showed a large fasciculated growth in the fundus, white and fibrous looking. The examination showed it to be a fibromyoma. The fundus of the uterus was enlarged, the cavity filled with a shaggy growth, and the walls extensively infiltrated with a soft, opaque new growth. Microscopic examination showed it to be made up of irregular masses of gland-like tissue in places filled quite solid with epithelial cells. The diagnosis is a fibromyoma combined with adenocarcinoma of the uterus."

The second case which showed a malignant change was a very interesting one. The tumor was about the size of a fetal head, and was of a multiple variety. One nodule had developed low down in the cervix, and it extended towards the left in the base of the broad ligament, so that its removal without cutting the ureter was almost impossible. A portion of it was therefore left. The greater part of the mass, according to Dr. Whitney's report, which I will not give in detail, was composed of nodules of varying size, which had undergone marked calcification, and at one part had become cystic, with rather gelatinous contents, and fragments of anemic necrotic tissue. In one small nodule projecting from the fundus there was a condition which, according to the microscopical examination, justified the diagnosis of a calcifying sarcoma, which Dr. Whitney did not regard as of a very malignant type. The patient returned home in a month, but there was a rapid growth of a malignant character in the course of a few weeks, and she died about four months after the operation.

It will be noticed that in the last case there was in addition to the other conditions a beginning anemic necrosis. This same change occurred also in 2 other cases, both large tumors, but both of which made good recoveries from the operation. One of them was distinctly septic before the operation, and it was undertaken only after a consultation and with grave doubts as to the outcome, but the recovery was absolutely uneventful.

To sum up these grave conditions incident to what are so often called benign and harmless tumors, we have 2 cases of death where the tumors were large, 2 cases of malignant degeneration, and 3 of anemic necrosis, 1 of the latter cases presenting malignancy as well. We thus have out of 19 cases 6 where life was threatened by the presence of these growths. With this array of possibilities before us it seems to me that when patients present themselves with tumors of moderate size, which are clearly causing symptoms which interfere with the patient's en-

joyment of life, that their removal should be urged. By this statement I do not mean that every fibroid tumor should be operated upon. Many give rise to absolutely no symptoms. They may either grow not at all, or so slowly that the menopause may be reached and the tumors atrophy, without in any way proving a source of disturbance. But when a tumor is causing hemorrhage, is causing pain and discomfort, is a source of embarrassment, as it well may be in a single woman, the operation may be prescribed, as not the only, but on the whole the best, course to pursue.

Modern methods of operating have lessened the weight of some objections; thus in young married women who do not contemplate with equanimity the loss of the uterus and an absolute end to all possibility of pregnancy, the hope that a myomectomy can be done may be held out. Increased experience shows that this may be done in the case of tumors of considerable size, and many a woman would be willing and glad to part with her tumor if she need not thereby lose uterus and ovaries.

I therefore find myself, as my experience in the history of these tumors, if left to themselves, enlarges, and the fear of a fatal issue in operating for small tumors lessens with improved technique, advising their removal at an early stage if symptoms are present. How strongly I urge the operation depends somewhat upon the circumstances under which the patient lives. If she is where I or some careful practitioner can watch her, and examine her from time to time, note the effect of any hemorrhage which may be present, observe the rate of growth of the tumor, and be prepared to operate or advise operation before the patient's general health has been undermined, I do not urge immediate operation so strongly. Should she desire an operation, however, I should accede willingly, as I believe a patient has a right to decide for herself in such a matter. In the case, however, of a patient who lives at a distance, who cannot be watched, and who cannot command skilled oversight or service, I should urge operation without delay.

HYSTERECTOMY FOR MYOMA IN AMERICA.¹

BY ERNEST W. CUSHING, M.D.,

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IN the development of the operation of hysterectomy America has had a large share, both by original inventions and by adopting and perfecting the work of Continental and British operators. Although the earlier surgeons worked in isolation, and in ignorance of the methods of each other and of European operators, yet during the last generation a constant succession of ambitious youths and of successful and mature surgeons has taken advantage of the unbounded courtesy of distinguished European operators, and especially those of Germany, to complete their education or to improve their practice, respectively, by observations in the great clinics of the Old World.

A complete review of the evolution of hysterectomy in America would be too voluminous for this occasion and the writer would refer to an article already published by himself on that subject.² It may suffice to

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March, 23, 1900.

² Evolution in America of Abdominal Hysterectomy and the Total Extirpation of the Uterus. *Zeitschr. f. Geb. u. Gynäk.*, 1896; *Annals of Gynecology and Pediatrics*, June, 1895.

point out the principal contributions of Americans to the development of this branch of our art and we find that the country which first gave to the world ovariectomy for tumors (McDowell, 1809) gave it also :

The first successful hysterectomy (mistaken diagnosis), Burnham, 1853.

The first intentional hysterectomy, success, Kimball, 1853.

A very early if not original use of the position, with the elevated pelvis, and head to the light, Noeggerath, 1873.

The first application of galvanism to uterine myomata, Cutter, 1874.

The first application to the treatment of uterine myomata of Battey's operation of ablation of the appendages, Trenholme, 1876.

Valuable modifications of the intraperitoneal method of treatment of the stump, Marcy, 1881.

A series of improvements in the technique of the extraperitoneal method of treating the stump by which intraligamentous tumors and those deep in the pelvis can be removed, J. Price and his pupils, 1886.

Total abdominal extirpation of myomatous uterus by use of clamps (first resuscitation of the operation in America since those of Freund had been abandoned), Jones, 1888.

First separate ligation of the uterine arteries in their continuity, and total extirpation by this method, Stimson, January, 1889.

Method of total extirpation by use of a staff, Eastman, 1889.

Total abdominal extirpation, fastening stump of vagina to abdominal incision, for prolapse, Polk, 1889.

Methods for making the stump intra-abdominal, but extraperitoneal, Polk, 1888; Kelly, 1890; Byford, 1890; Baer, 1892.

Total abdominal extirpation of the uterus with suppurating appendages as a matter of election, Baldy, Krug, Polk, 1893.

Enucleation of the stump as well as the myoma by the use of a serrated gouge, without severing the uterine arteries, Eastman, 1894.

Total extirpation of the uterus in cases of extra-uterine pregnancy, where the tube which is not pregnant is diseased, Krug, 1894.

A collection of the results of the work of thirty-five American surgeons up to 1895, including operations for myoma, cancer and salpingitis, showed that during this transition period, when operators were experimenting and learning their art, and while the aseptic technique was being introduced into our hospitals, out of 1,188 cases there were 164 deaths, or a mortality of 13.8%. Since that time there has been an enormous improvement, so that at present abdominal hysterectomy is comparatively a safe operation. In the hands of good operators there are often series of 60 or 75 or more cases without a death, and in the hands of general practitioners the mortality is lower than would be expected.

The changes in methods of performing hysterectomy for myoma may be briefly summarized as :

(1) Entire abandonment of the extra-abdominal treatment of the stump by *serre-neud* or rubber ligature.

(2) The wide trial and substantial rejection of vaginal hysterectomy, as an operation of election in cases of myoma and salpingitis.

(3) The establishment of indications for the retention of the cervix uteri, as compared with total extirpation of the uterus.

(4) The adoption of a method substantially the same by most operators.

(5) The disuse of drainage whenever possible.

(6) The common employment of the operation by general practitioners, operating in the small hospitals which are springing up in all towns in the country of 3,000 or more inhabitants. Each of these hospitals has from four to six visiting physicians and surgeons, among whom there are sure to be several desirous of performing surgical operations, and ready to attempt the most difficult ones, with a zeal often in inverse ratio to experience and training.

This generalization of the operation at present works to its disadvantage, but as each of these new hospital acts as a training school for surgeons, by degrees good surgery is diffused throughout the country; the ablest men come to the front and by the American system of individual initiative, free competition and the free judgment of colleagues in each locality, the benefits of surgery, and very good surgery, are brought within reach of multitudes who otherwise would be unable to obtain it.

Before performing hysterectomy for myoma the most careful operators take great pains in cleansing not only the abdominal wall and the vagina but also the uterine cavity, since the danger of infection is now almost wholly from the cervical, respectively vaginal, canal. Personally the writer is confident that this precaution has been the chief feature in reducing the mortality of the operation in his hands from some 10% to practically nothing.

The abdomen being opened, the tumor is brought outside if possible; the round ligament on one side is tied and cut; then the ovarian artery on the same side is tied and clamped and cut between ligature and clamp. By making an incision through the peritoneum covering the uterus, passing from the insertion of one round ligament, just above the limit of the bladder, to the insertion of the other round ligament, the bladder can be separated from the tumor; a similar incision is then made through the peritoneum on the posterior surface of the tumor, which can then be brought outside of the abdomen even in difficult cases. The broad ligament being now open it is easy to find and feel, or even to see, the uterine artery on one side. This is tied securely, and clamped close to the uterus, and cut between ligature and clamp. The cervix uteri is now cut across, some traction being exerted and the knife being directed obliquely downward, so that the part of the stump remaining on the uterus is wedge shaped. It is well, though apparently not essential, to disinfect the cervical canal when this is cut across, by pushing into it a sound wrapped in cotton soaked with peroxide of hydrogen or sublimate solution. The stump is then seized with double tenacula, so that the flaps are brought together—not including the peritoneal surfaces in the grasp of the tenacula. The incision is then continued until the cervix is nearly severed, when, just as the last of the muscular tissue is cut, the other uterine artery is seen and clamped, when the round and broad ligaments are clamped and divided and the whole tumor is removed. It only remains to tie the second uterine artery, and the arteries of the round ligament and the ovarian artery, on the side last cut and to unite the flaps of the stump with a continuous catgut suture in the muscular tissue, with a second layer of continuous serous catgut suture uniting the peritoneal surfaces. The two layers of the broad ligaments are then brought together with a fine continuous catgut suture, burying the ends of the uterine arteries with their ligatures.

The toilet of the peritoneum is made and the abdomen closed without drainage.

If it is thought best to remove the whole of the uterus, the operation is quite similar, until the first uterine artery is tied, but instead of cutting across the cervix uteri the incision is carried down at the side until the vault of the vagina is reached, clamping the lateral vaginal arteries as they are cut. Then with scissors the cervix is liberated, keeping close to the uterine tissue and clamping the posterior vaginal artery. The end of the vaginal portion is seized with double tenacula and lifted up and freed from the tissues on the other side, clamping the vaginal arteries and the uterine when it is reached. After applying mass ligatures of catgut to the small vaginal arteries and ligating the uterine artery carefully, the muscular walls of the vagina are united with a continuous catgut suture and above this the peritoneum is united with a seroserous continuous suture, when the operation is finished as above stated. If owing to the enucleation of subperitoneal masses, or for any other reason, drainage is desired, it is easy to pass a rope of gauze from above downward into and through the vagina, closing the sides of the opening in the vagina with sutures which close the lateral vaginal vessels and approximate the muscular and peritoneal surfaces and drawing the peritoneum which covers the bladder down to the incision in the vagina. Gauze drainage is, however, much less used than was the custom three or four years ago, the rule being to avoid drainage whenever possible.

The method of cutting across the cervix (Kelly), or removing it wholly (Pryor), before securing the second uterine artery is of advantage in rendering the operation more rapid and also because in case there are difficulties on one side, such as an adherent sacrosalpinx, or a mass of subperitoneal myoma, it is more easy to enucleate and remove such an obstacle after the uterus is liberated on one side and the cervix divided, for then the whole tumor can be more readily lifted out of the pelvis and whatever remains adherent can more easily be felt and seen. The operation is more satisfactory to perform and to witness if the surgeon is really skilful and dexterous and has an exact knowledge of his anatomy. For those in whom these qualifications are not very evident, and for all beginners in hysterectomy, it is safer to tie the arteries of the round and broad ligaments and the uterines on each side before dividing the cervix or removing it.

It remains to consider the indications for total hysterectomy in cases of myoma, as compared with leaving a portion or the whole of the cervix uteri. In general it is better to leave the cervix:

(1) Because it makes the operation shorter and easier and gives less chance of hemorrhage during the operation and does not open so much cellular tissue for oozing and decomposition of blood after the operation.

(2) Because there is somewhat less chance of infection of the wound where only the small cervical canal is cut across and instantly closed by the double tenacula than when the whole vault of the vagina is opened.

(3) Because the vaginal portion of the cervix is a seat of sexual feeling and worth preserving on that account, and if the cervix is present the women do not feel so much mutilated as when it is gone.

(4) Because the lower parts of the broad ligaments

with the cervix form a better support to the pelvic contents than does the simple union of the vault of the vagina.

Total hysterectomy should be performed: (1) When the cervix is enlarged and diseased; (2) when the cervical canal is suppurating or septic; (3) when there is any suspicion of malignant disease, and (4) when vaginal drainage appears desirable.

IMMEDIATE REPAIR OF PERINEAL TEARS.¹

BY E. S. BOLAND, M.D., BOSTON.

EVEN the frequency of these injuries and the troublesome effects associated therewith, or entailed thereon, would not justify me in presenting this matter to this section had not our honored chairman requested it.

Frequency.—While such injuries are more common in primiparae, they occur very often also in those who have already borne children. No figures are available, but probably 80% of all primiparae receive some degree of tear, and among multiparae at least 20% will have the same injury. It would not be exact to say that the injury is overlooked, for it is more often not looked for at all, for its occurrence has sometimes been regarded as a reflection on the skill of the accoucheur—a groundless belief in the main, as will be admitted by those who have observed carefully the progress and termination of many cases of labor.

Causes.—No theory of prophylaxis or treatment would be satisfactory without some consideration of the causes of these injuries. Excluding the cases due to precipitate labor, narrow pubic arch, disproportionate size of the fetal head or trunk, or faulty adaptation of the head diameters, to the pelvic outlet, it may be said that vaginal and perineal tears are due to imperfect distensibility of the soft parts at the pelvic outlet. The more advanced the age of primiparae after twenty-five years the greater the liability to tears. Given a labor of normal duration and normal presentation, the vulvar orifice ought to stretch enough to permit the delivery and then resume its original size and shape.

Degree.—The degree of tear will vary from a mere nick in the mucous membrane of the fourchette down into the rectum and to a greater or less distance up into the rectovaginal septum, with all intermediate degrees of extent, together with, at times, radiating tears from the more commonly longitudinal one, the frequency of tears to the extreme extent mentioned above being, of course, quite rare; while those about half through the perineal body and running from one to three inches up the posterior vaginal wall, and down or back on the cutaneous surface to within a half inch of the sphincter ani are quite common and are the ones which will need our help oftenest.

While the average direction of the tear is, roughly speaking, parallel with the long axis of the vagina, a considerable variation of the situation and direction of the tears may be evident on exposing the vagina. There may be a central perforation of the perineum if the latter is lax and the labor very forcible and quick, and the vulvar ellipse be unstretched and untorn. The injury may be in two parallel lines leaving a central ridge of the perineal body, or a divergent tear may run up the inner face of one or both labia.

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March 23, 1900.

The latter tears are usually quite shallow. Sometimes a tear involving the vestibule may prove troublesome from the hemorrhage set up. Some ordinary tears bleed quite freely, also, and it is evident that more consideration ought to be given to this matter of hemorrhage for its own sake. How often must it be said that hemorrhage paves the way, while the raw surfaces of the tear opens the door, for septic invasion? The patient, while not always complaining much at first, soon feels the soreness of the tear and the suffering is intensified by the urine and lochial discharges. If cicatrization takes place without union there is apt to be some loss of functional capacity of the vagina sooner or later, and operation for late repair will involve the elaborate plastic work of flap splitting, butterfly denudation, etc., which is discouraging to the family physician as well as terrifying to the patient.

Prevention.—If what was said above as to etiology is correct, a sure rule of prevention of these injuries might be as briefly summarized as a description of the snakes of Ireland. No doubt those happy practitioners who never have these injuries occur, and who treat these tears by denying their occurrence, would be indignant at such a statement, but the fact remains that the man who attends the most cases will see the most tears—if he looks for them—no matter how skilled or experienced he may be. No doubt some tears are prevented or minimized by retardation of too precipitate labor, anesthetic relaxation of the soft parts, etc. Possibly the same end is advanced by perineal support, position of the patient and lateral incision of the vulva. What has helped me most has been manual dilatation of the soft parts during the first stage of labor, under partial anesthesia from chloroform. The forceps cannot be held accountable for tears when properly used, and some go farther and say that they are a means of prevention. This is no doubt true in so far as they prevent the devitalizing effect on the soft parts of too prolonged labor. If the practitioner has but a limited responsibility in the production of perineal tears, he cannot evade the obligation to promptly repair such injuries. No doubt union will occur if suturing is done within twelve or eighteen hours of the injury, but no one acts on this assumption in caring for scalp wounds. Better always to go prepared to do the immediate operation.

Treatment.—Theoretically a parturient tear does not offer ideal conditions for surgery. Asepsis, dryness, pressure and rest cannot be wholly attained, but we must not abandon attempts at repair because we get some failures. If carefully carried out, the immediate operation of suturing ought to give 90% of successes. The pressure that tore the parts acts to some extent as an obtunder of pain from the needle punctures, and an anesthetic is not a necessity. Anesthesia also requires additional assistance, which often means delays and added expense, a consideration among our honest working people. If promptly and carefully done, the tears heal readily, and before the usual nine or ten days' confinement to bed are past, the stitches can be removed in the same order in which they were put in. The value of the prompt restoration of the perineal body does not depend wholly on the after results, but also on the influence it exerts to minimize the risk of septic infection in the puerperium.

To the man in family practice, this accident occur-

ing at night, the lack of skilled assistants and the need of simplifying the operation have sometimes led to poor surgery, which may not be much better than the antique method of tying the patient's knees together. Some, recognizing the fact of a tear, are content to put in one or two stitches on the cutaneous aspect of the perineum. Sometimes the results from this procedure are satisfactory, but there is a good chance of getting only what has been called a "skin perineum."

If we recall the fact that any tear is apt to go farther up the vagina than it shows on the cutaneous surface, the inadequacy of merely skin sutures is manifest; besides, these end stitches constitute a veritable dam across the gutter-shaped tear, above which blood clots and lochia distend and possibly infect, and certainly prevent union when union is most to be desired. If the tear is short at the vaginal end, the suture can be carried from the skin surface up to the end of the vaginal tear and parallel with the sides of the tear, but far enough out of sight to be in sound tissue. It gives a purse-string action that may be sufficient, but for a long vaginal tear it is not good. If these injuries were external wounds, no one would think of treating them in any way except by the ordinary interrupted suture at right angles to the wound and placed deep enough and close enough to evenly approximate the surfaces throughout. The trouble to some has been the difficulty of illuminating the vaginal part of the tear. The obstetric bag, of course, contains the needles, needle holder, suture material and scissors. If to this is added the head mirror of the laryngoscope with head band attached, you will be ready for the operation at any time and place—in the darkest room provided a kerosene lamp is at hand, and no home except the very wealthiest is without one. Aseptic catgut and kangaroo-tail tendon have the advantage of absorption, and if good are admirable, but silk is good enough, and it has this in its favor—its removal gives you a good chance to see your result. The ends of silkworm gut are too irritating. With the above outfit sterilized, the suturing is not difficult after a little experience. The patient can hold the lamp for you at her flank or on her abdomen if no kindly neighbor is at hand. After an antiseptic douche, which had better be interuterine, and the manual removal of all remaining clots, vernix caseosa, semidetached tags and marginal hair, the vaginal walls are separated and steadied by the fingers of the left hand; the head mirror will throw a cone of bright light into the vagina with midday distinctness, and beginning at the upper end of the tear the sutures are readily placed, each in turn being cut when tied before another is put in. Some patients will complain, but it is surprising how well the majority submit to it in preference to being put on a table with some outside assistant and all the detail of anesthesia. The satisfaction of delivery (which no one can imagine who has not experienced it) seems to reconcile her to the lesser suffering of the suturing. If the rectum is involved it often gives less trouble than might be supposed and only in extreme cases will the elaboration of rectally placed suture be needed. It seems best to catheterize the first twenty-four hours after suturing even if the patient can void the urine voluntarily. Unless specially needed, and, if so, carefully given, the post-partum douches may be omitted after suturing. If the parts sutured have been devitalized by

severe and prolonged pressure the chances are bad, but aside from this condition the results are surprisingly successful, even uniting in the face of what seems like septic infection sometimes. Any radiating tears of labia, vestibule or vaginal sides can be sutured with lighter material, as they are usually superficial and generally unite firmly before the main, deeper tears. Ligating of vessels first is not often needed. In the removal of the vaginal stitches the same light is needed, and ear forceps and pocket scissors all that are required. Begin above and work down and out.

It is cruel to add another instrument to the outfit which we must carry, but the head mirror is so useful for other purposes that this will offset the trouble and occasional expense of a broken one.

Medical Progress.

REPORT ON PROGRESS IN SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

(Continued from No. 7, p. 165.)

THE TREATMENT OF INJURIES OF THE SPINAL CORD.

BOLTON⁸¹ makes the following summary of his method of treatment:

(1) Extradural hemorrhage does not give rise to cord lesions or symptoms, and requires no treatment.

(2) Total lesions of the cord are irremediable, because the cells and fibres of the entire cord are destroyed, are never regenerated, and are replaced by cicatricial tissue. The lesion thus is permanent, and requires no treatment.

(3) In hematomyelia the clot is absorbed; its site persists as a cavity or is filled by newly formed tissue; irregularities of circulation in the surrounding portions of the cord adjust themselves. There may be great amelioration of the symptoms. There is, therefore, no therapeutic indication, and no remedial treatment is possible.

(4) In partial contusion of the cord the lesion results in permanent destruction of cells and fibres; disturbances of circulation adjust themselves. Repair is accomplished by cicatricial tissue. No treatment is available.

(5) In open injuries of the cord there are destruction of cells and fibres and disturbances of circulation. In addition, infection may occur or a foreign body be introduced and left in or lodged against the cord, and by its continued presence produces great disturbance of circulation and consequent extensive degeneration and necrosis of cells and fibres. Repair occurs by cicatricial tissue. Here immediate operation is indicated for antiseptics, drainage, and the removal of the foreign body.

OPERATION FOR TUMORS OF THE SPINAL CORD.

Schultze⁸² reports 2 successful cases of tumor of the spinal cord diagnosed and treated surgically, thus adding to the list of 20 similar cases published by Bruns, in which beneficial results had been obtained only in 6.

The first patient, a woman, age forty-nine years,

suffered from hysterical and neurathenic symptoms which were succeeded by signs of spinal disease, symptoms of compression of the spinal cord and paraplegia. The localizing symptoms pointed to the mid-dorsal region, and on operation a tumor was discovered compressing the cord in the region of the fourth to the seventh dorsal segments and lying between the dura mater and the vertebra. This was removed, and for a week after the operation the symptoms grew worse, after which they steadily improved, and in a few months the patient was able to walk and to get about freely.

The second case was that of a man, age twenty-eight years, with symptoms of spastic paraplegia and with an area of anesthesia extending up to the level of the mid-dorsal segment of the cord. On opening the spinal canal a tumor was found at the level of the sixth dorsal vertebra and was removed. The sensory and motor troubles temporarily grew worse during the few days succeeding the operation. After this the patient improved steadily, and was able to walk about and to follow his occupation as a gardener.

Schultze points out that these 2 cases throw a more favorable light on the statistics of operations for spinal tumors, and that in view of the utter hopelessness and futility of expectant and palliative treatment there is every reason why surgical operation should be resorted to when once the diagnosis of intraspinal tumor is confirmed.

POST-ANESTHETIC PARALYSES.

Mally⁸³ cites a number of instances in which paralyzes, central, hysterical, peripheral, or reflex, have been detected after the administration of a general anesthetic.

Regarding the peripheral paralyzes, he says they are generally due to compression. They are more numerous than one might at first suppose, as many of them pass unnoticed, the patient recovering before being able to leave the bed after the operation, so that they are not noticed. If, however, they are carefully questioned, many will admit that they have had a numbness or tingling which has not amounted to much. The anesthetic cannot be considered as the cause of this, except that the unconscious patient has been unable to defend himself against cramped positions and overstretched limbs.

The paralyzes that are reflex and those that are hysterical in their character have nothing to do with the anesthetic. The central paralyzes due to cerebral hemorrhage are very rare where the anesthetic has provoked the arterial rupture in a purely mechanical manner.

The treatment should be preventive, sufficient care being exercised to prevent the patient from receiving injury by pressure through awkward positions during the operation. The cerebral and hysterical should be treated on principles applicable to these conditions. The use of electricity and massage is advised for the others.

THE TREATMENT OF VARICOSE ULCERATIONS BY NERVE STRETCHING.

Chipault⁸⁴ says that the results obtained in cases of malperforant of the foot by the stretching of the

⁸¹ *Annals of Surgery*, August, 1899; *American Journal of the Medical Sciences*, November, 1899, p. 602.

⁸² *Zeit. f. Nervenheilk.*, December 7, 1899; *Lancet*, March 17, 1900, p. 792.

⁸³ *Rev. de Chir.*, July, 1899; *American Journal of the Medical Sciences*, October, 1899, p. 475.

⁸⁴ *Rev. de Chir.*, November, 1899; *American Journal of the Medical Sciences*, March, 1900, p. 348.

plantar nerves led him to attempt the same method of treatment in cases of varicose ulcers.

The method employed consisted of two parts. The first was the stretching of the nerve supplying the skin area in which the ulcer was found. This nerve should be stretched at a point not far from the ulcer, nor too near, lest the wound become infected. The nerves usually involved in these operations are the internal saphenous, either at the ring or in the upper portion of the limb; the sciatic, its popliteal portion either at the head of the peroneal or at its bifurcation. The stretching in these cases is limited to the musculocutaneous branches. This is the more common seat of these varicose ulcerations and generally involves the musculocutaneous branches associated with the internal saphenous. It should be remembered that these nerves, when this condition is present, are more friable than usual.

The second part of the operation consists in curetting the ulcer and getting it aseptic, if the skin and surrounding tissue is much involved, or in excising the skin with the ulcer and then, after gentle traction and complete hemostasis, sewing the edges together. The tightened skin exercises a beneficial influence on the varicose condition.

THE TREATMENT OF VARICOSE ULCERS BY STRETCHING THE PERONEAL NERVE.

Bardescu³⁵ claims priority over Chipault, who, on April 15th of the present year, at a meeting of the Biologic Society of Paris, advocated the treatment of varicose ulcer of the leg by means of nerve stretching. In proof of his claim the author refers to the *Bulletin de la Société des Sciences Médicales de Bucharest*, December, 1897. Chipault's paper confirms the previous claims made by the author. Two cases are reported in which the internal saphenous vein was first resected under cocaine, and in one case nine and in the other ten days later the common peroneal nerve was stretched under chloroform narcosis. Both the resection and the nerve stretching could be done at one sitting. The common peroneal nerve was selected in these cases on account of the extensive character of the ulcers. Naturally the nerve which corresponds in distribution to the site affected should be selected. Both cases made an excellent recovery. Temporary anesthesia following stretching was noticed.

THE HISTOLOGY OF DUPUYTREN'S CONTRACTION OF THE PALMAR FASCIA; REPORT OF MICROSCOPIC EXAMINATION IN TWO ADDITIONAL CASES.

Nichols³⁶ in an article on this subject, states that his observations go toward indicating that in the early or developing period of Dupuytren's contraction the cellular and vascular elements occur in great abundance; while at a later stage, when the lesion is fully developed and stationary, the cells and vessels diminish, leaving the abnormal tissue a dense, fibrous mass; and that the hypertrophied fibrous bands are developed by the activities of the abundant connective-tissue cells, which are proliferated in especial profusion along the course of the small blood vessels. The lesion is essentially a hypertrophy, the new tissue being similar to the pre-existing normal fascia. Any etiological explanation of Dupuytren's contraction would have to take into account the active prolifera-

tion and the fibroplastic action of the connective-tissue cells and their relation to the vascular elements. The presence of Pacinian bodies in all the 3 cases microscopically examined by the author he considers worthy of mention.

A CASE OF ACUTE OSTEOMYELITIS OF THE FEMUR, WITH GENERAL SYSTEMIC STAPHYLOCOCCUS AUREUS INFECTION, TERMINATING IN RECOVERY.

Berg³⁷ gives a history of a case of acute osteomyelitis of the femur in a child eight years old, and gives as the points worthy of notice in his article the following: (1) An infection of the medullary cavity of the femur by the staphylococcus aureus, induced by the traumatism; (2) an early blood infection by the same organism and its toxins; (3) the use of the antistreptococcus serum and the absence of any metastatic focus of suppuration in a staphylococcus infection; (4) the subsequent elimination of the organism by the kidneys; (5) the effects of this organism and its toxins upon the viscera, as shown by the acute degeneration and inflammation of the latter.

A METHOD OF TREATMENT FOR THE RESTORATION OF ENTIRE TIBIÆ NECROTIC FROM ACUTE OSTEOMYELITIS.

Cushing,³⁸ in an article on this subject, gives the following summary as to the indications for treatment in cases of acute osteomyelitis:

(1) To save the patient's life and relieve pain by immediate operation to establish free drainage. The medullary cavity should be opened, pressure relieved and infection checked.

(2) If the bone is killed, as it usually and rapidly is in a few days, it should be removed.

(3) The most favorable time for its removal is when the periosteum and granulation tissue are in their most active regenerative stage, but before the process of calcification of the bone trabeculæ has shut out the sequestrum within a compact, dense shell of involucrum.

(4) This point is to be determined by frequent examinations of sections of the periosteum with the microscope. It is shown by the presence of numerous fibroblasts, osteoblasts and small trabeculæ in which lime salts are beginning to be deposited.

(5) Clinically it can be recognized by the slight crackling sensation as the periosteum is incised, due, probably, to the crushing of the trabeculæ by the knife.

(6) The periosteum at this stage resembles granulation tissue in color, density and vascularity. There is no macroscopic appearance of ossification. Bone will be formed from this elastic, flexible, periosteal layer.

(7) This stage in this case was probably reached in the seventh to eighth week of the disease.

(8) At this stage the necrotic bone should be removed by incising the periosteum in the long axis of the leg and shelling out the sequestrum.

(9) The periosteal sheath remaining should be closed by suture, leaving a solid cord or mass of periosteum buried in the centre of the leg when in its most active bone-producing condition.

(10) If areas of calcification of any extent or thickness are found adherent to the inner surface of the periosteal sheath, they should be dissected off.

³⁵ *Annals of Surgery*, December, 1899, p. 775; *Centrbl. f. Chir.*, 1899, Bd. xxviii, S. 769-771.

³⁶ *Medical News*, October 14, 1899, p. 491.

³⁷ *American Journal of the Medical Sciences*, March, 1900, p. 332.

³⁸ *Annals of Surgery*, October, 1899, p. 486.

(11) The soft parts and skin superjacent can be closed by suture.

(12) The utmost care and most efficient means should be used to render the operation an aseptic one, for primary union is important.

(13) The new bone is formed rapidly, apparently in eighteen to twenty-four days, when the operation is done at the time above indicated. At this time ossification is so advanced that the new bone is rigid.

(14) If the operation is done too early, the growing periosteum is injured, apparently, and its growth interfered with.

(15) If too late, a rigid bony involucrum makes the removal of the sequestrum more difficult and forms a cavity which is very difficult to close.

(16) It is demonstrated by the radiograph that the medullary cavity is reformed in the new bone.

(17) The shaft of the bone is easier to restore than the epiphysis.

TREATMENT OF VARICOSE ULCERS BY TOTAL EXTIRPATION OF THE INTERNAL SAPHENOUS VEIN.

Casati³⁹ states that extirpation of the entire internal saphenous vein from the femoral junction, in case of leg ulcers and varices, has been followed by excellent and permanent results at his hands. In order to avoid the long skin incisions, from 70 and 80 centimetres in length, the author proceeds as follows:

Eight centimetres below the femoral fold he makes a 4-centimetre incision exposing the vessel. The vein is isolated as high up as possible and the proximal end ligated. The vein is then isolated as far downward as possible and traction put upon it. This causes it to become prominent for the whole extent of the thigh. Another 4-centimetre incision is made 4 centimetres above the knee, and the vessel is isolated subcutaneously upward and downward in the same manner. It is then drawn out of the wound. The same procedure is repeated through two incisions below the knee, so that finally the entire vein has been removed. It is not necessary to ligate the lateral branches. One of the advantages of the operation is the placing of the first incision below the fold of the groin; at the latter point a dressing is difficult to hold in place; secondly, the avoidance of a cicatrix at the knee, which is apt to prove painful. The author reports 3 successful cases by this method.

DELAYED SUTURING IN PACKED WOUNDS.

Koppen⁴⁰ calls attention to the fact that it is not good surgery to place stitches in the flaps of the wound which it is necessary to pack with gauze. There are many reasons why this should not be done. If we are uncertain of our asepsis sufficiently to make it necessary to pack the wound, there is no logic in putting in sutures while the wound is septic. They may become infected and lead to stitch abscesses after the gauze packing has been removed and the wound closed; they will frequently become weakened while the surrounding tissues may become the seat of a phlegmonous infiltration. The sutures can be readily inserted at a later period by the use of a eucaine B. solution—eucaine B. .1, salt .8, water 100. This solution anesthetizes the part sufficiently to permit the insertion of the sutures, and in addition

permits the removal with a curette of the granulations that have formed, so that a more nearly primary union will be the result.

(To be continued.)

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARR, M.D., SECRETARY.

REGULAR meeting, Wednesday, March 28, 1900,
DR. E. L. TWOMBLY in the chair.

DR. E. S. BOLAND read a paper on

IMMEDIATE REPAIR OF PERINEAL TEARS.¹

DR. STORER: I think the thanks of the section ought to be given to Dr. Boland for his eminently practical presentation of this subject. I wish every student could have this paper in his hand when he starts in practice. I think the two points of special interest that he emphasized were very well taken—the preparation of the perineum for the passage of the head and the advantages of having a head mirror handy.

DR. CALL: I most certainly think the only right and proper treatment is that every perineum should be examined immediately after labor and any tear that is discovered repaired at once.

DR. DAVENPORT: I have not for a number of years done any obstetrical practice and see very few or almost no tears of the perineum immediately after labor. The tears that I see come months or perhaps years after labor has occurred, and of these the tears which seem to me to be most important are those of the levator ani muscle, and it has been a question in my mind whether they can be detected at the time of labor. Of course if there is a giving way of the levator ani muscle at its attachment in the perineal body and below its lower attachment in the vagina the detection is comparatively easy, but I am of the impression that very often such giving way takes place subcutaneously and there has been in my mind a doubt as to whether such a tear can be recognized and properly sutured at the time of labor. I should be very glad if Dr. Boland would tell whether such tears can be detected. Certainly they give rise to more serious difficulty afterwards than do the tears through the perineal body, even those which extend down to the sphincter ani. They weaken the support of the lower part of the vagina and we have prolapse of the vaginal walls and tendency to pulling down of the uterus, and so there are more symptoms complained of by the patient than in those tears of the external perineum which are readily seen. In the cases that I occasionally see where I have been asked to repair a perineum immediately after labor I have always used silkworm gut and the objection Dr. Boland gave for its use, namely, the ends of the sutures sticking into the patient and causing annoyance, can be avoided by leaving them long and tying them together in a knot and cutting the ends short. I should feel that silkworm gut was better suture material for these tears than silk, which of course becomes more easily infected.

¹ See page 185 of the Journal.

³⁹ Annals of Surgery, December, 1899, p. 776.

⁴⁰ Centrbl. f. Chir., July 1, 1899; American Journal of the Medical Sciences, October, 1899, p. 473.

DR. TWOMBLY: Not long ago a medical gentleman within my hearing remarked that he always sewed up his perineal tears immediately, but he had two-thirds of the number failures, and I imagine if we should ask our brother practitioners if they had observed, after some time, whether the perineum was good and firm, a good many of them would have to confess to these same failures. It is due in part, I have no doubt, to the faulty arrangements at the time, where we have to act so often with few assistants, or with nobody who can help at all. I feel that the head mirror is a distinct advantage which we should mention again and again to the younger men who are taking up this work, for it certainly will throw light on the dark subject, and so often an improper light is the cause of failure. Personally I feel that the silkworm-gut suture is the one to use and I have used it in my cases with good success. You can always boil it ten to fifteen minutes beforehand; it does not string out and run over things; you can take it out of its small basin in which it is boiled over the stove and apply it immediately, and it does not become infected as readily as the plain silk. The scratching of the ends can be avoided by twisting or tying, leaving them outside. If they are slightly irritating, the discomfort is not greater than the gain that we get in closing up the tear. I think it is wise to take two or three—very seldom do we have to take more than three in a moderate tear—rather deep interrupted sutures inside the vagina, getting the patient into position where the torn parts fall into place relatively to the position which they would take in health without trying to coapt very carefully, and we get a pretty good perineum resulting. Where you have plenty of assistants and can perform a more careful operation, it has been the vogue in Vienna for some time to employ the layer suture, using an animal tendon or catgut and in that way sewing the parts from the bottom to the top. For the general practitioner, what we want is something practical and the easiest, quickest, best way to get a good result. Dr. Boland has very kindly pointed out a number of suggestions easy to understand and easy to follow out.

DR. BOLAND: I don't think I have ever seen the injury Dr. Davenport speaks of. I may have overlooked it. I have been fortunate not to have many tears that went down into the rectum. The point I want to urge is the necessity for looking deeper than the perineum. There is one point I trusted some of the gentlemen would take up—the *prevention* of these tears. I have tried supporting the perineum, taking off the instruments, etc. I don't believe they can be prevented if the soft parts do not stretch.

DR. F. H. DAVENPORT read a paper on

THE MORTALITY OF HYSTERECTOMY FOR FIBROIDS.²

DR. CUSHING: I think we have all listened with great interest to this paper, and I am sure that I should cordially agree with what Dr. Davenport has said. In the 2 fatal cases it is very plain it was not the operation, but the long delay that made them fatal; in other words, if they had been operated a good deal earlier they would not have died. The indications for operation in fibroid I have always considered to be pain, growth, bleeding, pressure, and either of these is quite sufficient, since with the modern technique the mortality has become very little.

I don't think it is any worse than in ovarian tumors; hysterectomy is about as safe and nice a procedure as any abdominal operation. There is a reasonable chance of the tumor being malignant. It does not make much difference, except anatomically, whether there is cancerous degeneration of the fibroid or concomitance of the two conditions, there is a certain proportion of fibroids which if left to themselves will turn out malignant. The theories that they are surely going away at the menopause are fallacious. I have found that particularly when a fibroid starts growing in the forties it is apt to keep on growing. The fibroids which have a pedicle or have formed adhesions to the abdominal wall or omentum so that they have an independent source of blood supply do not stop growing at the menopause, but keep on increasing.

Some five years ago I took a good deal of pains for the *Monatsschrift der Geburtshilfe und Gynäkologie* to collect a series of statistics from all the American operators I could reach, and it figured to 1,160 cases or more, including hysterectomy for fibroids, cancer and salpingitis, with a percentage of 13.5% mortality, and that was taking cases running back to the early eighties and including the evolution of the extra-abdominal treatment of the stump. I have not collected the statistics for the last five years, but they have been vastly improved. Personally within that time I have done over 100 fibroids and lost 1, and I have no reason to think that my statistics are better than others. We meet cases in all abdominal surgery where the chances are unfavorable from the beginning. One fatal case was in a middle-aged woman who came with a ventral hernia. She stated just before operation that she had been examined and had a tumor and wished it removed at the same time. It made a long operation. I presume I was not at my best, as I had just done another long operation. She did well three or four days and sank away and died. As far as mortality goes, my friends tell me that their results are so good they have not the least hesitation in recommending the operation while the tumor is young, before it forms adhesions. They have excellent results, do not need drainage. I think that it is the disinfecting of the uterine cavity beforehand that makes all the difference, since the technique involves a very careful cleansing of the vagina and uterine canal, so that when you cut the stump across it is clean and when you lift the uterus up nothing drips out of it. The profession used to wait until they had big tumors, but now the trouble is rather the other way.

DR. CALL: It seems to me the position Dr. Davenport has taken in this paper is the one that would commend itself to all of us who have had any experience. In the early years of my practice I had the opportunity of following the course of a good many fibroid tumors which belonged to patients in the practice of Dr. Lucy Sewall. In those days the danger of operation was so great that nobody advised it except as a last resort; therefore almost all these cases had been allowed to go on with the hope that the menopause would end the troubles. I remember but one in which sooner or later that effect did not come to pass; nevertheless those people went through for years a series of hard times, either with hemorrhage or discomforts of every kind that I have no doubt nowadays they would have been spared by the advice that Dr. Davenport gives. So far as my limited ex-

² See page 181 of the Journal.

perience goes, I do feel that a very large number of fibroid tumors will cease to trouble the patient at the menopause. Of course there are a good many exceptions to this rule, and if the patient cannot be under observation it seems to me the wisest thing is to operate.

Dr. E. W. CUSHING read a paper entitled

HYSTERECTOMY FOR MYOMA IN AMERICA.³

Dr. DAVENPORT: Dr. Cushing's paper seems to me to express the historical facts and the present condition of the operation of hysterectomy very fairly. I have no criticisms to offer.

Dr. TWOMBLY: I think we ought to thank Dr. Davenport for his clear presentation of the reasons why and why not in regard to early operating for fibroids, and for bringing it to our attention. It is something that we are very much interested in, especially in Boston, as we see many of the smaller fibroids and in a great many cases we are rather conservative and do not tell the patients they must immediately have an operation. Dr. Davenport's paper will be of very great help in future counsels.

Dr. MALCOLM STORER and Dr. M. T. THURBER read a paper on

REPEATED ECTOPIC GESTATION IN THE SAME PATIENT, WITH OPERATION IN EACH CASE.⁴

Dr. BOLAND: In regard to leaving the other ovary in case one has been the seat of an ectopic gestation calling for operation, it would seem best to be guided by the same rules that are safe to follow in ovariectomy for any other condition. In 3 extra-uterine cases where the offending tube and ovary on one side had been removed four children have been born subsequently in perfectly normal labor.

Dr. CUSHING: I also can add a case of extra-uterine pregnancy followed by a normal birth.

Dr. HARE: I assisted at an operation for extra-uterine pregnancy two years ago last November, and since then she has had two children.

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

THE OPENING CEREMONY.

The opening general meeting of the congress took place in Paris on Thursday, August 2d, with the official ceremony which entails evening dress, in the vast Salle des Fêtes in the Exhibition. Owing to the assassination of the King of Italy, the President of the French Republic was not present, but he was represented by M. Monis, the Minister of Justice, who arrived punctually at 2.30 p. m. to the strains of the "Marseillaise," played by the band of the Republican Guard. Professor Lannelongue, the president of the congress, dressed in the green embroidered coat and wearing the sword of an academician, had on his right, M. Fallières, the President of the Senate, and on his left the Minister of Justice. On the platform were also seated the members of the Committee of Organization, the members of the Academie de Médecine, the professors of the Faculty of Medicine, the presidents and vice presidents of sections, while behind

and to the right of the chair sat the official foreign delegates, among the representatives of Great Britain being Sir William MacCormac, Bart., K.C.V.O., Sir Dyce Duckworth, Sir Lauder Brunton, Professor Simpson, of Edinburgh, etc. In the body of the circular hall were the members of the congress, the representatives of French and foreign universities, and delegates of learned societies; the ladies were placed in a gallery at the back of the hall, one hundred and fifty yards or so away from the platform, while the press was allotted a gallery in an equally disadvantageous position. As a result, of the president's opening speech only three words penetrated to the far end of the vast auditorium.

PRESIDENT'S ADDRESS.

The president of the congress read the opening peroration welcoming the members of the congress. In terminating, he said: In wishing you welcome I offer you my warmest congratulations. I most heartily thank the committees of all the foreign countries who have helped in the organization of this vast undertaking; the entire press for its active and disinterested aid; the Executive Committee, who have never failed to respond to my call and have given the best of their advice; the University of Paris and the members of the government of the republic, who have understood from the first the importance of our task and have rendered its realization easier. As to myself, my heart filled with the keenest emotions I have ever felt in my life, I can find, in conclusion, no better words than those addressed to you by Bouillaud, the first and one of the most illustrious presidents of this congress: "Thanks to you, my whole life has just received its crowning award. I hold you in the depth of my heart, and you will continue to live there till its last beat." I will only add: Now to work, time is pressing; never since the beginning has there been promise of a richer or more plenteous harvest. May we know how to profit by it and gather in the fruitful grain, which future generations will cause to bear more fruit.

GENERAL SECRETARY'S REPORT.

The Minister of Justice, in the name of the government, then welcomed the members of the congress. M. Chauffard, the general secretary, now read his report, describing the complex work of organization. As a result, 190 delegates, representing the governments of 34 foreign states, were present on the platform; 250 universities, academies, or learned societies have sent delegates, and over 6,000 members of the congress have come to Paris. The programme of the congress includes 260 reports, and more than 1,200 communications.

PRESENTATION OF FOREIGN DELEGATES.

After the termination of the secretary's report, the official delegates of the foreign nations came forward to offer their good wishes to France, and hopes for the success of the congress. Professor von Bergmann led the lengthy procession. Sir William MacCormac, Bart., K.C.V.O., represented Great Britain. Professor Baccelli was absent owing to the mourning of the Italian nation. M. Mandizabal, the delegate of Mexico, made a long and spirited speech, which was greatly applauded. The delegate of Venezuela closed the series.

³ See page 183 of the Journal.

⁴ See page 177 of the Journal.

ADDRESS BY PROFESSOR VIRCHOW.

This terminated the official portion of the programme, and as the audience had heard little or nothing of the speeches the majority left, and it was a very small crowd which gathered round the foot of the platform when Professor Rudolf Virchow rose to give his address on "Traumatism and Infection." The venerated professor, who was in the best of health and spirits, spoke in German. After a historical review of the subject, Professor Virchow expressed the opinion that the present attention to bacteria has withdrawn us too much from other causes of pathological processes. Injuries of bones take place without abrasion of the skin, yet osteomyelitis ensues. Brain abscess results from head trauma. Some surgeons claim that microbes enter even through the slight lacerations of skin. This, however, is mere theory. We know that cells may degenerate without any microbial influence. Trauma may kill them. We know from dead parasites, such as trichina within the body, what happens to dead cells. The changes occurring in extra-uterine fetuses also make this clear. Let us, then, not attribute too much importance to microbes, but let us study carefully the cellular changes as they occur. With the address of Professor Virchow, which was received with great applause, the proceedings terminated, the discourse of Professor Pavlov, which was included in the original programme of proceedings, being postponed to the first general meeting.

THE SECTIONS.

The work in the various sections, twenty-six in number, began generally at nine o'clock on Friday morning, with the exception, however, of the Sections of Neurology, and Dermatology with Syphilography. These sections are perhaps the largest attended. The Section of Neurology is at the same time the second International Neurological Congress, and it is a question which will be decided before the end of the present congress whether the International Neurological Congress as such shall cease to exist, or whether it will arrange its meetings at a different time to the International Medical Congresses. These two sections, owing to the great number of communications promised and the number of subjects for discussion, met on Thursday morning at nine o'clock, and are holding morning and afternoon sittings every day.

RECEPTIONS AND SOIRÉES.

The president of the congress and Madame Lanlongue gave a reception by invitation to the delegates and presidents of sections on Friday evening, August 3d. The programme included minuets and ballets by dancers from the opera, while a Hungarian band played at intervals in the refreshment room.

The Committee of Organization gave a *soirée* in the Palace of the Senate and in the Luxembourg Gardens on Monday, August 6th, at 9 p.m. The programme included dancing and an entertainment in the Salle des Fêtes of the Palace. M. Mounet-Sully, of the Comédie Française, and Madame Sarah Bernhardt recited poetry, while the musical talent was supplied by M. Renaud and Madame Litvinne, of the opera, and M. Fugère, of the Opéra Comique. As all the members of the congress with their wives and families had been invited, the number of guests must have ex-

ceeded 15,000. Owing presumably to faulty organization the enjoyment of some hundreds was spoilt, as the sole entrance into the Palace, a door five feet wide, also served as the popular means of exit, so many guests never succeeded in reaching the door of entrance even, but after a struggle of half an hour or so gave up the attempt and left.

Dinners and *soirées* have been given by the presidents of all the sections, and these smaller *fêtes* have been a very enjoyable feature of the meeting to the fortunate guests.

Excursions were arranged for Sunday, August 5th, to Versailles and to Fontainebleau.

DINNER IN HONOR OF LORD LISTER.

A dinner was given by the scientific society "Scientia," on August 1st, in honor of Lord Lister. The dinner took place in the Restaurant des Congrès, in the Exhibition Grounds. About 60 guests were present, the obstetricians and physiologists turning up in force. At the president's table were Professors Richet, Lucas Championnière, Marey, Bouchard, Guyon, Pinard, Pozzi, Landouzy. Prof. Lucas Championnière recalled how he went to Glasgow, and after seeing and working with the master, returned as an apostle to Paris, and was not listened to. Professor Pinard spoke in the name of the obstetricians and of the *accouchées* of France. Lord Lister replied in French, in his own simple and quiet manner, speaking almost half apologetically, and was received with great applause. He told the story of his early struggles and work, saying, "All my efforts were without result till Pasteur showed a possible way, which I have done my best to follow; that is all, gentlemen. If the result of my work has been as beneficial to humanity as you say, it has been largely due to the happy accident of my epoch." After the dinner, on the invitation of the Medical Club in Paris, Lord Lister and the guests went to a reception in the club in the Avenue de l'Opéra, where Lord Lister was welcomed by Professor Pozzi, the president, and on whose motion it was decided to put up a tablet on the wall in commemoration of the event.

Owing to the death of the King of Italy, the official *fêtes* to the members of the congress have been put off. The evening *fête* in the Town Hall given by the municipality, and the evening *fête* given by the President of the Republic and Madame Loubet at the Elysée, are changed into afternoon receptions; the latter is to take place on Friday, August 10th, at 4.30 p.m. Members of the congress have thus had many evenings free, and have been able to utilize to the utmost the card giving free admittance to the exhibition.

STATISTICS.

Up to August 5th, 6,170 members had registered their names, the nationalities being represented as follows: France, 2,293; Russia, 805; Germany, 572; the United States, 412; Italy, 324; Great Britain, 222; Spain, 219; Belgium, 147; Austria, 141; Argentine Republic, 108; Swiss, 101.

PRESS ARRANGEMENTS.

Owing to the initiative and energy of Dr. Blondel and the French Medical Press Association, a reception room and a work room have been placed at the

disposal of the French and foreign press reporters. Here members of the press find the daily programme and printed summaries of all the communications made in the various sections, and are able to write their articles and post them on the premises. Members of the French Press Association in rotation are always in attendance to give information and advice. It is interesting to note that this is the first occasion at an International Medical Congress when such facilities have been given to medical journalists and correspondents.

(To be continued.)

Recent Literature.

Bacteria. Especially as they are related to the Economy of Nature, to Industrial Processes and to the Public Health. By GEORGE NEWMAN, M.D., F.R.S. (Edin.), D.P.H. (Cantab.), etc., Demonstrator of Bacteriology in King's College, London. Illustrated. New York: G. P. Putnam's Sons; London: John Murray. 1899.

This book is one of a series devoted to popular science. It is an attempt to present a popular scientific statement of our present knowledge of bacteria. It is not designed as a textbook for the laboratory, nor as an exhaustive work on the subject. It is apparently written for the layman rather than for the medical man. In looking over the work we note the statement that the bacillus *icteriodes* of Sanarelli "is now accepted as the causal agent" of yellow fever. This statement is not justified at the present time. In the definition of diphtheria a misprint makes the word "fibrinous" read "fibrous." On the whole the book seems to be well written and to fulfil the purpose of the author to a reasonable extent.

A Blank Book for Autopsy Protocols. By ALDRED SCOTT WARTHIN, M.D., Ph.D., Assistant Professor in Pathology in the University of Michigan. Ann Arbor, Mich.: George Wahr. 1899.

This book is essentially a collection of blank forms which when filled out will constitute the records of autopsies. Their chief purpose seems to be to fix in the student's mind a routine method of autopsy technique. These forms have been used by the author in connection with his work in instructing medical students. We think that they are of doubtful utility for any one else. A table of average weights and measurements of the normal human body accompanies the volume.

Saunders' Question Compend, No. 2. Essentials of Surgery, together with a Full Description of the Handkerchief and Roller Bandage, arranged in the Form of Questions and Answers; prepared especially for Students of Medicine. By EDWARD MARTIN, A.M., M.D., Clinical Professor of Genito-Urinary Diseases in the University of Pennsylvania. Illustrated. Seventh edition, revised and enlarged, with an Appendix. Philadelphia: W. B. Saunders & Co. 1900.

Quiz compends are all of necessity dogmatic and very fragmentary in the information they give. We wish that it were not necessary to have quiz compends, but if they must exist this is a good one.

THE BOSTON

Medical and Surgical Journal.

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THE INTRADURAL INJECTION OF COCAINE.

ANESTHESIA by ether or chloroform is occasionally contraindicated by the condition of internal organs, or by the generally weak state of the patient. In such cases, which fortunately are not extremely frequent, there is at times a demand for radical surgical operation and the necessity for an extensive local anesthetic becomes apparent. Cocaine has long been used to this end and with good success. Operations of magnitude and taking a considerable time have been carried to a successful conclusion without material discomfort to the patient. Very recently, however, an attempt has been made to produce a more general insensibility of the lower portion of the body and legs by the introduction of a cocaine solution into the subdural space of the cord, with the object of paralyzing sensation at and below the point of injection. This somewhat radical measure has no doubt been encouraged by the almost complete safety of the operation of lumbar puncture, which has now taken its place as a recognized means of diagnosis and occasionally of treatment. Several European surgeons in 1899 published cases of major operations on the abdomen and legs, anesthesia being produced by cocainization of the spinal cord. Tuffier, of Paris, has given the matter particular attention and has performed in the neighborhood of eighty operations under cocaine anesthesia of the lumbar cord. Cadol, a former house surgeon in Tuffier's wards, has presented in his thesis before the Faculty of Medicine a résumé of twenty-three of these operations, with the technique of the methods. The current number of the *Practitioner* publishes a detailed letter on the subject from a Paris correspondent, to which we would refer our readers for a complete description. The method of introducing the needle between the vertebrae, the precautions to be observed and the difficulties to be avoided are familiar in connection with the similar operation of lumbar puncture. When the point of the needle is in the subdural space, as indicated by the exudation of cerebrospinal fluid, the cocaine solution is introduced. This injection should be

made with scrupulous care as regards rapidity, quality, quantity and temperature of the fluid. It is particularly important to bear in mind that the cocaine must not become immediately diffused throughout the cerebrospinal fluid and that the drug should not be allowed to permeate to higher levels of the cord, the object being to produce a temporary cutting off of sensation below a certain level, with a minimum amount of the cocaine solution. To accomplish this, the injection must be made very slowly, the solution should be freshly prepared and of a temperature corresponding with the body fluids. The quantity injected should never exceed four centigrammes of a one-per-cent. solution, and must naturally be varied below that amount according to circumstances of age and extent of anesthesia desired. After the completion of the injection the point of entrance of the needle is covered with collodion. The physiological action of the cocaine is manifested by subjective sensations of tingling and prickling of the legs, followed by loss of sensibility to pain, temperature and touch respectively. Soon thereafter the motor system also is involved, with a loss of muscle sense. The anesthesia, reaching to about the level of the umbilicus, is complete in eight to ten minutes after the injection. Among the cases operated on by Tuffier in this manner, as described by Cadol, were a sarcoma of the thigh, resection of tibia, resection of knee, suture of patella, amputation of thigh, extirpation of rectum and four vaginal hysterectomies.

An analysis of the cases shows certain fairly constant phenomena, which may be summarized as follows: The extent of the area rendered analgesic and the duration of the anesthesia depend upon the age of the patient and upon the amount of the dose, the duration varying from thirty minutes to an hour and forty minutes. In young adults and children the effect of the injection ensues more rapidly than in adults, varying from an almost instantaneous effect to eight or ten minutes or even more. The onset of analgesia is characterized by subjective sensations, as already described. It begins in the extremities of the legs and progresses upward, and is both superficial and deep. An interesting fact is that there is often a temporary dissociation of sensation, resembling that observed in syringomyelia. The return of sensation is opposite to its loss, the sole of the foot being the first and the last region affected. Symptoms which may occur during the anesthesia, but which are claimed to be so insignificant or transitory as to be of no moment, are sweating of the face, dilatation of the pupil, nausea, tremor, headache, vomiting and tachycardia during the operation. It is, however, urged that some at least of these symptoms may be induced by the emotions incident to grave operations in persons whose consciousness is in no way disturbed. In Tuffier's series of cases no serious accident is recorded.

The method of intraspinal injection of cocaine has also been suggested as a means of easing the pains of labor. Of this, which is said to have been successfully

practised by Dolèris in five cases, the *Medical Press* remarks: "One of the maddest ideas of which it has been our lot to take cognizance is unquestionably that of abolishing the pain of labor by injection of a solution of cocaine into the arachnoid cavity of the spinal cord."

The whole matter seems to us a matter of theoretical rather than practical interest, and one which therefore will find an extremely limited range of usefulness. That pain may be wholly abolished by such means is certainly a fact of great scientific interest; that it is, except in very rare instances, necessary to abolish pain by such a method must be equally evident. Why should a patient be compelled to look on at a severe abdominal operation or at an amputation of one of his members, if such a situation can possibly be avoided? For minor operations cocaine has long since been demonstrated to be an agent of the greatest service to the surgeon, but we suspect that experience will show that its range of usefulness stops there. It is, however, conceivable that circumstances might arise which would warrant its more extended use, and in those rare cases the possibility of anesthetizing large areas of the body as described above must be regarded as a significant addition to our knowledge.

STATE HEALTH INSPECTORS.

IN spite of the fact that we are repeatedly told that typhoid fever is a preventible disease, a year never passes that we do not hear of one or more local epidemics traceable in every case to carelessness. No doubt, so long as we are human, such incidents will occur, but each new experience should at least impress more deeply the necessity of the most painstaking care and watchfulness on the part of those who are charged with the duty of guarding the public health. The present epidemic at Norwood should certainly serve as an object lesson. The question naturally arises as to the possibility of securing a greater immunity than we now have against these annoying and dangerous sporadic outbreaks. It would seem that this might be secured by increased watchfulness on the part of men well trained in the problems of public hygiene. This suggestion has in fact been made by Dr. Henry P. Walcott, chairman of the State Board of Health. Dr. Walcott's idea is that the State should appoint a certain number of expert inspectors, whose function it would be to investigate and report on public nuisances menacing to health, without thereby interfering with the authority or prerogatives of the various local health boards. Such a relation of a State board to a local board should engender no antagonism, but rather a better possibility of working out the various problems of sanitation which are constantly presenting themselves. Without any disparagement whatever, it must be admitted that the men representing the health boards of small towns are often not sufficiently trained in modern scientific methods to grapple successfully

with the difficult problems which the origin and spread of an epidemic disease implies. Furthermore, as a daily contemporary well says: "It should be obvious to every one that in order to prevent the spread of infectious or contagious diseases, it is necessary to have uniform regulations throughout the Commonwealth and to have the different municipalities acting together instead of each proceeding without regard to the others and sometimes in hostility to the others' interests." For these various reasons it is to be hoped that Dr. Walcott's suggestion will be given due consideration and action taken which will result in protecting the community still further from what we cannot help thinking are unnecessary outbreaks of disease.

MEDICAL NOTES.

CONDITIONS IN THE PHILIPPINES.—There are said to be 30,000 lepers in the Philippines. The disease is supposed to have been introduced in 1633 by a vessel from Japan, bringing 150 lepers to be cared for by the Catholic priests. The Manila Board of Health reports that bubonic plague made its appearance at Manila, December 29, 1899. Only one white man died of it. Out of a total of 225 cases there were 167 deaths, 115 being among the Chinese and 51 among the Filipinos. The number of deaths in Manila from October, 1899, to July, 1900, inclusive, was 8,535. The population of the city is estimated at 350,000 to 600,000. Of the number who died 7,591 were Filipinos and 15 Americans (civilians).

RABIES IN PARIS.—According to the *Medical Record*, the annual report on hydrophobia, which has just been presented to the Council of Public Hygiene by Prof. Adrien Proust, inspector-general of the Board of Health, shows by statistics that the number of mad dogs in Paris and the department of the Seine is steadily increasing. The Pasteur Institute treated 294 persons who had been bitten by rabid animals between January 1 and June 8, 1900.

MOSCOW PRIZE CONFERRED ON PROFESSOR RÁMON Y CAJAL.—The prize of \$1,000, established at the Twelfth International Medical Congress at Moscow in 1897, for medical work of the greatest benefit to humanity, has, at the present congress, been awarded to Professor Rámon y Cajal, for his researches on the minute structure of the nervous system.

RETIREMENT OF PROFESSOR GEGENBAUR.—Dr. Carl Gegenbaur, professor of anatomy at the University of Heidelberg, is reported to have retired from the active duties of his professorship.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, August 22, 1900, there were reported to the Board of Health of Boston, the following

cases of acute infectious diseases: diphtheria 85, scarlatina 17, measles 31, typhoid fever 15.

THE ENFORCEMENT OF VACCINATION AT ROCKLAND, ME.—The antivaccinationists of Rockland, organized in an effort to cause the repeal of the non-enforcement of the State law regarding the vaccination of school children have received a check in the form of a refusal by the Board of Health to accede to their demands. The Board of Health, through its secretary, sent a formal reply to the request, thus: "The Board of Health has considered the matter, and can see no reason for modifying its action regarding the enforcement of the State law."

CHELSEA HOSPITAL IMPROVEMENTS.—Extensive improvements, for which the government has appropriated \$45,000, are being made at the United States Naval Hospital at Chelsea, Mass. More commodious buildings are to be provided, the plumbing and ventilation renovated, and other needed changes made.

THE HARVARD INFIRMARY.—Harvard College has bought of the Cambridge Hospital a tract of land on Mount Auburn Street adjoining the hospital, which it intends to use as a site for the new infirmary. The land previously selected was regarded as unsuitable.

TYPHOID FEVER IN NORWOOD, MASS.—An epidemic of typhoid fever of considerable magnitude has appeared in Norwood, and has been traced to the sale of infected milk.

NEW YORK.

WATER SUPPLY OF BROOKLYN.—Chief Engineer Robert Van Buren, of the Brooklyn Water Department, has given out a statement regarding the water supply of the borough, in which he refers to the inadequate amount of water on storage, and expresses the opinion that the great need of the department is increased conduit facilities from the watershed to the reservoirs at Hempstead, Ridgewood and Mount Prospect. From July 1st to August 12th the consumption exceeded the supply by over 6,000,000 gallons a day, and on the latter date the amount of water in storage had fallen to 283,360,100 gallons; showing a loss of 252,323,700 gallons in forty-two days. On August 12th of last year the storage amounted to more than 200,000,000 more than at present. What is most urgently needed, he declares, is an additional pipe conduit from Millburn west, as by this means most of the water which now goes to waste along the watershed east of Millburn could be made available for the borough.

NEW LYING-IN DEPARTMENT FOR BELLEVUE HOSPITAL.—Commissioner Keller, of the Department of Public Charities, has announced that he is about to convert the building on the grounds of Bellevue Hospital which for more than twenty-five years was occupied by the Bellevue Hospital Medical College, and of late has been used as the temporary quarters of the Cornell University Medical School,

into a thoroughly equipped lying-in department for the hospital, to take the place of the inadequate maternity hospital now connected with Bellevue. The fine new building of the Cornell School on First Avenue, just opposite the Bellevue Hospital, is approaching completion, and this old building will no longer be required.

BEQUEST TO A HOSPITAL. — By the will of Judge Francis O. Mason, of Geneva, N. Y., the Geneva City Hospital is made the recipient of a bequest of \$100,000. Of this amount, \$10,000 is immediately available, and the remaining \$90,000 comes to the institution after the death of two sisters of the deceased.

Miscellany.

POWER OF THE EYE.

"We often hear," writes Hiram M. Stanley, "people say that they can merely by a steady gaze affect a person at a distance, who is not looking at them, and some say that they are able to make one sitting in front turn the head in this way. Mr. Bell in his 'Tangweera' mentions this feeling when he says: 'Presently I felt as if some one was looking at me, and raising my head I saw a large puma standing ten yards away.' To the physiologist it may seem uncalled for to investigate a manifest absurdity, but it has at least a practical value to explode a common error by direct experiment. I asked a young man, who is very confident of his powers, to stand unknown to reagent A behind a bookcase and look through a carefully concealed peep hole. I gave him the best opportunity, placing A about four feet from the hole directly facing him, and I engaged A in mechanical writing. To the young man's confessed disgust and irritation he was unable to disturb A. My few experiments were negative in results. However, it may be that telepathic influence is exerted under certain conditions, and experiments with twins and others constantly *en rapport*, especially when under emotional stress and at critical junctures, might be worth trying. If there is nervous telepathy, this is perhaps as simple and common a form as any. If disturbance arose subconsciously the test would be that the tracings from an instrument, to show nervous conditions, should show large fluctuations coincidentally with the times when the agent regards himself as successful." — *New York Medical Record*.

THE DANGERS OF THE RAILROAD.

THAT the arts of peace are not less dangerous than those of war would appear to be amply indicated by the figures of railway accidents for a year. According to the twelfth statistical report of the Interstate Commerce Commission, 1 among every 420 of the 417,508 men engaged in the work of railway transportation was killed, and 1 among every 27 was injured during the year ended June 30, 1899. Of trainmen proper, engineers, firemen, conductors, brakemen, baggagemen, etc., 1 was killed for every 155 employed and 1 injured for every 11 employed. The

total number of accidents among employes was as follows: Killed, 2,216; injured, 34,923. Of 523,000,000 passengers carried only 239 were killed and 3,442 injured. A good deal has been done to reduce to a minimum the dangers attending railway travel, but much remains that can yet be done and the promise seems not extravagant that the time will come when there will be no more risk in travelling by rail than in any other form of progression or locomotion. — *Philadelphia Medical Journal*.

Obituary.

SIR WILLIAM STOKES.

THE death of Sir William Stokes occurred at Durban, South Africa, August 19th. Sir William was one of the eminent men who were appointed consulting surgeons to the British forces in South Africa during the early period of the Boer war. He was born in Dublin, March 10, 1839, studied medicine at the University of Dublin, and became a master of surgery. He was surgeon in ordinary to Her Majesty the Queen in Ireland, and professor of surgery in the Royal College of Surgeons. Other professional honors were the presidency of the Pathological Society, 1881; presidency Royal College of Surgeons, 1887; honorary presidency of the International Medical Congresses of Berlin, 1890; Rome, 1894; Moscow, 1897; and Paris, 1900. He was gold medallist of the Pathological Society of Ireland, surgeon to Meath Hospital and County Dublin Infirmary, and formerly senior surgeon to Richmond Surgical Hospital. He was the author of many surgical addresses and a contributor to the *Lancet*, *British Medical Journal* and other professional publications on topics pertaining to clinical and operative surgery. He was knighted in 1886. His home was in Dublin.

DR. MOSES W. KIDDER.

DR. MOSES WARREN KIDDER, of Lincoln, formerly of Lowell, died at the Waltham Hospital, August 15th, of appendicitis. He was born September 11, 1828, from an old New England stock. His education was chiefly obtained under the instruction of his father; he later attended the Harvard and the Berkshire medical schools, graduating at the latter in 1852, when he entered into practice with his father in Lowell, where he remained until 1870. He served as city physician and as member of the School Board in 1861-1863. He was a member of the Massachusetts Medical Society and his services as chemical expert in law cases were often in demand. During the late years of his life he became interested in mechanical devices and removed to Boston and later to Lincoln. He was in the latter town chairman of the School Committee and of the Board of Health. Dr. Edward H. Kidder, of Fall River, his son, died a few years ago.

BOOKS AND PAMPHLETS RECEIVED.

The Diseases of the Blood in Their Relation to Surgery, and Their Treatment. By George G. Van Schaick, M.D. Reprint. 1900.

XIII Congrès International de Médecine. Paris, 2-9 août, 1900. Kurze Inhalt von der Erzählung am Ueber Extrabuccale Ernährung. Von W. von Leube.

Original Contributions Concerning the Glandular Structures Appertaining to the Eye and Appendages. By Adolf Alt, M.D. Illustrated. St. Louis, Mo: American Journal of Ophthalmology, Publisher. 1900.

XIII Congrès International de Médecine. Paris, 2-9 août, 1900. Résumés des Rapports présentés aux Sections de Psychiatrie, Neurologie, Bactériologie et Parasitologie. Paris: Masson et Cie, Editeurs. 1900.

Address.

THE SURGEON IN THE NINETEENTH CENTURY.¹

BY FREDERICK TRAVES, F.R.C.S.,

Surgeon Extraordinary to H. M. the Queen; Surgeon in Ordinary to H. R. H. the Duke of York; Consulting Surgeon to the London Hospital.

MR. PRESIDENT, LADIES AND GENTLEMEN:—The honor of being selected to address an association which represents not only in numbers but also in dignity and repute the medical profession of this country is an honor of such a kind that I feel it can only be belittled by any expressions of gratitude I am able to command. I will do no more therefore than sincerely thank you for bestowing upon me a great distinction, and at the same time remind myself of the words of Goethe that "it is easier to bind a wreath than to find a head worthy to wear it."

I am fortunate also in the circumstance that the occasion for the giving of this address should coincide with the concluding year of the nineteenth century. This century has been without a parallel in the history of human culture, and so far as the art of surgery is concerned has embodied an advance in principle and in practice which has been no other than revolutionary. I do not propose to attempt a review of the progress of surgery during the last hundred years. That work has been already done by abler hands. I would venture rather to deal with the progress of the surgeon himself during this period, and with the advancement of the individual as an exponent of a grave profession.

There is little difficulty in fashioning a picture of England as it was one hundred years ago. A sympathetic literature has left us with ample records of the men and women of the time and of the scenes they moved among. These records are rich with the littleness of personal affairs and are made living by the very gossip and petty commentaries of those who constituted society when the century was young. The life in England then was largely life spent in the country, in sleepy villages, and in sober, self-esteeming county towns. The conditions were yet immature which led men to herd together in ever-extending cities and to swarm around oases of blackened chimneys and restless furnaces.

Travelling was a luxury limited to the few. The many were content to live and die within sight of fields and spires which had been familiar from babyhood. They were apparently content to keep to their own stations in life, to take their notions of dignity from the squire and their conceptions of religion from the vicar, and to be satisfied with such excitement as was afforded by harvests and market days, by the movements of the locally great and by the achievements and misdoings of their neighbors. In many a town it was no little event when the coach from London lumbered through the cobbled streets or when a gang of pressed men marched by on their way to the sea, or when some soldier home from the wars made the little ale house lurid with tales of arms and tragic lands. These simple folk were comparatively free from the fever of social ambition, from the almost savage conflict of modern commerce, and from the bewildering hurry of events which compass the peace of later times.

¹ The Address in Surgery delivered at the Annual Meeting of the British Medical Association at Ipswich, August, 1900. By courtesy of the British Medical Journal.

London was then not one-fourth of its present size; the great city ended, towards the west, at Sloane Street, and beyond were quiet fields and meadows intersected by footpaths, certain of which led to the hamlet of Kensington and the little riverside village of Chelsea. The lover of solitude would have found seclusion in the wide open country through which ran the Edgware Road. Paddington was still in the fields. Game could be shot about Westbourne Green and around the isolated farm house which marked the present settlement of St. John's Wood. Few would have cared to venture after dark across the bare fields of Battersea or to traverse the expanse of open land which stretched to the north of Tottenham Court.

No railway terminus flaunted its hideous structure in the city's midst, and neither omnibus nor cab nor tram car invaded the narrow streets. There was no telegraph and no telephone. The postal system was without form and void. The gayest streets were lit by oil lamps, and the gloom by night was only equalled by the dirt by day. It was not until 1829 that the omnipotent policeman appeared upon the scene, and his early experience of the city's traffic was concerned with sedan chairs and cabriolets, with gaudy coaches and creeping wains, with link boys and running footmen. It was not until 1821 that the English Channel was crossed by steamboats and that the picturesque hoys and coasting sloops, the dignified frigates and the stately East Indiamen, began to vanish from the sea.

Education among the mass of the people was a matter of little account, and was to a great extent actually non-existing. The average man of the middle class was quite content with a degree of learning which would do little more than satisfy the demands of a modern school board.

As to the surgeon in those days, he was but a sorry element in social life. In the great towns and cities there were esteemed practitioners of surgery who were eminent by reason of their scientific work and their successful practice, but their numbers were few. At the commencement of the period under notice London was the centre of surgical activity, and the prominent exponents of the art at that time were John Abernethy, Henry Cline, Sir William Blizard, Sir Everard Home, Sir Astley Cooper, William Lawrence and Charles Aston Key. The great John Hunter had died in 1793, having accomplished a work which marks an epoch in British surgery. In the provinces the most conspicuous surgeons were Edward Alanson, of Liverpool, and William Hey, of Leeds, while in Edinburgh the position of the leading operator was held for many years by John Bell. A little later in the century we find among the names of prominent men in England those of Sir Charles Bell, Sir Benjamin Brodie and the ingenious and learned Benjamin Travers.

At the beginning of the century surgery on the Continent was represented by such men as Sabatier, Deschamps, Boyer and Larrey in France, Scarpa in Italy, Langenbeck, Chelius and Diefenbach in Germany, and Warren and Physick in America.

The surgeon or common practitioner in the village and town in these early days has been depicted by many writers. Possibly the most precise of these was Smollet, who was himself in turn an apprentice, an assistant, a surgeon's mate, a practitioner and a graduate in medicine. Smollet died in 1771. The account he has furnished of the leech of his time is tolerably discouraging. We find him an ignorant,

illiterate, sordid creature, not above the allurements of money-grubbing, and not without suspicion of dishonest practices and of a leaning towards the bottle. He was to a large extent a mere retailer of physic, and in the public eye he ranked with the quacks and nostrum sellers with whom he competed. There was probably some excuse for a writer who, in a discourse in the *New Monthly Magazine* for 1828, speaks of the general body of surgeons as a "cringing, pulse-feeling race." Smollet's description could not have been true of all his brethren, and there is no doubt he wrote with the bitterness of an unfortunate experience. Still, there can be little question that Lauecelot Crab represented a type not yet extinct when the century began, and he must be taken as a forerunner of the cultured and esteemed general practitioner of the present day.

1. THE SURGEON AS AN ADVISER.

In noting the advances made by the surgeon during the century, the first matter which may be dealt with concerns his position as an adviser to his patient. In reviewing this subject, one cannot fail to be immediately impressed by the paramount influence which exact knowledge—or *a fortiori* the want of exact knowledge—has had upon the attitude of the medical profession.

It is obvious that the progress of any science is to be measured by the amount of absolute truths which may have been accumulated at a given time. The lack of knowledge, the mass of things unknown, represent merely a void to be filled. In the development of the science of medicine the element of the unknown has not remained so negative a factor, but has, on the contrary, proved to be a stimulus for a very luxuriant invention, the products of which have been tabulated as facts.

There is no science outside our own in which there has been, during the stages of development, such an extreme disproportion between the amount of knowledge professed and the amount proved ultimately to be exact and sound. As an example of this may be cited the "humoral" system of pathology, which, in spite of its ancient origin and its more or less obvious foolishness, held a position in medicine for centuries, and struggled on, as a distorted and dying creed, even into modern times. This system, in its barest features, asserted that four cardinal humors occupied the human body, and that practically all diseases, and certainly all tumors, were due to disorders of certain of these fluids. The pathology of this system was precise, dogmatic, elaborately classified, and full of detail. Upon it all treatment was founded, and yet the whole of this precious system was a mere daring fiction, an ingenious fancy, the product of an impudent and unscrupulous imagery.

The reason for all this lies more with the sick man than with the man of medicine. The sick man requires absolute and exact knowledge from his doctor. He will accept neither possibilities nor doubts nor confessions of ignorance. He will accept such from his lawyer and from his man of business, but not from the man who attends him in illness.

It is no matter of wonder that in the past the physician has made good by fiction what he lacked in fact. The demands of the patient have been hopelessly beyond any powers of supply, and the deficiency has been furnished by the products of invention. It

would seem that the less the man of medicine knew the more he invented, and the more diligently he hid his little light under the bushel of a ceremonious and mystery-making treatment. The judicial wig, the academic ruffe, the gold-headed cane, the reflective snuff box, and the Socratic air, all made an effective covering for the few poor bones which formed the skeleton of his knowledge.

It thus happens that a good deal of the pretence and humbug with which medical practice has been associated in the past has been forced upon the practitioner by the demands of unreasoning people. With such people the surgeon in the early part of the century had more largely to deal than he has to do at the present day, and yet his stock of knowledge could seldom meet the demands even of the reasonable. Hereby it came to pass that the puzzled man of medicine had to repudiate his ignorance, had to concoct such explanations and to construct such pathologies as could meet the sick man's inquisitiveness, and at the same time give a semblance of reason to an empirical and tawdry system of therapeutics. His utterances were tangled and confused by conceits of his own invention. A false attitude towards his patient was unconsciously forced upon him, and the folly of his pretence to an unattainable learning was apparent to all but the simplest. As an adviser, therefore, he spoke not as one having authority, and his position intellectually is well illustrated by the endless lampoons and caricatures to which he was publicly subjected.

The surgeon of the present day, as an adviser, is in a position which is so greatly improved that it could hardly have been imagined by his forbears of one hundred years ago. He has in the first place to deal with a more enlightened public, with patients whose education to a large extent enables them to appreciate the nature of scientific problems, and with whom it is possible to discuss difficulties, and to own to lapses of information.

In the second place, the additions made to surgical lore have been so substantial that in many departments surgery has reached to the status of an exact science. There is indeed no longer need to call upon invention to supply such gaps as still indicate the unknown. An intelligent patient is satisfied with the assurance that practically nothing at present is known of the nature and causes of cancer. Such assurance is at least as valuable as the information provided at the beginning of the century, when the inquirer would have been told that cancer was "a diseased hardness," or a "scirrhous degeneration."²

We have perhaps not quite shaken off the poor vestments of mummery with which ignorance was clad, nor rid ourselves of forms of speech which still pass current for sense, but which are little more than sounding brass and tinkling cymbal. We speak assuredly of the "constitution" and of "states of the system" and of the "supporting of the system." We sanction such terms as "poverty of blood," "diminished vitality," and "sympathetic inflammation." We profess to believe in "tonics," in medicines the swallowing of which will give strength, in "galactagogues," in "alteratives," in "astringents," and in "cooling physic." We profess moreover to "strengthen the lungs" and give "tone to the stomach."

² Samuel Cooper's *First Lines*, London, 1807.

³ South's *Chelius*, 1826-46.

The modern surgeon can well afford to dispense with all this empty verbiage, since he can base his opinion upon demonstrated facts and can express it in plain words, free from any of the embellishments of a literary masquerade. For many reasons this is well.

II. THE SURGEON AS A MAN OF LEARNING.

The surgeon at the commencement of the century appears to have lacked most of what we now consider to be the essentials of the art, and we can only view with amazement the scantiness of his learning and the poverty of his equipment. He knew little more of inflammation than that it was represented by swelling, heat, redness and pain. His knowledge of the causes of inflammation and of those dangers which follow upon open wounds was scarcely in advance of that professed in the days of Hippocrates. He had no glimmer of the possibilities of asepis. He had no anesthetic, no hypodermic syringe, no clinical thermometer and no practical means of investigation in clinical chemistry. The very name "bacteriology" did not exist, and the treatment of disease by prepared serums would have appeared to him as wild as the wildest therapeutic dream of ancient days. Although vaccination had been introduced in the last year of the eighteenth century, the magnitude and nature of the principle it involved had not been appreciated.

The microscope as an aid to diagnosis played no part in the equipment of the surgeon. He had neither laryngoscope nor ophthalmoscope, and his acquaintance with otology, skin affections and the diseases of women was at the best rudimentary and indistinct. He had only rude medieval orthopedic appliances, and he knew nothing of the lithotrite nor of the array of instruments which are now in daily use in connection with ophthalmic, laryngeal, cranial and abdominal surgery. It would seem indeed that there was little for him to do but to open abscesses and sow the seeds of chronic septicemia, to excise tumors of the structure of which he talked much and knew little, to amputate limbs for diseases he could not mend, and to draw blood whenever doubt existed as to what was best to be done.

Conservative surgery was not understood, and was certainly not practised, and plastic methods of operation had no place in treatment.

Lord Thurlow, in speaking against the Surgeons Bill in the House of Lords in 1797, declared, with some basis of truth, that "surgeons in this country are not respectable men, their pretensions are unjust and illegal because they are not a scientific body."

In 1800 a man could practise as a doctor without passing an examination of any kind. Indeed one itinerant practitioner is reported to have assumed the title of assistant surgeon on the ground that he had served an apprenticeship to the crutchmaker of a hospital. The examination for the diploma of the Royal College of Surgeons was by *via voce* only. There was no examination of patients, and no dissection of the subject. Candidates were required to produce evidences of apprenticeship, of attendance upon anatomical and chirurgical lectures, of having performed dissections, and of having attended the practice of a recognized hospital for a period of six months.

In 1813 the period of compulsory attendance at a hospital was raised to one year. The standard of

knowledge, however, does not appear to have risen in corresponding proportion, for in 1822 the then president, Sir William Blizard, felt called upon to address the Court of Examiners on certain "tokens of remissness in teachers, and of inattention in students," which had been forced upon his notice. He regrets that candidates are commonly ignorant of the situation of nerves and blood vessels, of the disposition of the muscular fibres of the heart, gullet and stomach, and of the diameters of the intestine. He further adds that "the deficiency of candidates in physiological information is far more remarkable," and enters into such detail as the following: "Often do we find them," says the president, "ignorant of the reasons why the ribs in inspiration are, from their figure and muscular connection, moved upwards and outwards, of the systole and diastole of the heart, of the process and intention of respiration, of the nature and distinction of the pulse, of the distinct offices of divers muscles, of the figure of the lens and uses of the humors of the eye in vision."

He concludes by deploring that there is a "correspondent darkness of mind relating to the symptoms, seat, causes and rational treatment of diseases and injuries," and furnishes a catalogue of items with which candidates do not appear to have been commonly conversant, although the list presents such matters as the signs of fractures and dislocations, the symptoms of compression and of inflammation of the brain, the consequences of fractured rib, and the *rationale* of the symptoms of hernia.

At the commencement of the century there was, indeed, no systematized medical education. The training of the surgeon was paltry, casual and inefficient. His preliminary education was miserably meagre. It was necessary that he should be able to read and write and pretend to some smattering of Latin. He became an apprentice, and, in that menial capacity, gleaned what he might from his master and from attendance upon sundry lectures. So far as hospital practice was concerned, his attitude as a learner was well expressed by the phrase, "He walked the hospital." The institutions which he thus attended for a period of six months were in a state of rude squalor as regards administration, sanitary arrangements and nursing, and well deserved the abuse which was lavished upon them.

III. THE SURGEON AS AN OPERATOR.

During the nineteenth century the surgeon, as an operator, passed through a rapid metamorphosis, and has now reached at least the level of the unexpected. It may have been supposed that there is little to be learned in the way of using a knife which had not been learned during a period of over eighteen hundred years, for there were surgeons before the Christian era. Yet time has shown that even in 1800 there was a technique in operating which was as little like the technique of today as are the slashes of a cutlass when compared with the studied movements of a foil. It may have been surmised that twenty centuries would have exhausted the methods by which a limb could be cut off. Yet in 1800 modes of amputation were in vogue which are now regarded as uncouth. It cannot even be said that the commencement of the century saw in use a ready and efficient means of checking bleeding, although that measure represents the most elementary of the surgeon's duties.

The operator of olden times certainly possessed many qualities which are now falling into abeyance, and which cannot pass away quite unregretted. The success of his craft depended largely upon his daring, upon the alertness of his eye, the steadiness of his nerve, and the rapidity of his movements. He stepped into the arena of the operating theatre as a matador strides into the ring. Around him was a gaping audience and before him a conscious victim, quivering, terror-stricken, and palsied with expectation. His knife was thrust through living flesh and acutely-feeling tissues, and the sole kindness of his mission was to be quick. In spite of moans for mercy from gagged lips the knife had to move on its way steadily, and, undeterred by struggles and bursts of hemorrhage, the blade must needs pass without faltering or sign of hesitancy.

There is less need for such qualities now. The dramatic element in surgery has gone with the men who unconsciously fostered it. The operating theatre of the present day has lost its horrors, and has changed from a shambles to a chamber of sleep. The surgeon's hand can move with leisurely precision, and theatrical passes of the knife are favored only by those who have not yet learned that mere brilliancy is no measure of success.

It may be that the present-day surgeon is a loser in that he has less need for those dashing qualities which were essential to the operator before the days of anesthetics; but, on the other hand, he has gained much in the direction of the sympathetic handling of his patient and in the culture of gentleness.

It is little wonder if the older surgeon became rough and stern, if his sense of feeling became dulled, and if the sympathetic side of his nature suffered some suppression. Indeed, contemporary accounts are apt to represent the operator of pre-anesthetic times as rough almost to brutality, and as coarse both in his conduct and in his utterances. His language, it would appear, savored of the cockpit, and the hasty flourishing of his knife led occasionally to unintended mutilations.

Within the compass of some thirty years the whole state of affairs has changed. Consideration for the patient and for the patient's sensibilities has become a matter of the first moment, and the operator has learned that his work is best done if done with gentleness and tact, and that haste and bluster, coarseness and coarse handling are out of place around the operating table. A striving after affect at any cost has ceased to be an element in the surgeon's work. Success is no longer measured by the number of minutes occupied in the amputation of a limb, but by the state of the patient many days after the measure has been completed. The triumph of the older surgeon was immediate and scarcely reached beyond the arena of the theatre. The triumph of the modern surgeon is deferred, and is found in the operation ward and in the convalescent home.

Still, the fact remains that it is easier to be a surgeon of some degree at the end of the century than it was at the commencement, since in the earlier days the qualities needed for success in operating were rare and of a kind not readily to be acquired.

On passing more into detail, one notices that beyond these general changes in the attitude of the operator there have been others which owe their existence to special advances in the surgeon's art. Prominent

among these may be named: (1) An improved knowledge of anatomy; (2) a readier method of arresting hemorrhage; (3) the employment of anesthetics, and (4) the introduction of antiseptic measures.

(1) *An improved knowledge of anatomy.*— Among the surgeons of the early part of the century there were many competent anatomists, and not a few who could lay claim to be deeply versed in that science. Among the latter were such men as Astley Cooper and William Lawrence. Still, in the education of the average surgeon the study of anatomy did not play a prominent part. Anatomy was largely taught by means of public demonstrations. The teacher dissected and the student looked on, much as he did in the days when Rembrandt's great picture of Nicolaus Tulp and his pupils was painted. The knowledge required was scant and superficial and had little practical basis, and no methods of teaching existed which can in any way compare with those in vogue at the present day. The science of anatomy was well advanced at the commencement of the century, but it was not taught to the common student. "Quain's Anatomy," first published in 1828, contained a very sound account of the human body, although the whole work was then represented by a single small volume of 700 pages which was without illustrations.

The facilities for acquiring a practical knowledge of anatomy were not only few, but were hampered by many sordid difficulties. Anatomical schools were regarded with disfavor and were actively discouraged. They were viewed with unconcealed suspicion by the public, and were surrounded by a ghoulish romance in which rifled graves and unseemly dealings with the hangman played a pungent part. Indeed, the teacher in an anatomical school found himself involved in a squalid and disreputable traffic, very un congenial to any earnest man of science.

Among the many qualifications needed for success in operating, a practical knowledge of anatomy as acquired by repeated dissection is conspicuous. Such knowledge as the surgeon needs is to be learned not from books but from the patient use of the scalpel and forceps. The dissecting room is the surgeon's nursery. The tissues of the body are the material with which he works, and he must needs know them as the sculptor knows the marble he chisels and the potter the clay he moulds.

It is no matter of surprise that the older surgeon often lacked confidence in operating, that he failed in initiative, and clung only to formulated methods, and that a departure from accepted lines was attended with fear and hesitancy. Ignorance encouraged in the rash heroic passages of the knife and in the timid and over-cautious and dangerous fumbling. And as to this, it is probable that in pre-antiseptic days as much ill attended the nervous fingers which were creeping clumsily into the unknown as followed the reckless operator who essayed to draw his bow at a venture.

(2) *A readier method of arresting hemorrhage.*— At the commencement of the century the means employed for the control of bleeding were numerous, and were represented by such familiar measures as the ligature, the suture, styptics of many kinds, and the actual cautery. In applying the ligature the vessel was picked up by forceps and tied as at the present day. The instruments used were those of Dieffenbach, Assilini and Liston. The older types of instruments were not readily applied, or at least required

time in their adjustment. The bleeding from the vessel was not necessarily controlled by the forceps when in position. The general rule in amputation was to apply a tourniquet and to ligature the individual arteries after the limb had been removed. In the excision of tumors the practice was recommended of securing each vessel as it was divided.

When it is remembered that operations were carried out without anesthetics, it will be understood that the older surgeon had an absolute terror of bleeding, and was driven to undesirable shifts to avoid the need of facing it. He was indeed a coward where hemorrhage was concerned, and there was reason for alarm when a conscious patient was struggling and showing signs of exhaustion, and when the means for staying the stream of blood were slow of application.

We find, then, that hemorrhage was expected, and that a liberal loss of blood was considered to be a necessary adjunct to every major operation. Tourniquets were employed freely and with considerable harshness. Raw surfaces were bathed with styptic solutions which were often destructive in their action or at least opposed to primary healing. The actual cauterium with which to sear the bleeding area was in some request, and every well-equipped operating theatre kept its stove and its cauterium irons in constant readiness.

The least pleasant evidence of the surgeon's dread of hemorrhage and of his inability to deal with it was afforded by the treatment of certain nevi in infants and children. These growths were strangled by ligatures which slowly cut their way through the skin and the neoplasm, assisted by a benevolent process of suppuration. A painful ingenuity was expended upon amplifications of this measure, the cruelty of which was but little mitigated by the introduction of chloroform.

Allied to this procedure was the *écraseur* of later date. Its invention was due to Chassaignac, and it was freely used in England until quite recent times. It was employed for the removal of growths of various kinds, but its most baneful employment was as a means for excising the tongue. It is scarcely to be believed that within the period of the introduction of anesthetics the tongue has been torn out of the mouth by means of a loop of hemp or wire which strangled it at its root.

The *écraseur* will remain in the archives of surgery as the insignium of the incompetent and the timorous, and will stand out as a blot in an otherwise bright period of progress and enlightenment. The shadow of this medieval instrument has been slow to fade, and as the ovarian clamp and the *serrenard*, it clung about the confines of reasonable surgery and hindered the development of the operations of ovariectomy and excision of the uterus.

At the present day the surgeon has little dread of hemorrhage, and the confidence he possesses is based upon good grounds. In the first place, he makes larger use of the precautionary ligature of vessels. It has become a commoner practice to apply a temporary or permanent ligature to a main artery before a part supplied by that vessel is excised. This is carried out frequently in dealing with large and vascular tumors. In removal of the tongue, moreover, an excellent method is that in which a preliminary ligature of both linguals in the neck is carried out. In removing the uterus through an abdominal incision the ques-

tion of hemorrhage is disposed of by an early ligature of the ovarian and uterine vessels. A further example of this mode of anticipating bleeding is afforded by that method of hip amputation which is known as the anterior racket. Here the main vessels and even the main branches are secured before the flaps are cut, whereas by the older plan the vessels were severed with the flaps and were tied after the limb had been removed.

In the second place, the latter-day surgeon is operating upon an anesthetized patient and can proceed with slowness and deliberation. The importance of this fact in connection with the present subject cannot be overstated. In the instances which have been just cited, an incision of the tongue in a conscious patient would be greatly extended by the twofold operation in the neck, and whereas the amputation of the hip by transfexion occupied in able hands but a minute or so, the operation by the anterior racket is tedious and involves relatively much expenditure of time.

Thirdly, the treatment of hemorrhage has been to a remarkable extent simplified, if not indeed rendered complete, by the introduction of the pressure forceps of Sir Spencer Wells. These little instruments represent the most valuable addition which has ever been made to the surgeon's appliances. It is not uncommon in operations of a certain type to have twenty or more pairs of pressure forceps applied to the surface wound at one time. This represents a degree of possible bleeding which in the old days, when every vessel had to be separately tied, would have been replaced by actual bleeding of a fatal type. No instrument has brought with it so great an assurance of security or has done more to extend the area of safe operation.

(3) *The employment of anesthetics.* — The value of the anesthetic and the radical and beneficent transformation it has effected in surgical practice call for no comment in this place. The changes that the discovery has wrought in the personality of the surgeon, in his bearing, in his methods and in his capabilities are as wondrous as the discovery itself. The operator is undisturbed by the harass of alarms and the misery of giving pain. He can afford to be leisurely without fear of being regarded as timorous. To the older surgeon every tick of the clock upon the wall was a mandate for haste, every groan of the patient a call for hurried action, and he alone did best who had the quickest fingers and the hardest heart. Time now counts for little and success is no longer to be measured by the beatings of a watch. The mask of the anesthetist has blotted out the anguished face of the patient and the horror of a vivisection on a fellow man has passed away. Thus it happens that the surgeon has gained dignity, calmness, confidence and, not least of all, the gentle hand.

Anesthetics have, moreover, greatly extended the domain of surgery by rendering possible operations which before could have been only dreamed about, and by allowing elaborate measures to be carried out step by step.

The introduction of anesthetics has not only developed surgery, but it has engendered surgeons. It has opened up the craft to the many, for in the pre-anesthetic days the qualities required for success in operating were qualities to be expected only in the few.

In the technique of established operations chloroform and its allies have led to advantageous changes.

This is well seen in the case of amputations. In the olden days that method of removing a limb was best which was the most speedy. A prominent position was, on this account, given to the cutting of flaps by transfexion, a long, narrow blade being used for the purpose. This rapier-like instrument required great skill in handling and in the grasp of the feeble it was a fearsome weapon. Muscles were sliced through in such a way that the widest possible section of their substance was often made. Vessels and nerves were, in like manner, cut almost in the direction of their long axes, and the resulting incision gave the maximum area of wounding. At the present day transfexion is abandoned and the murderous amputating knife has found its way into the museums of the curious. Muscles can now be severed at right angles to their length, or in such a way as to secure the smallest possible surface of section. Vessels and nerves are cleanly divided in the same manner and the resulting area of the wound is reduced to a minimum. This difference in methods is vividly illustrated by amputation at the hip joint.

(4) *The introduction of antiseptic measures.*—Of the great work of Lister, and of the introducing of the antiseptic treatment, there is no call to speak at this time. When the century was young the touch of the operator was the touch of a tainted hand; the balm he poured into the wound was poisoned and he himself undid the good his science strained to effect. It is sad to think that behind the earnest man with the ready knife there stood a shadow which rendered hopeless his kindest effort and which only too often proved to be the veritable shadow of death. The change has been great, and its greatness lies in its littleness, for it is bound up with no more than this: that the surgeon has learned to be clean.

The operator of days gone by would have turned with some petulance from the grand simplicity of the counsel to be clean. He ever sought some means of mighty bearing to rid him of the incubus of failure and, like Naaman of old, he would have hesitated to dip in the Jordan of antisepticism to be free of his leprosy. The surgeon has not only learned to be clean, but he has become aware of the potency of little things. The demands of the antiseptic treatment have made him minutely careful, distrustful of any aid that he cannot control and suspicious of every semblance of error.

It is possible that the abandonment of the old easy order of things has been followed by a too slavish devotion to mere ceremonial. The remarkable and extravagant preparations with which some surgeons now approach an operation, the cleansings and the washings which precede the laying on of hands, smack a little of fetish worship and foster the cult of the surgical Pharisee. On the other hand, these performances, this "making clean the outside of the cup and platter," seem to give assurance and to render the devotee thankful that he is not as other men.

IV. THE SURGEON OF THE FUTURE.

Circumstances in the tendencies of today foreshadow to some extent what may lie buried in the future. The changes which have swept over the world of surgery have extended the possibilities of the art and have, at the same time, added a host to the ranks of those who practise it. Some thirty years ago the roll of such as could claim to be accomplished operators

was very small. The greater deeds of surgery were limited to cities and the larger towns. The general practitioner seldom took up the scalpel except in minor necessities. Even in London the list of consulting surgeons was meagre. In the hospitals of the metropolis the number of operations performed in the year would be less than is now the quatum for a month.

But here at the close of the century the disposition of affairs is wholly altered. Where there was one surgeon there are now ten, and throughout the breadth of the land and to its utmost limits the work of the operator has extended. The more ambitious performances of surgery are no longer restricted to great centres, but are carried out in the little town, in the cottage hospital and even in the cottage itself. The general practitioner is laying claim to operate upon his own patients and is carrying out his intention in no hesitating manner. The days of the great operator, of the one man to whom all came who could, are rapidly passing away. Indeed, the practice of pure surgery, which was at one time limited to the prominent few, is now becoming common to the many. The man who excels conspicuously as an operator will always attain such eminence as his ability deserves, but the exclusiveness of the practice of operative surgery is quietly vanishing with the century. This change is well. It is a change that is inevitable. The democratic movement is the active power of the day, and that an oligarchy in the community of surgeons should be replaced by an earnest democracy is precisely in accord with the spirit of the times.

In every great change there must—at first at least—be some undesirable developments, and it is impossible to deny that the wider distribution of the practice of operative surgery may lead to the occasional performance of major operations by men who are not justified, either by experience or by training, in undertaking them. Furthermore, there is among the signs of the times some evidence that the reaction in the matter of operative surgery is to some degree extreme, and that we are in danger of passing from the policy of doing too little to the policy of doing too much. Operations we know were too few in the past, but there is some foundation for the impression that they are occasionally too frequent in the present.

One other matter which looms out of the future will suffice to bring this subject to a close. So many have been the artificial aids to clinical investigation which recent science has introduced that it comes to be a question whether the natural acumen of the surgeon will not deteriorate in proportion as he fails to encourage that particular learning which elings to the finger tips of all great diagnosticians. That there will be such a decadence is beyond doubt. The loss is to be deplored, for if there be one point of excellence which stands before all in the qualifications of the perfect surgeon, it is bound up in that refined sensibility, that critical perception, that inestimable cunning, which lies in the surgeon's touch.

Examples of the directions in which this loss will be felt come readily to mind. A considerable amount of skill, for example, is demanded in the examination of complex fractures, of lesions of deep-seated bones, and of injuries about joints. What was to be learned of these troubles once had to be acquired by a tedious manipulation demanding considerable refinement. The surgeon who has now to deal with such con-

ditions can afford to dispense with a prolix examination, and can submit the inquiry to a demonstrator of the Röntgen rays. The skiagraph, although its value is much exaggerated, embodies a substantial gain, but it is to be discounted by the loss of the great element in education which it is slowly replacing.

An obscure tumor—to take another instance—presents itself, and no longer is the surgeon compelled to trust to the acuteness of his inquiry and his patient review of all the physical details of the mass. For what his ready fingers may have learned can be substituted the findings of the exploratory incision, the trochar and the aspirator. Here once more an advantage is minimized by a loss.

Or, again, an abdominal swelling is brought under notice. Its features are obscure, but much of the uncertainty of outline can be dissipated by a cultured hand which, with infinite patience and repetition, has learned to construct a reality out of a shadow. It may be said that it is needless to persist in bringing this much elaborated means of inquiry to further perfection since the problem is at once to be solved by an exploratory laparotomy. By such little operation a great advantage is gained, but an opportunity to add to one of the most refined forms of learning is lost. The value of the exploratory incision is beyond question, but among the signs of the times it is impossible not to notice a tendency to resort too readily to this means of solution. The Gordian knot, according to the legend, was ultimately cut, and it is a question whether the sum of human ingenuity would not have been substantially increased if attempts to untie the noose had been more diligently persisted in.

In another example, let it be supposed that a suspicious ulcer presents itself for diagnosis. In such case is it well to devote time to a precise and tedious inspection of its edges and to a careful tactile examination of its base, and to check what is discovered by results laboriously gained from like inquiries? Is it not simpler to take a scraping of the affected surface and to submit it to a microscopist, and to thus be spared a method of examination which, although it may not give final results, yet represents an opportunity of furthering a priceless accomplishment?

Finally, there are cases which present symptoms hard to interpret at any superficial inquiry. Is it worth while in such to undertake an exhaustive critical research and to submit the whole to a trained judgment? The quest would no doubt develop habits of observation and powers of weighing evidence; but the process is slow, and an inquiry carried out in a bacteriological laboratory will clear up all doubts, and at the same time dispense with the efforts of a cultured sense.

Those, therefore, who are concerned with the education of the surgeon of the future would do well to still cherish this ancient power, and to foster a memory of the fact that surgery is, in its very essence, a handicraft, and that in all that he does the surgeon's great endeavor should be to make his own hands self-sufficing.

It is sad to think that this hardly acquired faculty dies with the possessor of it, and never was this more vividly presented than it has been by the loss which surgery has sustained in the death of Sir James Paget. One can picture the great surgeon composed in his last sleep, and can see the once busy fingers lying lifeless on the white sheet, and then comes the wonder at the

wealth of learning, at the exquisite cunning, at the refined sense which lay dead in the dead hand. No written book can hold a tithe of the dainty knowledge which had been mastered by those subtle fingers, and no record, however labored or however loving, can tell of the power which once rested in that magic touch.

An individual loss does not, however, hinder the general tide of progress. Advance in such a work as ours depends upon the uneventful work of the whole body, and is only accentuated by the achievements of the prominent few. The movement is the movement of a multitude in which individuality is, at a distance of time, little to be distinguished and in which personal eminence contributes a smaller factor than the present is ready to acknowledge. Those who stand forth as the leaders of the advance are merely the elect of the common body and the representatives of a wide intellectual franchise. Even he who startles the world as a discoverer has often done little more than give expression to what was already nascent in the multitude. So as one great surgeon after another drops out of the ranks his place is rapidly and imperceptibly filled, and the advancing line moves on with still the same solid and unbroken front. The continuity of progress is undisturbed by the uncertainties of human life, and, as one writer has well expressed it,

"No work begun shall ever pause for death."

Original Articles.

RESULTS OF THE OPERATIVE TREATMENT OF CANCER OF THE BREAST.

BY HOMER GAGE, M.D., WORCESTER, MASS.,
Surgeon to the Worcester City, Memorial and St. Vincent's Hospitals.

THE removal of the cancerous breast has for more than fifty years been one of the commoner of the major operations. When successful it is usually followed by a sense of relief on the part of the patient at being rid of the external manifestations of a loathsome disease, and on the part of the surgeon by a feeling of satisfaction in having at least temporarily relieved his patient, with a probability of having prolonged her life, and a possibility of having permanently eradicated the disease. These feelings of relief and satisfaction are too often of very short duration, and the return of the growth within a few months plunges the patient into a deeper despondency, and leads the surgeon to question the value of his advice and operation. So frequently is the darker side of the picture the more prominent that from almost the beginnings of surgery many of its most distinguished followers have doubted the wisdom of operating at all.

Sir Benjamin Brodie says that the late Mr. Cline, Sr., and Sir Everard Home, both men of great experience and sound judgment, would scarcely ever consent to the removal of a scirrhus tumor of the breast under any circumstances, and states his own belief that in the larger proportion of cases in which the operation is performed the patient is not alive two or three years afterward, and in a great many cases instead of the operation stopping the disease it actually seems to hasten its progress. He thought the number of cases suitable for operation extremely limited. Sir James

Paget thought the utility of the operation very doubtful. Halsted says Agnew operated only for moral effect, and that Sands did not save a single case. The late Dr. Richard M. Hodges, in 1888, wrote that he had only known of but one instance of seemingly prolonged life after the removal of cancer of the breast, and expressed his opinion that there were but three conditions in which removal of the breast for cancer should be or ever has been thought advisable, namely, (1) for extreme pain, a rare occurrence; (2) for the relief of unendurable odor, in the exceptional instances of this popular supposed inevitable accompaniment, a condition now wholly within the control of local treatment; and (3) when the patient, after a statement of the nature and sure return of the disease and small prospect of prolonged life, took upon herself to decide for excision. He believed that in dissuading his patients from operation he had rendered them the greatest service.

The establishment of the aseptic principle in surgery has wholly removed many of the objections which these men have made to the principle of interference, but it has also, in connection with the studies of Heidenheim and others, so materially changed the character of the operation itself that the old discussions seem hardly pertinent, and the whole subject must, in the near future, be thoroughly revised. In 472 pre-antiseptic operations from the clinics of Velpeau and Billroth the mortality was over 17%; in 231 antiseptic operations from the clinics of Volkmann, Lister and Billroth the mortality was 6%; and in 490 operations done at the London Hospital from 1882 to 1890 the mortality was almost 10%. A mortality of 1 in 10 or even 16 is enough, I think, to throw a legitimate doubt upon the advisability of urging the patient to submit to the operation, unless a reasonable assurance can be given that in case she survives she will not only live longer and more comfortably, but have fair chance of permanent relief. This question of mortality, is, however, now practically eliminated. Many observers have now reported long series of consecutively successful cases, and the general mortality would seem to be certainly less than 2%, and probably even less than 1%. Halsted has reported 50 successful operations, with no death; Dobson, 63, with no death; and Cheyne, 64, with 1 death. These with my own 56 consecutively successful cases make 233 cases, with 1 death, or less than one-half of 1%.

At the same time that the dangers of the operation have been reduced to almost nothing, the objections of the tedious convalescence, frequent and painful dressings and subsequently impaired usefulness of the arm, have been practically negated. Indeed, so safe and so simple has the operation for the removal of a cancerous breast become, when performed by what is generally termed the incomplete method, that is, without the removal of the muscle and the axillary contents, that, as Dr. Hodges said, it is or has been "performed with but little hesitation even by those not accustomed to surgical operations of similar importance." Under such circumstances the immediate results are apt to be much more brilliant than the later; the wound heals quickly, but the disease soon returns, and by the patient and her friends the operative treatment of mammary cancer falls into disrepute. In the hands of the experienced surgeon, however, the removal of these objections has simplified very much the choice of operation. Any surgical operation is to

be avoided if possible, and when absolutely necessary the consequent mutilation should be as limited as is consistent with the attainment of the object for which it is undertaken. But if the complete and incomplete methods of operating upon the cancerous breast are equally safe, with an equally short and comfortable convalescence, that method is to be preferred which seems to offer the chance of securing the longer immunity from the extension of the disease.

I have purposely avoided the use of the term cure, because it seems to be absolutely impossible to fix a limit beyond which the disease may not reappear. The three-year limit, which has been quite generally accepted, was proposed by Gross, who believed that after that time local recurrence was so rare that it might be reasonably assumed to be a development independent of the previous disease. But the more careful collection and observation of cases proves that late recurrences are too numerous to be accounted for in any other way than by the latent existence of the local disease, or the presence of a general dyscrasia. With either supposition the use of the term cure is inconsistent.

I have lately had a striking illustration of this in a woman seventy-two years old, upon whom I operated in December, 1896. In reply to a letter, she wrote in January that she was well and free from any signs of a return of the disease. In February she entered the City Hospital for the treatment of an ulcer of the leg, and by reason of my inquiries in regard to the results of my operation for cancer of the breast she was examined with especial care. No appearance of disease was noted. Soon after her admission a fusiform enlargement of clavicle was observed, which grew rapidly and was very painful. She failed steadily, and died just one month after her admission. At the autopsy there were found extensive cancerous deposits in pleura, pericardium and peritoneum, and a cancerous growth of the medulla of the clavicle.

Verneuil reports an instance in which the disease recurred *in situ* thirty years after the primary operation. Shields has collected 19 cases in which recurrence took place from the fourth to the eighth year, and 29 cases in which it appeared from the ninth to the twenty-fifth year. The instances of local recurrence are, for the most part, from the histories of incomplete operation, but the visceral recurrences seem to follow complete as well as incomplete. It is therefore, I think, much more exact to speak of prolonged immunity than of cure; and prolonged immunity is certainly an object worthy of our highest endeavor.

Neither the clinical experience of the surgeon nor the laboratory study of the pathologist has as yet given us any clue to the cause of cancer, but it will be generally accepted, I think, that they have pretty conclusively established its local origin. They have shown that it begins almost invariably in one locality; that it extends in certain definite lines, following the course of the lymphatic vessels; and that it is then gradually disseminated throughout the body in the form of multiple metastases. It would seem *a priori*, therefore, that there must be a time when it could be wholly eradicated — a time when it has not yet entered the lymphatics, and a time when it is being carried along in the lymphatics before its general dissemination, and as if during either period its complete removal ought to be followed by a radical cure. We

rarely have an opportunity to witness its earliest beginnings, and careful microscopical examinations of the axillary contents have almost invariably shown some evidences of glandular infection, even when the gross appearances have shown nothing. Heidenheim's observations—since many times confirmed—have also shown that there is very early an infection, not apparent to the naked eye, of the fascia which covers and extends between the fibres of the pectoral muscle. These invisible recurrences are believed to be the foci of the local recurrences, and their number and extent to explain the initial multiplicity of most recurrences as against the primary, solitary outbreak of the disease.

From a theoretical standpoint, then, the most complete operation should offer the largest chance of immunity. From a practical standpoint, the nearer we come to eliminating the probability of a recurrence in or about the seat of the primary growth the stronger should be our belief in the possibility of total eradication, and the nearer should we be approaching our ideal result. The subject of local recurrence has thus become one of the most important in the future development of the operation.

It was the ancient custom to raise the affected breast from the body, and with the red-hot iron to remove the whole of the gland with all of its cutaneous covering. But in the course of the natural revulsion from such a barbarous method, its completeness and thoroughness seems to have been lost sight of, and instead it became the habit to remove the tumor with more or less of the surrounding breast tissue through an elliptical incision. In 1868 Moore, of the Middlesex Hospital, in an exceedingly valuable paper which seems to have excited but little interest or discussion, first called attention to the incompleteness of the method then in vogue, and to the necessity of a more radical extirpation of the disease, and especially of the overlying skin. In speaking of the operation as it was ordinarily performed at that time, he says: "Sometimes the tumor only is removed—sometimes that segment of the breast in which the tumor lies is taken away with it. Sometimes, with the intention of extirpating the entire mamma, a portion of it is unwittingly left behind; sometimes the breast is removed, but the propensity of cancer to extension in the skin is misapprehended, and for symmetry's sake a flap which even includes the nipple is preserved; and yet again, there being no definite plan in the mind of the operator but that of cutting wide of the tumor, portions of the breast itself are left behind. The consequence of this last method of operating may be at once apparent, when, on examining the mass thus dug out of the centre of the breast, hard cancerous cords, continuous with the principal tumor, are found to have been cut across."

In place of this inadequate operation, in language that expresses as well the opinion of today as if it had been written by Halsted or Cheyne, he says that "it is not sufficient to remove the tumor or any portion of the breast in which it is situated—mammary cancer requires the extirpation of the entire organ. In the performance of the operation it is desirable to avoid not only cutting into the tumor but also seeing it. Diseased axillary glands should be taken away by the same dissection as the breast itself without dividing the intervening lymphatics, and the practice of first roughly excising the central mass of the

breast and afterwards recovering successive portions which may be of doubtful soundness should be abandoned."

Of Moore's own practical results we know but little, and the next step in favor of more radical operation did not come until 1880, when Gross published his classical monograph on "Tumors of the Breast," with its carefully prepared statistical evidence upon the natural course of unoperated cancer, and upon the results which ought to be expected from operations. He advocated the removal of the entire breast and its coverings by a circular incision, a search for outlying lobules, the removal of the pectoral fascia, and the prolongation of the outer portion of the incision into the axilla, with a view to its thorough exploration. He was followed in 1882 by Mitchell Banks, who advocated substantially the same procedure. In 1896 Watson Cheyne urged not only the complete removal of the gland, with all its ramifications, and the exploration of the axilla, but also the removal of at least a part of the underlying muscle, and of all the contents of the axilla except the nerves and vessels, whether microscopic evidences of disease were present or not. Still later, Halsted has added to the theoretical reasoning of Moore the value of his practical experience in removing in every case the breast, its overlying skin, the sternal portion of the pectoral muscle, and the contents of the axilla, *en masse*; and in his last series of 53 cases has included an equally thorough dissection of the lymphatics in the inferior cervical triangle. There has been, thus, a steady progression toward a more radical removal of mammary cancer; and Halsted's method, the last step in this progression, has probably given us as nearly perfect a technique as it is possible to reach. Now, what are the results?

The objects to be attained are, as we have seen, two, namely, the prevention of local recurrence, and the securing of a longer immunity from the disease.

First with regard to the prevention of local recurrence. The following table compiled by Halsted is taken from the results of about 1,200 operations performed by the most prominent German surgeons. They include both antiseptic and pre-antiseptic operations: Billroth had 85% of local recurrences; Czerny, 62%; Fischer, 75%; Gussenbauer, 64%; König, 60%; Kuster, 60%; Lucke, 66%; Volkmann, 59%.

To these we may add the results of 35 cases reported by Sir Thomas Smith, operated on by the incomplete method, with 74% of local recurrences. In over 1,200 cases, therefore, operated on by a more or less incomplete method, the growth reappeared in or about the scar of the primary operation in 67%. The percentage of local recurrences in the cases collected by Gross was 68. The number of cases in which a complete operation has been done is not nearly so large—about one-fourth—but the results are very striking: Halsted had 25% of local recurrences; Watson Cheyne, 18%; Rotter, 14%; Dennis, 5%; or an average of 15½% against 67%. So wide a discrepancy can be accounted for only on the theory that the less thorough operation leaves behind infected tissue which subsequently comes to the surface, and that the more complete methods of operating diminish the probability of any such recurrences to a very remarkable degree. So striking is this contrast that it would almost seem to justify the very positive declaration of Watson Cheyne, "that improvement in the results can only take place if we

put the blame of local recurrence on the operator. For just as we must assume at the present day that suppuration after an operation through unbroken skin is entirely the fault of the surgeon, so it must be admitted, though not by any means to such an extreme extent, that a recurrence in the track of an operative wound or in the neighboring glands also implies an imperfect operation."

With regard to the period of immunity which is secured by the operation, we find that Billroth, in 1876, reported that 4.7% of his cases has passed the three year limit without any reappearance of the disease; Gross, in 1880, reported 9%; Kuster, in 1881, 21%; König, 23%; and Bergmann, 39%. Halsted had 40%; Dennis, 45%; and the average of Rotter, Helfferich and Cheyne was 49½%. Of Cheyne's 61 cases, 30 passed the three-year limit free from disease, and thus far in only 1 has recurrence been noted. It is therefore quite apparent that, as the extent and thoroughness of the operation have increased, not only has the tendency to local recurrence very much diminished, but the probability of a complete immunity for at least three years is very much greater, being, in the hands of some of the ablest surgeons, an even chance. Surely such a showing as this is a sufficient answer to the critics whose opinions I quoted at the beginning of my remarks; and it is the more remarkable when it is remembered that in the older statistics benign tumors must occasionally have been included, while the recent cases have all been verified by microscopic examination.

In the light of these results I think we should review carefully our own experiences, and see where we fall short of what is thus demonstrated to be possible. Since my first operation, in 1888, I have endeavored to remove the whole breast with the skin directly over the tumor, and have in every case but one opened endeavored to clear out the axilla. In most of the earlier operations I also removed the pectoral fascia. The one incomplete operation was in a very thin woman, eighty years old, who had a tumor of very slow growth and no evidence of glandular infection. She is still living, free from disease, four years after the operation. Two years ago I began to remove the greater pectoral muscle, and within the last year have endeavored to copy the technique of Halsted as well as I could and remove the breast muscle and axillary contents in one mass, endeavoring not to cut across the infected track anywhere from the lower margin of the breast to the apex of the axilla. My later experience with this method has impressed me very forcibly with the imperfection of my earlier operations. I not only sacrificed too little of its covering, but I often—in fact, usually—left outlying lobules of the breast itself. Until one attempts to remove the breast as a whole, he has little idea how far in all directions—especially inwards and upwards—it extends. I am satisfied, too, that in failing to remove the gland and axillary contents as a whole, I have often left portions of the connecting lymphatics, which are, of course, very apt to be sources of rapid recurrence. Another point with which I have been strongly impressed is that when I have removed the sternal portion of the pectoral muscle my patients have not only recovered the full use of the arm, but have actually recovered it more quickly and more perfectly. This is to be accounted for, I think, by the fact that one of the chief factors in

binding the arm to the side has been the sternal portion of the greater pectoral, which by its involvement in the scar fails to recover its normal elasticity.

My operations, including the incomplete one above referred to, have been 57. There has been no mortality. Ten were done in 1899, and have not recurred; but as so short a time has elapsed they are not included in the following statistics. Of the remaining 47, 46 have been followed up to the present time. Of these, local recurrences took place in 27, or 57½%, a far worse showing than I think it ought to be, and than I think will be made by later cases. Of the remaining 20 cases, 8 died from internal cancerous disease; 2 died over three years after operation, 1 of diabetes and 1 of apoplexy—both without recurrence; and 9 are well and free from recurrence after passing the three-year limit. Thus, in 11 out of 47, or 23½%, there has been immunity from the disease for at least three years. One case was operated on in December, 1897; had a small local recurrence which was removed in December, 1898, and at present shows no return.

Although these results are by no means what they ought to and might be, they are sufficient to convince me that in the thorough, complete removal of the cancerous breast we have a means of offering a long immunity from cancerous infection to a large proportion of these patients, and a considerable hope that the immunity may be permanent, a hope which, in the absence of any alternative, is so strong that it certainly ought not to be smothered by a refusal to interfere. To have reduced the mortality to almost nothing, the local recurrences, that is, the external recurrences, from 67% to less than 20%, and to have increased the number of those who pass the three-year limit free from any recurrence from 10% and 15% to more than 40%, would seem to be a sufficient justification for the operation. But it must be remembered that these results are to be obtained only by a most thorough and extensive operation; and it is, I think, fair to hope that, if such an operation can be performed when the growth is discovered early, while the external manifestations are limited to the breast itself, even better results may be expected.

THE INJURIOUS EFFECTS OF IMPROPERLY CONSTRUCTED SCHOOL CHAIRS.¹

BY J. S. STONE, M.D., BOSTON.

WHILE the theoretical importance of certain principles in regard to school seating may be freely admitted, yet these considerations do not always determine the action of those charged with the purchase of school furniture. It is generally admitted that the height of the seat should equal the knee height, that the width of the seat should be but slightly greater than the width across the buttocks, that the depth of the seat should be about two-thirds the length of the thigh, that the difference between the height of the desk and the height of the seat should correspond to the height of the elbow above the tuberosities when the arm is very slightly raised, as in writing, a difference which also secures the proper distance from the eye in reading.

In regard to the horizontal distance between the

¹ Read before the Boston Society for Medical Improvement, April 2, 1900.

desk and the seat and in regard to the desk slope there has been considerable discussion. The best opinion, however, is that in writing the edge of the desk should considerably overhang the seat, that is, there should be a minus distance in spite of the somewhat greater difficulty in getting in and out of the seats, and that the desk slope should be about one in eight or one in ten, although on theoretical grounds a little greater slope might be better. The Chandler desk top, by a simple mechanism, allows a change both in distance and in slope, and yet, on account of the slightly greater cost, the manufacture of this top has been largely abandoned.

The conditions existing in the Boston Public Schools eight years ago were shown by Dr. Scudder. It is to be hoped that the conditions today are better, and yet there are reasons to fear that the matter has not received here in Boston all the attention it deserves and which it is receiving in Cuba, where 116,000 adjustable desks have just been ordered. The adjustments for height of seat and of desk are so easily arranged that marked misfitting is inexcusable in rooms furnished with adjustable furniture.

Unquestionably, strong children can withstand without permanent injury the bad effects of improperly fitting school seats and desks. But when certain facts with reference to the development of lateral curvature are considered, the importance of placing children under the best possible hygienic conditions when in school cannot be overestimated, especially with the long school terms and the home conditions existing in large cities today. Lateral curvature is a disease originating almost always during school life, the number of cases found increasing regularly with the age of the scholars examined. It is much more frequent among girls than among boys.

It is a well-recognized fact that the ordinary type of lateral curvature is that of the writing position. There is universal agreement that the habit of holding the writing book to the right of the body is bad. There is no dispute as to the necessity of holding the book directly in front of the median line of the body. There is some dispute as to whether vertical or slanting penmanship is preferable. Leaving aside the possibility of any injury to the eyes from oblique penmanship, it is plain that when it is practised the head inevitably turns so that the eyes may follow the line of the writing. From this bending of the head to the left the centre of gravity is altered, the left arm slips from the desk and is lowered, while the right is pushed forward and upward onto the desk. In Nuremberg twice as many incorrect postures were found among those writing the oblique as among those who wrote the vertical script; in Munich two and a half times as many; in Fürth and Würzburg four times as many. Yet in the face of these facts vertical penmanship has been lately abolished in one of our suburbs.

The chair back has always been the great problem. In sitting, the weight of the body is borne by the tuberosities of the ischium and the under surface of the thighs. There are recognized three typical sitting postures, the upright, the forward and the backward. In the upright position when the centre of gravity falls directly on a line connecting the tuberosities the body can be maintained in equilibrium without great muscular exertion, but of course it is not practical to maintain this position for any length of time without support. In the forward position support soon be-

comes necessary and is secured by leaning on the desk. In this position there is great liability to assume faulty attitudes.

So great is the liability to malposition when the child is leaning forward that Schenk and Lorenz advocate writing in the reclining position with the back placed at an angle of about ten degrees. There are, however, certain practical objections to this. In writing a forward position is naturally taken. A reclining position is awkward unless an impracticable desk slope is adopted. But in the forward position there is ordinarily no support for the spine.

In the backward position, although the rolling back of the pelvis is limited by the sacrum, some support higher up is necessary to avoid great fatigue. The great problem of constructing school chairs has been in regard to the back. There are two essentials to a proper back. In the first place, under no circumstances should the shoulders be forced forward. In the second place, the physiological anterior lumbar curve should be maintained. That is to say, there should be a firm support for the sacrum and lumbar region, and at the same time a moderate support for the dorsal region up to the shoulder blades. In this way the liability to round shoulders is decreased, and account is taken of the fact that full extension of the spine tends to prevent lateral curvature, while flexion allows it.

The necessity for a proper support for the lumbar spine has been recognized in the seats made for typewriters. Although the typewriter is able to move about more freely than the scholar, can regulate the distance between her chair and her work, which the scholar cannot do, can regulate the height of her chair at will, which the scholar cannot do, it has still been found a matter of commercial value to supply her with an adjustable automatic spring back constructed on hygienic principles. The introduction of the typewriter chairback has not come about through the agitation of theorists, but has been brought about through a recognition of the fact that the avoidance of fatigue is of financial value. The question is whether the health and well being of the growing children of the community is of as great consequence as the comfort of the typewriters, in whom, because of greater age, deformities are much less likely to arise.

In the past the great defect in the school seats has been the failure to recognize the fact that no attitude, no matter how good in itself, can be long maintained without fatigue. Change in position is necessary, and if a proper change is not possible, a scholar must for the sake of change alone assume an improper attitude. It is to allow a change of distance, to allow an upright and a reclining position, to allow for some changes in the anteroposterior curves of the spine, while at the same time always giving a firm lumbar support, that Professor Miller has devised his chair.

HORSE MORTALITY IN SOUTH AFRICA.—A peculiar and up to this time not understood disease has broken out among American horses sent to South Africa for service in the British Army. The native horses are not affected, but the affection, which appears to be of malarial character, has proved very fatal to imported animals. Veterinarians are making a careful study of the condition.

Clinical Department.

A CASE OF PAROVARIAN CYST WITH TWIST OF THE PEDICLE OCCURRING DURING THE FOURTH MONTH OF PREGNANCY; OPERATION; RECOVERY; NORMAL DELIVERY AT TERM.

BY F. B. LUND, M.D., BOSTON.

HOWEVER much opinions may differ as to the mechanics of twists of the ovarian pedicle, whether they are produced by the peristaltic action of the intestines which impinge on the tumor, by the alternate filling and emptying of the bladder and rectum, or by sudden movements of the body of the patient, there can be no question but that there is one prerequisite for the torsion of the pedicle, and that is that the tumor should have one. The longer and freer the pedicle, other things being equal, the more probable will be the occurrence of a twist. Another characteristic which will be favorable to the twisting of the pedicle of a tumor will be irregularity in its shape, which will favor both rotation under the influence of gravity, which may act unequally upon its different sides, and also that of the movements of neighboring viscera. Storer,¹ out of 248 cases of torsion, found dermoids 43 times, whereas if the normal proportion of dermoids to other ovarian tumors, which is about 5%, had been maintained, we should have only 12 instead of 43. In about 83% of reported cases the tumor was polycystic, solid or dermoid, making a decided preponderance of tumors of irregular shape.

We have, therefore, two reasons which would lead us to expect that torsion of the pedicle in parovarian cysts would be rare, (1) because parovarian cysts commonly have no pedicle, or at least a short and broad one, and (2) because they are regular in shape, being always monocystic, and generally spherical in outline. Arising as these cysts do from the remains of Gartner's duct in the mesosalpinx, they commonly develop between the folds of the broad ligament, are intraligamentous, and it is only in the exceptional cases that they expand toward the superior border and become distinctly pediculated. In a somewhat hasty search through the literature of the subject I was able to find only one article dealing with twist of the pedicle in parovarian cysts. Bouilly² has collected 3 cases from literature, and adds 2 of his own, 1 of which, as in the case reported in this paper, occurred during the fourth month of pregnancy. The case which I am able to add to these previously published occurred in the practice of Dr. E. S. Boland, of South Boston, by whom I was asked at 8 p. m., on July 13, 1899, to see the patient in consultation.

We found a woman of twenty-seven, who had been seized with severe pain in the right inguinal region of the abdomen, accompanied by vomiting, at about four o'clock that afternoon while engaged in cutting pastry, standing by the table and reaching over. She was of excellent general appearance, well developed and nourished, lying in bed and complaining of severe pain in the right inguinal region, recurring every ten or fifteen minutes. She was married and had had two children, both living, and the last born

ten months ago. Her menses had returned seven months ago, and had been regular until three months ago, when they ceased. She had had morning vomiting, vaginal discharge and increased frequency of micturition, and believed herself three months pregnant. Examination of the abdomen revealed a fluctuating tumor larger than a uterus pregnant at three months, extending upward to the umbilicus, occupying the hypogastric region, and extending rather more into the right than the left inguinal region. There was acute tenderness in the right inguinal region. On bimanual examination the cervix was found soft and patulous, and a mass of moderate size and extremely tender was made out in the right lateral cul-de-sac. The epigastric tumor could not, under the condition of muscular spasm present, be distinguished from the uterus. The temperature was 100° and pulse 90.

She was taken to the City Hospital and admitted to the service of Dr. M. F. Gavin, who kindly placed her in my charge. Her pains continued during the night and in the morning a small tender mass was distinctly felt in the right iliac region, suggesting a swollen appendix. Owing to the continuance and severity of the pain, and the presence of the mass, it was deemed wise to open the abdomen. The writer operated under ether at 9.30 A. M. Owing to the presence of the tender mass in the right iliac region the case was thought to be probably one of appendicitis occurring during a pregnancy, the pregnancy having existed longer than the three months alleged by the patient, in order to account for the large size of the supposedly uterine tumor. Ovarian cyst with twisted pedicle and extra-uterine pregnancy were also considered. A short incision was made through the outer part of the right rectus muscle and came down upon the twisted pedicle, which consisted of the broad ligament with veins enormously dilated, and even ruptured, as was shown by extensive subperitoneal ecchymoses. The cyst, with thin, translucent walls, dark from dilatation of the vessels over its surface, was seen behind and above the uterus, which was of the size and appearance of a three months' pregnancy. The rectus incision was sewn up in layers with continuous chromicized catgut sutures, and a longer incision made in the linea alba. The cyst was tapped and about a quart of thin, smoky fluid removed. The cyst was then drawn out, the pedicle, which was twisted on itself three times, untwisted and tied off in sections with silk, and the wound sutured in layers with chromicized catgut.

The patient made an uneventful recovery, was discharged from the hospital August 5, 1899, and in January, 1900, was delivered by Dr. Boland of a boy baby in excellent condition. There was at that time no separation of the transversalis fascia from stretching of the scars, or other evident weakness of the abdominal wall at the seat of the incisions.

The character of the fluid suggested a parovarian cyst, and the examination of the specimen by Dr. R. M. Pearce showed that the cyst belonged to this class. Dr. Pearce's report follows:

"*Gross examination.*—Specimen consists of a large membranous sac attached to mass of solid tissue. The sac has a capacity of 700 cubic centimetres, and is a cyst wall drained of its contents. The thickness of the wall is that of heavy parchment. It is easily separable into two layers and is traversed by many blood vessels. The outer surface is smooth and glis-

¹ A Study of Axis Rotation, with Especial Reference to the Torsion of Ovarian Tumors. Boston Medical and Surgical Journal, November 5, 1896.

² De la Torsion des Kystes Parovariens. La Gynécologie, Paris, 1898, iii, 481.

tening, of pink color, and shows no inflammatory adhesions. The inner wall is traversed by many slightly elevated bands of connective tissue, radiating in all directions. Old hemorrhages into the cyst wall are indicated by slightly raised patches of a deep red color and averaging 5 millimetres in diameter. The tuba uterina runs within the cyst wall. Its distal end is free; its proximal end sectioned near the uterus. The ovary is pendant from the cyst wall but is not incorporated in it. It is intensely congested and measures $2\frac{1}{2} \times 6\frac{1}{2}$ centimetres. Its surface is glistening, smooth, and of a dark reddish-brown color. The cut surface is moist, smooth and fairly firm. The area sectioned shows two follicles and one corpus luteum.

"Anatomical diagnosis.—Parovarian cyst."

The case is of interest from several points of view: First, what is the mechanism by which such a twist is produced? The traumatism which finally produced strangulation of the pedicle must have been one of the slight movements of the body connected with the by no means active exercise of cutting pastry. It is by no means an uncommon history in these cases that the strangulation is produced by slight and comparatively gentle movements of the body. It seems entirely improbable that so slight a movement as brought on the symptoms in this case could have produced the three distinct turns of the pedicle found at operation. A more probable hypothesis is that the tumor, lying in such relation to the pedicle that movements of the abdominal wall, intestines, etc., twist it in a given direction, becomes gradually turned several times on its pedicle and then finally some slight movement gives it the final additional twist which produces strangulation.

A second point of interest is the question of diagnosis, the swollen, turgid pedicle in this case simulating a swollen appendix. If accurate differentiation could have been made between the pregnant uterus and the cyst, the diagnosis would have been established beyond a doubt. As it was, the wisdom of opening the abdomen in the presence of acute abdominal symptoms, even in the absence of an exact diagnosis, is indicated. It is more important to save the patient than to wait for an exact diagnosis.

The fact that an operation on the female genitals during pregnancy did not result in miscarriage is one which is a matter of so frequent occurrence in modern surgery as hardly to excite comment.

Medical Progress.

REPORT ON PROGRESS IN SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

(Concluded from No. 8, p. 189.)

CONICAL STUMP AFTER AMPUTATION IN CHILDHOOD.

POWERS,⁴¹ in an article on this subject, tells of a young man of eighteen years who in August, 1899, showed him the result of an improperly made amputation of the arm. The amputation had been done for a crush of the arm some ten years before. The young man stated that directly after the amputation was made the stump was in excellent condition, and it

so remained for two or three years, but after that the bone began to press against the soft parts at the end of the stump, and, in time, to come through. The process had been gradual. He held the physician who had done the original amputation responsible for the result. The arm had been amputated near the junction of its upper third with the lower two-thirds. The stump was in a typically conical condition, the pointed end of the fragment of the humerus coming through the soft parts.

The author states that of course the proper management of this would rest on the removal of a suitable amount of bone. But these cases have an important aspect, which is this: After amputation through the upper part of the arm or the upper part of the leg in childhood, a slow development of a conical condition is physiological and is to be expected. This is quite independent of the nature of the stump after the original amputation. It is because the humerus and the leg bones are developed in large part from their upper epiphyses. The growth takes place at these epiphyses and simply pushes the bone through the soft parts.

Some years ago the author presented⁴² a number of these cases before the New York Academy of Medicine, and he states that unless the child's parents are warned by the surgeon at the time of the first amputation of what is likely to occur, they may blame him when the conical condition appears.

MODERN BULLET WOUNDS.

The descriptions which have prevailed hitherto in works on surgery of the lesions inflicted by bullets must be completely rewritten. The remarkable changes of recent years in the diameter and velocity of rifle bullets have been followed by changes equally remarkable in the wounds produced by them. A few weeks ago some very interesting experiments were described which had been performed to determine the comparative effects of modern bullets, and the results were of great value because the experiments were comparative. These experimental results had to be tried on the touchstone of actual experience, and a very interesting letter from Sir William MacCormac⁴³ shows that the practical results fall far short in severity of what might have been expected as a deduction from the experiments referred to. Sir William MacCormac is particularly well qualified to express an opinion on the severity of bullet wounds, for he had excellent opportunities of observing the lesions from bullets during the Franco-Prussian War, and he states that in most cases the damage done by the modern bullet, especially by the Mauser, cannot be compared in severity with that inflicted by the needle gun or the Chassepot. The slight severity of the injury has struck him with amazement. The projectile bores a small, clean hole right through the part and the aperture of exit can hardly, if at all, be distinguished from that of entrance. The wounds are on the whole aseptic and heal readily under a simple antiseptic dressing. So rapid is the healing in most cases that instances have already occurred of men who had recovered from one wound and been discharged being readmitted later for a second bullet wound. When only the soft parts of a limb are perforated and no important vessels have been torn,

⁴¹ New York Medical Record, June 7, 1890, and April 7, 1894.

⁴² Lancet, January 13, 1900.

⁴³ Annals of Surgery, April, 1900, p. 436.

the shock at the time of infliction of the injury is but slight and recovery is rapid and complete. Sir William MacCormac cites a case where a Mauser bullet traversed both thighs, passing in front of one femur and behind the other. There was very little hemorrhage and the man was able to run another 800 yards after receiving this injury. Even where a bone has been hit the bullet may make a clean hole through it without any splintering, or with very little. This is naturally more common in the case of flat bones, such as the scapula, than in the long bones. It has also occurred in the case of the bones of the skull. In many cases even when important structures have been in the line of the bullet no harm seems to have resulted. In one instance a bullet entered on the right side of the neck immediately behind the sternomastoid and an inch above the clavicle, and its point of exit was in a similar position on the other side. Some difficulty in swallowing and speaking followed, but this passed off almost completely in a very short time. In another case the shot passed through the left ilium just below the crest and emerged a little more than an inch below the ensiform cartilage. From the situation of the apertures of entrance and exit, and remembering that a Mauser bullet passes straight from one to the other, turning neither to the right hand nor to the left, one is justified in thinking that the bullet must have pierced the stomach, but no symptoms of any such injury appeared. The patient took his food from the beginning without any inconvenience and had a rapid and uneventful convalescence. In yet another instance, from the situation of the wounds and from the fact that a most obstinate constipation followed the injury, it is almost certain that the colon was perforated, yet no peritonitis arose. Not the least remarkable of the effects of the Mauser bullet is the very slight hemorrhage resulting from perforation of the lung. There is generally a little hemoptysis which soon ceases and convalescence ensues. Even when a comminuted fracture of a bone of a limb has been produced, complete consolidation of the broken bone may result, though the fracture was necessarily compound. A striking case of perforation of a joint shows that only a slight synovitis may follow. This is in marked contrast to the havoc produced by a large-bore bullet. These results must produce a feeling of hopefulness in the treatment of modern bullet wounds, for they show that in many cases a temporary interference with military service is all that is produced. To Sir William MacCormac the profession owes a deep debt of gratitude for his graphic pictures written from the seat of war. While helping his country he is at the same time making a solid contribution to scientific knowledge.

THE SURGICAL ASPECTS OF THE MODERN SMALL-BORE PROJECTILE.

Schachner⁴⁴ derives the following conclusions from his study of the subject:

(1) All advanced nations have practically the same character of rifle and projectile, and the remarks applying to one apply practically with equal force to all.

(2) The modern small-bore projectile is capable of producing wounds of both a humane and a gruesome nature.

(3) The nature of the wound produced by the small-bore projectile is either dependent upon the intervening distance or the character of the structure wounded, or both.

(4) The precise manner in which the explosive action is developed in structures filled with or rich in fluid is still *sub judice*.

(5) The weight of evidence and the majority of authors favor the hydrodynamic rather than the hydrostatic theory.

(6) The new projectile is propelled with greater energy, velocity and accuracy; it is lighter, has a smaller frontage, and is less liable to deformation on striking an object.

(7) The new projectile has less "disabling capacity," and on the whole produces wounds of a more humane character than the old leaden bullets.

(8) By explosive action is meant the damage created in structures outside of the projectile's path.

(9) The explosive action depends upon the deformation of the projectile, the range, and the character of the tissue.

(10) The shorter the range within the first 400 to 600 yards of the projectile's flight the more pronounced the explosive action.

(11) At 800 or 1,000 yards explosive action is occasionally met with, and then only in the skull or in parts of the body filled with and rich in moisture.

(12) At a distance of 800 or 1,200 yards the new projectile, as a rule, creates wounds with small orifices of entrance and exit, and little or no explosive action.

(13) The rotatory action of the projectile may continue after its penetrative movement ceases, and the character of the wound is partially dependent upon this rotation.

TREATMENT OF FRACTURE OF THE PATELLA BY SUTURING THE CAPSULE.

Vallas⁴⁵ draws attention to the fact that a good functional result is sometimes found when marked separation of the bony fragments persists after patella fracture, and that a bad functional result is sometimes observed when accurate bony union has been obtained. Experimentally, it can be shown that division of the patella alone does not admit of a separation of the fragments greater than a few millimetres even when the knee is fully flexed, but that division of the capsule on either side of the divided patella at once permits the occurrence of wide separation. Fractures of the patella without injury to the capsule should be treated like hemarthrosis — by compression, massage and early mobilization. The difficulty of recognizing absence of capsular injury is great. Slightness of the separation of the fragments is insufficient for diagnosis. In doubtful cases the author treats as for hemarthrosis, until, after the lapse of three or four days, swelling and pain have diminished and thorough examination is possible. Palpation may show capsular rupture. If the injury involves the patella alone, the patient, by the fourth day, ought to be able to voluntarily lift his leg above the plane of the bed. If he cannot do this, sufficient capsular injury is present to call for operation. Any case in which 2 centimetres of separation are demonstrated must be operated upon.

⁴⁴ *Annals of Surgery*, January, 1900; *American Journal of the Medical Sciences*, April, 1900, p. 466.

⁴⁵ *Rev. de Chir.*, October, 1899; *Annals of Surgery*, March, 1900, p. 383.

Operation. — Make a median vertical incision from 1 centimetre above the superior fragment to 1 centimetre below the inferior fragment. Make a transverse incision at right angles to the above and make it follow the line of fracture. This transverse incision must be long enough to expose to view the whole of the capsular rent. Carefully clean the joint cavity, removing all blood clots, etc. Clean and freshen (if necessary) the fractured surfaces of the patella, and pare away any shreds of periosteum which might get between the fragments when they are brought together.

The following layers of tissue are now in evidence: (1) Skin and subcutaneous tissue; (2) the deep fascia; (3) the anterior ligament of the knee or articular capsule, consisting of the patella in the middle line, with the peripatellar fibrous tissue on either side and lined by the synovialis; (4) the condyles of the femur.

Suture is begun at the ends of the wound remote from the patella. The author uses metallic sutures. A suture is passed through the whole thickness of the lower lip of the wound from the skin into the joint, then from within outward through the synovialis and fibrous capsule of the upper lip of the wound. The upper end of the suture is passed in the reversed direction, that is, first from without inward through the fibrous capsule and synovialis of the upper lip of the wound, and then from within outward through all the layers of the lower lip of the wound. The free ends of the sutures are twisted over a pad of gauze. A sufficient number of these sutures are introduced to close the wound. Suture of the patella itself is unnecessary. The external wound is closed with silk-worm gut. A slightly compressing dressing is applied without drainage, and the whole covered with a plaster-of-Paris bandage. The first dressing is made after about eight days, the stitches are removed, and a splint or plaster dressing is applied. One week later splints are removed. Massage is applied to the thigh muscles, and the patient encouraged to voluntarily contract the quadriceps without lifting his leg from the plane of the bed. About eighteen or twenty days after the operation, massage of the knee is practised and passive movements are begun. Active movement of the knee and convalescence soon follow.

FRACTURE OF THE NECK OF THE HUMERUS WITH DISLOCATION OF THE UPPER FRAGMENT, WITH A REPORT OF THREE CASES TREATED BY OPERATION.

Curtis⁴⁶ derives the following conclusions from his study of the subject:

(1) In fracture of the upper end of the humerus with displacement of the upper fragment from the glenoid cavity, when proper attempts at simple reduction under general anesthesia have failed, operative measures should be resorted to unless shock, other injuries, or extensive damage to the soft parts about the shoulder justify delay. A delay of from one to four weeks will not impair the result.

(2) Anterior displacements require an anterior incision; subglenoid or posterior displacements require a posterior incision, preferably by Kocher's method.

(3) The head should be restored to its place, if possible, and resection resorted to only when reduction is impossible or would require such extensive damage to

the parts, or such prolongation of the operation as to increase the dangers of wound infection or of shock.

(4) Resection will probably give a better result in fracture of the anatomical neck than in that of the surgical, but reduction is to be preferred in both cases.

(5) Asepsis is an indispensable requirement for a good functional result, and these operations must not be undertaken except under aseptic conditions.

(6) Motion should be begun in the joint as soon as the wound has healed, in ten to fourteen days after the operation.

A DIRECTOR FOR THE INTRODUCTION OF THE GIGLI SAW IN SKULL RESECTIONS.

H. Gross describes an instrument which he uses satisfactorily for this purpose.⁴⁷ It consists of an instrument 15 centimetres long and 4 to 5 millimetres wide. It is shaped like an ordinary "director." The point beyond the termination of the groove terminates in a bulbous end. At this end of the groove is a small hook (so small that it does not project out of the groove), over which one end of the saw can be hooked. The instrument is used as follows: The skull is trephined. The end of the director is curved up slightly, the eye at one end of the saw fixed over the hook, the instrument inserted through the trephine opening and pushed along between the skull and the dura till the second trephine hole is reached. The saw accompanies the director and lies in its groove. The curved-up end of the director emerges from the second trephine opening exposing the hook and the end of the saw. The saw is freed from the director and now lies under the portion of the skull to be divided, either end projecting from a trephine opening. The skull is now sawn through, the director serving to shield the brain and dura from injury from the saw, the saw cutting through the curve of the skull while the director lies along the chord of the arc. Dr. Gross claims that the bulb-pointed end will push its way between the sinuses and the skull without injuring the former.

THE TECHNIQUE OF CRANIOTOMY: A NEW CONDUCTOR FOR THE WIRE SAW.

Podrez,⁴⁸ realizing the advantages of craniotomy when performed by the osteocutaneous flap method, with the use of the wire saw, has devised an instrument for passing it rapidly from one opening in the skull to another, and afterward protecting the brain and its membranes from injury while the bone is being divided. The instrument is made from a watch spring, 3 to 4 millimetres broad and 13 to 15 millimetres long. At one end is a ring or handle, at the other a rounded tip perforated with an eye, to receive the silk ligature that is connected to the saw and is double the length of the conductor. The ligature is attached to the saw, then threaded to the middle in the eye of the conductor. Two openings are made at the ends of the line of incision, in a slanting direction, in which the saw is to be passed. The director is then passed, armed with its thread, and is made to emerge at the second opening. The thread is removed from the eye and the saw drawn through. The guide, on account of the recoil of the spring, presses the membranes of the brain and the brain itself inward and prevents injury by the saw. Three sides of the square to be removed are cut in this

⁴⁷ Centrbl. f. Chir., 1900, Bd. xxvii, S. 18.

⁴⁸ Loc. cit., 1899, No. 9; AMERICAN JOURNAL OF THE MEDICAL SCIENCES, November, 1899, p. 601.

⁴⁶ American Journal of the Medical Sciences, March, 1900, p. 291.

manner. In the fourth only the inner table is cut, while the outer is broken, preserving the periosteum and skin pedicle.

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Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, April 2, 1900, Dr. E. H. BRADFORD in the chair.

The subject for consideration was

THE PROPER SEATING OF SCHOOL CHILDREN.

DR. JAMES S. STONE read a paper upon

THE INJURIOUS EFFECTS OF IMPROPERLY CONSTRUCTED SCHOOL CHAIRS.¹

PROF. EDW. F. MILLER, of the Massachusetts Institute of Technology, demonstrated

A CHAIR DEvised TO MEET THE ANATOMICAL REQUIREMENTS.

The chair, a model of which was shown, was presented in its earlier form two years ago at the Harvard Medical School. The main feature of the chair then was the two movable links supporting the seat. The idea was to obtain by the chair alone what is accomplished by a movable top on a desk giving the plus and minus distance, and also to change the angle of the seat so as to get greater comfort while reading. The chair has a motion forward and back of two and a half to three inches. At the same time it was felt that the chair as it tipped back should not elevate in front, because if it did it would stop the circulation in the legs. For that reason the front link is made longer and the elevation of the front of the chair when carried from the forward position to the back is but trifling, not over three-fourths of an inch. In writing the person naturally leans forward and the centre of gravity is carried forward. That holds the back link nearly vertical, and the front link is swung over some little distance. As soon as the person gets through writing and leans back, the centre of gravity travels back, the chair moving away from the desk, the long link becomes vertical and the short link swings back, dropping the rear of the chair and giving the same effect as in a rocking chair, avoiding pinching the blood vessels on the under side of the leg. In the earlier chair there was a fixed back. Since then some modifications have been made and the first one was in substituting a movable back. The

back is made so as to swivel about a horizontal axis, the longer arm being at the top. The height of the back support is adjustable and can be regulated by means of slot and screw in the back to suit any height. A second adjustment was put on by making the back have forward and back motion, so that if a person was writing and felt the need of more pressure on the spine by reaching down and turning the screw the back of the chair could be moved forward as desired. There is a motion of five inches allowed by means of the screw. The chair is adjustable in height the same as all of the modern school chairs, and it has been endeavored to make the machine-work as simple as possible, so that it could be put together by cheap labor. All of the mechanism at the bottom is on one casting, held to the chair by four screws, and the machine work is drilling and putting in pins which can be done at small cost. The castings are cored out to make them light, and the surfaces rounded to prevent catching dust. There are rubber stops to prevent noise as much as possible. This is only the second attempt, and I still see some features in the chair which could be improved. The base is thicker than it need be, and there are some slight modifications I would make in the back to give it further adjustment, so that the chair can be used as a sort of reclining chair if desired for office work.

MR. BUTLER: I came this evening to see Mr. Miller's chair, and in relation to ours to give you what little information I can in regard to it. I think the chair is so well known in the city it is hardly necessary to say anything in regard to it. I was one of the first to see Professor Miller's chair in its crude state and have taken a great interest in it, and I think that chair combined with this desk top would make the best article of furniture I ever saw, speaking from the manufacturer's standpoint. This top, while it is very necessary to have that movement of plus and minus which has been shown so necessary by Dr. Hartwell, Dr. Scudder and yourself, in a great many different instances, the plus and minus motion should be momentary, and something which could be adjusted at a moment's notice — the desk top as well as the chair, because in writing, especially with the vertical system, you should regulate the slant of the top of the desk as well as the plus and minus distance from the desk. This top is adjustable to any slant from 1° to 20°; by loosening these screws you can determine the plus and minus motion by bringing it to you this way, so you sit erect all the time; you determine the slant by bringing it that way. If it comes to a question of purchasing this desk, from the manufacturer's standpoint the only question of its universal adoption in my opinion would be the cost. There is a difference in the cost of this desk and an ordinary desk of this style of 35 cents. It would almost seem that any committee would pay that difference and have this desk, but I think in the city of Boston there are none in use. I believe in the city of Syracuse there are 1,300 or 1,400. It was endorsed by the College of Physicians and Surgeons of the State of New York, 250 strong, at Syracuse. This chair was also endorsed as the best back at that time. Professor Miller's would undoubtedly be endorsed today in preference to this. I think that that chair of Professor Miller's could be made for a very little difference in cost between that and ours. We get over the plus and minus with this

¹ See page 206 of the Journal.

model. The cost of this chair is \$1.75. Professor Miller's chair could be made for \$2.25. The question would come up as to the room in the school room. Professor Miller's would necessitate the desks being placed a little farther apart. Otherwise than that I think that is the best chair, Professor Miller, I ever saw.

DR. STANDISH: I have not a great deal to say. I am not much of an expert on school desks and chairs, but the average ophthalmologist fails to see why it is necessary to have all sorts of adjustable things in order to prevent the chair from coming underneath the desk. The schoolmaster has reasons, I suppose, but from the position of the ophthalmologist they are not obvious. A child studying, a young child especially, instinctively will put its eyes too close to what it is trying to learn. If he does not know what a letter is or what a word is he thinks somehow he is going to find out better by putting his head closer to it. If a scheme can be devised whereby children shall not do that thing that is a step in advance. Now, if we pull the chair way back and push the desk way over in the old-fashioned way, it enables the schoolmaster to stand his children up between the desk and the chair in rows, but it also fixes it so that the child usually stoops forward and gets down to his book. Now the scheme which you have here to-night, the minus distance, simply is this, that if you bring the table near enough to the child's chest he cannot stoop over it and be comfortable. That is desirable, and the great advantage of the vertical handwriting comes from practically the same thing, that the child does not want to stoop over. Every line going straight away from the child, he naturally keeps the erect position and can sit at a desk projecting over a seat and write without fatigue. But somehow the schoolmaster never took to that. He must have means of getting his children in and out from the desk. Well-to-do parents often fetch a child to the ophthalmologist at the age of three or four, simply because the child puts his head near his book or other small object. The examination of the eye shows no myopia. The child returns for another examination at seven, eight, ten or twelve years of age, and it is found that the child actually has acquired nearsightedness. There is a distinct period at seven or eight years of age, and another distinct period not sufficiently recognized about puberty when nearsightedness is acquired, was not there before, and is acquired principally by the faulty use of the eyes. Anything that we can have in the way of desks, or in the way of hammering it into the teachers' heads that a child should be made to sit up straight and put the book in the right place, is a desirable thing to do. The one thing from the oculist's point of view is this, that the desk should overlap the seat sufficiently so that it will be uncomfortable to the child if he tries to sprawl over it.

DR. BLAKE: I have not very much to say on this subject, which is not a new one in Boston. Twenty-five years ago we began agitating the subject of school hygiene, which included this among others. We tried to surround the children with healthy conditions, endeavoring to protect them not only from diseases which might be contracted while in the school, but also from the danger of developing spinal deformities. We succeeded after a very long time in getting a sort of modified medical inspection of schools which was

confined largely to precautions against the introduction of contagious diseases. We considered the question of proper school furniture, but were unable to accomplish anything.

Unquestionably, there are in the schools many hundred children who need this sort of chair, which seems admirably adapted for the purpose. I think if teachers were instructed to give special attention to children who showed an inclination to fall forward or lean sideways, it would be an excellent thing. To ask that such children be supplied with this chair would be both reasonable and proper. As a result, probably, would come its gradual introduction, so that all children would be protected. Many do not need it, but it is perfectly evident to me from my familiarity with the subject that a great many do, and that it would be a very great benefit to them if their wants could be supplied. The request would be a moderate one, would not call for any great expenditure of money and the results would show themselves very quickly.

MR. SEAVER: This subject certainly has received a good deal of attention from the school authorities in Boston during the last eight or ten years. Dr. Hartwell himself did a good deal towards securing more reasonable action in the matter of furnishing school rooms with proper desks. It is a fact that some of the older buildings did at one time contain rooms with only one size of desk. The old scale, which was a scale of ages, was supposed to be sufficient in a rough practical way for the purpose; but it was found by the more observant teachers that the edge of the chair was too high from the floor, so that the foot did not rest squarely upon the floor. A very simple remedy was devised by providing small pieces of pine plank two inches thick and placing them on the floor in front of the chair to be used by the children whose legs might be too short to reach the floor. In another way adjustment was made by providing three or four different sizes of desk in the same room. That change, I think, was quite extensively carried out in the newer buildings fifteen or sixteen years ago. Since the introduction of adjustable furniture it has been possible to fit most of the children with chairs admirably well. It is not necessary to furnish the whole room with adjustable furniture. You can put in a row on one side and a row in front or back of adjustable furniture; the rest can be standard furniture of different sizes; then with a little care the children can be well fitted to the school chairs and desks. We have not been able to come down to the fine points of adjustment in each and every case, and I dare say Dr. Hartwell, if he were to go into the schools today, would be able to find some children not well seated; but I also believe he would fail to find anything like the number that he did when he first began his observations; so that in a practical way I hope that we are making some progress towards the better seating of children or a better adaptation of school furniture to the children. There is one old-fashioned practice which ought to be thoroughly broken up. The old practice I refer to is "seating by rank." At the end of the month, after the examinations, the children were placed on a rank list and the one at the top was allowed to choose his place of sitting. That would be the first seat, first row, regardless of the size of the children. The practice is not yet completely broken up. This whole subject of the hygiene of school life is, it seems to me,

a most important one, and one which medical men will do well to study a good deal more than they have heretofore. The production of nearsightedness, lateral curvature of the spine, round shoulders and all those ills which arise from the fact that the growing human animal is kept five hours in a day in unnatural confinement — all these things need the most thorough and scientific study, and for one I am glad to see that they are beginning to receive it.

DR. CALDERWOOD: Mr. Seaver has spoken of the manner of seating the children at the present time. Of course with the stationary furniture and the two rows of adjustable chairs they can be seated better than perhaps ten years ago, but yet, with the present adjustable furniture, there is the difficulty in having the chairs so near the desk that the children cannot get out quickly. That is the objection which the masters have, while this chair or a chair similar to this would prevent that, as it can be moved back from the seat. I think this is a very great subject, a very important one to one who has been in the schools and seen the pupils as they have been seated in years past. Dr. Hartwell spoke of one room where there were only two children who could put their feet on the floor. Of course that is an exception, but it shows what has been and what is now taking place to a certain extent. This is a subject that really cannot be controlled fully by the School Board. I think the physicians of the city should take it up. The influence that might go out in that way would have a great deal to do with carrying it out in the schools, and I am not sure, Mr. President, but that it is a matter for the legislature to provide in some manner inspection of the children in the schools and have proper seating in that way.

DR. DURGIN: I think this question has been well discussed for years and to my satisfaction, and it seems to me the time has arrived when Boston should be ready to put in adjustable furniture for our school children. I think further discussion might be expected down in Cuba, but I am surprised to learn that the Cubans have adopted a good thing while Boston is still discussing it. It seems to me that the discussion might go on in the medical society indefinitely, but until the business men of the School Board are convinced that the time has arrived for making this change we shall not get ahead much. I think it is a question of dollars and cents and votes in the School Board. I have felt an interest in this subject and had something to do years ago in bringing about an expert board upon this subject, and I felt disposed then, as I do tonight, to take their word as to the best furniture for this purpose. I hope that something will be recommended and adopted and done as soon as possible. I have been much interested in Dr. Blake's remark, reinforced by Mr. Seaver's, in regard to having a portion of the pupils thus seated at once in the improved chair. I would like to be the person to pick out the number who should have the adjustable chair and desk. It might be well, however, to begin that way and by contrast it would be seen by the School Committee that the change was desirable, and the amount of such adjustable furniture might be rapidly increased.

MR. BUTLER: I would like to give a few statistics which I think will be of interest. I listened to Superintendent Seaver's statement as to how many chairs were needed in a room, and the question came to my mind as to how he would pick out those pupils and

designate which should have adjustable furniture and which not. I want to say for the benefit of the ladies and gentlemen present that there is not a city that I know of in this State outside of Boston but what buys adjustable furniture only and at the same price as for stationary. The cry of a few adjustable desks in the room is put out by manufacturers who have a poor adjustable desk. In the past they have sold stationary furniture and nothing else. This city has taken a front rank in everything. I think we owe the encouragement we have and the business we have done to the city of Boston. I would like to pay a tribute here and now to Dr. Hartwell, Dr. Scudder and these other gentlemen here who were instrumental in giving support when we started in the line of adjustable furniture. There is not a manufacturer in America but what is making adjustable furniture, and when we started it was considered a fad. You can buy adjustable furniture just as cheap as stationary. There is no reason why all castings should not be adjustable. The only idea in making it stationary is to lock the bolt. If the time comes that you want to adjust it to fit the pupil the bolt must be loosened. I have heard principal after principal in the city of Boston say: "We would like to have adjustable furniture if we could get it." Why can't you get it? It is to be bought at the same cost. We have sold in the city of Boston thousands of sets of adjustable furniture. A great many schools we have fitted out entirely with it. In the last few there have been a few rows of adjustable furniture. When Dr. Hartwell was on the board we put in all adjustable furniture.

MR. SEAVER: Has it always been true that adjustable furniture was furnished in the market for just as little money as paid for the stationary furniture?

MR. BUTLER: No, sir; but it has been within the last four or five years.

MR. SEAVER: That is not in accordance with my own information. Bids come in from the dealers with very substantial difference. I think the reason for using partly adjustable and partly stationary furniture is that there has been a substantial difference in the cost.

MR. BUTLER: You have had bids from me a great many times the same price as stationary.

DR. C. M. GREEN: It seems to me, as Dr. Durgin has said, that the members of the School Board are the ones to be convinced; for a long time the medical profession has appreciated the importance of properly seating the pupils in the public schools. I well remember the effort that was made in 1892 to introduce adjustable desks and chairs. It was then that Dr. Bradford, Dr. Hartwell and Dr. Scudder endeavored to interest the School Committee in the proper seating of pupils, and at this time Dr. Scudder's paper was printed as a public school document. I was then a member of the School Board, and I visited a good many of the schools, with the object of investigating the seating of the pupils. I was shocked at the number of "misfits," particularly in the older school buildings. I remember very well the conditions found in the Brimmer School, in which little boys were found in big boys' seats, and *vice versa*. One boy in a front row, I remember, was so large that he could not flex his legs under his desk, but was obliged to sit with his legs extended. The conditions were as bad in other schools, in which pupils were seated according

to rank. At that time I tried to interest the committee in this subject, and succeeded in having adjustable furniture placed in the new Prince Primary School. I left the School Board soon afterwards, and I never knew how well the adjustable furniture, then introduced for the first time, suited the requirements. But it seemed to me at the time that very little interest was taken in the matter. At that time adjustable furniture cost more than the old standard desks and chairs; but now that we are informed that the cost of approved adjustable furniture is no more than the old furniture, I see no reason why all the school buildings should not be adequately furnished with it. Perhaps if this society would bring the matter once again to the attention of the School Committee, the members of the board might be convinced of the wisdom of heeding the advice of those competent to decide how properly to seat the public school pupils.

DR. BLAKE: From what I know of the revenues of the School Board, we should have to resort to the process of gradual emancipation from undesirable school furniture. If we could prevail upon the board to fit out every new building with this improved form of furniture, and to provide a certain number of these desks and seats for all the schools, and if then Dr. Durgin's corps of school inspectors would select the pupils who need them (which I am glad to hear him say is feasible), I think we should be making a very substantial gain. I know it would be utterly useless to expect that the School Board would undertake to get rid of all the present furniture, but I have no doubt that this discussion will interest them, and perhaps help to arouse them to the necessity of doing something more than is at present being done about the subject.

DR. GEORGE B. SHATTUCK: I had a certain general knowledge of what had been done in regard to this matter eight or ten years ago, and I was interested in coming here tonight to see and to learn what there was new that would be shown and said. Now it does not seem to me that there is very much new from the point of view of the profession. I think that what we have been told tonight is very much what was told us about the year 1892, published in the school documents, and pretty well developed from the scientific and the professional point of view at that time. The one thing in which, as far as I can judge, we have something actually new is the development of Professor Miller's chair. Now I have no doubt that there is great merit in iteration and reiteration and emphasizing things, and especially things of this sort, and I have no doubt that the profession might be called upon to iterate and reiterate and emphasize, and have another committee and report again on this subject, but I should distinctly feel that I should sympathize with what Dr. Green said, that after all the touchstone of the whole thing must be in the School Committee. The medical profession may point out what they believe to be scientifically and practically the best thing, but that is not equivalent to its adoption. I confess that I am a little puzzled when we are told here that the adjustable furniture and the stationary furniture are of the same cost, and are not of the same cost. I should think that is a subject in regard to which it would be possible to have one categorical uniform statement, and, even if there should be a difference in the cost, from the point of view of the pro-

feSSION, it seems strange that Somerville and Malden and Lowell and Cuba should be able to care for their school children in a way that Boston is not able to. Now, moreover, if there is a difficulty about having school teachers who are sufficiently intelligent to adjust adjustable furniture, it seems to me strange that Somerville and Malden and Lowell and Cuba should apparently have school teachers who in this respect are so much more intelligent, at least from the mechanical point of view, than the school teachers in Boston.

DR. KELLER: I don't know that I can add anything to what has been already said, except perhaps to say that while some think that the matter rests with the School Committee, I think it rests with the condition of the treasury. I have always, as Dr. Calderwood will remember, favored the introduction of the adjustable desk and chair, always voted in that way when it was brought to a vote of the board, and I think if the committee whose duty it is to furnish the new buildings were to bring the matter before the full board it would be carried by a large majority. It seems to me that it would be a large expenditure of money which the city could not well afford at this time—perhaps it might at some future time—to take out of the buildings the stationary desks and chairs and introduce the adjustable desks and chairs into all the buildings. I think the committee are in earnest about desiring the very best furnishings for our schools, the most modern and most healthful furnishings in our school buildings, and while we are looked upon as slow and uninterested and unconcerned in regard to the health of the children, I am sure that it is an accusation which should not receive the sympathy and support of at least the educated class of people. I think the idea of furnishing new buildings with the most approved desks and chairs should receive the consideration of our School Board. I must say that as I have gone into the schools in the last two or three years, the seating of the children has been better than it was ten or eleven years ago, when I first came on to the board. There have been faults to be found with the desks and chairs which were put in conscientiously, believing they were an improvement upon the old plan, and I think they were; they still do not conform to the idea of an hygienic seating of children, and from the little I have seen of the chair which has been presented, it seems to me it has all the indications which the others have lacked, and I like it very much, except I have wondered whether that chair would not take up more room than a chair such as that at the desk before me. It seems to me that from the fore part of the seat to the bend of the support it occupied more space, and in our school buildings, where we are expected to seat I am ashamed to tell you how many, it would take up room, making it impossible to put as many seats in a building, but that might be a good thing. I hope something will be done which will bring about the reseating of our children.

DR. SHATTUCK: I don't wish to advocate any injudicious or faulty propositions in the way of expense as a taxpayer. I have no desire to suffer unnecessarily, but I would as lief suffer as a taxpayer in behalf of the little children as in behalf of any other proposition, and I think it would be as good an investment as a taxpayer could make, because it not only serves them, but serves the future generations. One is glad to learn that the School Committee would now

be eager to introduce the most approved furniture into all *new* buildings, and of course in a moderate length of time that would create a revolution, and we should doubtless be in a very satisfactory position, but one cannot help reflecting that if the discussion of this subject which occurred seven or eight years ago had been followed by the same eagerness, and this process had been going on all these years, we should today be in a good deal the condition it is promised we may hope to be in several years hence.

MR. SEAVER: In the last seven or eight years very large quantities of adjustable furniture have been put into school buildings in Boston, and there is a gentleman sitting over there who could probably guess better than I could how much adjustable furniture he has sold to the city of Boston. I think, as a rule, every new school building for the last seven or eight years has received a share of the adjustable furniture. A considerable number of the buildings are furnished with adjustable furniture throughout. There are others where adjustable furniture and stationary furniture both have been used for the reason that at the time there was an important difference in the cost. But suppose every new building built in the last ten years were furnished with adjustable furniture — that is not half of the solution of the problem; it is only one-fourth. The new buildings contain but a small fraction of the total number of the children of the city. The serious part of the problem is how to change the furniture of the old buildings without expending more money than the taxpayers — not as liberal as the one who has spoken tonight — would countenance the committee in expending, in throwing out some 50,000 old seats. We are not exactly in the condition of Cuba. We have a lot of old furniture in pretty good order which has been used, and which the economical taxpayer thinks we ought to use a little longer. I am in favor of adjustable furniture, and have done all I could to have adjustable furniture used.

PROFESSOR MILLER: The point has been raised about the room which this chair takes up. This particular chair was made for an adult. I imagine in the ordinary school chair this seat could be shortened several inches. It will no doubt take up more room than the chairs now in use.

DR. FITZGERALD: There are two things I should like to say: First, as to the matter of fact regarding the comparative cost between adjustable and non-adjustable furniture. I had occasion to ask that question of the purchasing agent of the city within a month, and his reply was that there was a difference in favor of non-adjustable furniture of 35 to 50 cents. If that is true that they are for sale at the same price, it would be well to let the purchasing agent of the city know that fact. He does not know it now. I regret having been called upon, because my investigation by the direction of the Committee on Hygiene and Physical Training has shown me, I am sorry to say, that the seating of children in rooms fitted with adjustable furniture is not as well carried out as it is in rooms fitted with three different sizes of seats. As a believer in adjustable furniture that is not a pleasant thing to say, but it is true. There were more children seated uncomfortably in rooms furnished with adjustable furniture than in rooms fitted with three sizes of seats, and it is largely owing to the difficulty of the present form of adjusta-

ble seat. I am informed that a rule was passed at a meeting of the Boston School Board last year, and as a matter of fact all the new buildings fitted up last year were fitted with adjustable furniture.²

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Continued from No. 8, p. 193.)

SECOND GENERAL MEETING.

The second general meeting of the congress took place on Monday, August 6th, in the large amphitheatre of the Sorbonne, which was fairly well filled when PROFESSOR LANNELONGUE took the chair at 2.15 p. m.

The general secretary, M. CHAUFFARD, first read a long list of honorary presidents of the sections. Among the Englishmen so honored were Lord Lister, Sir William MacCormac, Bart., K.C.V.O., Jonathan Hutchinson, Sir John Burdon Sanderson, David Ferrier, Professor Sherrington, Alexander Bruce. Among the other nationalities were Virchow, Waldeyer, von Bergmann, Hitzig, Koch, von Leyden, Politzer, Fraenkel, Metschnikoff, Bacelli, Retzius, Kitasato, etc.

PROFESSOR PAVLOV, whose address was postponed at the first general meeting in the Salle des Fêtes on the opening day of the congress, was absent through illness, so PROFESSOR LIKHATCHEFF read his paper, entitled

EXPERIMENTAL THERAPY AS A NEW AND EXTREMELY FRUITFUL METHOD OF PHYSIOLOGICAL RESEARCH.

In support of his subject the Russian professor described minutely his numerous experiments on section of the pneumogastric nerve, and its consequence, more especially in dogs. The intimate association of medicine with physiology has served more than once a useful purpose. The physician who treats a case of myxedema, for instance, with preparations of thyroid gland acts exactly analogously to the physiologist who makes an injection of thyroid extract in an animal deprived of this organ, in order, by synthetical means, to make clear the mechanical, chemical and nervous functions of those glands. The professor then spoke of his experiments with Professor Mosseu on dogs, in which all the blood of the portal vein was poured into the inferior vena cava. This operation, which is usually fatal, was not so in some of the animals, thanks to a special dietary. The professor touched on the brilliant and important experimental therapy which forms part of contemporary bacteriology. In conclusion, he paid a tribute to Claude Bernard, who in his vast and profound brain united in a harmonious whole physiology, pathology and experimental therapy.

PATHOLOGICAL PROBLEMS OF THE DAY.

PROFESSOR BACELLI (Rome) should have been the next speaker, but owing to the national mourning of Italy, he withdrew.

PROFESSOR LANNELONGUE in the name of the congress expressed his profound sympathy to the Italian professor, and then called on SIR JOHN BURDON SANDERSON, who spoke in French, on

² Since this meeting satisfactory action has been taken by the School Board. See Editorials, June 21 and June 28, 1900.

SOME OF THE PATHOLOGICAL PROBLEMS OF THE
PRESENT DAY,

and as he warmed to his subject was received with many rounds of applause. The professor stated that forty-five years ago, after taking his degree of Doctor in Medicine, he came to Paris to complete his medical education; and now, nearly at the end of his medical and scientific career, he felt it a great honor to speak before the congress. Sir John then called the attention of his audience to the above period. At that time in Paris, without speaking of the great clinicians, Claude Bernard was in the most active period of his career, Brown-Séquard had demonstrated the functions of the vasomotor nerves, and had begun his work on the physiology of the spinal cord. Everybody came to Paris to see the latest progress in experimental medicine. This was also the epoch of "cellular pathology." He then sketched the progress in cellular pathology from 1858, when Virchow published his work, through the work of Cohnheim, Recklinghausen, Leber, and Pfeffer, down to the beginning of the bacteriological period in 1878. But microbiology has not hindered the advance of pathological histology. On the contrary, never has the progress of histology been so rapid, in support of which statement he cited the work of Golgi, of Pavia, and of Ramón y Cajal in Madrid. Every one recognizes the great value of bacteriological diagnosis and of sero-therapeutics, but microbiology has rather produced its greatest influence on the science of medicine by the new and more extended ideas it has given us of the physiological functions of the cell, and consequently of cellular pathology. Pathology is today fundamentally as emphatically "cellular pathology" as it was when Virchow adopted the expression. Leucocytes, which were formerly interesting chiefly as factors in the process of inflammation or as typical examples of contractile and ameboid protoplasm, are now known to possess special chemical functions indispensable to the life of the organism. From the work of recent years one is led to believe that the actions of the cell on its surroundings, and vice versa, are due to ferments, the products of the evolution of the living cell. The professor alluded to the work of Miescher and Drechsel, and the more recent work of Kossel, of Marburg, on this subject.

MEDICINE AND DOCTORS IN THE UNITED STATES.

PROFESSOR JACOBI (Columbia University), before a very scanty audience, then read this paper. In a very interesting manner the professor traced the growth of the medical profession, education and press in the United States from its earliest beginnings in chaos down to the present day. This terminated the proceedings, when everybody went away to dine and prepare for the *fête* in the evening in the Luxembourg Palace described in the *JOURNAL* of August 23d.

MASSAGE AND MOVEMENT IN THE TREATMENT OF
FRACTURES.

On Monday morning, August 6th, at the Hôtel Dieu, before a crowded amphitheatre, M. LUCAS CHAMPIONNIÈRE gave a lecture and demonstration on the varieties of fractures in which the right treatment is massage and mobilization, with suppression of fixed apparatus. In expounding the principles and theory of the new method, the surgeon laid emphasis on the

fact that a methodical moderate movement is favorable to the setting of fractures; it is favorable to the formation of a firm callus. Surgeons of every age have condemned the fractured limb to immobility for the following reasons: It permits the primitive form of the limb to be restored; it ensures the reunion of the bones; it prevents or cures the inflammation of the region; and it is therefore the indispensable condition for the restoration of the functions of the limb. M. Lucas Championnière has introduced the following new and contradictory principles in the treatment of fractures: Movement is as necessary for the repair of all living parts as for their regular vitality, and this fact should be stated as soon as possible after the traumatism. The good influence of movement is incontestable for all soft parts, but it is not the less evident for solid structures also, in spite of their being solid bony levers. Not only do the muscles and soft parts more quickly and more completely regain their vigor with movement, but the bony callus also is formed more quickly, it is more solid and resistant, the reunion takes place more quickly and more firmly. The movement necessary for this bony reunion must be methodical, and, so to speak, "dosed" in a certain measure. An excessive range of movements has drawbacks. This "dose" of useful movement can be obtained by massage immediately after the traumatism. This is the best method of anesthetizing the limb, of removing the pain. Immobility only suppresses the pain for it to reappear each time that movement occurs, and by stiffening the limb to prepare the way for a new kind of pain. Whenever massage is painful, you can be certain that it has not been performed according to the rules laid down by the professor. This new method does away with muscular contraction, which is the cause of a considerable extent of the deformity and against which fixed apparatus is often powerless. It follows, therefore, that massage avoids deformity, which is especially noticeable in the clavicle, at the elbow, at the olecranon process. The disappearance of ecchymoses and inflammatory products takes place, and more rapidly in a massaged limb. The vitality of the skin is preserved, but more especially is the vitality of the limb restored. Muscular atrophies are reduced to a minimum, and have often disappeared from the time of the first attempts at normal function. The fractures which can always be treated by massage and movement are: Fractures of the humerus in its upper portion as far as the deltoid insertion; fractures of the lower end of the humerus up to a hand's width above the elbow; fractures of the elbow and especially fractures of the olecranon (M. Lucas Championnière has never sutured an olecranon); fractures of the radius at the wrist in the great majority of cases, fractures of the clavicle ditto; fracture of the fibula, except in cases where deviation of the axis of the foot threatens. The same holds in perimalleolar fractures without deviation. These cases are among the most satisfactory, and in which, on the other hand, rigidity is most to be feared. At the knee fractures of the femur without tilting of the fragment, and fractures of the head of the tibia (*plateau du tibia*) give marvellous results. In all the above cases this treatment is the regular and common practice, the apparatus being reduced to a minimum, and is replaced by the least support after the first few days. To give an idea of the generalization of this treatment, the professor terminated in giving the sta-

tistics of cases treated during the last five years at the Beaujon Hospital and at the Hôtel Dieu.

OPERATION FOR HERNIA.

On Tuesday morning, August 7th, M. LUCAS CHAMPIONNIÈRE gave a demonstration on his method of treating hernia, and operated before the numerous members of the congress who were present.

VISIT OF ENGLISH SURGEONS TO A SURGICAL CLINIC.

Several English surgeons having expressed a wish to see a French surgical clinic, a very successful visit was arranged through the energy of the secretaries of the British committee, Mr. D'Arcy Power and Dr. Garrod. Under the guidance of Dr. Mercier, from Montreal, who acted as interpreter, about twenty-five English surgeons met on Tuesday, August 7th, at 9.30 A. M., at the gates of the Laennec Hospital. M. Faure, surgeon to the hospital, performed two operations for the benefit of the visiting surgeons.

SECTION OF INTERNAL MEDICINE.

The first question on the programme of this section was the

PATHOGENY OF GOUT.

The discussion was introduced by DR. LE GENDRE, physician to the Tenon Hospital, Paris: SIR DYCE DUCKWORTH, and PROF. WILHELM EBSTEIN, of Göttingen. The following are abstracts of their reports:

DR. P. LE GENDRE said that since the uratic nature of tophi and uricemia in gouty subjects had been determined the efforts of theorists had almost always had as their object an explanation of the pathogeny of gout by accumulation of uric acid in the economy and the precipitation of urate of soda in the tissues. The author replied by the principal theories, namely, the introduction in excess of uric acid by the food or of nitrogenous substances generating uric acid; the formation in excess of uric acid by destruction of the nucleins or nucleo-albumins proceeding from the leucocytes or from the nuclei of all the cells in the body; the accumulation of uric acid by insufficiency of transformation into urea whether through torpidity of the liver or default of a ferment permitting it to fulfil its uropoietic function, or by inadequate oxidization throughout the organism; the retention of uric acid in the blood by insufficiency of the eliminatory function of the kidney; the resorption of uric acid in the kidney, which, being supposed normally to have the function of effecting by certain of its cells the formation of uric acid by combination of the urea and glyocol proceeding from the liver, would become incapable of eliminating the acid formed. This being reabsorbed would in the blood become quadriurate of soda, which being present in superabundance precipitates itself under certain influences in the tissues in the state of biurate of soda. Some hold that the presence of urate of soda in the articular tissues sets up therein only a paroxysmic inflammatory reaction as a foreign body. Others maintain that the uric acid acts as a chemical poison causing necrosis, and that the preliminary mortification of the tissues is necessary to the formation of the crystallized uratic deposits. Some explain the gouty localizations by the smaller vascularization or the

less resistance of predisposed tissues and the onset of attacks by the hindrance of the renal functions. Others attribute the localizations, paroxysms and metastases to a nervous influence. It has also been believed that uric acid was hurtful only after having undergone certain physical or chemical modifications, and that a pathogenic rôle should be attributed equally to substances other than uric acid, such as alloxuric bodies. Each of these theories is open to valid objections, chemical, physiological or pathological; the most plausible, moreover, can explain only the mechanism of the gouty paroxysm, not the permanent and hereditarily transmissible disturbance of cellular transmission, which is the necessary link between the intermittent morbid phenomena in the individual as between the disease of the father and that of the son. Clinical statistics, however, have placed it beyond question that gout is observed with a special frequency in individuals whose ancestors or descendants suffer from diseases of the so-called arthritic group or from trophic inadequacy. First, diabetes and obesity and then gout are often associated with some of these diseases in the same person. The numerical relations established between diseases of the arthritic group warrant us in attributing to each of them the pathogenic process which has been shown to be true as regards one of them by Bouehard, after whose investigations it is no longer permissible to doubt that diabetes consists in a diminution of the aptitude of the tissues to burn up sugar, to carry to the extreme the transformations of carbohydrates. If clinically gout is of the same nature as diabetes, there is a great probability that there exists in the gouty subject a defective elaboration of nitrogenous material, an inaptitude of the tissues to destroy albumin thoroughly. Among the consequences of the incomplete destruction of refuse must be included the incumbrance of the organism both by certain acids (oxalic, acetic, lactic, etc.), which can diminish the conditions of solubility of uric acid without that substance being necessarily in excess in the blood, and by certain organic bodies the toxicity of which may contribute to the production of the manifold accidents of gout. Clinical statistics further place in evidence the morbid affinities of gout with simple albuminuria and interstitial nephritis as the frequency and intensity of the disturbances in gouty subjects. It may be inferred from these co-existencies that the functional disturbances of the kidney, as those of the nervous system, play a part in the preparation of gout and in the outbreak of its paroxysms, either by hindering the eliminations of the toxic waste products of the denutrition of the tissues, or through neurotrophic inhibition of the intracellular metabolism. When gout is acquired, the nutritive disturbance of the cells is brought about by a defective hygiene (abuse of food stuffs, nitrogenous or rich in oxalic acid, and of certain fermented drinks, insufficient physical activity, and overstrain of the nervous system), or by the action of a poison (lead). When gout is hereditary it is that the nutritive disorder of the cells of the first begetter has been continued through the ovum or the spermatozoon in the descendants of these cells.

SIR DYCE DUCKWORTH read a paper, of which the following is a summary:

(1) That gout as a morbid condition depends on an inherent vice of nutrition, which is manifested by an imperfect metabolism in various organs or parts of

the body, presumably in the kidneys, and probably in the liver.

(2) That this trophic disorder or inadequacy (*calentissement de nutrition*) leads to the formation of uric acid, probably in excess, and to the periodic retention of it in the blood (gouty uricemia).

(3) That histology throws no light upon the intimate nature of this defect, which thus relates to cellular potentiality, possibly under neurotrophic influence, and not, as far as we know, to structural alteration.

(4) That this textural disability, or a tendency to it, may be primarily acquired, and also transmitted as a fault, thereby inducing from time to time uricemia with gouty manifestations in the descendants.

(5) That in most instances, under conditions which provoke it, and in some cases independently of these, attacks of gout may grow up and come to a crisis. Such crises are attended by an alteration in the solubility of the uratic salt in the blood, whereby irritating crystals of biurate of sodium are produced and precipitated in various parts of the body.

(6) That a paroxysm of gout, the sites of its occurrence, and its metastases are determined by nervous influences, probably dominated from the bulbar centre, and that the local attacks alight either in the joints or in textures which have been weakened or rendered vulnerable by impaired nutrition, owing to past injury or overuse.

(7) That this central neurosis is an essential and transmissible feature in the pathogeny of gout, and pertains to the arthritic diathesis generally.

(8) That the uricemia of gout is peculiar and unlike that which is induced by other morbid conditions, but that the occurrence of uricemia in the gouty is by itself inadequate to induce attacks of gout.

(9) That uratic deposits in any part of the body may be removed in course of time, but are apt to be permanent in the least vascular tissues.

(10) That uratic deposits may occur to an enormous extent in gouty persons without the occurrence of any pain or paroxysms.

(11) That the clinical features of gout indicate that both hemic changes (due to inherent morbid tissue metabolism) and a neurotrophic disturbance act as pathogenic factors, and that, consequently, gout is to be regarded as a neurohumeral malady.

DR. EBSTEIN summed up his conclusions as follows:

(1) Gout is a more or less chronic disease of which the fundamental substratum is a hereditary morbid proclivity, which is almost always congenital. To this proclivity is given the name "uric-acid diathesis."

(2) As regards ultimate cause of the uric-acid diathesis, nothing more than hypothesis can be advanced. The intimate relations existing between the nucleins and uric acid make it probable that we have to do in the uric-acid diathesis with an abnormal state of the cell nuclei or of the protoplasm of the individual proclivity, which can be followed throughout whole generations and races of men, and is in any case of the greatest importance in the uric-acid diathesis.

(3) It appears that there are various circumstances which may contribute to the development of the diathesis and its transformation into positive gout. Among these circumstances must be mentioned the following:

(a) Gout develops, all the circumstances being alike,

the earlier and more intensely the diathesis is more pronounced; (b) there are habits — laziness, luxurious living, often a combination of both these causes, in the highest degree the abuse of alcohol — which favor the development of gout; the temporary fluctuations that have been observed may generally be attributed to those circumstances; (c) there are acute and chronic intoxications, which, given the existence of the diathesis, favor the development of gout; bacillary poisons are in that case of great importance; relations of gout with rheumatism, syphilis and lead poisoning should in the first place be borne in mind; influenza, too, seems to favor the appearance of gout; (d) contagion, which was considered a factor of the first importance by Boerhaave, appears to be of no importance; (e) climate seems to have no influence.

(1) Uric acid seems to be poison (the *materia peccans*) of gout. The question of knowing whether or not, besides uric acid, other products of the organism belonging to the family of the alloxans or nuclein bases play a part or not is still unsettled. It is probable that it is only the uric acid formed at the expense of the nucleinic substances of the human body and not that formed at the expense of the nucleins of the elements which has an influence on the pathogeny of gout. It has not yet been proved that in gout uric acid is formed in excess, and Ebstein does not think that this is indispensable. Nevertheless he thinks that an excess of uric acid is very probable. The history of leukemia teaches that gout is not the result of increased production of uric acid (estimated according to the quantity of uric acid separated in the urine), for there is in some cases of leukemia a secretion of uric acid such as is never seen to such a degree in gout.

(5) Uric acid is a chemical but not a septic poison. The influence of the poison is not equal either on different animal species or on animals of the same species differing in age. Inflammatory and necrosing changes of the tissues in question are the necessary consequence of the presence of uric acid, which finally causes a complete necrosis. When the tissues are utterly dead, but not before, the acid is deposited in them in the form of crystallized acid urate of soda (monosodium urate, Tollens), (sodium biurate, Roberts). Tollens thinks that the uric acid circulates in the blood and the alkaline juices of the human body in that same form and not, as Roberts has supposed, as sodium quadriurate (called more rationally hemisodium urate by Tollens). It may be admitted without hesitation that the monosodium urate (Tollens), sodium biurate (Roberts) may be deposited in a crystalline form in the tissues necrosed either by uric acid or another poison.

(6) To understand the pathogeny of the different symptoms of gout one must assume (a) a primary articular gout; (b) a primary renal gout. The former is the most widespread form of gout which does not prevent its subjects from reaching an advanced age. Primary articular gout develops itself first under the influence of a retention of uric acid; this retention is localized because it affects only one or more parts of the human body. In primary renal gout we have to do from the first with a generalized retention of uric acid, which consequently affects all parts of the body; it is always caused by a primary and material change in the kidneys.

(To be continued.)

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DR. ELLISTON'S ADDRESS BEFORE THE BRITISH MEDICAL ASSOCIATION.

As this year's president of the British Medical Association, Dr. William Alfred Elliston addressed the association on the topic, "Some Incidents in the Evolution of the Modern Physician." We are perhaps too apt to forget in our realization of what we as a profession are, what we have been and how crude the conceptions of our forefathers were, in the light of our present knowledge. It will take very few generations more to place the days of painful and septic surgery, still fresh in the minds of some men yet living, in the same category with indiscriminate blood letting and the generally empirical therapeutics of a century ago. It is particularly true of medicine that we are inclined to live almost exclusively in the present, with frequent forecasting of the future, but with little respect for the past. The historical instinct is often painfully lacking even in well-educated physicians of the present day, a consequence no doubt quite inevitable where so much yet remains to be done. The neglect of the teaching of the history of medicine, even in our best medical schools, bears out this proposition, a neglect which we sincerely hope the near future may see rectified. Retrospective addresses are on the whole looked upon with disfavor at great medical gatherings, an attitude of mind often justified by the lack of critical analysis which such addresses too frequently represent. This generation is, it must be admitted, wholly weary of the history of anesthesia and surgical cleanliness, so often has it been reiterated by the uninspired medical orator, but there are other matters, less familiar and no doubt less important in a practical sense, but still of vital interest to us as representatives of a liberal profession. It is, therefore, altogether appropriate that we should hear from time to time a description of the events which have brought medicine to its present position of universal respect. This Dr. Elliston has done in his elaborate address and in a highly entertaining fashion. His remarks are confined rather exclusively to British medicine, a limitation no doubt

necessitated by the time at his disposal, but out of this history we are led to see the steps which have produced the present-day physician.

The event which really marked the beginning of medicine in England was the granting of a charter to a small body of medical graduates, who thereafter were known as the Royal College of Physicians. This charter, largely through the influence of Thomas Linaere, was granted in 1518. Later, in 1540, the barbers and surgeons were united, and incorporated as the "Masters or Governors of the Mysterie and Commonalitie of Barbers and Surgeons of London." During this century also the Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow were founded. At about this period a stimulus was given to medical science by the introduction of the study of human anatomy in addition to the dissection of the lower animals. In 1597 Mr. George Bacon was master of the Barber Surgeons' Company. He was a bookmaker apparently of a dignified sort. "I would not have," he says, "every ignorant asse to be made a chirurgeon by my booke, for they would do more harm with it than good." "In the sixteenth century," Elliston writes, "there were already established physicians, surgeons and apothecaries. The surgeons were associated in their guild with the barbers and the apothecaries with the grocers. While the physicians were men of education, cultured according to the education of the time, the surgeons and apothecaries were not a very highly educated class and they remained so, with few exceptions, until the rise of the nineteenth century."

The advent of Gilbert and Harvey brought a new energy into the progress of medicine not only in England, but throughout the civilized world, and, in fact, Harvey's work on the blood was a discovery without which advance must have been checked for many years thereafter. It is an interesting fact that the rate of the pulse was not taken by a watch until nearly a century after Harvey's time. Importance was apparently attached to the character of the pulse rather than to its exact rate, something we, in our day of precision, are often too apt to forget.

The Royal Society was founded in 1662 by a body of students at Oxford, and is therefore the oldest scientific society in Great Britain. It was made up not wholly of medical men, but in general of those who were interested in the development of mathematical and physical science. This gathering together of men interested in scientific subjects, no doubt, did much to stimulate medical practice and to raise it to a higher level. From this time on, at least, progress was continuous, and the physicians gradually established themselves in a firmer scientific and social position.

Dr. Elliston in his address discusses Boerhaave and Hales, the birth of chemistry, the progress of medicine in the eighteenth century, the unfortunate relation of the apothecaries to the physicians, medical societies and notable practitioners. The raising of the

standard of medical education was one of the most important advances of the early part of the nineteenth century, by legislation known as the Apothecaries Act of 1815: "The use of wise legislative enactments in the social influence and status of the profession soon became apparent, but, of course, its full effects were not evident until many years had elapsed. It is quite within my memory that the only qualification recorded in many instances in the annual *Medical Directory* was 'in practice prior to 1815.' It is not a little singular that the Apothecaries Act has gradually extinguished the apothecary, as then understood. I can remember an apothecary's shop in this town (Ipswich). That has now become a thing of the past, as will soon, I trust, what is called the open surgery of today. With the better education required and the institution of examinations, a different class of students were attracted to medicine, and they were rarely satisfied with the apothecary's license, but sought further a surgeon's diploma."

The progress of this century is covered more briefly and we are glad to note that but one paragraph is given to the time-worn subject of antiseptics and anesthetics. The following description of the first operation under ether in England, as given by Mr. William Cadge, who was present, is, however, not without interest: "Robert Liston was the first surgeon in this country to use ether, and those who were present at University College Hospital on December 21, 1846, and witnessed the complete and perfect success of that first venture will not easily forget the dramatic character of that scene. I was present and assisted at the operation—amputation of the thigh by the double-flap method. Some one present timed the operation; it took thirty seconds; the few arteries were tied, and all signs of blood cleared away. A towel was then thrown over the stump, and we watched anxiously for the patient to show that he was not dead; he presently woke up, and when asked once or twice if he could stand the pain of the operation, he accused us of cruelly trifling with his feelings, and when the towel was removed and he saw the naked stump, he burst into tears, and I thought Liston would do the same."

Dr. Elliston concludes his address with a very practical matter, namely, the expense of modern medical education. We quote in part his remarks, which surely apply elsewhere as well as in England:

"In conclusion, may I briefly refer to the growing expense of medical education? It is certainly the most costly of all the learned professions. This is due to the long period of time required for the medical curriculum, and to the multiplication of qualifications which I regard as a fashionable absurdity. I am not unmindful of the up-to-date requirements of general culture; of an accurate knowledge of anatomy, chemistry, physiology, biology, bacteriology, pathology, physics, optics, mechanics, electricity, and photography, which are all essential to the well-educated physician; they are daily called into requisition

in order to diagnose and to direct the eye and hand in the treatment of disease. The necessity for the highest education for this mental training is obvious, and it rests with the General Medical Council to see that this can be obtained without undue restrictions. What I venture to think is wanted is early qualifications, and if the elements of science were more generally taught in school life that would be easily possible."

Altogether this address is a welcome and fitting one on the occasion of the opening of a great medical congress, and we beg to call those of our readers' attention to it who feel an interest not only in the future but also in the past of their profession.

HYSTERIA AN ORGANIC DISEASE.

To one who testifies in court regarding the effects of trauma upon the nervous system, the difficulty has no doubt often come of explaining to a jury the nature of hysterical manifestations. The average juryman looks for something tangible; a broken leg or a bruise appeals to him, but a disturbance of sensation or a contracture without a cause which he can see is not likely to impress him deeply. His judicial faculty is quite in abeyance and he is too likely to depend upon the judge's charge or precedent in the formation of his opinion as to a just verdict. To explain these subtle matters to wholly untrained and often ignorant men from the disadvantageous position of the witness stand is no easy task, and men of great intelligence often leave the stand conscious of the fact that their elucidations have fallen on deaf ears, rather from the difficulty of the subject than from any fault of their own. The *Philadelphia Medical Journal*, under the heading "Organic Hysteria," suggests a possible way out of the difficulty, which appeals to us as logical and legitimate. We quote in part:

Of all the purely functional disorders which result from trauma it must be conceded that hysterical affections are probably the commonest and the most puzzling. That they are frequently disguised under assumed names in our courts is a matter of common observation. The prejudice against the term "hysteria" is not confined to the medical profession, but is entertained widely by all persons, and especially by the ignorant classes, from whom largely our juries are recruited. . . . Recently, in a Camden court, a man secured a verdict for \$5,000 for a typical hysterical paralysis of an arm caused by a shock of electricity from a low-hanging arc lamp, but the lawyer in the case had evidently succeeded in convincing the jury that the muscles and nerves had been destroyed by the mysterious current. Soon after, in a Philadelphia court, a woman with an almost identical paralysis caused by a blow from a falling sign failed to receive damages because apparently it was successfully demonstrated to the jury that the affection was merely hysteria. These two cases illustrate the subject perfectly. They prove that there is something in a name when damages are concerned. They also show that the attitude of both the medical profession and the courts toward such cases is illogical and unscientific. . . . Why

not abandon the misleading phraseology which assumes a paradox, that is, that a function can be disturbed without a change in its organic basis, and boldly state, as a sound pathological doctrine, that a neurosis is an organic fact. We have long thought that the more permanent stigmata of the grand neuroses should be grouped under some such designation as "organic hysteria." A muscle that is paralyzed for many weeks, or contracted, or the seat of tremor, is a disabled muscle; and all it needs to dignify it in the sight of men and courts is an acknowledgment of the fact that its disability is not dependent on a caprice, or whim, or volition of the patient, but on some minute change in the cytoplasm of nerve cells that is as real, though perhaps not as permanent, as the changes wrought by a poison or a process of degeneration. Surely pathology, of all the sciences, should no longer acknowledge the trammels of mere scholastic distinctions.

We are somewhat doubtful whether such a statement of the case would relieve the expert witness of all his embarrassment. At the same time the suggestion is a good one and should be put into practice far more often than it is in spite of the searching cross examination it would probably receive at the hands of a shrewd lawyer.

MEDICAL NOTES.

DEATH FROM PLAGUE IN GLASGOW. — It is reported that a member of a family certified to be suffering from bubonic plague having died, ten families living in their neighborhood have been placed under medical observation. This death was the second which has occurred from plague. Forty families are now isolated.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, August 29, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 76, scarlatina 10, measles 22, typhoid fever 27.

BOSTON DEATH STATISTICS. — The total number of deaths reported to the Board of Health for the week ending August 25th was 226, against 219 the corresponding week last year, showing an increase of 7 deaths, and making the death rate for the week 21.24. Of this number 114 were males and 112 were females; 156 were born in the United States, 67 in foreign countries and 3 unknown; 47 were of American parentage, 153 of foreign parentage and 26 unknown. The deaths from consumption were 25; pneumonia, 14; whooping cough, 4; heart disease, 20; bronchitis, 2, and marasmus, 6. There were 12 deaths from violent causes. The number of children who died under one year was 69, the number under five years, 87. The number of persons who died over sixty years of age was 42. The deaths in public institutions were 65.

DIPHTHERIA IN ROXBURY AND DORCHESTER DISTRICTS. — There are a number of cases of diphtheria in the Roxbury and Dorchester districts. Since Au-

gust 25th the Board of Health has reported 12 cases. Of these latest cases 8 are reported from Roxbury and Dorchester. The North End is said to be practically free of the disease. The disease is of a mild form and it is probable that, owing to the increased care in making bacteriological examinations, many cases have been reported which in previous years would have escaped unnoticed.

NEW BUILDING FOR WEST END NURSERY, BOSTON. — It is hoped that the buildings of the West End Nursery may soon be enlarged, to meet the added demands which are constantly being made upon it. To this end the land behind the present building will be bought when sufficient funds are raised, which will give space for needed enlargement of the out-patient department and added lecture rooms.

NEW YORK.

WATER SUPPLY OF NEW YORK. — The "Inquiry into the Conditions Relating to the Water Supply of the City of New York," which has just been published by the public-spirited Merchants' Association, is a most admirable document, supplementing, as it does, the comprehensive report made some months ago to Controller Coler by Mr. John R. Freeman, and being even more exhaustive than this. For the additional supplies of water which the growth of New York will shortly demand, two sources are stated to be available. One of these is the great watershed of the Catskills, which is capable of furnishing at least 400,000,000 gallons per day. The other is the much larger area of the Adirondack watershed, draining into the upper Hudson, which, it is computed, can be counted upon to furnish 1,500,000,000 gallons per day. The plan favored by the committee of the Merchants' Association, and one which would entirely free the city from having to depend on the grasping Ramapo Company for its future water supply, is to establish an ample filtering plant above Poughkeepsie and thence conduct the water of the upper Hudson by an aqueduct discharging into a storage reservoir near New York. An early addition of 250,000,000 gallons per day from this source would, it is stated, meet all the expected requirements of the city for twenty years to come, and such extensions of the system are practicable as, in the judgment of the committee, would supply a population of 18,000,000. This plan contemplates the construction of reservoirs in the Adirondack district to be filled by heavy rains and freshets, and to be discharged during dry seasons into the streams leading to the Hudson, thus maintaining the delivery of the river fairly constant through the twelve months. This, it is believed, would settle the water question for considerably more than a century to come. The financial aspects of this great undertaking have been carefully worked out, and appear to present no difficulties. On the contrary, it could add 250,000,000 gallons per day to the water supply, pay for the plant by 1937, and earn large revenues from water rates; whereas it is shown

that a twenty-year contract with the Ramapo Company would entail to the city a net loss of not less than \$195,000,000. To supply New York with 250,000,000 gallons additional water per day from the upper Hudson would require an investment in plant of \$36,880,000, which, in the judgment of the committee, can be easily met out of the revenue from the additional supply, without any increase in the present water rates. This will also hold true, it is believed, of additional supplies up to 1,500,000,000 gallons per day.

DEATH OF FRANKLIN BOOTH, M.D. — Dr. Franklin Booth, one of the leading physicians and surgeons of Long Island City, died at St. John's Hospital, in that place, on August 19th. His death was a peculiarly sad and heroic one. He was run over by a trolley car at Elmhurst, Borough of Queens, New York City, and had both his lower extremities terribly mangled; with great coolness he instructed the bystanders how to apply temporary tourniquets to the injured members. One of his legs was amputated on the sidewalk by the ambulance surgeon who was summoned to his relief. After being taken to St. John's Hospital, he consulted with the surgeons in attendance as to the best treatment of his case. It was decided to amputate the other leg, and a few hours after the operation he died. Dr. Booth was a native of Windsorville, Conn., and was graduated from Bellevue Hospital Medical College in 1868. He was one of the attending surgeons to the hospital in which he died.

DEATH OF WILLIAM B. WATERMAN, M.D. — Dr. William B. Waterman, of Brooklyn, N. Y., died after an illness of several months, on August 21st. He was born in Brooklyn thirty-eight years ago, and was graduated with honor in 1885 from the Medical Department of the University of the City of New York, where he was awarded the Mott prize and medal. For a number of years he was a member of the surgical staff of the Eastern District Hospital of Brooklyn.

Miscellany.

THE HYGIENE OF HIGH ALTITUDES.

It is well known that the chemical composition of the atmosphere differs but little, if at all, wherever the sample be taken; whether it be on the high Alps or at the surface of the sea, the relation of oxygen to nitrogen and other constituents is the same. The favorable effects, therefore, of a change of air are not to be explained by any difference in the proportion of its gaseous constituents. One important difference, however, is the bacteriological one. The air of high altitudes contains no microbes and is, in fact, sterile, whilst near the ground and some one hundred feet above it microbes are abundant. In the air of towns and crowded places not only does the microbial impurity increase, but other impurities, such as the products of combustion of coal, accrue also. Several investigators have found traces of hydrogen and certain

hydrocarbons in the air, and especially in the air of pine, oak and birch forests. It is to these bodies, doubtless consisting of traces of essential oils, to which the curative effects of certain health resorts are ascribed. Thus the locality of a fir forest is said to give relief in diseases of the respiratory tract. But all the same these traces of essential oils and aromatic products must be counted, strictly speaking, as impurities since they are not apparently necessary constituents of the air. As recent analyses have shown, these bodies tend to disappear in the air as a higher altitude is reached until they disappear altogether. It would seem, therefore, that microbes, hydrocarbons, and entities other than oxygen and nitrogen, and perhaps we should add argon, are only incidental to the neighborhood of human industry, animal life, damp and vegetation. — *Lancet*.

BACTERIOLOGY OF ACUTE TROPICAL DYSENTERY.

At the recent meeting of the British Medical Association Professor Simon Flexner, of Philadelphia, spoke on the "Bacteriology of Acute Tropical Dysentery." He is reported in the *Journal of Tropical Medicine* to have said that it was erroneous to suppose that tropical dysentery was of a single kind. The disease had been attributed to different groups of organisms. The bacillus coli communis was still believed by many to be the cause; the pyogenic cocci were regarded to be so by others, and the ameba coli ranked as a potent pathological factor. Whilst investigating the diseases of the American soldiers in the Philippines he had succeeded in isolating a group of organisms (allied to the coli) not normally present in the intestines and showing peculiar reaction. When the acute form set up by these organisms became chronic the ulcers were superficial and were not undermined. Experiments showed that certain animals could be rendered immune with the products of these microorganisms. Flexner believes the organisms he found are identical with those described by Japanese investigators as occurring in dysentery in that country. There seems some justification for the adoption of the term "infectious dysentery" as distinct from tropical dysentery.

METEOROLOGICAL RECORD.

For the week ending August 11th. in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.			Direction of wind.		Velocity of wind.		Wet'b'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S...5	30.23	66	73	58	63	63	63	N.W.	S.	4	14	C.	F.	
M...6	30.04	78	92	64	72	71	72	W.	S.	14	5	C.	C.	
T...7	30.21	70	76	64	73	88	80	N.	N.E.	8	5	R.	O.	.07
W...8	30.08	68	73	63	95	88	92	E.	W.	4	8	O.	O.	.31
T...9	29.92	77	86	68	77	75	76	N.W.	S.	12	3	F.	C.	.07
F...10	29.92	82	93	71	68	87	78	N.W.	S.W.	5	6	C.	F.	.28
S...11	29.77	86	95	77	69	72	70	W.	W.	13	10	C.	C.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

Address.

THE SCOPE AND AIM OF THE SECTION'S WORK.¹

BY COLONEL KENNETH MACLEOD, M.D. (RET. I.M.S.),
President of the Section of Tropical Diseases of the British Medical Association.

SINCE the last meeting of this section events have occurred which have emphasized the significance and enhanced the importance of its work. The war in South Africa has stimulated into vivid reality the unity and solidarity of the British Empire. The imperial idea implies not only a community of interests—social, commercial and political—between the mother country and her colonies and dependencies, but also a community of suffering; and as tropical conditions and tropical diseases prevail in Greater Britain to such a large extent, the study of these as they affect both the governing and the governed has come to be recognized as a matter of vital and cardinal necessity. This has been fully acknowledged by the able minister who presides over the Colonies, and who has realized more clearly than any of his predecessors the immense importance of inquiry and education as regards tropical pathology and hygiene. The Government of India has also awakened from its torpor, and taken thought and action in the same direction by encouraging research, training men in bacteriological methods, establishing laboratories, appointing commissions and promoting special investigations.

A knowledge of the pathology and pathogenesis of disease must obviously precede and guide preventive and curative effort; and it cannot be too loudly proclaimed that this knowledge can only be obtained by systematic scientific research. The days of casual and statistical observations and dissertations have gone, and it is now universally understood that nothing will avail for the solution of pathological problems except the undistracted work of trained agents provided with ample opportunities, facilities and appliances. The recent history of malariology, to employ a new and expressive term, is a signal illustration of the dependence of sanitary and therapeutical endeavor on pathological discovery. Laveran in 1880 furnished the key to the morbid processes which in malarious disease take place within the body by the discovery of the plasmodium malariae. Manson and Ross pioneered the brilliant investigations which have revealed one, if not the one, means by which this organism leaves the infected subject, lives and breeds in outer nature, thus compassing the communication of what must now be admitted to be an infective disease. It is interesting to observe how this knowledge is being at the present time turned to practical account, and how it explains and gives precision to methods of prevention and cure which had previously been resorted to empirically. Koch, in the Dutch Indies and German New Guinea, has been attacking the plasmodium within the human host, and claims, by destroying it in that phase or stage of its existence, not only to cure the individual, but to reduce greatly, or altogether abolish, the prevalence of malarious disease in the community. Sambon and Low, in Italy, are addressing themselves to the extrinsic life of the parasite, and endeavoring by special contrivances and precautions to cut the mor-

bific circuit outside the body. Koch's labors have an intimate bearing upon the subject which has been selected for discussion at this meeting, and will, no doubt, be noticed and criticised by those who take part in it. The results of the proceedings of Drs. Sambon and Low will be eagerly watched, as they will contribute an important aid to the solution of the question whether the "anopheles" is the only medium of malarious infection, and, if so, whether this occurs invariably by inoculation.

The South African war has forced into prominent and painful attention two diseases which, although they cannot be called tropical diseases, manifest themselves with special severity as regards incidence and fatality under tropical conditions—namely, enteric fever and dysentery. The theatre of the war—the uplands of South Africa—cannot be classed, either as regards position or physical characters, as tropical. Malarious disease, the special and predominant product and index of tropical countries, is conspicuous by its absence among the causes of disability and death occurring in the British army of South Africa. But the meteorological conditions which obtained during the early months of the campaign were most aptly described by the term "tropical." Sunstroke and sun fever were very common. I have endeavored to ascertain whether these cases were all or mostly cases of heat shock, and whether any considerable number of them presented the phenomena of heat fever—so called "siriasis"—and, if so, whether these occurred in epidemics or appeared to be communicable. I regret to say that I have not succeeded in obtaining any information on these points. The cases which I have met with at Netley have presented a similar history and similar sequelae to those received from India. Perhaps, when the medical history of the campaign comes to be compiled, some facts bearing on these questions may be forthcoming. I allude to the matter here and now in the hope of eliciting information.

That enteric fever existed in South Africa and was apt to prevail in South African towns and cantonments during the summer months was well known, and its appearance among the troops engaged in this war was fully anticipated; but the excessive prevalence of the disease in a country and climate with a reputation for exceptional healthiness has come as an unpleasant surprise. No doubt the circumstances and exigencies of warfare are mainly responsible for the heavy tribute of sickness and death which enteric fever has levied. War shares with famine the malignant power of enhancing the susceptibility to whatever infection is present at the place and time.

Enteric fever has been in grim evidence during recent wars on the Indian frontier and in the Egyptian Soudan; but malaria, cholera, yellow fever and dysentery have on other occasions been stimulated into disastrous activity by war. So with famine: malarious disease, smallpox, diarrhoea, dysentery and relapsing fever have attended or followed it, and at the present time cholera and plague are raging among the famine-stricken in India. The infection of enteric fever seems to be ubiquitous, portable, and peculiarly facile and subtle; and perhaps the most urgent question of the hour is how to mitigate its prevalence in the British army, in which in times of peace it causes one-third of the total mortality.

It is important to note that a very marked contrast exists between the ordinary incidence and mortality of

¹ An address delivered at the opening of the Section of Tropical Diseases, at the Annual Meeting of the British Medical Association at Ipswich, July-August, 1900.

the disease in temperate and tropical or subtropical countries — in England and Canada on the one hand, and in India and Egypt on the other. A similar contrast appears in the French army stationed in France and in Northern Africa. How much of this great excess is due to tropical conditions, tropical and climatic, and how much to remediable sanitary defects it is not easy to say.

But side by side with the excessive suffering of the army in India we are confronted with the remarkable fact of the immunity of the native population. Whether a similar immunity exists among indigenous races and habitual residents in South Africa is an interesting question. Evidence seems to indicate that it is so. The native immunity in India, though not absolute, is undoubted; its cause has not been satisfactorily ascertained. It has been attributed to habituation to minute dosage of the contagium, to protection conferred by attack during infancy and childhood, and to racial resistance acquired in the course of generations through both of these influences. Some experiments by Freyer and others indicate that natives give positive reactions to Widal's test; but more extended and exact investigations on this point are desirable. It is quite certain that the immunity of natives is not due to superior sanitary conditions. Whether a similar immunity — temporary or permanent — can be engendered in European subjects by a process of inoculation such as has been devised by Professor Wright, of Netley, and practised on a large scale among soldiers proceeding to the seat of war, is a question the reply to which is awaited with eager anxiety. Some figures obtained from Ladysmith have been published by Professor Wright, which seem to show that some immunity is conferred by these inoculations, but though encouraging, they are by no means demonstrative. Similar procedures for creating an immunity against cholera and plague initiated by Professor Haffkine have in India been attended with satisfactory results. But although a certain measure of preventive success has been obtained by these inoculations, the employment of them appears at present to be practicable and useful only as an emergent expedient in the presence of a serious outbreak; and the prevention of cholera, plague and enteric fever on a large scale must apparently be essayed on other lines and by other methods.

Dysentery has been very rife in the South African army, but the disease has exhibited mostly a mild type and been amenable to treatment. In some camps it has presented the aspect of an epidemic or infectious disease; but whether the infectiousness is apparent or real — due to common exposure to certain noxious conditions or to communication from man to man of some specific contagium — it is impossible in the absence of knowledge regarding the nature of the contagium or contagia of dysentery to say. The dysentery of war and famine is believed to be infectious, but notwithstanding much able and laborious research we have yet much to learn concerning the pathology and causation of dysentery. Imperfect conservancy, foul water, alternations of temperature, exposure, fatigue and bad food, which are undoubtedly adjuvants if not factors of dysentery, have been in baneful operation in this war, and a new disease resembling dysentery has been described under the name of "dust colic." This seems to be a muco-enteritis caused by the swallowing with water and food of irritating particles of grit

blown about by dust storms. The presence of the grit in the evacuations does not seem to have been sought for or found.

The persistence of plague in India and the appearance of the disease for the first time south of the equator — in Mauritius, South Africa, South America and Australia — are events deserving of special notice. The disease has during its present prevalence confined itself mostly to warm and hot countries, and, though not exclusively a tropical disease, nor apt in the tropics to be at its worst when conditions are most typically tropical, it appears to find in tropical countries and circumstances the most favoring environment. It is curious to remark that, while in India natives appear to be readily susceptible to the infection of plague, Europeans, though not absolutely insusceptible, exhibit a comparative immunity — the reverse of what happens as regards enteric fever. This immunity is doubtless what I venture to call a sanitary immunity, due to a purer personal domestic and social life, and perhaps to circumstances and habits rendering admission of infection less easy. This kind of immunity is also observable in some places — in Calcutta, for example — as regards cholera. How far an immunity of this sort is capable of being achieved as regards the infection of enteric fever, it is not easy to say. Certainly it has not been accomplished as yet in India or Egypt. The Bermudas used to render the highest ratios of enteric prevalence and mortality, but within recent years considerable reduction of these rates has occurred through sanitary reforms in the matter specially of water conservancy and sewage disposal. Similar causes have reduced the burden of enteric suffering in the French army of Algeria, and the power of sanitation has also obtained signal illustration in the banishment of beriberi from the Japanese navy. Great Britain appears also to have acquired an immunity against cholera through sanitary reform and effort. These experiences are full of encouragement and hope.

I trust that I have succeeded by these discursive observations in showing that recent events have expanded the scope and aim of our work in this section; and it seems to me fitting that we should at the commencement of our sectional labors remind ourselves of what these are. Our concern is not only with exclusively tropical diseases, many of them strangely named and imperfectly investigated and understood, which may be encountered and contracted in hot places where Europeans are compelled to reside for purposes of protection, administration or commerce, and are not as a rule met with outside of the tropics. More important are those diseases, originally or essentially tropical, which may be disseminated by intercourse with the tropics, and may prevail for a time in extra-tropical localities in which they are not habitually present. And, finally, there are the diseases which are not specially tropical, but which are liable to be aggravated in prevalence or severity by tropical conditions. These three classes represent a wide field of research, and, in addition, interesting questions arise as regards diseases which, common elsewhere, are rare or unknown in tropical countries.

The field of study thus presented has its scientific and humanitarian aspects, and its cultivation has become an essential part of the business of imperial administration. It embraces not only acute infections and the sequelæ or constitutional incapacities resulting

therefrom, but includes also those conditions affecting health and life which are vaguely designated as climatic, remediable only by adaptation, or which arise from sanitary defects or neglects capable of more easy amelioration. Hygienic improvements, personal, domestic and social, have undoubtedly raised the standard of health and the value of life in the tropics, and residence and service in hot countries offer fewer and less formidable risks than they did in times past. But behind the question of individual impunity looms the question of colonization or the continued vigor and vitality of the race when transplanted from temperate to torrid zones. The solution of these weighty problems constitutes the reason and purpose of our distinct sectional existence.

Original Articles.

NOTES ON DERMATITIS VENENATA.¹

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THE term "dermatitis venenata" is used to indicate forms of inflammation, or irritation, of the skin produced by the action of substances applied externally. The number of substances which can produce such conditions is very large, and although the symptoms produced by them are often transitory and cause but little annoyance, still they may be very severe. Therefore, for the sake of preventing recurrences, I consider their recognition of much importance. Many of these substances are among our familiar garden plants and wild flowers; many are among the drugs which we apply to the skin therapeutically; some are used in various trades and show their effects upon those working with them; others may be found in articles of clothing, household articles, paper boxes, playing cards, cosmetics and nostrums of various kinds. There is also a class of animal irritants which it is necessary to bear in mind, and which in my experience is often overlooked in making a diagnosis. The effect of these substances varies greatly in different individuals and even at times in the same individual. It seems in the majority of cases to be a matter of idiosyncrasy, or of individual susceptibility, but this is not always the case. I have seen, for example, persons who were able to handle poison ivy at times with impunity, but who on other occasions experienced a severe dermatitis from it. The same fact applies to local therapeutic applications. A person may be able to get benefit from an ointment of a certain strength and containing a certain drug at one time, when at another it would cause considerable irritation.

The form of dermatitis produced is as a rule of the erythematous, or eczematous, type, but occasionally much deeper grades of inflammation are seen. Itching, burning and pricking are the usual subjective symptoms, and sometimes there is numbness. The site of the inflammation is as a rule limited to the area to which the substance has been applied, but in some cases, possibly through absorption, it becomes more widespread, or even general. The diagnosis is not always easy, and often much questioning and search is necessary in order to find the irritative factor; but

such considerations as the site of the eruption, its limited area, its intensity, its acute onset, the habits or trade of the individual, or the history of some application having been applied, will be of much aid in clearing it up.

I propose to take up only a few of the many substances which may cause a dermatitis venenata—a consideration of them all being sufficient to fill a volume—and shall give the histories of some cases which illustrate their effects. The form of dermatitis venenata which is most commonly seen about here is that due to members of the rhus group. This group consists of three species: rhus toxicodendron, poison ivy; rhus venenata, dogwood or poison sumach; rhus diversiloba, poison oak. The first two varieties and the results they produce are so well known here that I need do little more than mention them. They may produce dermatitis of varying grade, from an erythema with a few vesicles and papules to an inflammatory condition of erysipelatous type accompanied by marked edema and serous exudation. The activity of the poison does not seem to be limited to fresh growths, for cases have occurred in which a dermatitis was produced by the dried specimen. The poison oak does not occur in this part of the country, but is seen frequently in California, where it takes the place of our poison ivy. Its effects are the same as the poison ivy, but it is generally more virulent, and it sometimes happens that persons who are not affected by the ivy may be by the oak. This is also true of dogwood. I have seen persons who could with impunity rub their hands with poison ivy be almost immediately affected by dogwood. The Japanese lacquer, which we now see more commonly than formerly, may be responsible for some cases of dermatitis venenata. It is made from the sap of a tree which closely resembles our rhus. I have seen 1 case which seemed to me undoubtedly due to that. It occurred in a person who was confined to the house by illness. He had handled no plants, but had recently had a picture painted in lacquer. The eruption was vesicular, localized on two fingers with which he had touched the painting, and much resembled ivy poisoning. I have been told by persons who had lived in Japan for some time that lacquer poisoning was not infrequent there, even occurring from contact with old lacquered articles. Among the wild flowers which I have known to produce dermatitis of mild grade are the buttercup, field daisy, golden rod and wood anemone. These flowers are so frequently picked without injurious effect that one would never suspect them of causing any trouble, and the occurrence of a dermatitis from handling them is unusual, but that it may occur is, I think, without question. The cases which I have seen were all of a mild grade of vesicular inflammation, and the eruption had recurred every time that the person affected had been brought in contact with the plants. I was particularly surprised with this effect of the anemone, which is one of our earliest and most common wild flowers, but on looking the subject up, I find that several authorities have reported its irritant effect. There is also an early tradition to the effect that the wind which had passed over a field of anemone was poisoned and that disease followed in its wake. I have seen 2 cases of vesicular dermatitis which I thought I could attribute to the action of the clematis, which occurs in the woods abundantly and is also seen in gardens. I was unable, however, positively to ex-

¹ Read before the Brookline Medical Club, February 14, 1900.

clude contact with other plants in these cases. The plant has the reputation of being an irritant, and cases showing this effect have been reported. The garden nasturtium is capable of causing a dermatitis which is of the type of a papulo-vesicular eczema, and which might be considered that were the cause not recognized. The following case will illustrate this fact.

A. B. came to me with an apparent acute eczema of both hands. She stated that it had been recurrent for a number of years, but only came on in the summer, when she was at her summer residence at the seashore. I gave her a lotion, and an ointment to be applied constantly on cloths. In a few days the acute condition had subsided, and I ordered the ointment to be used at night only. Within two days she came back with a fresh attack. This disappeared under treatment, but was followed by a third outbreak which led me to think of some external cause. On inquiring I found that at her summer home she had been in the habit of training and picking nasturtiums. While she had the applications on her hands she refrained from handling the plants, but as soon as her hands were free, and only night applications made, she returned to them. The nasturtium gardening was given up after this, and the dermatitis did not recur.

There are a number of substances which are used locally as household remedies, and which are capable at times of producing much irritation. Among the most popular of these is tincture of arnica. It is used for sprains, bruises, etc., in the form of fomentations, mixed with other substances in liniments, or painted directly on the part. The following cases show well its irritating character.

CASE I. A. D., suffering from a severe attack of lumbago, applied, on the advice of a friend, hot fomentations of tincture of arnica and water to his lumbar region. After an hour he experienced so much burning from the application that he threw it away. I saw him the next day, and his back was largely covered with a papulovesicular eruption on an erythematous base, which itched intensely.

CASE II. P. D., a professional athlete, while exercising with the punch bag, slipped and wrenched his knee. His trainer gave him a mixture of tincture of arnica and laudanum to rub on the part every hour. The following day he came to the hospital, having made some six or eight applications with considerable friction. His knee was badly swollen, and the leg as well up to the thigh; there was an intense hyperemia of the whole surface, and numerous small vesicles, some of which were crusted, others exuding. There was much itching.

CASE III. M. C. came to the hospital with the following condition: The forearm and hand were covered with a fine papulovesicular eruption on an erythematous base, there was some edema and numerous excoriations from scratching. Having sprained his arm by a fall, he had painted it several times the day before with tincture of arnica. The skin had not been broken before the application, and he had noticed no burning or sign of irritation until the night before I saw him, that is, about twelve hours after the application had first been made.

The eruption in all the cases which I have seen was of about the same character as that described in the foregoing cases. More exaggerated types of inflammation have been described, however, as a result of this application.

Another household preparation which was formerly very popular as a remedy for cuts, bruises and wounds is the so-called balm of Gilead. This is a tincture made from the buds of the *populus canadensis*. It is, I think, not much used at present; but when it is, it is capable of causing an intense grade of dermatitis, as the following case will show.

T. W., a boy ten years of age, was brought to my office by his father, and showed several areas of dermatitis of varying grades on different parts of the body. His right knee was inflamed and edematous and covered with bullae, some of which had broken and exuded freely. The left ankle and foot were of a bright red color, so much swollen that he was unable to wear his shoe, and dispersed with bullae and vesicles. On the hands, particularly between the fingers and on the flexor surface of the right wrist, were small vesicopustules, producing a condition closely resembling that seen in scabies. It was an evident case of dermatitis venenata, but although I questioned closely, I could find nothing to lay it to. Finally, the following week, the father told me that they had had some balm of Gilead buds sent down from the country, and made a liniment of them and applied it to some cuts and bruises which the boy had; but as they had never used them before, they had not the least idea of connecting them with the boy's trouble, nor did they suspect that they were capable of causing such a condition. The affection of the face was probably caused by touching that part with the hands, after the liniment had been applied to them, as it had not been applied to the face directly.

Kerosene oil is frequently used by the laity for the relief of pain, as a parasiticide, and sometimes for shampooing. It is capable of causing a dermatitis, generally of the erythematous type. The most exaggerated type of dermatitis from this substance which I have ever seen was in a man whose wife had saturated his underclothing with it to prevent him from going out. He put them on, however, in spite of the oil, and when I saw him the following day he had a general scarlatiniform eruption. This was followed by an exfoliative dermatitis which lasted several months. Crude petroleum, on the other hand, from which kerosene is derived, has never shown the least irritant effect in my hands, and I have used it extensively as a parasiticide on scalps which had large areas of excoriations, and in some cases, in order to test its effect, every night for a week without the slightest sign of irritation. Hamamelis, in the form of fluid extract or tincture, or what is known as Pond's Extract, is used frequently in barber shops as an application after shaving. It is also used as an antipruritic, and popularly for lameness, bruises, etc. I have seen a number of cases in which a papular, or erythematous, dermatitis had been produced by its use, particularly when applied after shaving. The cheaper grades of so-called bay rum will produce the same effect, but as a rule to a greater degree. The "Seven Sutherland Sisters' Hair Grower" is said, in the book, "Secret Nostrums," to contain bay rum, extract of witch hazel, common salt, hydrochloric acid and magnesia. I have not tried to determine the ingredients myself, but I think the following case shows that it may prove an irritant. A. B., a man somewhat over forty years of age, came into my room at the City Hospital with an intense dermatitis of the face and scalp, erythematous in type, and accompanied by considerable edema

about the eyes, and some scaling and crust formation. On being questioned, he stated that he had rubbed the above-named preparation into his scalp on two consecutive nights. On the morning after the first application there was a slight redness of the scalp, and some burning and itching, but as he thought that was a sign of activity in the application he tried it again the following night. The next morning the eruption showed on his face, and he could hardly open his eyes.

What ingredients in this nostrum caused the dermatitis I am unable to say. One of the stated ingredients is common salt, but the quantity is small. Common salt in saturated or strong solutions may cause a hyperemia and desquamation. I have seen a number of cases of extreme irritation from its use by hair dressers, who applied it with friction in order to get a stimulant effect. In the form of strong brine baths it may produce a general papular eruption of the skin.

There are always a certain number of cases appearing at the hospital with dermatitis following the application of liniments. In some cases the applications have been made by means of cloths wet with the preparation, in others they have been rubbed in with considerable friction. The eruptions in these cases are nearly always of the same character, being erythematous or papular, occasionally accompanied by edema, and sometimes showing vesicles and bullæ; the intensity depending somewhat on the part to which the application had been applied. These preparations, for the most part proprietary, are largely made up of the essential oils, especially oil of thyme and turpentine, and some contain caustic soda. They may show their irritative action on the face, or some sensitive part, by accidental contact with the hands which have been moistened with the application. Certain plasters, particularly belladonna plaster, applied as counterirritants may cause a scarlatiniform eruption, not only in the neighborhood of the application but over the general surface. There are quite a large number of cases of dermatitis, many of the *eczema* type, which are due to irritating substances brought in contact with persons on account of their occupation. The most common among these are seen in domestics who have been using strong alkalis, strong soaps or soap powders, such as pearline and soapine, for household purposes. The various brass and metal polishes, and shoe polish, particularly that used in cleaning tan leather shoes, may cause dermatitis of varying grades. Printers are liable to a dermatitis of the hands from handling type wet with caustic potash solution, that substance being used to clean the type. Painters may get an inflammatory condition of the skin from the use of turpentine, and they may also have a dermatitis from some of the pigments which they use. Arsenic is largely used in the arts, more so formerly than at present. It is employed in making such articles as wall paper, playing cards and artificial flowers, also in curing hides. It is a favorite ingredient in cosmetics, proprietary face lotions and powders, and depilatory pastes. It may produce erythematous, papular, vesicular and pustular eruptions, and the grinders of the arsenious acid coming in direct contact with it may get ulcers. Its effects are more commonly seen on the hands, about the nails, in the *alæ* nose, on the lips, behind the ears, or anywhere where folds of skin come together. Longshoremen may show its

effects from handling hides, also taxidermists and furriers, who employ it constantly. Chromium, or bichromate of potash, is used perhaps more extensively than arsenic in dyeing, calico printing, and to produce pigments. It may be found in various articles of wearing apparel, and may produce a dermatitis on persons wearing such articles. Mercury is responsible for a certain number of cases of inflammation of the skin from occupations. It is used in the form of the acid nitrate by makers of felt hats, also by furriers, taxidermists and those making thermometers and barometers. The surgeon and nurse, as you well know, come in for their share of its irritant action. It is also employed in many of the cosmetic nostrums and may cause much trouble thereby. The pathologist may suffer from an eruption of *eczematous* type from having his hands in tissue soaked with solutions of formalin or various fixation fluids, as Zenker's fluid, for example, which contains corrosive sublimate, bichromate of potash, sodium sulphate and glacial acetic acid. I have seen 2 cases of dermatitis in girls who worked in a chocolate factory. Both were on the arm and hand, took the form of a papulopustular dermatitis, disappeared under treatment when they changed their work, and reappeared when they returned to it. One occurred in a girl who stirred the hot chocolate, the other in the one who made it into moulds. I am not prepared to state positively, from the observance of these 2 cases, that the chocolate only was responsible for the dermatitis, as these are the first cases of the kind that I have seen mentioned. The appearances favor such an opinion, however. A mild papular dermatitis may be seen at times among those working in candy factories, but I have never seen among them anything of the type shown in the above cases. A dermatitis termed "impetigo glycosique" has been described by Nivet, as occurring in sugar refineries. In using certain drugs externally with therapeutic intent, one must be on the lookout for signs of irritation, which may at times arise even from a weak application. Many times the trouble arises from too free use of the drug, or a too vigorous application on the part of the patient; but more often from a too strong preparation being used on an unknown skin. The condition of the skin must also be considered, for an ointment which could be applied without any irritation to a sound skin might cause much irritation if the skin were broken. The quality or age of the drug may make much difference in its irritant qualities. For example, an ointment of chrysarobin from one druggist may have no injurious effect on a skin, while a neighboring shop with the same prescription will produce an ointment which causes much irritation. The ointment base may be a source of irritation, either from the fact of individual susceptibility to a certain base, or because it has become more or less rancid. Glycerin, for example, seems to act as a decided irritant to some skins even when much diluted, and occasionally one meets with a case when any form of fat seems to be contraindicated. Almond oil appears most frequently to have an irritant effect, possibly because it becomes so easily rancid. It is used pretty generally by the so-called facial massagists to make what they term skin food. I have had two of these people come to my office with an active *eczematous* inflammation produced by their own applications. This may have been, as I have said, due to a slight rancidity of the oil, or there may

have been some cheap grade of oil used, and such grades are very apt to be adulterated. Preparations containing mercury, either in the form of an ointment or lotion, are among the most active of therapeutic agents in producing dermatitis. The degree and extent of irritation depend on the strength of the application, and the length of time which it is applied, also largely on the susceptibility of the individual. I have frequently seen under a surgical dressing of corrosive sublimate a mild papular eruption limited to the site of the application; but occasionally one sees a general erythema from such an application, and in some cases the eruption beneath the dressing is papulovesicular and the part edematous. The most frequent application against pediculi pubis is probably unguentum hydrargyrum; so much so in fact that it has become a popular remedy for that trouble. Personally I never prescribe it for that purpose, for I believe that the average person will use it much more extensively than ordered, and that in consequence disagreeable results may follow.

The most exaggerated case of local inflammation from this preparation that I have ever seen was in a man who came to the City Hospital clinic some time ago after using it. His penis and scrotum were enormously enlarged, hyperemic and edematous, the former being nearly as large as a quart bottle. There was also an extensive papulo-erythematous dermatitis over the pubic region and abdomen. He stated that he had been given for relief from pediculi pubis an ounce of "blue ointment," and told to rub it in the affected parts for three consecutive nights. In order to save time he rubbed it all in the first night, and not only over the pubic region but up on to the abdomen as well. The result was the condition which I have described.

Another case was that of a woman who had been given unguentum hydrargyrum for the same cause by the surgeon on one of the ocean steamers, and had applied it for four days and nights. When I saw her, about a week after the applications, she had a general eczematous dermatitis which included the face as well as the body. I have seen the same general eruption with symptoms of salivation produced in a person who used inunction of unguentum hydrargyrum for one application only, the abdomen being the site of the application, and 2 drachms of the ointment being used. This of course was a case of extreme susceptibility to the drug. Mild grades of localized dermatitis of the erythematous type after inunctions with unguentum hydrargyrum are, in my experience, not uncommon. In a hairy individual I have often noticed an inflamed condition about the hair follicles after inunction, and this was undoubtedly due largely to friction. I have also seen cases of papulovesicular eruptions in infants who had been swathed in flannel smeared with unguentum hydrargyrum.

Dermatitis from the application of iodoform to ulcers and wounded surfaces is not at all uncommon, and many cases of varying intensity have been reported. The dermatitis may be caused by the drug in powder form, in ointments, in an ether solution, or in gauze. The eruption is usually erythematous, but may be papular, vesicular, or even bullous, and accompanied by edema. As a rule it is localized, but, as the report of cases shows, it may be general. Even the powder flying about the room is sufficient to affect some susceptible individuals. Its irritant action is undoubtedly

due to the iodine which it contains. A few years ago I tested several persons in whom I had seen iodoform dermatitis with iodide of potash given internally and found them all extremely sensitive to that drug. Carbolic acid may cause varying degrees of inflammation, from erythema to destruction of tissue. As with other substances used as antiseptics, individual susceptibility often shows itself to a marked degree. I have known a physician who was obliged to give up surgery entirely owing to such a susceptibility. It is an extremely valuable drug in dermatotherapy, especially as an antipruritic, but it must be used carefully and its action watched, as it may in an unsuitable case cause much irritation. It is a favorite ingredient of proprietary ointments, in some of which it is introduced in considerable quantities. I have seen a decided vesicating effect produced by the application of some such nostrums. The much advertised Cuticura ointment is said to contain nothing outside of coloring matter and perfume but 2% of carbolic acid and a vaseline base. Salicylic acid is a drug much used in treating skin diseases. It has also been used in surgery as a substitute for carbolic acid, and its use in this connection has given rise to frequent cases of dermatitis. It may be used in treating some skin diseases as strong as 12% in ointment form, but I have seen much irritation from the application of an ointment which contained only 1% of the drug. Applied to the scalp in an alcoholic solution, or a 6-per-cent. ointment, I have seen it produce a diffuse, fine, papular eruption over the forehead, ears and neck. Quinine is used in so-called hair tonics, particularly those of a proprietary character, to a considerable extent. It is also recommended in alcoholic solution as a local application in hyperidrosis and for the relief of night sweats. Any of these applications may produce irritation, particularly on the scalp, varying in character from a pruritus to a scarlatiniform eruption. Persons who are sensitive to the local action of this drug are generally susceptible to its internal action as well. So before using it locally it is well to inquire if the person has ever had an eruption after taking it internally. Sulphur is a drug which is constantly used by the laity for skin eruptions and advised by druggists, their choice lying between that and oxide of zinc. It is certainly a valuable drug in many cases if properly used, but it must be used carefully and its action watched, for it is capable of causing much irritation in some cases. It may cause a dermatitis of varying grades — erythematous, vesicular, or papular, whether applied as an ointment or lotion, in powder form, in a bath, or by fumigation. The following case, which was a surprise to me, illustrates well its action in a susceptible individual.

A. B., a girl seventeen years of age, being troubled with dandruff, applied to her scalp on going to bed an ointment containing 10 grains of sulphur and 15 grains of zinc oxide to an ounce of vaseline, which had been prescribed for another member of the family. About four or five hours after, she was awakened by a sensation of burning on the scalp and about the face. This increased in intensity and she was finally obliged to get up and wash the head. In the morning, when I saw her, the face was covered with a patchy erythema, the skin about the eyes was much swollen, and the scalp very tender and much reddened. Such a case is of course remarkably unusual, but from a stronger ointment, and especially if there is an in-

inflammatory condition of the skin, as an eczema, such results are not uncommon.

Tar in its several forms is extremely useful in some forms of skin disease, but, if injudiciously used, it is capable of producing much irritation. Like some other drugs it cannot be used on certain skins even in very dilute applications, and in acute inflammatory conditions it must be used with the greatest care. It may produce erythematous and papular eruptions, and at times those of an erysipelatous character. The dermatitis may extend some distance beyond the point of application. Another condition which may be produced by it is the so-called tar acne. This is composed of small, hard, red papules, in the centre of each of which is a dark point. This condition is most abundant in the hairy portions and is very rebellious to treatment. It persists for a long time after the applications have ceased, and may take several weeks to completely resolve. Chrysarobin is a drug much used in the treatment of psoriasis and some other chronic conditions of the skin. It probably causes local irritation more frequently than any other drug commonly used. It stains the sound skin a purplish-red color but not the diseased patches. It also stains the nails and gives the hair a purple tinge. The dermatitis produced by it is usually erythematous, or finely papular, but it may be more intense. I had under my charge at the Carney Hospital a girl with a general exfoliative dermatitis which was brought about by a few applications of an ointment containing 6% of chrysarobin. Applied to the face or scalp it is very apt to produce a violent dermatitis of erysipelatous type and maybe a conjunctivitis. I saw such a case at the City Hospital a few weeks ago. It may irritate the sebaceous glands and produce an acne like the so-called tar acne, with a black point in the centre of each papule. In applying the drug a very weak strength should be tried at first. In susceptible individuals and those with delicate skins, I have seen a 1-per-cent. ointment cause much irritation. In using an ointment, only a small amount should be applied at a time, and that well rubbed in with a swab. Otherwise the ointment is apt to get rubbed on to the neighboring sound skin, which being more sensitive than the diseased portions may become inflamed. Solutions of the drug in collodion or traumaticin dry where they are applied, and so do not spread in this way; but they are not always suited to the condition of the skin. Of the animal irritants, the mosquito, flea, bed-bug, black fly, wasp, bee and hornet are apt to make their presence appreciated, and as a rule the person afflicted makes his own diagnosis. Sometimes, however, especially in emigrants, the dermatitis produced is so extensive that it makes one suspect one of the exanthemata. I have seen an emigrant so poisoned by mosquitoes that the eruption on the exposed parts closely resembled variola. Spiders may drop from the ceiling during the night and cause an inflammatory condition of the face which at first sight might be mistaken for erysipelas. Caterpillars may cause a line of erythema, wheals or vesicles where they have passed over the skin, or even deeper forms of inflammation. The jelly fishes which are abundant in the salt water about here may cause much redness of the skin, and even large wheals. I have seen a boy who got into a school of these fishes and whose body was so covered with large wheals as to suggest a giant urticaria.

NOTES ON THE TREATMENT OF ATAXIC PATIENTS BY CO-ORDINATION EXERCISES, WITH THE DEMONSTRATION OF TWO PATIENTS.¹

BY JAMES J. PUTNAM, M.D., BOSTON.

THE power to see the hopeful aspects of hopeless diseases is one of the best gifts of modern medicine. The number of maladies whose very name make the physician think only how he may gracefully bow the patient from his door grows daily less; yet it is at once a warrant of the blindness in which we tread our accustomed paths and also of the hopefulness of the future that now and then the pointing out of obvious principles can claim the merit of substantial discovery. Why should the idea of training the ataxic patient to control his disorderly movements have waited for its practical development and almost for its conception until 1890, when the progress of the ataxic baby and that of the relatively ataxic school boy had been forever before us? Obviously, the reason is that we saw only too clearly the final outcome of the disease and, like fatalists, let our energies be paralyzed by the prospect.

It is to Dr. Fraenkel, a Swiss physician, that the credit of bringing the true value of this method before the profession is justly given, though Granville,² and perhaps others, had long before recognized the theoretical possibility of success in this direction. Fraenkel's first communication, in 1890, was followed in 1897 by a second, made before the Medical Congress of Moscow, at which the method was elaborated, various apparatus described and cases reported. Since then a host of physicians have brought their confirmations and criticisms, and, as is usual, the methods and the apparatus have been shown more and more to be susceptible of simplification, so that in fact the treatment in its essentials is at the command of any physician or gymnast, or even of any intelligent person who will master the principles at stake. In saying this, I would not be understood as meaning that skill and labor are not required for the best results, and in fact one of the medical gymnasts who has trained several of my patients has told me that the lesson is peculiarly exhausting for the teacher.

The following points should be strictly borne in mind:

(1) It is skill, not strength, that it is sought to develop. It is indeed important that the muscles should be in a state of good vigor and healthy nutrition, and special treatment, as by massage and exercises, may be directed if necessary to that end, but so far as the inco-ordination is concerned the need is to teach the brain and through it the lower reflex centres, to feel, and gauge, and respond to the feeble and distorted impulses that come from skin and joint and muscle.

(2) The movements, such as walking and stooping, or writing and simple piano exercises, etc., which one would freely prescribe to a healthy person, are often far too complex for the ataxic, and it is therefore necessary to begin with relatively elementary motions, such as drawing the leg up and down in bed, or moving the finger from one spot to another. On the other hand, however simple the movement, the patient should be called upon to perform it with promptness

¹ Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, April 18, 1900.

² See Collins's Treatment of Nervous Diseases. Wm. Wood & Co., New York, 1900.

and accuracy and at the word of command. To inculcate these habits from the outset, and to reduce the difficulties at each step so that attention and effort will make success possible, and will ensure skill and confidence, are the prime requisites for a good result.

(3) Dulness, monotony and fatigue, on the one hand, and superficiality on the other, are the rocks to be avoided, both by the introduction of sufficient variety into the exercises and by giving them something of the entertainment of games of skill. For these reasons the exercises of putting the finger on to spots on a card or into holes on a board, as suggested by Fraenkel, are well modified by using marbles of various sorts or colored pegs, for the same purpose (as also suggested), or by giving these tasks an amusing turn, taking care, however, that the amusement occupies a subsidiary place. Simple tunes, played on a glass-chord, or on bells or glasses, by calling, at varying rates of speed, the numbers indicating the notes which the patient should strike, would be in this line.

As regards the leg co-ordinations, the infinitely variable movements of walking, at the command of a prompt instructor, so many steps forward, backward, to the right and to the left, with the eyes open, with the eyes closed (as should indeed be the eventual aim with most of the exercises); stepping over obstacles, halting, balancing and the like, furnish ample opportunity for the exercise of skill and for the training of persistence, attention and habit.

(4) The temptation is often strong to let the patient try to get on without any instructor, by following a set of prescribed exercises, and in the first case I treated I attempted this, using a good set of movements which had already been suggested by a colleague in another city. The result was not encouraging, however, and I should not again waste time in the effort if it was possible to get even moderately skilled assistance. The necessity for obedience to the word of command, which calls for close attention and for movements which come to have something of the character of involuntary reflexes, is certainly a great help in stimulating both the conscious and the sub-conscious attention and the power of instinctive control.

(5) Finally, there are certain classes of cases which the experience of various physicians has shown to be ill adapted for this sort of treatment. These are summarized as follows by Collins in his excellent book on the "Treatment of Diseases of the Nervous System," page 243. "The employment of this method of treatment is contraindicated in weak, anemic patients and in those who suffer more or less constantly with pains or crises; in cases of acute or subacute tabes, that is, in cases of sudden onset and in which the habitual manifestations of the pre-ataxic period succeed each other rapidly; in patients with tabic optic atrophy, fragile bones and those who have had what is generally called spontaneous fracture or rupture of tendons. When any cardiopathy or aneurism exists the method must be tried very tentatively, if at all. It is not applicable to very obese or arthritic patients, and, finally, it is absolutely contraindicated when there are great laxity of the ligaments and severe arthropathy."

My experience is not sufficient to justify me in supporting or in contradicting these statements, but, in fact, they are not borne out by the history of the two patients whom I bring before the society tonight. The first of these has improved considerably in spite

of a tendency to pretty severe pains in the legs, and the second, whose improvement has been truly remarkable, is one in whom the ataxia developed with great rapidity.

The first patient had been suffering from characteristic pains for many years and from disorder of co-ordination for about two years. This had increased during the six months before he presented himself at the Massachusetts General Hospital to such a degree that he was then almost confined to his chair, though able with the aid of the furniture to get about his room and shop a little. The treatment by training in co-ordination was begun in June, 1899, but was continued for only a few months, and in a somewhat desultory manner, owing to the necessities of the case. This year it has again been resumed. The aim was first to teach him to walk with crutches, then with canes, and this has been accomplished to such a degree that he now goes about with the aid of the former in the neighborhood of his house quite freely, and in the way of exercises he can walk across the room alone. He is still improving. The treatment has been carried out faithfully in the face of considerable difficulty by Mr. Harding, the superintendent of the gymnasium of the Boston Young Men's Christian Union.

The other patient is a much younger man, of excellent general health. The rapidity with which the ataxic symptoms came on is well indicated by the fact that only two weeks before he came to me, supported by a friend on one side and with a cane in the other hand, he had been to several dances, and had walked, in the night, during a snowstorm, four or five miles to his home. He had, in fact, considered himself perfectly well up to that time, though in reality some unmistakable signs of tabes had been already present. Under the guidance of Mr. Wiberg, teacher of medical gymnastics, he devoted himself assiduously to the treatment here indicated, day by day and almost hour by hour, with the result that at the end of three months he was able to walk several miles alone or with the partial aid of a cane. His gait is still ataxic, but he has recently been able to resume his work, which without this method of treatment would have been impossible. I may say, further, that the latter patient and one other have thought that the paresthesias from which they had suffered diminished under the co-ordinatory improvement.

Clinical Department.

TWO CASES OF ABNORMAL SEXUAL DEVELOPMENT.¹

BY GEORGE G. SEARS, M.D., BOSTON.

THE following cases are interesting illustrations of a condition described by recent writers under the head of infantilism, in which more or less complete arrest of development of the genital organs is associated with changes in the economy of a most diverse kind and manifested by gigantism, dwarfism, feminism, muscular dystrophies, or affections of the special senses, but about which our knowledge is still too incomplete for definite classification. In the first, im-

¹ Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, April 18, 1900.

perfect development of the genital organs in a boy is accompanied by dwarfism and feminism, while in the second (a girl) the failure of the genitals to develop is associated with a tendency to gigantism and the assumption of male characteristics. The thyroid gland was not felt in either case.

CASE I. A male, twenty-five years old, but who appeared no more than sixteen or eighteen, was admitted to my wards in the City Hospital a few weeks ago, after an altercation with the police, in which a difference of opinion arose as to whether he had had a fit or was simply drunk. Physical examination revealed an individual not more than five feet two inches in height, but of good muscular development.



The first glance failed to discover the sex. The hair on the scalp was luxuriant in its growth, but the cheeks and chin were devoid of beard. On the upper lip there was a little soft down, but no more than is often seen in women with dark skins. The deep-set eyes, surrounded by dark shadows, and the rather thick lips gave the impression of great sensuality. The voice was somewhat high pitched, but was more becoming to a man than a woman. The hips were broad, well padded with fat, and moulded with well-rounded curves. The penis was small, though not diminutive. It might be described as too large for a boy and too small for a man. The testicles were

nearly spherical in form and about half the normal size. The pubic hair was thick, but grey like that of a woman, with a sharply defined horizontal upper limit. The most striking feature, however, was the breasts, which were of remarkable development, pendulous and of a size more than sufficient to perform the functions for which such organs are presumably adapted. The nipples and areolae were also well developed and the latter were deeply pigmented. His sexual appetite, according to his statement, was normal. He claims that he should have been married some time ago were it not for his diminutive size. He says that he has a brother who has developed on the same lines as himself. In the photograph the deep shadows have given a harder appearance to his face than was really present. The curves of the hips, on the other hand, appear less pronounced, while the very redundant prepuce gives, in the picture, the appearance of greater size to the penis than is really possessed. Examination of the heart showed the presence of a well compensated mitral lesion.

CASE II. A female, twenty-six years old, was admitted June 18, 1898. Her family history was negative. When twelve years old she began to grow mentally dull, and from that time until she was sixteen was troubled with frequent severe headaches often lasting a week. During the succeeding week she slept most of the time. When sixteen years old she states that there was a sudden swelling of the feet which lasted for a short time and then subsided, but the feet and hands then grew very rapidly. She has never menstruated, but has regular monthly attacks of vertigo and weakness. Physical examination showed an individual five feet eight and a half inches tall, weighing 145 pounds. Her face was distinctly Mongolian in type. The cheek bones were high and prominent, the lips rather large, the lower jaw heavy but not prognathous, the nose was normal, the hands and feet were much beyond the average size. The latter required a number nine shoe, while the former would probably need a number nine or nine and a half glove. The bones of the forearm and ankles seemed rather heavy, but the hands and feet themselves were not ill shaped. An x-ray photograph of the hands showed no abnormality except the size. The muscular development appeared normal, but she became easily tired. There was no axillary or pubic hair. The external genitals were those of a girl of ten. The vagina scarcely admitted the little finger, which reached with difficulty a very rudimentary cervix. The ovaries could not be felt. There was absolutely no development of the breasts, and her hips and general contour were those of a man rather than a woman. Her mental development had apparently been arrested with her sexual, for she was very childish and easily led. She was depressed, and frequently expressed a wish to die.

A NEW JOURNAL FOR NURSES.—The first issue of a new journal edited and owned by nurses will appear October 1st. It is to be the official organ of the Associated Alumnae of Trained Nurses of the United States. The editorial staff contains the names of many women who have long been intimately associated with the development of nursing in this country. The general scope of the journal will be to disseminate knowledge of new methods which may be of interest to nurses and mothers.

Medical Progress.

REPORT UPON PHYSIOLOGICAL CHEMISTRY.

BY HENRY F. HEWES, M.D., BOSTON.

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THE PHYSIOLOGICAL CHEMISTRY OF ALCOHOL.

THE question of the influence of alcohol upon the metabolism of the human body has been the subject of a considerable amount of investigation during recent years.

To ascertain definitely this action of alcohol in and upon the metabolism of the human body three facts must be determined:

(1) The method of the disposal of alcohol in the body.

(2) The effect of alcohol upon the respiratory metabolism, the metabolism of the non-nitrogenous organic tissue substances.

(3) The effect of alcohol upon the metabolism of the proteids or nitrogenous tissue elements.

The first fact is today definitely and finally determined for us. Alcohol is oxidized in the body. Upon this point the results of all the investigations of recent years are in agreement.¹ The most complete observations prove that of a quantity of alcohol, not exceeding 72 grammes ethyl hydroxide, introduced into the body during twenty-four hours at least 95% to 96% is consumed, the remaining 4% to 5% being eliminated as alcohol.²

In regard to our second fact our knowledge is less settled. The results of earlier investigations were in practical unanimity that alcohol in moderate doses caused a loss of body substance as measured by the effect upon respiratory metabolism.³ More recent results show a lack of uniformity upon this matter. Thus the experiments of Futh,⁴ Vogelius⁵ and Bödlander⁶ indicate that alcohol causes a lessened respiratory exchange, those of Zuntz⁷ and Bjene⁸ that it causes an increased change, while those of Geppert⁹ indicate that the variations observed under alcohol are within the normal limits of variation. Atwater's published observations show in one case (Experiment 7) a loss of carbon under alcohol as compared with a companion non-alcohol experiment (Experiment 8), in the other no variation between the alcohol and non-alcohol experiments (Experiments 9 and 10).¹⁰ A careful critical study of all these researches leads us to conclude that the effects of moderate quantities of alcohol upon respiratory metabolism vary much according to the conditions present. In most conditions it appears to cause a loss of substance.

In regard to our third fact also, our knowledge cannot be said to be absolutely settled. Here, however, our lack of uniformity is much less in evidence

¹ Anstie: Practitioner, vol. xiii, 1874, p. 15; Biny: Arch. f. exp. Path. u. Pharm., Bd. vi, S. 287; Heubach: Loc. cit., Bd. viii, S. 446; Schmidt: Centrbl. f. d. med. Wiss., Bd. xxiii, 1875; Bödlander: Pflüger's Arch., Bd. xxxii, S. 398; Stassman: Loc. cit., Bd. xlix, S. 315; Vogelius: Inaug. Diss., Kiel; Beniccenti: Bois-Reymond's Arch., 1896, p. 225.

² Atwater: Bulletin No. 69, U. S. Department of Agriculture, 1899.

³ Boeck and Bauer: Zeitschr. f. Biol., Bd. x, S. 361; Smith: British Medical Journal, 1859; Wolfers: Pflüger's Arch., Bd. xxii, S. 222; Berg: Arch. f. klin. Med., Leipzig, Bd. vi, S. 373.

⁴ Futh: Diss., Bonn.

⁵ Vogelius: Diss., Kiel.

⁶ Bödlander: Zeitschr. f. klin. Med., Berlin, No. 2, S. 154.

⁷ Zuntz: Fortschr. d. Med., Bd. v, S. 1.

⁸ Bjene: Arch. f. Phys., Bd. ix, H. 6, S. 323.

⁹ Geppert: Arch. f. exp. Path. u. Pharm., Bd. xxii, S. 367.

¹⁰ Atwater: Bulletin No. 69, U. S. Department of Agriculture, 1899.

than in regard to our second point. Some discrepancy is found in the results of the several researches of certain observers, but the majority of cases under each observer and the great total majority of cases investigated indicate that alcohol in moderate doses (40 to 72 grammes ethyl hydroxide in twenty-four hours) causes a loss of nitrogen to the body. And the study of the several researches conducted upon men during the last ten years, seven in number, leads us to conclude that the alcohol, though its effect in moderate doses upon proteid metabolism is obviously slight, fails to spare the proteid tissues. Large doses are distinctly prejudicial to proteid metabolism.

This work upon the effect of alcohol upon proteid metabolism in the human body published during this present decade consists of, a research of von Noorden in 1891,¹¹ one by Miura under the direction of von Noorden in 1892,¹² one of Schmidt under Rosemann's direction,¹³ one by Schönesseifer,¹⁴ one by Neumann,¹⁵ one by Stromm,¹⁶ and one by Atwater.¹⁷ Rosemann¹⁸ has shown that all the work upon this subject done previous to 1890 is valueless, owing to the fact that the observers worked with insufficient data.

In von Noorden's investigation upon 3 individuals, a loss of nitrogen under alcohol was observed in 2 cases, a maintenance of nitrogenous equilibrium in 1. The case without loss received a rich proteid diet.

Stromm, in his researches, found that a loss of nitrogen was the rule under alcohol. Exceptions were present in some observations.

Miura made three similar researches upon the following plan: In the first period the subject (himself) was brought into a condition of nitrogenous equilibrium upon a regular diet. In the second period a certain portion of the carbohydrate of the diet was replaced by isodynamic quantities of alcohol (65 grammes alcohol daily). In the third period the regular diet was restored, the sugar again replacing the alcohol. In the fourth period a diet minus both the sugar and alcohol (a reduced diet) was given. Miura's results showed that under alcohol the nitrogenous equilibrium was not maintained, the loss of nitrogen under alcohol equalling that lost upon reduced diet (Period 4). When the sugar was replaced in the diet nitrogenous equilibrium was restored. This research of Miura appears to be the most complete and adequate upon the subject published up to date.

The researches of Schmidt and of Schönesseifer gave results similar to those of Miura.

Neumann claimed that the results of his observations indicated that alcohol spared the proteid tissues of the body. Rosemann,¹⁹ however, has made a careful review of this research of Neumann, in which he proves conclusively that the experiment is inadequate and the conclusion drawn from it by the author unwarranted by the results. We cannot, therefore, accept the testimony of this research in regard to our question in hand.

Atwater has published two researches. In both the

¹¹ Von Noorden: Berlin. klin. Woch., Bd. xxviii, 554; Stammreich: Diss., Berlin, 1891.

¹² Miura: Zeitschr. f. klin. Med., Bd. xx, S. 138.

¹³ Schmidt: Diss., Griefswald, 1899.

¹⁴ Schönesseifer: Loc. cit. 1899.

¹⁵ Neumann: Arch. f. Hyg., Bd. 36, S. 1, 1899.

¹⁶ Stromm: Abst. in Jahrb. Thierchen., 24, 553.

¹⁷ Atwater: Bulletin No. 69, U. S. Department of Agriculture, 1899.

¹⁸ Rosemann: Zeitschr. f. dist. u. phys. Therap., 1898, Bd. i.

¹⁹ Rosemann: Pflüger's Arch., 1899, Bd. 77, S. 405.

subject received 72.59 grammes ethyl hydroxide daily in place of isodynamic quantities of carbohydrates or of fats. In both researches there was loss of nitrogen under the alcohol as compared with the results under the regular diet. Professor Atwater tells me that further experiments have given conflicting results, in some cases a maintenance of nitrogenous equilibrium under alcohol, in some a failure in this maintenance.

THE NUTRITIVE VALUE OF ALCOHOL.

The question of the nutritive value of alcohol has long been a subject of controversy among physiologists. Liebig, arguing from the similar chemical composition of alcohol to that of the fats and carbohydrate food substances, classed it among the fuel-food substances, and many physiologists have accepted this classification. An equal number of scientists, on the other hand, deny that alcohol has any nutritive value whatsoever in conditions of health.

It is interesting to consider this question in the light of our modern scientific knowledge. According to Voit, a nutriment is a substance which replaces or spares any necessary material of the body. The ordinarily recognized nutriments of the body are the organic foods, the proteids, carbohydrates and fats, and the inorganic foods, as water, sodium chloride, oxygen. These substances all replace similar materials in the body. Some of them, as the fats and carbohydrates, also possess the property of sparing the proteid tissues. Alcohol cannot replace a similar material in the tissues, since alcohol is not a fixed constituent of the body. Its nutritive action — if it possess any — must therefore consist in sparing by its action in metabolism some native tissue material. The review, given above, of the investigations up to the present time upon the action of alcohol in and upon the body metabolism reveals the following facts in this regard: Alcohol is oxidized in the body with the consequent liberation of energy therein. Its effect upon proteid metabolism appears to vary somewhat with the conditions of the organism. As a rule, in the normal individual its use is accompanied by a loss of nitrogenous tissue. In small doses this effect upon proteid metabolism is slight. In large doses it is marked. The effect of alcohol upon the metabolism of the non-nitrogenous organic tissue elements appears to be variable even in normal conditions. In most cases it fails to spare the fats of the body. Its effects in small doses in either direction are very slight.

As compared with the fuel foods which it resembles in its chemical composition we find that if in normal conditions 500 calories' worth of fat or carbohydrate in a diet, under which a man maintains himself in tissue equilibrium, be replaced by an equal calories' worth of alcohol, a loss of nitrogenous tissue will as a rule result. If this alcohol be in turn replaced by the fat the body will as a rule return to its state of nitrogenous equilibrium. That is, alcohol has not, in the general rule, the sparing property upon the tissues of the body possessed by the ordinary organic foods.

Summing up our results we find, then, that alcohol resembles the organic foods in the fact that it is oxidized in the body. It differs from them in that, while these can as a rule in normal conditions be depended upon to replace a given amount of body material, or to spare such material, it cannot be so depended upon.

The results of our scientific researches in regard to the nutritive value of alcohol at present, therefore, permit of our drawing only the restricted conclusion that in the average case it has no such value. The variations present forbid an absolute denial of this property in all cases.²⁹ Since, however, these results show clearly that alcohol either lacks the tissue-sparing property of the regular fuel foods or possesses this property in a much less degree than these, they justify the full and unreserved conclusion that its nutritive value, if it possess any at all, is clearly less than that of any of these substances, and, calorie for calorie, sugar or fat should always be preferred to alcohol. Why the alcohol, producing an equal amount of energy in the body to the fat or sugar, should not be of equal value there cannot be absolutely determined. It is probable, however, that through its well-recognized poisonous action upon the nervous system, some disturbance of metabolism or of the oxidation of the tissues is effected, as a result of which the proteids or other tissue elements fail to get the benefit of the nutritive aid of the alcohol as they do that of the ordinary foods. This fact is in a manner an evidence that this poisonous action of alcohol is present even when small quantities are taken. Else why should not the same results upon tissue metabolism be obtained with alcohol which are obtained with the same quantities of sugars and fats?

Of the existence of this poisonous action of alcohol, even in small doses, upon the nervous system, or upon the body through its effects upon this system, we possess a mass of experimental evidence. Kraepelin, Lombard, Aschaffenburg and others have reported experiments which show that even small amounts of alcohol (doses of 20 to 30 grammes hydroxide) cause diminution in the total capacity of the individual for mental or muscular effort. The work on this subject reviewed by Kraepelin in a recent article includes over 2,000 researches. It is a well proven fact that, though the combustion of alcohol must provide heat to the body, still the action of the alcohol upon the nervous system is such that by the resultant dilatation of the peripheral vessels the body is made less rather than more able to maintain its heat supply under alcohol.

Whether this poisonous action is, as is generally believed, a paralysis of the nerve centres or not, it certainly is present to a greater or less degree in all cases in health, and it is natural to suppose that it is this result which offsets any beneficial nutritive influence which the energy derived from the alcohol might tend to lend to the body.

The variation in the results of the experiments with alcohol quoted may be in part explained by the possession of a greater or less immunity in the subject of experiment to this poisonous action. The sum total of all the results of alcohol upon the body metabolism certainly inclines the unprejudiced student to agree with Horsley that total abstinence has a scientific basis.

THE INFLUENCE OF THE INORGANIC COMPOUNDS UPON THE VITAL PHENOMENA OF THE ORGANISM.

Physiological chemistry has been up to the present time for the most part the study of organic chemistry

²⁹ The property of sparing tissue is possessed by several narcotic substances, as morphia. It would be as reasonable to class this substance among the foods as alcohol, if this property were taken as the distinctive quality of a food.

and of the organic compounds. In the absorption in this branch the study of the inorganic chemistry of the body has been, to a great extent, neglected, and its importance overlooked.

A priori evidence of the importance of the inorganic compounds and of this branch of chemistry in the life phenomena of the body has never been lacking. The large ash obtained from the cells, especially from the cell nucleus, is evidence of the importance of the inorganic compounds in the constitution of living matter. The evidence is clear in botany. We know that iron is necessary for the formation of chlorophyll in plants, although it does not enter into the chlorophyll molecule. Bacteria and moulds form organic compounds by synthesis of the inorganic, thus forming compounds in which the phenomena of life is possible.

The same salts used by the moulds are found in the ash of the nucleus of the cells. And it is a reasonable hypothesis that the nucleus, like these, builds up inorganic substances into organic synthesis, and that in these inorganic substances thus synthesized we have the basis of living matter. And thus in the study of these compounds and their relations to the body processes, we have an important part of the chemistry of life phenomena.

The truth of this hypothesis and the importance of the inorganic salts or their bases in the animal economy has been forcibly brought out by some recent experimental work of Loeb, which shows that slight variations in the inorganic content of a tissue have a decided influence upon its properties, producing changes in these properties having far-reaching effects upon such vital functions as muscular contraction or even development of the ovum.

CHANGES IN THE PROPERTIES OF TISSUES RESULTING FROM VARIATIONS IN THEIR CONTENT OF INORGANIC SALTS.

Loeb²¹ has found that if a tissue, as muscle, be placed in turn in equimolecular solutions of certain substances capable of ionization, as sodium chloride, calcium chloride, potassium chloride, its property of holding or absorbing water is greatly varied according to the metal ion present in the solution used. A muscle placed in a .7 NaCl solution absorbs about 7% of its own weight of water in eighteen hours. One placed in an equimolecular KCl solution absorbs 40% to 50% of water. One placed in CaCl₂ loses 20% of water. The same phenomena are presented if the bromide or iodides of these same metal ions are used. A parallel of this influence of the ions upon absorption of water is found in the case of the Na, K, and Ca soaps. With these soaps it is found that the K soaps bind most water, the Na less and the Ca least. If K ions be substituted for Na ions the soap gains in water. If Ca ions be substituted for Na a loss of water occurs.

Ion proteids.—It thus appears that these metal ions exist in combinations with the elements of the muscle tissue, the proteid elements, as ion proteids in which one ion can be easily substituted for another, as in the soap compounds. That it is the ions which are changed in these alterations and not the whole salt, or electrolyte, is proven by the fact demonstrated in this and further experiments, that the

only alteration in the constitution of the substances as the muscle or soaps involved in this change of property is the variation in its content of particular kind of metal ions, Na or K or Ca.

In the same way, the property of contractility of muscle may be varied.²² Skeletal muscle in ordinary conditions lacking the property of rhythmic contraction at once takes up this property when introduced into a solution of NaCl. It does this, however, only when a certain amount of calcium or potassium salts is present in its tissue. These changes in tissue are observed only under treatment by solutions of substances capable of ionization, not in solutions of non-conductors, as sugar, urea, etc. They occur only in the presence of certain ionizable substances, as sodium, potassium, calcium and magnesium salts, not with all electrolytes.

From these experiments the author concludes that the presence of certain ions, as Na, K, Ca, in certain proportions in the constitution of a tissue, is an important determining factor in regard to the properties of this tissue. These ion salts, or electrolytes, do not exist in living tissue entirely as such, but partly as compounds of proteids, ion proteids, entering into combination not as a whole, but through their ions. These ion proteids are capable of disassociation under simple conditions, the Na ions being replaced by Ca ions, the Ca by K, and so on, with consequent alteration of the properties of the tissue.

The relation of the ion proteids to the normal conditions of the tissues and functions of the body.—In regard to these ion proteids and the effects upon the properties of tissue, Loeb observed further that a skeletal muscle which takes up rhythmic contraction in a NaCl solution, if immersed in a solution of the chlorides of Na, Ca and K in the same proportion as in the blood, fails to take up this property. A muscle, however, which after a period in NaCl solution has finally ceased its rhythmic contraction, is started up again by the addition of calcium or potassium chlorides to the solution. The same fact is true of a living organism (*fundulus*) which, having lost its natural activity under subjection to NaCl, retakes it again if subjected to small amounts of CaCl₂ or KCl.²³ That is, the properties of tissue, as irritability or contractility of muscle, are dependent to some extent upon the association of ion proteids present in or accessible to the tissue. These ion proteids of Na, Ca, K, Cl, etc., exist in certain proportion in a given body tissue or the blood. While this condition is maintained the tissue shows its normal properties. Change this condition by placing in a foreign medium (as an NaCl solution, in which the ions can be freely dissociated and thus an excess of the Ca or K ions of the tissue be replaced by Na) and the property of the tissue is changed, a skeletal muscle, for example, developing the property of rhythmic contraction. These muscles do not take on this property in the body, since the blood contains the ion salts NaCl, CaCl₂, KCl, etc., in proper proportions to keep each other balanced in the muscle. By artificial substitution of ions, however, this balance may be broken and a new balance or property set up. The author confirms these conclusions by a large number of experiments.

If it is true that life and normal properties of tissue

²¹ Loeb: Arch. f. d. ges. Physiol., 1899, Bd. lxxv, S. 303; American Journal of Physiology, vol. iii, No. viii, p. 327.

²² Loeb: American Journal of Physiology, vol. iii, No. 7, p. 327.

²³ Loeb: Loc. cit.

depend upon the presence of a number of various metal proteids, Na, Ca, Mg, in definite proportions, it must follow that pure solutions of one class of ion salts, as, for example, pure solutions of NaCl, are poisonous, for the Na would finally replace all the Ca in the tissues and thus the normal properties disappear. And this proves to be the case. A fundulus which can maintain life in even distilled water soon ceases to act in a pure NaCl solution.²⁴ If, however, Ca and K are added to the solution the vitality returns. That it is the anion, the Na or Ca, which is the essential factor in the changes, and not the cation, the Cl, is proven by the fact that in this experiment chlorides, NaCl, KCl, CaCl₂ are used in all cases. If the Cl were the poisonous agent, and not the Na, then the KCl would not relieve the poisoning.

*Experiments upon the medusa.*²⁵—The regular contractile action of the medusa is maintained by a set of nerve ganglia situated in the margin of the bell. The central portion contains no ganglion system and if separated from the bell will not contract in sea water, though the separated outer portion or bell continues to do so. In a solution of NaCl, however, the central portion at once takes up the process of rhythmic contraction just as the skeletal muscle in the first experiment described. That is, the tissue of the central portion of the medusa does not possess the property of irritability in its natural condition and environment. When, however, its content of ion salts is affected by a change in this environment it takes on this property. The presence of the Ca and K in the sea water prevents this contraction, for the property is at once lost upon the addition of Ca and K ions to the NaCl solution. These phenomena of the medusa are similar to those of the heart. Here the rhythmic contraction under the influence of the ganglia is normal in the environment of the body fluids with their proportions of Na, K, Ca and Mg ions. An isolated heart will continue its action for a much longer period in a solution containing Na, Ca and K than in a pure NaCl solution, for the latter gradually replacing the Ca in the tissue by Na ions soon upsets the proportion of the ion proteids necessary for the maintenance of this property. Hence the value of Ringer's solution over normal salt solution. The value of such mixed solutions is not, however, as generally supposed, due to the stimulating action of the calcium upon the heart, but to the presence of the several salts necessary for the proper interaction of the ions. The sodium is the agent which initiates the irritability, the calcium checks this effect, causing the cessation of the beat, and thus by alternate starts and checks the rhythm is maintained. Remove either entirely and the property is lost.

These observations have led the author to advance the hypothesis that rhythmic contraction of any tissue is a phenomenon of the constant alternate association and disassociation of the ions Na, Ca, K in their proteid combinations and is thus primarily a chemical process, the Na and Ca and K ions replacing each other in turn and thus causing the constant action. In the heart and medusa bell the process is under ganglion control and it is the ganglia rather than the tissue itself which are influenced. In the medusa centre, the skeletal muscle, the embryonic heart

before the appearance of the ganglia, perhaps the chemical process in the tissue itself, may account for the phenomenon. It is not the reception of these ion salts from the surrounding media which is essential to the maintenance of life or a special property, but the possession of them in proper proportions in the constitution of the tissue. For the fundulus lives perfectly in distilled water.

Development of the unfertilized egg of the sea urchin.—Some very striking evidences of influence of inorganic salts upon the vital processes are found in Loeb's experiments upon the development of the unfertilized ovum.²⁶ This author noted (1) that changes in the state of liquefaction or solidification of a tissue might play an important part in the life phenomena of the tissue; (2) that certain ion salts, as Ca or Na, favor coagulation or solidification in tissues, while others, as Mg or K, favor liquefaction.

The latter condition is also influenced by simple concentration of surrounding fluids. Applying these discoveries to the study of the important life phenomena of development of the ovum, Loeb found that simple concentration of sea water effected some division of the sea urchin ovum to twenty, thirty, or even sixty cells. The development never reached the blastula stage, however, the resultant growth being therefore similar to tumors or galls. The same result was obtained by the addition of certain quantities of Mg or K to the water.

From this experiment and by analogy with those upon the fundulus and medusa already mentioned, the author concluded that the constitution of sea water prevented the parthenogenetic development of the eggs of the sea urchin and other animals in whom the eggs require fertilization.

Since acceleration of this development followed influences which promoted liquefaction, it seemed possible that by reducing the agents favoring solidification (the Ca or Na ion salts) or increasing those favoring liquefaction (the Mg or K ion salts) in the surrounding media for a period a parthenogenetic development of the egg of the sea urchin might be accomplished. After various experiments Loeb found that if unfertilized eggs of the sea urchin were exposed for two hours to a solution of 5,000 cubic centimetres of 1% MgCl₂ plus 5,000 cubic centimetres of sea water, and then placed in ordinary sea water, a development of blastulae, gastrulae and plutei occurred as after impregnation by the spermatozoon. Thus it seems proven that the unfertilized egg has all the possibilities for parthenogenesis, the constitution of the sea water alone preventing this phenomenon. The Mg probably acts by liquefying the nuclear membrane and thus starting division. Any salt extracting water from the egg would probably do the same. The spermatozoon probably possesses a double action, (1) a liquefying action similar to the above, and (2) the transmission of the inherited characteristics. The properties are apparently separate; and the Mg ions are apparently able to perform the first property as well as the spermatozoon.

The influence of the electrolyte constituents of the sea water upon the development of the ovum are shown by some experiments of Loeb upon the fertilized egg of the sea urchin. This egg fails to develop an embryo in a solution of a single chloride (NaCl

²⁴ Loeb: American Journal of Physiology, vol. iii, No. 7, p. 227.

²⁵ Loeb: Loc. cit., No. 8, p. 333.

²⁶ Loeb: American Journal of Physiology, vol. iii, No. 3, p. 135, and vol. iii, No. 9, p. 434.

or $MgCl_2$, etc.) or in a solution of two chlorides. In a solution of the three chlorides which the experiments upon the fundulus and muscels had suggested to be the salts most essential to life phenomena (the chlorides of Na, Ca and K) the development of the embryo occurs, though without a skeleton. By the addition of $MgCl_2$ and Na_2CO_3 to this solution the complete embryo with skeleton is developed.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, April 18, 1900.
DR. H. F. VICKERY in the chair.

DR. G. G. SEARS reported

TWO CASES OF ABNORMAL SEXUAL DEVELOPMENT.¹

DR. J. J. PUTNAM: I have been much interested some years past in studying the subject of infantilism, which I think is too much neglected amongst us. A number of very interesting communications have been made by French physicians, and it is perhaps more common than has been supposed. Infantilism, with tendency to feminism, which generally go together, would express the condition of the first case Dr. Sears reported. One curious speculation it seems to me is with regard to the causes of these states. To a certain extent they can be reproduced artificially or by accident through mutilation or disease of the reproductive organs. I have seen myself one interesting case of that sort following injury of the testicle. A good many are on record and the more common results which follow are classed under the head of eunuchism. Then the very curious phenomena presented by birds are well known. The female birds of certain species, when they pass the reproductive age, assume the plumage of males. The question arises how to classify this change of structure, whether to consider that it is simply due to the withdrawal of some chemical substance such as may be supposed to be passed into the blood from the testicles or ovaries—a sort of internal secretion—or to suppose that the change is one dominated by the nervous system. If the former is true then we have something more or less analogous to what occurs in myxedema, where the removal of a gland is followed by a large number of curious and widespread changes, some of which seem to be to a considerable extent morphological in their character. The comparison between the true cretinism of Switzerland and northern Italy and the sporadic cretinism produced by disease of the thyroid would seem to be something like the relation between the artificial eunuchism and the infantilism and feminism. In the case of the sporadic cretinism the condition can be largely counteracted and made to change back again in spite of its complexity, by the introduction of the thyroid secretion. In the case of the cretinism of Switzerland that is impossible. Similarly one might suppose that the results of castration could be prevented by the introduction of testicular products,

whereas one could hardly expect results of that sort to follow from a similar influence in pronounced feminism or infantilism. It cannot yet be positively asserted that the results of castration can be relieved in that way, but it always seemed to me a very proper subject for experimentation and to a certain extent it has been experimented on in the Harvard Medical School in the past two years.

DR. J. J. PUTNAM presented

NOTES ON THE TREATMENT OF ATAXIC PATIENTS BY CO-ORDINATION EXERCISES, WITH THE DEMONSTRATION OF TWO PATIENTS.²

DR. TAYLOR: I should like to ask what the object of the trunk movements is, as demonstrated in one of the cases?

DR. PUTNAM: I suppose that although it is true that co-ordination is the thing chiefly aimed at, still if one must call a great deal on certain groups of muscles, of which the trunk muscles are pre-eminently important, it is necessary that their nutrition should be in first-rate condition, and it is simply with the idea of developing the nutrition of the muscles most used that these exercises for strength are put in. I think the particular object is that when one is going to call for co-ordination, you want the nervous system and the muscles to be in healthy condition before you start.

DR. GRAHAM: With regard to movements, the larger movements I think should be begun first and later the finer movements come into play. All this is exceedingly interesting and I am sorry so few gentlemen are here this evening to have witnessed it. I notice that Mr. Harding began with the foot movements, and these have done very well, and perhaps his plan was to begin with the movements that were easiest. It is a very good plan indeed, but it seems to me it would be more natural to begin with the larger movements and graduate down to the finer movements; for in the natural evolution of the human being from childhood up, the large and easy motions come first, the more delicate and difficult ones later.

DR. PUTNAM: When any movement of an extremity is made, the first thing that is done is to fix the muscles of the trunk, so that it would seem essential that a patient should be assured of the condition of his trunk muscles as regards strength and capacity for, at least, sustaining balance moderately well.

DR. VICKERY: I should like to ask Dr. Putnam what nerve channels convey the co-ordination in these cases. I suppose the reason this had not been tried before was that people thought the circuit was broken by an irreparable destruction of nerve tissue.

DR. PUTNAM: It seems to me that is just where the error lies. I remember reading many years ago, without getting the moral which the case should have carried with it, the report of a patient who had been treated in several of the German clinics, and was found eventually to have a pronounced and typical condition of sclerosis of the spinal cord, but nevertheless recovered his power of walking to a very considerable extent, so that he was considered one of the cured patients. Again, it has been noted many times that patients who have general paresis at the same time that they have these tabetic changes in the cord do not have, as a rule, as much ataxia as when they had better command of their mental faculties, and the notion has been that they threw themselves more on

¹ See page 232 of the Journal.

² See page 231 of the Journal.

their instincts and without trying to do so much actually succeed in doing more. I have also in mind a young woman with advanced sclerosis, whose legs were in a spastic condition, and she was confined to her chair entirely. Her mother heard a noise in her room one night and found that while still asleep she had walked to the door. On waking her up she had difficulty in getting her back. This case seems to show that we do not need for locomotion anything like the amount of information that we ordinarily get through our nerves, but when wideawake and trying to do the right thing all the time we interfere with our own success because we recognize the defects in our mechanism too much and do not rely in a simple and confident way on what we have left.

DR. GRAHAM: I suppose all the paths of conduction in the spinal cord are not destroyed and the patient has the power to throw his will down through the channels capable of conveying the impulse when a suggestion is made to him that he can do so and so. There must be certain tracts open to convey the influences down, otherwise they would not go. The men who work suggestion often do so to good effect. It is worth the effort and if you do not succeed it does not do any harm.

DR. PUTNAM, in answer to a question as to whether this treatment effected any improvement in the pathological condition, or whether it tended to retard the processes in the cord, said it was his belief that it tended to retard the progress of the disease, inasmuch as the spinal cord and the rest of the nervous system are stimulated to more healthy and normal functions. He supposed one could hardly expect to make a regression in conditions that had already taken place. Sclerosis would remain.

DR. GRAHAM: Dr. Putnam said acute cases do well. I remember a chronic case that was doing well and finally had an acute attack which took him off his legs and then he resumed massage and exercises pretty vigorously. After a while I told him one day he was going to walk without crutches, and he said, "Never." Some weeks later I noticed that he was doing his resistive movements while lying down so well that I told him I thought he could now go without his crutches. He replied that he had been going without them for a fortnight. Evidently he wished me to find out for myself that my prophecy had come true. In chronic cases with an acute attack perhaps we can do more than we expect sometimes.

It is certain that massage and movements often restore lost power of motion, and if in disturbances of central and peripheral origin they do this not only by their local effect, but also, as has been claimed for them, by arousing psychomotor impulses in the function of new associations and combinations, then they are certainly worthy of more consideration than they have yet received.

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Continued from No. 9, p. 219.)

SECTION OF INTERNAL MEDICINE.

THE DIAGNOSIS OF RENAL INSUFFICIENCY.

DR. C. ACHARD said that the diagnosis of renal insufficiency formerly rested entirely on a complex of general and functional disturbances, such as uremic

phenomena—dropsies, slight signs of "Brightism," *bruit de galop*, and a summary examination of the urine consisting in the estimate of its volume and density, and the discovery of albumin and casts. Thanks to the simplicity of the investigation, and the long experience acquired with regard to them, these signs still remain the primary condition of every renal affection. But they are better fitted to establish the existence and the nature of the lesions of the kidney than to make known functional disturbances of these organs. The anatomical change and physiological disorder do not always proceed *pari passu*, and on the other hand the functions of the kidneys may be seriously compromised even when the preceding symptoms remain unpronounced. A deceptive appearance of general health is maintained, and a more or less precarious compensation masks the danger—which is nevertheless very real—that threatens the organism. Therefore some complement of the investigation into the state of the function becomes necessary. To this end a whole series of researches has been devised, having for their object the exploration of the urinary secretion, especially through comparing the urine and the blood, by various procedures, clinical (dosage), physical (cystoscopy) and physiological (toxicity). Moreover, instead of studying the product of the spontaneous secretion of the kidney it has been proposed to inquire how that organ accomplishes a work set it to do, consisting in the induced elimination of a foreign substance introduced in a known dose into the organism. Of the methods referred to, only two are sufficiently practical—cystoscopy and induced elimination. The comparative cystoscopy of the urine and the serum which affords knowledge of the number of the molecules without distinction of nature contained in the two fluids indicates the permeability of the kidney combined with the dosage of certain ingredients of the urine, the measurement of its amount, and the estimation of the weight of the body; it appears capable of also furnishing very instructive information as to the state of the renal circulation and the nutrition as a whole. Achard, however, thinks it possible that the ingenious calculations which allow us to draw all those deductions are somewhat wanting in the simplicity necessary for everyday practice. As regards the test of induced elimination which is generally carried out with methylene blue, it enables us to judge within what limits of time, and in what proportion the kidney accomplishes the disencumberment of the organism from the substances for which it serves as the emunctory. Differing in their mechanism, those explorations may furnish somewhat dissimilar indications. It is advantageous, therefore, to combine them. They are interesting in a double respect. First, they constitute a method of study applicable to pathogenic researches, and are suitable for the elucidation of certain obscure points in the domain of theory. Next they have a practical utility, for they confirm by making more precise the data acquired by simple clinical examination, as it is carried out cursorily at the bedside. Sometimes even they suffice for the detection of disorders of the renal function which would have remained uncertain or unknown; this is especially the case in certain cases of interstitial nephritis running an insidious course.

DR. S. LAACHE in his report treated the question

from the clinical and the therapeutic point of view. He took for his starting point the function by virtue of which the kidney is the most important secretory apparatus of the organism for waste matters, liquid and solid, the last being represented chiefly by urea. He referred to renal edemas, *edema fugax*, universal anasarca and the decisive part played by the heart. As regards diagnosis, in connection with which he alluded to the milder form of Bright's disease, he said the researches of Aehard and Castaigne had opened up a new way. Treatment should be by preference prophylactic; but if this was impossible, the well-known principles already followed in the treatment of renal affections should be applied. Special attention should be given to the state of the heart.

TREATMENT OF MUCOMEMBRANOUS COLITIS.

DR. ALBERT MATHIEU, physician to the Hôpital Andral, Paris, said he would confine himself to a summary review of the principal pathogenic and symptomatic indications and the broad lines of treatment corresponding thereto.

(1) Constipation is the rule in mucomembranous colitis; it is often spasmodic. The diarrhea, which is always transient, is the result of a *debâcle* or an attack of catarrhal colitis.

(2) There always exists in mucomembranous colitis a secretory irritation of the mucous membrane.

(3) The syndrome mucomembranous colitis does not occur in its full intensity except in individuals predisposed by a pre-existing neuropathic condition. The colitis tends to aggravate this neurosis and localize it in the abdomen. The same holds good with regard to visceral ptoses. Locally, the neurosis induces hyperesthesia of the walls of the large intestine and disorder of its motility; it is especially a cause of spasmodic contractions.

(4) The general and local conditions very often react on each other in mucomembranous colitis and reciprocally aggravate each other. In treatment both these elements must be kept in view. Disorders of alimentation, attacks of pain, doubtless also auto-intoxication, are a cause of anemia, wasting, sometimes even true cachexia.

(5) Lastly, certain complications, acute dysenteriform or febrile attacks, hemorrhage, etc., furnish special indications for treatment. The constipation is at once a cause and an effect; before everything the removal of this condition must be aimed at; its disappearance is the sign and guarantee of the cure of mucomembranous colitis. In dealing with it measures must be employed that do not increase either the secretory irritation, the pains, or the tendency to spasm. Castor oil, large enemata and belladonna are especially useful. The castor oil should be given in the morning in small doses with the early breakfast; its employment should alternate with that of the large enemata; these should be given at a low pressure, slowly and at a temperature near 104° F., in doses of 1½ to 2½ litres. These enemata soothe the painful and spasmodic irritation of the intestine, bring about the evacuation of material accumulated within it and act as a mechanical antiseptic. Boiled water may be used with a weak solution of biborate or salicylate of soda to reinforce the antiseptic action and a very dilute solution of neutral ichthyolate of ammonia to exert a modifying action on the intestinal catarrh. Care must be taken to avoid everything likely to cause irri-

tation of the bowel; for instance, drastic purgatives, astringent injections, massage in the cases where there is marked hyperesthesia of the intestine or painful spasm of the colon. It has sometimes been recommended that food rich in vegetable detritus—green vegetables, cooked fruits, wholemeal bread, etc.—should be given; in many cases, however, this is not tolerated, and one is obliged to prescribe a regimen that favors constipation but lessens the irritation of the digestive mucous membrane. Enemata of oil are often very useful, especially combined with large enemata at low pressure. Belladonna is often prescribed with success; it soothes pain and antagonizes the tendency to spasm. More rarely one may have recourse to opium and its derivatives. Hot local applications and hot baths have a useful sedative effect; prolonged baths and large hot enemata form the basis of the treatment at Plombières and similar stations. Sometimes in these places ascending douches given at too high a pressure have been abused. It is often also of advantage to act on the general neurosis by the employment of nerve sedatives and hydrotherapy; often the patients are weakened and emaciated and it is necessary to raise the standard of their nutrition and at the same time to prescribe a regimen more appropriate to the state of their digestive canal. The dysenteriform attacks should be treated with enemata of a weak solution of nitrate of silver; the hemorrhages by preparations of hamamelis and large enemata at a temperature of 113° F.

Dr. F. BOAS (Berlin) next dealt with the symptomatology, diagnosis and clinical course of mucomembranous colitis:

(1) By mucomembranous colitis we understand a special catarrhal disease tending to plastic mucous formations of the colon.

(2) In addition to this form, which is the most frequent, there is another much more rare, in which the process manifests itself in paroxysms, whilst in the intervals there is no noticeable malady except constipation; this form is denoted by the term mucous colic.

(3) Lastly, there is a third form which may be designated by the name of artificial mucomembranous colitis; by astringent injections, especially tannin, this form may be induced in persons who are the subjects of colitis, but not in healthy individuals.

(4) The symptomatology of mucomembranous colitis includes constipation, colic, spasmodic atony of the intestines, glairy or membranous masses in the stools, and a general neurotic state; nevertheless, several of the symptoms may be wanting; the only one of them that is almost constant is constipation.

(5) That which alone determines the diagnosis is the existence of characteristic mucous masses; the other symptoms—sensitiveness of the colon, coloptosis, movable kidney and atony of the intestine—at the most can only help to confirm the diagnosis.

(6) It is indispensable that it should be ascertained whether the mucomembranous colitis is an idiopathic condition or a complication; it is equally of great importance to ascertain whether the membranous colitis is of artificial origin.

(7) In regard to the differential diagnosis the only alternative that need be considered is mucous colic; by frequent observations and methodical intestinal injections in the intervals it will almost always be possible to come to a decision.

(8) The clinical course of mucomembranous colitis is absolutely parallel to that of habitual constipation; influences which correct the latter will cause the former to disappear, and vice versa.

DR. JULIUS MANNBERG, physician to the General Polyclinic, Vienna, dealt with the pathogeny and pathological anatomy of enteritis membranacea and colica mucosa.

(1) A distinction must be made between membranous enteritis and mucous colic.

(2) By membranous enteritis is understood a sub-acute or chronic catarrhal affection of the large intestine, accompanied by evacuations particularly rich in mucus.

(3) By mucous colic is denoted a morbid state, of which the special clinical symptoms are paroxysmal crises of colic followed by evacuation of masses of mucus.

(4) It is a question whether the two processes may occasionally be combined.

(5) Each of the two morbid forms of which the only common element is the existence of mucous evacuations has a pathogeny peculiar to itself.

(6) The first form is nothing more than a catarrh of the large intestine characterized by an abundant evacuation of mucus; it has the same pathogeny on the whole as ordinary catarrh of the large intestine.

(7) Mucous colic, on the contrary, has a special pathogeny. In the great majority of cases it rests on a basis of general neurosis (hysteria, neurasthenia), and there is a tendency to consider the disease as an expression of the neurosis. In the exceptional cases where there is no underlying general neurosis the morbid state must be regarded as a monosymptomatic neurosis of the intestine. In addition to this fundamental etiological factor certain occasional factors capable of producing paroxysms must be taken into account. The principal among them are diseases of the genital apparatus (in man as well as in woman), mental disorders, constipation, irritating rectal irrigations, organic diseases of the intestine.

(8) Mucous colic is frequently accompanied by other pathological manifestations to which its production cannot be attributed, but which may be regarded as equivalents of the fundamental nervous element — gastric achylia, nervous dyspepsia, spasmodic constipation, enteroptosis.

(9) The pathological anatomy of membranous enteritis is the same as that of enteritis in general.

(10) As regards mucous colic in the very rare cases in which it has been possible to make an examination either on the living or the dead body no appreciable lesion of the mucous membrane has been found.

PULMONARY EDEMA.

PROFESSOR BASCH, of Vienna, proposed to deal with this question under the following heads: (1) Under what conditions is pulmonary edema produced? What is the nature of the process producing it? (2) What are the secondary consecutive processes? (3) What relation is there between the doctrine of pulmonary edema and that of dyspnea and cardiac asthma? (4) What relation is there between pulmonary edema and muscular insufficiency of the left heart?

(1) The first pathogenic condition of edema is that the capillary circulation of the alveoli should be arrested owing to the elevation of the blood pressure in the left auricle. The second is that the afflux of

blood coming from the right heart, that is to say, from the side of the pulmonary arteries, should be unimpeded. The mechanical consequences of these two conditions are the enlargement of the pulmonary alveoli and increase of resistance in their walls. The enlargement is produced by elongation of the capillary vessels and the increase of resistance by the high tension of the blood in the capillary network. To these two consecutive processes may be added transudation into the alveoli — a natural consequence of the circulatory stasis in the lungs.

(2) The enlargement of the alveoli and the increased resistance of their walls create a mechanical obstacle to respiration, and as a consequence a disturbance in the ventilation of the blood. From this arises a morbid sensation, dyspnea, which is only the expression of the disproportion between the work of respiration and its effect. This morbid sensation becomes intensified proportionately to the increase of carbonic acid which accumulates in the blood as a result of the disturbance of its aëration. It causes an increase of the excitement of the respiratory centres and forced labor of the respiratory muscles. The obstacle increases still more when intra-alveolar transudation is added to the preceding conditions — enlargement of the alveoli and increased resistance of the lungs. There is need to insist on the fact that the transudation alone without concomitant enlargement of the lungs does not hinder respiration so much as is believed. An abundant transudation, if it is associated with a slight pulmonary enlargement and moderate resistance of the lungs, produces much less dyspnea than a slight transudation combined with a considerable enlargement of the lungs and a strong resistance of the alveoli. The persistence of the dyspnea causes an increase of carbonic acid in the blood. The result is death of the heart in consequence of general asphyxia.

(3) The dyspnea and cardiac asthma develop in the prodromal stage of pulmonary edema, that is to say, before the production of the alveolar exudate; but a slight transudation is very difficult to discover by clinical examination, and it is probable that it accompanies both these diseases equally.

(4) Cardiac dyspnea, cardiac asthma, and pulmonary edema have their starting point in muscular insufficiency of the left ventricle, and not merely in primary insufficiency, which is characterized by a low arterial pressure, but also in secondary insufficiency, which is characterized by increase of arterial pressure.

PROFESSOR MASTU'S, of Liège, dealt with the pathogeny of acute pulmonary edema. Edema, he said, is an abnormal accumulation of lymph in the plasmatic spaces. Acute pulmonary edema is only a particular form of it, presenting two peculiar characters, both depending on the acuteness and activity of the pathogenic process and its particular localization. These are, first, the accumulation of the liquid not only in the lymphatic tissue, but also and particularly in the alveolar cavities by transudation through the walls or by rupture of these. Next, the suddenness with which the phenomena show themselves, on which depends the almost uniform clinical symptomatology. The theories of the pathogeny of edema regarded generally are three:

(1) The purely mechanical theory which attributes edema to a notable increase of lateral pressure in the capillary vessels — this should be rejected.

(2) The view of Hamburger and Heidenheim, which considers the formation of lymph as a secretory act of the endothelial cells of the capillary wall and edema as an exaggeration of this function.

(3) The theory of Starling, Winter and Théaulon, which attributes the genesis of the edema to modifications of the osmotic relations between the liquids situated on either side of the vessel wall and to variations in the permeability of this wall.

In regard to the question to be considered two facts are of predominant importance: (a) An active simple non-inflammatory hyperemia of the vessels without hindrance to the flow of the liquid is by itself incapable of producing edema; (b) lesions of the capillary walls entailing an increase of permeability are an important factor of edema. For this reason Masius is unable to admit that acute pulmonary edema has only one pathogeny; clinically it assumes three forms:

(1) Inflammatory edema; here in all probabilities we have to deal with a reflex vasodilatation, circumscribed or widespread, developed under the influence of some casual factor and followed by a direct lesion of the walls by microbes dwelling in the substance of a normal pulmonary parenchyma, a fact demonstrated by one of Masius's pupils.

(2) Stasic edema, which is by far the most frequent. This is the form met with in affections of the heart, especially initial stenosis, in affections of the vessels, — aortitis or arteriosclerosis, — in diseases of the kidney, such as primary sclerosis. The experimental studies on the subject have been numerous, but their conclusions are often contradictory and seldom applicable to human pathology. The fact which appears best established is the production of edema under the influence of an increased pressure in the pulmonary artery dependent on the normal or increased activity of the right ventricle coincidentally with stasis dependent on a parietic or spasmodic inactivity of the left heart. The pathogeny of the edemas included in this group therefore comprises a great variety of factors. One only among these seems to adapt itself to all cases, and so to constitute the basis of the affection; it is the deterioration of the wall of the capillaries of the lung. Thus in chronic aortitis, in the small red kidney there is often an extensive arteriosclerosis and disorders of nutrition which are echoed in the osmotic tension of the plasma as well as on the molecular constitution of the vessel walls. Modifications in the permeability of the walls are in Masius's opinion one of the principal causes favoring edema. On the other hand, many of the affections referred to, especially arteriosclerosis and sclerous nephritis, react on the left heart and singularly diminish its resistance. To explain the suddenness of the accidents, one must invoke occasional factors, such as sometimes irritation of the cardiopulmonary plexus causing reflexly vasodilatation of the pulmonary vessels; sometimes, on the contrary, sudden paresis or spasm of the left heart co-existing with normal or greater contraction of the right ventricle.

(3) Toxic edema, which is known only in the experimental domain. Thus there is an edema caused by the muscarin, cause of which is a cramp of the left heart, combined with a direct action of the poison on the vessels. Again, there is iodine edema, in the pathogeny of which the last named factor is probably of predominant importance.

DR. TEISSIER dealt with acute edema of the lung. He holds that there is a definite clinical entity to

which the name acute edema, or serous apoplexy, of the lung may justly be given. The symptoms are premonitory sensations of tickling in the throat or painful intrathoracic tension, violent dyspnea accompanied by spasmodic and continued cough, soon followed by foamy and pinkish expectoration, a true bronchial froth caused by transudation of blood serum with a rain of fine râles heard over all the edematous region. Teissier has come to the conclusion that primary acute edema of the lung requires for its production a special soil — previous infection (acute articular rheumatism, influenza, the puerperal state, typhoid fever, pneumonia), or intoxication (Bright's disease, and a long way after, alcoholism). Changes in the heart affecting the zones of distribution of the nervous plexuses or ganglions — base of heart, coronary region, left ventricle — must also be given an important place among predisposing causes. The immediate cause of the onset is generally a rapid chill, fatigue or emotion. Under an influence of this kind, a sudden rise of pressure having been produced in the territory of the pulmonary veins, previous changes in the blood facilitating serous transudation and concomitant vasomotor disturbances favoring stasis, edematous fluctuation will be brought about. As interstitial nephritis presents these various pathogenic conditions in the highest degree, it is not surprising that this form of Bright's disease so often presents as an epiphenomenon the syndrome of acute pulmonary edema. Teissier has been able to confirm this view of the etiology by experiments. Acute edema of the lung is more serious from a prognostic point of view than passive and chronic edema, sometimes causing death in a few hours. There are cases, however, in which it may subside spontaneously or metastatically owing to pericarditis or some other visceral inflammation. In general terms the gravity of acute pulmonary edema depends on the degree of renal permeability. When the crisis tends to a fatal issue the disorders of the peripheral circulation become accentuated. Arterial pressure falls more and more, the pulse becomes small, quick and irregular, cyanosis appears and the heart stops in systole, the left ventricle appearing as if tetanised. In regard to treatment, experience has shown the unquestionable utility of bleeding, which, besides relieving the circulation, withdraws a certain amount of toxic substances. Derivatives applied over the nerve trunks and the cardiac plexus are also found beneficial. Atropin, which seemed to be indicated, as it antagonizes the effect of muscarine, has not proved of service. Oxycarbonated nitrite of amyl may perhaps be found useful owing to its vasodilator properties and its marked influence on the contractile energy of the heart. Teissier has in serious cases obtained good results from the administration per rectum of carbonic acid combined with the use of derivatives and wet cupping. Morphine is a dangerous agent, the use of which should be abandoned. In desperate cases puncture of the right auricle and tracheotomy with aspiration of the liquid blocking the larger bronchi have been recommended. But Teissier has had no experience of these measures.

(To be continued)

It is reported in the *Philadelphia Medical Journal* that a certain Almon W. Sargent of Watertown, N. Y., died after taking 440 grains of sulphonal.

Recent Literature.

A Manual of Surgical Treatment. By W. WATSON CHEYNE, M.B., F.R.C.S., F.R.S., Professor of Surgery in King's College, London; Surgeon to King's College Hospital, and the Children's Hospital, Paddington Green, etc., and F. F. BERGHARD, M.D. and M.S. (Lond.), F.R.C.S., Teacher of Practical Surgery in King's College, London; Surgeon to King's College Hospital, and the Children's Hospital, Paddington Green, etc. In six volumes. Philadelphia and New York: Lea Brothers & Co. 1899.

The authors' preface well expresses the purpose of this book. "We have ourselves frequently experienced the want of detailed information, especially as regards the after treatment of our cases, and have had to learn the best methods of procedure from experience. Nothing can of course replace experience, but it is often of the greatest advantage to have a detailed record of that of others upon which to base one's work. It is this want that the present work is intended to supply. We have tried to put ourselves in the place of those who have to treat a given case for the first time, and we have endeavored to supply them with details as to treatment from the commencement to the termination of the illness. We have assumed that the reader is familiar with the nature and diagnosis of the disease, and we only refer to the pathology and symptoms in so far as it is necessary to render intelligible the principles on which the treatment is based, and the various stages of the disease to which each particular method is applicable.

"We have purposely avoided attempting to give anything like a complete summary of the various methods of treatment that have from time to time been proposed; to do so would merely confuse the reader. Only those plans are described which our experience has led us to believe are the best, but with regard to these we have endeavored to state exactly and in detail what we ourselves should do under given circumstances. In some cases no doubt several methods of treatment are of equal value, and while we have only discussed at length that which we have ourselves been led to adopt, we have referred shortly to the others."

Volume I consists of the treatment of general surgical disease, including inflammation, suppuration, ulceration, gangrene, wounds and their complications, infective diseases and tumors, and the administration of anesthetics, by Dr. Silk. This volume is filled with many elaborate methods of treatment, some of which are obsolete. There is an uncertainty in the minds of the authors as to the value of asepsis, and some of the clumsy methods which are advocated are not reliable. The surgical pathology is not in accordance with modern knowledge. To many surgeons and practitioners the book will be of real value; it enters into the details of treatment in a satisfactory way.

Volume II consists of the treatment of the surgical affections of the tissues, including the skin and subcutaneous tissues, the nails, the lymphatic vessels and glands, the fasciæ, bursæ, muscles, tendons and tendon sheaths, nerves, veins, arteries and deformities. This volume is of more value than the first. The subject of surgery of the nerves and of the vascular system is very well presented, although many of the illustra-

tions are of no great value. The deformities are not treated according to modern methods. As a whole the volume is very satisfactory.

Volume III consists of the treatment of the surgical affections of the bones and amputations. Fractures are well presented, although many of the splints are antiquated.

The three volumes which have appeared of this "Manual of Surgical Treatment" can be turned to for sound, conservative advice, but not for the modern treatment of today. The work is an ambitious effort and is well done, and while it is possible that the authors do not entirely appreciate the definite advance that has been made in modern surgery, yet the volumes are a real contribution to the art of surgery.

We shall look with the greatest interest for the appearance of the remaining volumes, and hope that the subjects treated will be considered not alone in detail, but more in the light of modern research work.

Surgical Pathology and Therapeutics. By JOHN COLLINS WARREN, M.D., LL.D., Professor of Surgery in Harvard University; Surgeon to the Massachusetts General Hospital. Illustrated. Second edition, with an Appendix containing an enumeration of the Scientific Aids to Surgical Diagnosis, together with a series of sections on Regional Bacteriology. Philadelphia: W. B. Saunders & Co. 1900.

Dr. Warren's "Surgical Pathology and Therapeutics" was published in 1894, and it was generally recognized that it filled a position formerly occupied by Billroth's "Surgical Pathology." It is a very readable book, and the scholarly attainments of the author are shown on every page. It is not sufficiently dogmatic to serve as a textbook.

We are glad that the second edition of the book has been called for, but it is to be regretted that some portions of it could not have been rewritten in the light of recent advances in surgical knowledge. However, it has an appendix "containing an enumeration of the scientific aids to surgical diagnosis, together with a series of sections on regional bacteriology." It is one of the best books on surgical pathology which can be placed in the hands of students.

Atlas and Epitome of Gynecology. By DR. OSCAR SCHAEFFER, Privatdozent of Obstetrics and Gynecology in the University of Heidelberg. Authorized translation from the second revised and enlarged German edition. Edited by RICHARD C. NORRIS, A.M., M.D., Surgeon in Charge Preston Retreat, Philadelphia; Gynecologist to the Methodist Episcopal Hospital and to the Philadelphia Hospital; Consulting Gynecologist to the Southeastern Dispensary and Hospital for Women and Children; Lecturer on Clinical and Operative Obstetrics, Medical Department, University of Pennsylvania. With 207 colored illustrations on 90 plates and 62 illustrations in the text. Philadelphia: W. B. Saunders & Co. 1900.

The work consists practically of a series of plates interspersed with brief text. The latter, though condensed, is good. The plates are the best that we have seen published, more especially the colored ones, which are extraordinarily like the subjects which they represent. The subjects illustrated are well selected and the book is throughout a credit to author and publisher.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, SEPTEMBER 6, 1900.

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283 WASHINGTON STREET, BOSTON, MASS.

PENALTIES OF PROGRESS.

PROGRESS appears to be a matter over which we, as individuals, have small control, in spite of the very palpable fact that we must be ultimately responsible for it. In the mechanical arts the introduction of machinery and labor-saving devices has progressed steadily, although protests from the makers and even the consumers of the final product have at times been loud and vehement. The hand-made article is by degrees, but inevitably, being forced out of existence, and whether we wish or not, we are more and more the victims of mechanical devices. On the whole this is no doubt a benefit rather than an evil, but the matter of interest is that in individual instances, however much we may disapprove, we are quite powerless to resist the tendency.

There is much evidence to show that medicine, even, is not exempt from the tyranny of progress. The last few years have shown a most remarkable increase in scientific devices, which are calculated to substitute machine-made products, as it were, for personal intelligence. No doubt, intelligence is thereby given a broader field for development, and the world at large is the gainer, but the individual unquestionably suffers, in the same sense that laborers in other branches suffer when a new machine is introduced which renders their personal skill superfluous. Not many years ago it would have been thought that medicine would forever be free from this curious phase of progress, and yet if we look about us today we find a state of affairs quite analogous to what has gone on in the various industrial arts. We are gradually substituting mechanical for intellectual means of arriving at conclusions. This perhaps applies particularly to surgery, which in great measure owes its phenomenal development to the fact that it is becoming more and more mechanical, and hence more and more exact. Where fifty years ago skillful and successful surgeons could be counted by tens they are now counted by hundreds. This is as it should be, and shows an advance of which we, as a profession, may well be proud. The causes

are, no doubt, manifold; many of them are too familiar to bear repetition and the others we have no present desire to analyze. What we do wish to emphasize, however, are the possible dangers and drawbacks in such progress. We should possibly have hesitated to present this side of the picture had we not the support of so noteworthy a surgeon as Mr. Treves. In his recent address before the British Medical Association, published in our issue of August 30th, Mr. Treves took occasion to sound a warning note to his professional brethren. In his remarks on the "Surgeon of the Future," he says, after speaking of the tendency toward too radical operation:

One other matter which looms out of the future will suffice to bring this subject to a close. So many have been the artificial aids to clinical investigation which recent science has introduced that it comes to be a question whether the natural acumen of the surgeon will not deteriorate in proportion as he fails to encourage that particular learning which clings to the finger tips of all great diagnosticians. That there will be such a decadence is beyond doubt. The loss is to be deplored, for if there be one point of excellence which stands before all in the qualification of the perfect surgeon, it is bound up in that refined sensibility, that critical perception, that inestimable cunning, which lies in the surgeon's touch.

There is accumulating evidence to prove the justification of this fear. Not long since it was our fortune to hear a surgeon of much eminence say that, after all, diagnosis of certain obscure conditions was becoming unnecessary now that an exploratory operation is so easily and so safely performed. In other words, the mechanical side has been perfected to such a degree that the intellect of the operator may stand in abeyance until the revelations made by the knife inform him of the condition with which he is dealing. It is not our purpose to argue whether or not this is practical surgery, but we are convinced that such an attitude of mind is inimical to the best development of the individual surgeon. The principle is one absolutely fatal to progress in the best sense, even though we admit the paradox that progress alone has made it possible. It is this tendency that Mr. Treves so strongly deprecates. He gives a number of concrete examples. First he mentions the x-rays. The period of irresponsible enthusiasm regarding this means of diagnosis has wholly subsided. The whole subject is now being looked at dispassionately; articles are appearing which point out the possible sources of error in this "exact" means of diagnosis; we are no longer hearing the extravagant claims for the method which the ardor excited by a great discovery at first provoked. Of this Mr. Treves remarks:

A considerable amount of skill is demanded in the examination of complex fractures, of lesions of deep-seated bones, and of injuries about joints. What was to be learned of these troubles once had to be acquired by a tedious manipulation demanding considerable refinement. The surgeon who has now to deal with such conditions can afford to dispense with a prolix examination, and can submit the inquiry to a demonstrator of the Röntgen rays. The skiagraph, although its value is much exaggerated,

embodies a substantial gain, but it is to be discounted by the loss of the great element in education which it is slowly replacing.

We quote, in part, further dangers to which our modern methods are leading :

An obscure tumor — to take another instance — presents itself, and no longer is the surgeon compelled to trust to the acuteness of his inquiry and his patient review of all the physical details of the mass. For what his ready fingers may have learned can be substituted the findings of the exploratory incision, the trochar and the aspirator. Here once more an advantage is minimized by a loss. Or, again, an abdominal swelling is brought under notice. Its features are obscure, but much of the uncertainty of outline can be dissipated by a cultured hand which, with infinite patience and repetition, has learned to construct a reality out of a shadow. It may be said that it is needless to persist in bringing this much elaborated means of inquiry to further perfection since the problem is at once to be solved by an exploratory laparotomy. By such little operation a great advantage is gained, but an opportunity to add to one of the most refined forms of learning is lost. The value of the exploratory incision is beyond question, but among the signs of the times it is impossible not to notice a tendency to resort too readily to this means of solution. The Gordian knot, according to the legend, was ultimately cut, and it is a question whether the sum of human ingenuity would not have been substantially increased if attempts to untie the noose had been more diligently persisted in. In another example, let it be supposed that a suspicious ulcer presents itself for diagnosis. In such case is it well to devote time to a precise and tedious inspection of its edges and to a careful tactile examination of its base, and to check what is discovered by results laboriously gained from like inquiries? Is it not simpler to take a scraping of the affected surface and to submit it to a microscopist, and to thus be spared a method of examination which, although it may not give final results, yet represents an opportunity of furthering a priceless accomplishment? Finally, there are cases which present symptoms hard to interpret at any superficial inquiry. Is it worth while in such to undertake an exhaustive critical research and to submit the whole to a trained judgment? The quest would no doubt develop habits of observation and powers of weighing evidence; but the process is slow, and an inquiry carried out in a bacteriological laboratory will clear up all doubts, and at the same time dispense with the efforts of a cultured sense. Those, therefore, who are concerned with the education of the surgeon of the future would do well to still cherish this ancient power, and to foster a memory of the fact that surgery is, in its very essence, a handicraft, and that in all that he does the surgeon's great endeavor should be to make his own hands self-sufficing.

All this is most certainly true, and worthy of the deepest consideration. As individuals we are undoubtedly losing much that our predecessors possessed, and yet, as a learned profession, we are progressing year by year, and winning a place of universal respect, which our forefathers were far from attaining. Much as we may deplore the tendencies which Mr. Treves so well points out in the passages we have quoted, events will not be turned thereby. The surgeon has been the first to suffer, but there are already indica-

tions that the physician will not be long in following. It is certainly desirable that teachers should do what they can to stem the tide, by inculcating in their students the necessity of dependence upon their own intellects, rather than upon extraneous aids in their art. When this is done, however, we may welcome whatever tends toward greater accuracy, in the belief that such accuracy will not be attained at too great a sacrifice. The range of possible knowledge is, after all, far too great to make us solicitous lest we become merely mechanical. To certain men Mr. Treves's remarks will always apply; to others, and, we trust, the larger proportion, the solution of the simple problems means only the diversion of attention to more difficult questions, which permit of no other than an intellectual solution.

MEDICAL NOTES.

PLAGUE IN GLASGOW. — On September 1st it was reported that over 80 persons were under observation, suspected of having plague. Precautions are being taken to protect outward bound vessels, and quarantine regulations are being enforced against vessels from Glasgow. There is small probability that the disease will gain a permanent foothold.

A NEW ANTITUBERCULOSIS SOCIETY IN FRANCE. — There has recently been founded in France, according to the *British Medical Journal*, a society for the protection of the people against tuberculosis by popular education. It proposes to diffuse a knowledge of the means of preventing the disease by pamphlets, circulars, leaflets, placards, pictures, articles in the newspapers and popular lectures. The president is Dr. J. J. Peyrot, and the committee includes the names of Drs. Armaingaud, of Bordeaux, founder of the Ligue contre la Tuberculose, and other well-known men.

CHOLERA IN SIMLA. — It is reported that the present outbreak of cholera in Simla, India, is one of the most severe on record. The number of deaths has been estimated at 3,000 a week. The epidemic is probably due to the pollution of the scanty water supply during the famine.

THE RUSSIAN MEDICAL SERVICE IN CHINA. — According to the *Medical Record*, the Russian Medical Service is reported to be better than that of the other European nations. The number and good organization of the Russian ambulances should afford, it is said, an object lesson for the other powers. At Moscow twelve new military medical corps have just been organized, and they will shortly start for the East. Each of these corps consists of four physicians, four Sisters of Charity, and eighty-two nurses.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, September 5, 1900, there were

reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 87, scarlatina 18, measles 20, typhoid fever 15.

BOSTON DEATH STATISTICS. — The total number of deaths reported to the Board of Health for the week ending September 1st was 223, as against 189 the corresponding week last year, showing an increase of 34 deaths, and making the death rate for the week 20.7. Of this number 116 were males and 107 were females; 165 were born in the United States, 54 in foreign countries, and 4 unknown; 56 were of American parentage, 143 of foreign parentage, and 24 unknown. The deaths from consumption were 24, pneumonia 12, whooping cough 4, heart disease 18, bronchitis 3 and marasmus 8. There were 9 deaths from violent causes. The number of children who died under one year was 75, the number under five years 101. The number of persons who died over sixty years of age was 37. The deaths in public institutions were 68.

NEW BUILDING FOR CONTAGIOUS DISEASES AT THE NEWTON, MASS., HOSPITAL. — Plans have been accepted for this new and much needed department of the Newton Hospital. The structure will be divided into three separate buildings, 30 feet apart, and connected by roofed passage ways. Beds will be provided for 52 patients, with the possibility of increasing the number should necessity demand. The most modern aseptic methods of building will be used. The pavilions are 118 feet long and 37 feet wide, running east and west. The length of the three buildings together, from north to south, is 172 feet.

UNITED STATES HAY FEVER ASSOCIATION. — The twenty-seventh annual meeting of the United States Hay Fever Association has recently been held at Bethlehem, N. H., where the sufferers from this disorder are accustomed to congregate. Many new members were admitted, and a relation of experiences followed. Whether or not this is good treatment for a disease which certainly has in it a large nervous element would seem to be open to question.

SCHOOL BUILDING REPAIRS. — Considerable improvements have been made in many of the Boston schools, preparatory to the opening of the fall term. A number of the school buildings have been provided with new sanitary arrangements. This work has entailed an expense of \$35,000.

A WOMAN APPOINTED ON THE LYNN, MASS., BOARD OF HEALTH. — Miss Marion Cowan has recently been appointed by the Board of Health of Lynn to be one of its members in the capacity of city chemist.

AGED ONE HUNDRED AND THREE YEARS. — Mrs. Phebe W. Crabbe, reported to be one hundred and three years old, died on August 28th in Boston. She was a native of North Stamford, Conn.

NEW YORK.

DEATH FROM HYDROPHOBIA. — An apparently well authenticated death from hydrophobia occurred at the Harlem Hospital on August 27th. The patient was a lad thirteen years of age, who was admitted August 23d. The remarkable feature about the case was the extremely short period of incubation, which lasted only seventeen days. The bite causing the disease, which was on the nose, was a severe one, and the boy was taken to the Harlem Hospital for treatment at the time, but it was not then supposed that the dog which bit him was rabid, and inoculative treatment was not recommended.

WORK OF THE AMERICAN RED CROSS ASSOCIATION. — The American Red Cross Association began active work in New York on behalf of India famine sufferers on August 27th. Rooms have been taken in the Presbyterian Building on Fifth Avenue, and William Willard Howard is at the head of the special committee having charge of the relief work. Later it is expected to send agents to India to put into practical execution the plans of the association.

PROVISION FOR TUBERCULAR PATIENTS AT BELLEVUE. — The completion of a new ward for the insane at Bellevue Hospital will render possible a much more adequate isolation of patients suffering from tuberculosis than has heretofore been possible. They will have a separate ward

Miscellany.

THE SO-CALLED "POISONED BULLET."

G. H. MAKINS, consulting surgeon with the Field Force in South Africa, writes to the *British Medical Journal* as follows regarding the so-called poisoned bullet:

"For some months past the wax-coated bullets employed by the Boers and discovered amongst captured ammunition have been a source of both interest and anxiety, particularly to the lay mind, in South Africa. To the evil action of these suspected missiles many a case of suppuration and cellulitis has been ascribed. By this time the appearance of the cartridges may be familiar to many of your readers, but to such as are not a short description may be of interest. It has apparently been the custom both by the Boers and some ammunition manufacturers to coat the bullet with a layer of wax, I believe on the theory that the missile in consequence takes the rifling more readily, while at the same time the lubrication preserves the grooving of the barrel from wear by friction.

"The wax coating of the various bullets I have seen differs in tint. In the older large leaden bullets a white wax has been employed, and the wax remains uncolored except where fouled by contact with dust. Many cartridges I have seen have had a coating of white wax applied which apparently from age, and perhaps the conditions under which they have been stored in hiding, has acquired a brownish tinge.

"Of the green-colored bullets I have seen two varieties; in the first and less common, white wax of some

kind has been applied both to the bullet and brass case of the cartridges, and probably from exposure to damp the latter has acquired an incomplete coating of verdigris, which has become irregularly diffused into the wax coating; in the second and more common variety a green-tinted wax is employed in the original coating; cases of cartridges treated in this way are numerous. As to the composition of this wax, I am unable to furnish any information, but in support of the innocuousness of the process I may only first repeat the opinion I expressed on a former occasion, that the surface of the bullet clearing its passage through the grooves of the rifle is almost completely renewed, only the extreme tip and base being untouched, while the velocity with which the missile is started is such as to make it probable that the tip itself would be cleansed by the flight through the atmosphere. This view as to the cleanliness of the surface of the bullet has been most thoroughly confirmed in the case of the coated ones by an experiment performed by Captain Mitchell Wood, at Capetown, as long ago as last March. A green-coated bullet fired by the Manser rifle was made to traverse a book of white paper, and then bury itself in a bank of sand. As a result, when the book was examined no trace of the green wax was found on the margins of the perforation in the paper, and the casing of the bullet itself, although somewhat split, was perfectly clean and white. The complete disappearance of the wax is no doubt partly to be explained by the heat generated during the passage of the bullet through the rifle, which, although insufficient to cauterize the tissues, is yet great enough to fuse the wax, and in part to the actual scraping of the surface by the rifling of the barrel."

THE INTERNATIONAL MEDICAL CONGRESS.

A VALUED correspondent writes us from Paris, under date of August 15th:

"The Medical Congress has seemed to me a success in every way, comparing it to the Berlin Congress, the only other I ever went to. With the Sorbonne and École de Médecine as the places for the meetings and the exposition for a side show, a few thousand doctors more or less are easily handled. The number of papers was large, and, judging from my section, they were of good quality. The entertainments by the President and Minister of Instruction were free from what was so unmedical in Berlin, and were out-of-door *fêtes*: of course there were a number of dinners.

"Paris is crowded with provincials and I should judge fewer strangers than were expected. The city is dirtier than I ever saw it and it is absolutely *bourgeois* everywhere, but otherwise the same, only larger. The exposition is one big *foire* and the temporary buildings are extraordinary stucco *affiches*, crowded without taste or proportion, but full of assertion. The permanent buildings, Palais des Beaux Arts and Petit Palais, are better, but absolutely without reserve.

"The exposition itself is a wonderful collection of merchandise, for the pictures and statues are chiefly France's annual output in art, with those of foreign nations trying to compete. The pictures are of course fine. Coquelin in 'Cyrano' is excellent, but they say the divine Sara in 'l'Aiglon' is for the provincials.

"I saw Dr. J. C. Warren the other day, when he was presented to the French President as a delegate of the congress. He wore in order of the Cincinnati. Dr. Weir, of New York, wore a splendid decoration—the order of Venezuela, won by operating on the 'Boss' of Venezuela."

THE DUST PROBLEM AND ASPHALT PAVING.

JUDGING from the following remarks in the *Medical Press* regarding pavements, the problem is a vital one in Great Britain as well as in America: "Although in this country we are accustomed to hear much of the drawbacks attending the employment of asphalt for paving our roadways it cannot be seriously contested that it offers many and serious advantages. First and foremost there is a comparative freedom from dust, and dust we know is one of the most potent agents in the dissemination of certain diseases. Then, again, it can be readily cleansed by the aid of water without giving rise to dust, and without the substitution of foul mud, which once again became reconverted into dust after a brief period. Lastly, there is a reduction in the noise, asphalt-paved streets being quiet compared with the growl of vehicles passing over macadam and the roar over granite blocks. We are assured too—though this is hardly within the scope of our remarks—that it is more economical and effects a great saving in the wear and tear of vehicles. From a medical point of view its great and incontestable advantages lie in its freedom from dust and ease of cleansing. Wood paving, if even more noiseless, is more costly, wears out more quickly, and hardly admits of local repair, it generates a highly irritating and dangerous dust, and in hot weather gives out a very disagreeable odor, recalling that of an ill-kept stable. With the advent of the motor car the objection raised to asphalt on the ground of the insecure foothold for horses which it affords under special atmospheric conditions will cease to have much weight."

HOSPITAL STATISTICS.

At the recent meeting of the Association of Hospital Superintendents, as reported in the *New York Medical Journal*, T. Sutton, of Detroit, read an interesting statistical paper on the growth and development of hospitals in the United States during the past three years. He stated that during the past three years about \$245,000,000 has been spent in the United States in the erection and equipment of new hospitals, in enlarging and improving old hospitals and in general expenses. Over 1,000 new hospitals were built during that time, a gain of 65%. The approximate cost of these buildings was \$50,000,000. There are now about 2,500 hospitals and asylums proper in the United States, which employ about 65,000 persons in various capacities. The hospitals pay yearly in salaries about \$23,332,000. Over 1,600,000 patients are annually treated and 37,500 physicians attend them. Probably the most interesting part of hospital management is the purchasing of supplies. The amounts of various staple articles

used in all the hospitals are appalling. The author gave the following figures: "There are, during the year, 112,000,000 dozen eggs used, 165,000,000 pounds of butter, 68,000,000 pounds of coffee, 8,000,000 pounds of tea, 332,000,000 gallons of milk, 285,000 barrels of flour, 550,000 barrels of sugar, 1,148,000,000 pounds of fresh meat and 2,000,000 pounds of oatmeal. In all of the hospitals there are 300,000 beds."

Obituary.

JAMES HENRY ROBBINS, M.D.

THE Fellows of the Norfolk South District Medical Society, wishing to express their love and esteem for their deceased colleague James Henry Robbins, M.D., have adopted the following memorial:

"Dr. Robbins has been in active practice of his profession in Hingham and its vicinity for the past twenty years. He has been an active and valued member of this society from its organization and has successfully filled the offices of censor, councillor and president. The interests of this society were very dear to him, and nothing but the most urgent professional engagements prevented his constant attendance at its meetings. Nor was he simply a listener and observer. A man of broad and deep culture, thoroughly informed on the lines of his profession, and also an authority in the broad fields of literature and art, gifted by nature with a wonderfully retentive memory, his words were fraught with the wisdom which comes from long study, accurate observation and deep thought.

"His comrades will miss his warm word of greeting and the cordial handshake, emblematic of the heart which always beat warmly for his professional brethren. There still remains the blessed memory of old friendship and the example of a life conscientiously devoted to the profession which he loved and honored.

"The members of this society offer to his bereaved family their heartfelt sympathy in their deep affliction. To that larger circle who have lost a skilful physician and a warm and sympathetic friend, condolences are extended at this time.

"Resolved, That this memorial be entered upon the records of the society, that a copy of the same be forwarded to the family of Dr. Robbins, and that a copy also be furnished for publication to the *Hingham Journal* and to the *Boston Medical and Surgical Journal*."

METEOROLOGICAL RECORD.

For the week ending August 25th. in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...19	30.02	67	74	60	87	66	76	N.	N.	9	5	C.	C.	.02
M...20	30.02	66	76	55	79	72	76	N.	S.	8	3	C.	C.	
T...21	29.97	66	72	59	87	83	85	N.E.	S.	8	14	C.	C.	
W...22	29.91	68	78	59	85	74	80	N.W.	S.	5	9	C.	C.	
T...23	30.01	68	75	60	69	71	70	N.	S.	7	7	C.	C.	
F...24	30.00	72	78	65	86	91	88	S.	S.W.	10	5	O.	F.	.02
S...25	29.97	81	90	72	85	91	88	W.	E.	9	7	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, AUGUST 25, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1157	553	37.84	6.72	14.88	1.12	2.56
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia . . .	1,266,832	—	—	—	—	—	—	—
St. Louis . . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	226	87	38.72	7.04	19.68	1.76	.88
Baltimore . . .	506,389	199	76	40.50	5.50	23.50	4.00	.50
Cincinnati . . .	405,000	—	—	—	—	—	—	—
Cleveland . . .	350,000	—	—	—	—	—	—	—
Pittsburg . . .	305,000	—	—	—	—	—	—	—
Washington . . .	277,000	106	35	37.60	9.40	6.58	3.76	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	53	20	33.84	3.76	22.46	—	—
Nashville . . .	87,754	—	—	—	—	—	—	—
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	111,732	58	24	43.00	3.44	27.52	—	3.44
Fall River . . .	103,142	33	17	45.45	3.03	36.36	3.03	—
Cambridge . . .	92,520	32	14	40.69	—	31.30	—	3.13
Lowell . . .	90,114	33	18	33.33	—	24.24	—	3.03
New Bedford . . .	70,511	32	17	34.43	6.26	31.30	—	—
Lynn . . .	68,218	—	—	—	—	—	—	—
Somerville . . .	64,394	15	7	27.52	6.88	13.76	—	—
Lawrence . . .	59,072	26	15	46.20	—	34.65	—	3.85
Springfield . . .	58,266	31	10	41.99	—	19.38	3.23	—
Holyoke . . .	44,510	17	9	47.04	5.88	35.28	—	—
Brockton . . .	38,759	9	4	44.44	—	11.11	—	—
Salem . . .	37,723	17	8	29.40	5.88	23.52	—	—
Malden . . .	36,421	9	6	33.33	11.11	33.33	—	—
Chelsea . . .	34,235	12	2	25.00	—	—	—	3.33
Haverhill . . .	32,651	8	5	50.00	25.00	25.00	—	—
Gloucester . . .	31,426	9	—	22.22	—	22.22	—	—
Fitchburg . . .	30,523	11	5	45.45	—	11.11	11.11	—
Newton . . .	30,461	12	8	41.65	—	16.66	16.66	—
Taunton . . .	28,527	15	10	66.66	6.66	46.66	13.33	—
Everett . . .	28,102	—	—	—	—	—	—	—
Quincy . . .	24,578	9	6	55.55	—	55.55	—	—
Pittsfield . . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	6	2	50.00	—	50.00	—	—
North Adams . . .	21,583	6	6	—	—	—	—	—
Chicopee . . .	18,316	12	8	41.65	—	41.65	—	—
Medford . . .	17,190	11	8	54.54	—	9.09	—	—
Newburyport . . .	15,036	5	4	20.00	—	20.00	—	—
Melrose . . .	14,721	3	1	33.33	—	33.33	—	—

Deaths reported 2,182; under five years of age 988; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 769, diarrheal diseases 420, consumption 215, acute lung diseases 131, diphtheria and croup 42, typhoid fever 38, whooping cough 22, cerebrospinal meningitis 14, measles 9, scarlet fever 6, erysipelas 2, smallpox 1.

From whooping cough New York 8, Boston 4, Baltimore 3, Washington, Providence and Worcester 1 each. From cerebrospinal meningitis New York 7, Boston and Somerville 2 each, Baltimore, Washington and Worcester 1 each. From measles New York 5, Boston 3, Holyoke 1. From scarlet fever New York 3, Worcester 2. From erysipelas New York 2. From smallpox New York 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending August 11th, the death rate was 20.3. Deaths reported 4,520; diarrhea 1,006, whooping cough 84, diphtheria 65, measles 64, scarlet fever 23, fever 21.

The death rates ranged from 11.2 in Burnley to 26.8 in Preston; Birmingham 23.7, Bradford 12.2, Bristol 14.3, Croydon 13.5, Gateshead 15.7, Hull 20.7, Leeds 24.4, Liverpool 26.3, London 20.5, Manchester 22.6, Newcastle-on-Tyne 19.6, Nottingham 22.8, Sheffield 26.1, Swansea 15.8.

APPOINTMENT.

HOWARD T. SWAIN, M.D., has been appointed physician to out patients at the Boston Lying-in Hospital.

RECENT DEATHS.

JOHN FRANCIS RYAN, M.D., M.M.S.S., died in Roxbury, September 1, 1900, aged twenty-nine years.

FRANCIS STEPHEN MILBURY, M.D., of Brooklyn, N. Y., died on August 29th. He was a native of the Province of New Brunswick, and was in the forty-fourth year of his age.

Original Articles.

THE RADICAL CURE OF HERNIA.¹

BY J. COLLINS WARREN, M.D., BOSTON.

At a period when the leading practitioners of medicine of the present day were just beginning their career, any operation for the radical cure of hernia was regarded with suspicion. Attempts had indeed been made by surgeons in good standing to remedy this affection by an operation, notably Wood, of London, but all methods were crude and based upon incorrect theories, and the dangers of sepsis were correspondingly great. Even as late as the eighties the operation was still in the hands of the pioneers and it was not until the beginning of the present decade that the subject may be said to have been placed upon the basis of a routine surgical procedure.

During this later period it has become an integral part of the hospital surgeon's work, and the laboring classes are beginning to appreciate the fact that the operation for a radical cure is pretty sure to be successful and a blessed relief from the discomforts and uncertainties of the truss. Old traditions, however, still prevail amongst the laity and even amongst a large proportion of medical practitioners. The patient who can afford to pay for it is still very generally advised by his physician to buy a truss. After an irksome apprenticeship he finally becomes broken to harness and accepts the discomforts of his new life as a matter of course. It is true that such advice is often followed by excellent results and in rare instances (the truss makers say in about 2% of the cases) a radical cure is effected. But in a very large number of cases the patient feels he has discharged his duty by buying a truss and putting it on—somehow—and there his responsibility ceases. The contents of the hernia are kept within the abdominal cavity part of the time, but at the end of a day's work are not infrequently found held securely in the sac below by the pad. In this way the hernia continues to grow until some complication brings both patient and doctor face to face with the situation.

It is for the purpose of endeavoring to impress upon the profession that the time has come when even the most conservative practitioner should revise his opinions as to the treatment of this disease, and should recognize the advantages of the operation for a radical cure, that this paper has been written.

The following series of 98 cases comprises both those operated upon in the Massachusetts General Hospital and in private practice between the years 1888 and 1900. It includes 74 cases of inguinal hernia, 7 cases of femoral hernia, 12 cases of umbilical hernia and 5 cases of ventral hernia. This includes all cases operated upon up to February 1, 1900.

Great pains have been taken to obtain the subsequent history of all cases operated upon over one year previous to the above date and answers have been received from 62 cases. In 4 of these reports death is stated to have occurred from other causes, the subsequent history of the hernial cicatrix being unknown. This leaves 58 cases from which to obtain definite information as to the question of recurrence.

A careful analysis of all the 98 cases has also been

made to determine the relative merits of the animal tendon, catgut and silk sutures and their probable bearing upon the permanent healing of the wound.

A separation of the cases into two groups—those in which the operation was performed between the years 1888-1894 and those between the years 1895-1900—shows in a striking way the marked change which the improvement in aseptic technique has brought about in the prognosis of the healing of the wound.

	1888-1894	1895-1900	Total
Clean	14	53	67
Septic	16	9	25
Clot evacuated	1	3	4
Drained	1	0	1
Doubtful	1	0	1
Total	33	65	98

It will be seen that prior to 1895 there were 33 cases operated upon, of which 16, or 48%, were septic; whereas, after 1895, of 65 cases operated upon, 9, or 16%, only were septic. The term "septic" includes all cases that did not heal by first intention throughout the wound, with the exceptions mentioned below. The slightest infection of a stitch wound would place it under the above heading. As a matter of fact there were but one or two cases in the whole series in which sepsis became a formidable complication, as is shown by the fact that in none of the 98 cases was there a fatal result.

The term "clot evacuated" includes those cases in which first intention was not obtained, not because of sepsis, but owing to the formation of a blood clot which prevented close approximation of the surfaces of the wound.

The healing of a wound by first intention depends, of course, largely upon the perfection of the aseptic technique, but in hernia especially the sutures become an important factor in the solution of this question. There is more or less tension in the wound at the time of application of the sutures, and this is increased when the patient is in the upright position. The tendinous character of the tissues bounding the lines of suture is not so well adapted to healing as softer and more succulent structures. For this reason surgeons usually have strong preferences for different kinds of suture material.

The following table is therefore submitted with a view to comparing the results obtained in groups of cases in which different kinds of materials were used for this purpose. The sutures were made of silk, catgut, animal tendon (kangaroo) and silkworm gut. In a few cases silk and catgut were used simultaneously and silk was also combined with animal tendon. Wire was also once used with animal tendon.

	Clean.	Septic.	Clot evacuated.	Doubtful.	Drained.	Total.
Silk	49	10	1	0	0	60
Catgut	15	12	1	1	1	30
Silk and catgut	1	3	0	0	0	4
Silk and animal tendon	1	0	0	0	0	1
Wire and animal tendon	1	0	0	0	0	1
Silkworm gut	0	0	2	0	0	2
Total	67	25	4	1	1	98

It will be seen from these figures that in the case of silk but 17% of the wounds were septic, but that in the case of catgut septic conditions were found in 40%.

Inasmuch as the great majority of ruptures were cases of inguinal hernia, it is, perhaps, more instructive to make a study of these in a class by themselves.

¹ Read before the Surgical Section of the Suffolk District Medical Society, April 4, 1900.

The operation employed in the majority of cases was that of Bassini, although Macewen's method was given a test in the earlier cases. The latter proved complicated and the life of the sac was endangered or destroyed by the quilted suture. After having the entire sac slough out in a case which bid fair at first to heal without sepsis I decided to abandon it. Bassini's method I arrived at by a gradual process of evolution, and found, when I reached a method which corresponded as nearly as possible with Nature's arrangement of the parts, that my operation was identical with that known as "the Bassini."

Studying now the causes of sepsis in these operations we find, first, that the period at which they were performed has materially affected the result. As one might naturally expect, the more favorable results were obtained subsequent to 1895. From 1888 to 1894 there were 10 clean and 11 septic cases, 1 of which was drained and healed by second intention, and 1 in which the clot was evacuated, making in all 23 cases. In the 51 cases which were done after 1895 there were 41 clean cases and only 8 septic cases. In the other 2 cases clot was evacuated. The suture also seems to show important differences in its influence upon the healing of these wounds. In 25 cases in which catgut was used there were 12 clean cases and 11 septic cases, whereas in 42 cases in which silk was used 37 were clean and only 5 were septic. Going back now to the series of 23 cases previous to 1895, we find that of the 11 septic cases catgut was used in 9. The 8 septic cases found in the group operated upon after 1895 are thus made up: 4 catgut, 3 silk, and 1 silk and catgut. Here the results are more nearly even and show the obvious better preparation of catgut than was done in the earlier period.

The above analyses seem to show pretty clearly that better results were obtained with silk than with catgut as suture material. The ease with which silk can be sterilized, its superior strength, and the greater facility in handling it are qualities which make it, in my opinion, far preferable to catgut. The disadvantages claimed for it by Bull and Coley are the slow absorption of the material and the danger of the suture working out through sinus formation long after operation. This complication was, undoubtedly, a common one in the early days of the operation, but a careful search into the records of those of my hospital cases in which the wound had healed by first intention, and their subsequent history, has failed to reveal such, and I have had no experience of this kind in private practice. It seems probable, therefore, that the improved methods of sterilization and the improved aseptic technique of the operation have reduced this danger to a minimum. It is also highly probable that the finest grades of silk are as easily absorbed as chromicized catgut.

Coming now to the question of recurrence, we find 58 cases in which an answer was obtained one year or over after the operation. Forty-five of these were cases of inguinal hernia, and in 7 relapse was reported. This gives 84% of cures. There were 3 cases of femoral hernia with no recurrence; 2 cases of ventral hernia with no recurrence, and 8 cases of umbilical hernia with 3 recurrences.

Comparing the inguinal hernias operated upon prior to 1895 with those since that date we find in the former case there was 69% of cures, and in the latter

92% of cures, showing that improved technique had an important influence upon the result. This is shown by an analysis of the causes of failure.

In septic wounds there was 35% of recurrences; in clean wounds, on the other hand, there was recurrence in 7.6% only of the cases. In cases sewed with silk the recurrence amounted to 9%, but in cases sewed with catgut it was as high as 30%. This difference between silk and catgut is shown still more strikingly if we compare the inguinal cases alone with one another. In 18 catgut operations there were 6 recurrences, or 33%, whereas in 23 operations in which silk alone was used there was no recurrence.

If we take now as a standard the operations for inguinal hernia performed since 1895, we find that the percentage of perfect results (92%) is nearly as good as that laid down by Bull and Coley in their last article in the "International Textbook of Surgery." These authors give 95% as a fair estimate of the cures in Bassini's operation.

The age which is most suitable for operative treatment is a point about which many surgeons differ. In children there is always the chance of cure by the truss. The percentage of cases cured in this way is vastly greater than in adults. After the age of twenty-one years the chances of cure fall to the very small percentage already mentioned.

The station in life is a factor of considerable importance. Children who have parents capable of exercising constant and intelligent care can be treated mechanically, but when the chances of such care are uncertain, or there are any complications, the operation had better be advised.

Bull and Coley state in a general way that fifty years is the age limit for operation in the adult, but hospital experience will hardly bear out this view. It is in hospital practice that we see a larger number of hernias, usually of large size, in individuals above this age. They are as a rule patients who are unable to afford a proper truss, or do not understand how to apply it intelligently. It is precisely in this class that an operation seems to hold out hope of great relief. The table here submitted shows that many are operated upon who had passed that limit, and the recurrences reported were all under fifty years of age.

Age.	Inguinal.	Other hernias.	Total.
0-10	4	3	7
10-20	13	3	16
20-30	15	0	15
30-40	13	5	18
40-50	8	8	16
50-60	11	1	12
60-70	2	3	5
?	2	1	3
Total	68	24	92

In 6 cases there were double hernias.

The following figures give the ages of the 7 cases of relapse reported: 43, 42, 38, 33, 27, 16 and 15.

Bull and Coley say: "If a rupture is sound at the end of one year after operation, there is a reasonable prospect of permanent cure, while if it remains well for two years, the chances of relapse are exceedingly small." An analysis of 38 "perfect" cases shows: 1 case was reported cured eleven years after operation; 1, nine years; 2, eight years; 2, seven years; 4, six years; 2, five years; 7, four years; 5, three years; 11, two years, and 3, one year after operation. In all the cases of inguinal hernia in which relapse was

reported recurrence took place within one year after the operation. It seems, therefore, reasonable to assume that if a patient continues well for one year he may regard himself as cured.

There are some points in the technique of the operation which experience shows worthy of mention. The sac, after being dissected from the cord, should be carefully emptied of its contents, and a continuous suture should be passed through the neck before the sac is excised. A ligature may slip and give rise to hemorrhage from some of the numerous vessels adherent to the outer surface of the peritoneum. The wound should be treated precisely like any other wound in the peritoneum. In some cases the sac is hard to find, but it should always be carefully sought for and removed, as this is one of the most important features of the operation.

When the omentum is small in amount it can be returned into the abdominal cavity, but when there is a large quantity of omentum it is more or less matted together and elongated at the point involved, and may become a source of danger when returned, being liable to form a band capable of producing intestinal obstruction or of facilitating a return of the hernia. There is little danger of hemorrhage if the various clusters of vessels which supply the part to be removed are tied separately. In very large hernia the amount of omentum removed is sometimes enormous; but such hernia, although they seem formidable to attack, present in reality no greater technical difficulties than the smaller hernia.

The sutures with which the skin was brought in apposition were silkworm gut in the majority of cases. This material can be used as an interrupted suture or as a continuous buried suture. The latter gives a somewhat more esthetic result, and theoretically is less liable to produce stitch abscess; but I cannot say that I have seen any special advantage in its use.

Great pains should be taken in the preparation of the skin before operation, as this is a region unusually hard to sterilize. I am in the habit of using the permanganate-oxalic-peroxide of hydrogen process, and of repeating the washings after the dressing has been removed at the time of operation.

Cases of large umbilical hernia are usually observed in stout, elderly women who have borne several children. There is then considerable danger of strangulation. At first these hernia contain only a small nodule of omentum, which acts as a sort of plug to the opening in the sac to which it is usually adherent. As the hernia grows, a knuckle of intestine is liable to be pushed into the sac behind the omentum after some unusual exertion, and this gives rise to an attack of colic for which the patient seeks relief. This pinching of the bowel occurs often, but in very large hernia strangulation is rare. Inflammation and suppuration may, however, be one of the complications of umbilical hernia. Permanent relief from colic is usually obtained by the intelligent adjustment of a truss, and in very fat or elderly patients it is better to try this form of treatment, as recurrence after operation is much more common in this than in other forms of hernia. I believe, however, that increased experience will bring with it a decision to resort to the operation more frequently. In 1 case I have succeeded in curing an enormously large hernia after the second operation. The time of election is in early adult life while these hernia are still small.

Umbilical hernia in children are almost invariably cured by the truss.

I have had 2 cases of congenital umbilical hernia into the cord.¹ In one case the contents of the sac was the liver, in the other a large loop of intestine. Both cases recovered from the operation and one was permanently cured. The other infant had a very small umbilical hernia when last seen, which will doubtless in time disappear.

Congenital inguinal hernia is not always healed by the truss. When a young man, in the neighborhood of twenty years of age, applies for treatment of this affection, the operation should be advised.

In non-descended testicle we find the organ usually in the inguinal canal, and the question arises as to whether or not it should be removed. The patient usually objects strenuously to the removal of the organ, and there is no particular harm in leaving it, but after operation it usually atrophies and slowly disappears. These hernia should not be operated upon in youth, as the testis may eventually descend into the scrotum, and the hernia disappear.

I wish to express my indebtedness to Dr. R. B. Greenough for the preparation of the statistics of these cases.

ACTINOMYCOSIS.¹

BY CHARLES ALLEN PORTER, M.D., BOSTON.

At this session last year several cases of actinomycosis were reported by different surgeons. Increased interest has been aroused on the subject by a very thorough analysis of all the American cases by Dr. John Ruhrah, of Baltimore, in the second volume of the *Annals of Surgery*. In that article 62 cases are reported, and 5 more added in a subsequent appendix.

Since the last meeting here, 11 cases have been found at the Massachusetts General Hospital, 1 of primary rib or lung disease, with general actinomycotic pyemia—in this instance the diagnosis was only made at autopsy—and 10 of the maxillary form of the disease. Drs. Homans, Mixter and Balch, 1 each, and 6 of mine were all discovered in the Out-Patient Department. The fact that these 6 cases occurred within three months, and 4 within a week, is, I think, sufficient evidence that the affection cannot be a rare one among us, and that many cases are overlooked.

I will limit myself to the maxillary form, and briefly speak of the histories of these cases.

Though actinomycosis has been considered a relatively rare disease, it seems more probable that it is one which is very commonly overlooked. In its clinical aspects there is little that is characteristic. Though the course of the infection may make the surgeon suspicious, examination by microscope and culture is essential for a positive diagnosis.

The object of this paper is to attract your attention to the possibility that a proportion of the cases ranking as alveolar abscesses may be due to this specific organism, and by a few briefly reported cases to give you an idea of the disease as it affects the mouth, jaws and neighboring regions in man. Statistics of the relative frequency of this disease are really of little

¹ Read before the Surgical Section of the Suffolk District Medical Society, April 4, 1900.

¹ Transactions American Surgical Association, 1893.

value. In 1892 Illich, of Vienna, gathered only 42 cases in man from all that were at that time reported. Dr. Ruhrah, of Baltimore, has published an article in the *Annals of Surgery*, 1899, in which he has collected all the American cases, 72 in number, occurring in all parts of the body. In the past two years I have been especially interested in this subject, and during eighteen months' work in the Out-Patient Department at the Massachusetts General Hospital I have found 8 cases of actinomycosis in about 60 so-called alveolar abscesses examined, and 4 cases have been found by other surgeons. Six cases of mine have occurred within three months, and 4 within one week; so we may conclude, I think, that the disease cannot be one of great rarity.

I will pass about some photographs of these cases, as well as a painting of the pus from the abscesses, which shows very well the gray or grayish-yellow granules which may be found in typical cases.

CASE I. J. C., age thirty-two, coachman, entered Out-Patient Department, November 7, 1899. Five weeks ago noticed a small lump on inner side of right lower lip; this grew larger, without marked pain, until two weeks ago, when an inflamed area was evident on the outside of the lip. There was a red inflamed nodule, size of a five-cent piece, on right lower lip; the surrounding tissue was indurated to the size of a quarter; fluctuation was evident in the centre; no communication with mouth. Under cocaine a small incision was made on the inside of the lip; about one-half a teaspoonful of seropus escaped, with numerous granules, which showed the typical appearance of actinomycosis under the microscope. Simple excision was advised, but the patient would consent only to a thorough curetting through an external opening; the surface was disinfected with peroxide and painted with iodine and packed with iodoform gauze. In two weeks the small wound had almost closed, with considerable induration at the base. No colonies could be found in the discharge.

December 15th, five weeks after operation, only a soft red scar remained; no induration. Whether this infection started from the inside of the mouth cannot be determined; there were no carious teeth, nor any history of a wound. Many sections of the tissue were examined but no colonies could be found.

CASE II. W. C., age forty-five, entered Out-Patient Department, August 29, 1899. Two months ago stuck a toothpick under his tongue, and could not remove the whole of it. One week after this the submaxillary region began to swell. The swelling varied at different times; no pain; tenderness slight; no interference with talking, eating or swallowing. There was an indefinite swelling about the size of a lemon in the submaxillary region on the left side. The skin was somewhat edematous. At the bottom of the swelling was a small area where fluctuation could be made out; over this the skin was slightly reddened. There were no glands in the neck. Under cocaine a small incision was made. Seropus escaped, with a few grayish granules, which proved to be actinomyces.

On the following day a more extensive operation was done under ether. Incisions were made about the involved skin, and the whole submaxillary region thoroughly cleaned from below upward. The submaxillary and a few lymphatic glands were removed with the mass. Just under the jaw a dense fibrous

cord was found, extending upward to the floor of the mouth. Within this connective-tissue tube lay the remains of the toothpick lost two months before. This was removed, the flaps loosely sutured, and an iodoform wick placed to the top of the wound. Under daily packings and iodine the wound healed solidly in five weeks, without evidence of recurrence. This case shows well the common connection of actinomycosis with some foreign body.

CASE III. F. L., age sixteen, schoolboy, entered Out-Patient Department, November 9, 1899. Teeth have always been bad; has had five removed from upper jaw. Second left molar decayed for some time; two months ago a small lump appeared inside mouth about root of this tooth; this gradually grew in size, without pain, and appeared on the outside of the jaw ten days ago as a reddened semifluctuant swelling the size of a quarter, surrounded by a hard and firm border. Inside the mouth a distinct induration could be detected, as of a connective-tissue sinus leading from the tooth to the external swelling. There was moderate trismus; no pain; tenderness slight; no glandular enlargement. A small incision revealed several granules of actinomycosis. Under ether the edges of this wound were excised and the walls of the cavity cut away with scissors; the base thoroughly curetted and painted with iodine. No sinus could be found connecting with the tooth. The wound granulated slowly, but was healed by December 7th, when there appeared on the outer side of the ear a small fluctuating area. This was opened and curetted. In the pus no colonies could be found after very careful search.

December 20th. The induration within the mouth still persisted, but by January 2d this too had disappeared, and there was then no sign of recurrence.

At operation many granules were obtained, which varied in size from a pin head to three times that size. There was considerable soft, cheesy-looking material in the wall of the cavity. Pure cultures from this case were finally obtained by Dr. Wright.

CASE IV. W. W., age thirty, entered Out-Patient Department, November 13, 1899. Five months ago noticed lump inside mouth opposite last molar teeth on right. This grew larger, and becoming very painful he went to Emergency Hospital, where it was lanced, with immediate relief. In another month abscess reformed and face swelled to the eye. After lancing no further trouble until three weeks ago, when he noticed a "pimple" on outside of jaw about the middle of horizontal ramus; this grew larger, with much swelling and pain. On entrance, the whole right side of the face and eye were much swollen; trismus was well marked; over the centre of the jaw was a reddened, fluctuating lump, the size of an English walnut. The surrounding tissues were very hard and brawny. This induration ended very abruptly and gave place to general edema; within the mouth was well-marked induration from first molar to wisdom tooth.

Under cocaine the external abscess was opened and very numerous granules, a hundred or more, poured out in thin seropus. Some of these were unusually large, almost the size of a very small split pea. Under ether the infected skin was freely removed, with the base of the cavity down to sound muscular tissue. Again no sinus connecting with the teeth could be found. Closer to the jaw a small cavity was found containing thick, yellow, stinking pus. The

wound was dressed as before. Within three days the swelling had much diminished and the trismus was much less.

December 10th, almost a month after the operation, the face suddenly began to swell again. Under ether an abscess to the outer side of the upper jaw was evacuated within the mouth. The pus was foul and contained many soft, yellow granules, appearing somewhat like actinomycosis, but under the microscope proved to be masses of mouth bacteria and *leptothrix buccalis*. Just back of the scar of the first operation a "crater" was found, which when opened allowed the little finger to enter nearly to the lower jaw outside of the last molar; the sinus was lined with very dense connective tissue and contained foul pus. Here one or two disorganized colonies of actinomyces were found.

January 5th. In three weeks the swelling and most of the induration had gone; the sinus was healed and the patient in much better condition.

March 20th. Patient reported; no signs of recurrence; no induration; mouth opens normally; about the wisdom tooth there was some exuberant gum.

In this case the focus of the disease was probably not reached until the last operation, and mixed infection undoubtedly played an important rôle. Pure cultures were finally obtained by Dr. Wright from the granules in spite of the contamination.

CASE V. H. G., age twenty-two. On October 10, 1899, five weeks ago, without toothache or external wound, a small swelling formed below the middle of the right lower jaw; there was little pain. It had grown considerably in size within the past few days. The skin was hardly reddened over it, but fluctuation was evident. From the upper part of the tumor a firm cord runs upward for half an inch; the whole mass was movable and seems rather superficial. Temperature 101° ; pulse not elevated; teeth not carious. Incision showed the streptothrix colonies. Under ether the diseased skin was excised and the whole mass removed, with a small portion of the submaxillary gland, which was adherent to it. No trace of sinus leading to mouth could be made out. The excised mass showed a central cavity surrounded by dense tissue, here and there infiltrated by small areas of grayish-red granulating tissue, containing the pearly granules; some of these show slightly darker centres. In the contents of the cavity were several black bodies, which under the microscope were seen to belong to some beetle. Whether this entered through the floor of the mouth and gradually worked down, or came from the tonsil or esophagus, is not clear. A man could hardly get the body of a beetle into a wound of the face without knowing it. No history of any external wound could be obtained. Evidently the fungus entered with the beetle. The wound was soundly healed in two weeks.

CASE VI. M. C., age twenty, laborer, entered Out-Patient Department, November 14, 1899. Three years ago patient had similar lump in the same place, which broke and went away. This swelling began a week ago as a little round, painless lump. Below horizontal ramus of right jaw was an oblong red swelling, size of a peanut, which fluctuated in the centre. From this to the level of the lip the tissue was firm, swollen and boggy. There was also some swelling over and about the submaxillary gland. Trismus was well marked; could barely open mouth one-fourth

inch. On opening the small superficial abscess, a thin, seropurulent discharge appeared with several colonies; at a deeper level 3 drachms of foul pus was found, without actinomyces colonies. Apparently diseased tissue; everted thoroughly and cavity drained after painting with iodine. In a week the edema had disappeared and the trismus was much less. Examination of the mouth showed that the three right molars were all carious. In three weeks wound soundly healed; normal motion of jaw.

March 18th. Two months afterwards another abscess rapidly formed, which Dr. Balch opened and Dr. Wright found to contain two typical granules.

March 25th. Dr. Balch kindly asked me to see the case again. Trismus was well marked. At the site of the old scar was a small sinus from which a little bloody serum came. The scar was dense and firmly adherent to the anterior edge of the masseter. Under the jaw were two enlarged glands. Under ether I excised the mouth of the fistula with the surrounding skin. The wall of this sinus was surrounded by very dense connective tissue, which ended abruptly at the cavity, which was lined with soft, flabby granulations. Following along this sinus an inner cavity was found, the inner wall of which was formed by the periosteum of the jaw. From this another small sinus could be traced backward for an inch and a half to the base of the second molar tooth. The whole sinus and cavity was excised and the three carious teeth removed; iodine and gauze drainage; few stitches. In the centre of the second molar tooth a fairly characteristic granule was found, but on microscopic examination this proved to be a mass of mouth bacteria. The sections have not yet been examined. The case is now entirely healed.

CASE VII. J. S. six months ago broke left lower jaw just anterior to masseter muscle. The bone healed, but whenever he got drunk he had soreness and swelling at the point of fracture. Once a little pus was discharged into his mouth. He came to hospital with a small fluctuating abscess just under the skin. On opening this the typical granules were found. The abscess cavity was thoroughly excised; no bare bone was found. In two weeks the wound was healed. There has been no recurrence. The natural diagnosis was necrosis after fracture: yet no dead bone was found, and thorough excision stopped the spread of the disease.

CASE VIII. P. S., age forty (Dr. G. W. W. Brewster's case). For two years has had trouble with left molar teeth, which are carious. Had had several small abscesses opened inside the mouth. In January left side of face swelled and large abscess was evacuated. Since then there had been intermittent purulent discharge into the month, and jaw had been sore. Patient entered on April 15th. The left side of the face was much swollen; he could hardly open the mouth; in front of the masseter muscle, over the horizontal ramus of the jaw, was a reddened fluctuating abscess, the size of a walnut. This was opened and found to contain the granules.

Under ether the abscess cavity was dissected out and a sinus found leading back to the second molar tooth; here a small piece of dead bone was found. The sinus passed between the jaw and the masseter muscle, which was also involved in the disease. The whole cavity was thoroughly everted and cauterized, and the bad tooth extracted. In ten days the patient had

only a small sinus left, which was granulating in a healthy manner.

This case is a good example of the recurrent abscesses which occur until the disease has been thoroughly removed.

The infection seems to enter most frequently near a carious tooth, or is carried in by a foreign body through the mucous membrane of the mouth or pharynx. The process is essentially subacute or chronic, and the disease tends to advance by a sinus towards the skin. Infection is rarely pure, but is usually mixed with ordinary pyogenic organisms or mouth bacteria. It is rarely painful and the accompanying pain, when it occurs, is due, I think, to the mixed infection. Clinically and under the microscope the disease is characterized by the formation of an unusual amount of dense connective tissue, which ends more or less abruptly at the periphery and infiltrates the adjacent muscle or fat. In the jaw the bone itself is rarely involved in human actinomycosis, though it may be thickened from periostitis.

It would seem that this surrounding connective tissue could later become infiltrated by the growth of the streptothrix and break down. In all the cases I have examined the inner wall of the cavity shows a clearly cut line of demarcation between the connective-tissue wall and the lining—flabby, soft, grayish-red granulating tissue. Glandular enlargement was conspicuous by its absence, and when present seemed to be due to mixed infection. Metastasis seemed to occur through the blood current and not by way of the lymphatics. In serious cases the disease may progress down the neck, into the antrum or through the base of the skull. Though a definite connection cannot be always demonstrated, it would seem that a sinus at one time leads from the original site to the superficial abscess. In M. C.'s case, for example, at the last operation such a sinus was found leading directly to the carious tooth.

Trismus, though often present, is no more characteristic of this disease than of other inflammatory affections, though if the masseter were involved in the dense connective tissue, the jaw would probably remain stiff for a long time.

It is rarely possible, I think, to make a clinical diagnosis of actinomycosis; recurrent abscesses, without necrosis, chronic, painless, subcutaneous abscesses, about the jaw, evidently not connected with tubercular glands, would lead to a suspicion of this disease. If these fluctuating areas were surrounded by especially firm and hard connective tissue, and a sinus could be felt under the skin, if there was little edema and swelling, perhaps a probable diagnosis could be made.

Examination of the discharge is of great assistance, but the mere presence of the so-called "sulphur granules" is not by any means conclusive, and no case should be considered as one of actinomycosis without competent microscopic examination. Small, round masses of fibrin or tubercular debris sometimes simulate a colony, in the mouth or adjacent regions. Round masses of mouth bacteria, or leptothrix buccalis, occasionally appear very like a true colony. Even under low powers the resemblance is very similar. Dr. Wright has kindly photographed for me one of these masses, removed from M. C.'s tooth. It presents a radiating arrangement, but under a higher

power is seen to consist of vast masses of bacilli and the large, thick, non-branching filaments of the leptothrix buccalis.

In examining for actinomycosis, gauze sponges which absorb the discharge should not be used. All bleeding, when possible, should be stopped before opening the abscess wall. Unless badly contaminated, actinomycosis pus appears usually as a clear, perhaps blood-tinged, slightly syrupy seropus. Placed on a cover glass, the granules vary in size from a millet seed to the head of a large pin. They are usually round with a clear-cut periphery; the color is gray or grayish yellow, often suggesting a small pearl; the centre is not rarely somewhat darker. The surrounding pus is non-adherent and the granules can be readily removed alone. Fluid should be examined *at once*, for these granules are found with great difficulty when the blood has clotted.

With reference to treatment, two facts speak strongly, I think, for the self limitation of the disease in the majority of cases:

(1) Though it cannot be a rare affection, few cases enter the hospital with advanced actinomycosis of the jaw, and it seems therefore certain that many recover after simple incision of the abscess, and even through a natural rupture of it.

(2) It is surprising to find, on microscopic examination of sections, how infrequently the colonies are found in the walls of the abscesses, though the pus contained many granules. The surrounding connective tissue probably proves an effective barrier to the spread of the disease.

Simple opening, curetting and drainage have proved sufficient in many cases; though recurrences may be frequent, healing eventually takes place. Where possible, excision of the inner half of the abscess wall or sinus is the best treatment. The danger from swallowing the granules, where the discharge empties into the mouth, is hard to estimate. Certain cases of generalized disease in the lungs, intestinal tract, liver, etc., occur in which the organism gained entrance through the food, or was swallowed, and therefore the surgeon should aim at making *external* drainage. This question is often a difficult one to decide. On the one hand, he wishes to avoid a scar on the face, especially in women; on the other, he wishes thoroughly to eradicate the disease; for with recurrence the scars would probably be worse than from a single, thorough and clean operation. The individual case and the severity of the infection must determine the choice between curetting and cauterizing the cavity with tincture of iodine or carbolic acid and a more radical excision. Iodide of potash, in doses of 20 grains three or four times a day, has distinctly influenced some cases for good, and should be used in connection with the local treatment.

Finally, I trust that when your attention has once been called to actinomycosis of the jaw, you will be enabled, through this brief paper, to make an early diagnosis of the disease, and I feel sure that a careful examination of chronic alveolar abscesses will show that the streptothrix actinomycotica is the cause of perhaps one-eighth or one-tenth of them.

PLAGUE IN GLASGOW.—On September 10th an additional case of bubonic plague had been reported in Glasgow. The total showed 16 cases and 112 persons under observation.

FOUR CASES OF ACTINOMYCOSIS.¹

BY JOHN C. MUNRO, M.D., BOSTON.

CASE I. Hyman G., clothing dealer, forty-five years old, was seen in consultation with Dr. A. L. Flanders and Dr. Henry Jackson, to whom I am indebted for notes on the history of the case. In March, 1899, the patient had had a cough with expectoration for several months, and for two weeks an irregular fever, pain in the back, and increasing shortness of breath. Coarse râles were heard over both backs and in the left lower back, about the region of the eighth to tenth ribs, an area of dullness was found with diminished respiratory murmur and absence of fremitus. A diagnosis of bronchitis with limited encapsulated pleurisy was made. No tubercle bacilli were found in the sputum. A week later the patient was reported to have been cyanotic for a short time; the expectoration continued, but no change in the physical signs was found. The fever continued for a fortnight longer, up to the first week in April, when bulging of the chest wall in the area of the dullness appeared, with marked pain. The chest was aspirated several times, but only blood was obtained. Examination at my first visit on April 5th showed a smooth, hard, slightly tender tumor below the angle of the scapula, flat on percussion and solid in feel. A diagnosis of sarcoma or local empyema was made.

Under ether on the following day the tumor was incised, and beneath the outer layer of muscles a small abscess containing thick pus was opened. The upper edge of the ninth rib was found denuded, and leading thence was a small sinus from an encysted empyema about an inch and a half in diameter. A section of the rib was removed, the cavity, whose walls were rough, thick and sarcomatous in feel, with much granulation tissue, was curetted out and packed with gauze. The operation caused no shock, but the general condition did not improve, the cough continued, the temperature often ranged as high as 105° or 106°, and in the course of a few weeks the patient died. The actinomycetes were found in both the curettings and the sputum.

CASE II. Allen G., a carpenter living in Prince Edward's Island, was referred to me by Dr. Muttart, of East Boston, in February, 1900. There was no clue to the original source of infection. In July, 1899, he fell, striking his right cheek against a board, but thought nothing of it at the time. In August he noticed that he could not open his jaw, and a month later a swelling appeared either in the parotid region or at the angle of the jaw. This swelling grew slowly until December, when it increased rapidly. Examination showed a hard, projecting tumor of the right side of the face, softened in the centre, where the skin was reddened. No connection with the bone of either jaw could be found. The induration extended from the ear to the lower edge of the ramus, and nearly to the angle of the mouth, and upwards nearly to the lower edge of the orbit. No enlarged glands were to be felt. Diagnosis lay between a malignant tumor of the parotid, for which he was referred to me, or actinomycosis. The soft area was opened and examination of the pus revealed the actinomycetes. Under ether, Dr. Bottomley curetted and dissected out all suspicious tissue, the cavity being

treated with tincture of iodine, peroxide and iodoform packing. Two weeks later there was a suspicious local recurrence, and again under ether I curetted thoroughly and dissected off some of the masseter, and probably part of the parotid gland. This wound healed slowly, and by the end of March there was a small granulating area from which saliva escaped irregularly and in decreasing amounts, and the patient returned home to his physician.²

CASE III. Robert W., a carpenter thirty-five years old, entered Dr. Bolles's service at the City Hospital on February 19, 1900, with a fracture of the lower jaw at the symphysis and in the molar region on the left side. Two years and eight months ago his jaw was broken in a fight, at the symphysis and on the left side; it healed in seven weeks under treatment at the Massachusetts General Hospital. Five months ago he worked about horses with the "scruffles" (circular ulcers of the legs and nasal discharge). Ten days ago, while drunk, he fell 10 feet, striking on the left side of his face and jaw.

On the following day he was referred from the Massachusetts General Hospital to the Dental School, where a splint was fitted which he did not wear. The day before entrance to the City Hospital he began to have marked pain and swelling of the face, and at entrance there was a swelling from the ear to the symphysis, and 4 inches down the neck, red, tender and indurated. Two days after admission the abscess was opened under ether inside the mouth, and a few suspicious granules were seen. Six days later a diagnosis of actinomycosis having been returned from the pathologist, and the abscess not draining well, he was given ether again and the abscess thoroughly curetted from the outside. No characteristic granules were seen at this operation, though the fungus was found in the scrapings. Ten days later he was discharged to the Out-Patient Department with a sinus, considerable discharge, moderate induration, diminishing in area, and ability to open the jaw half an inch. Up to present time there has been no recurrence.

CASE IV. Emma L., a healthy college girl from the middle of the State, came to Drs. E. C. Briggs and Hardy for an alveolar abscess of the left lower jaw. Two weeks before she came to Boston, a local dentist had extracted a carious molar tooth for tooth-ache, but without relief, the swelling increasing, so that when I saw her with Dr. Briggs in February last there was a soft, fluctuating abscess along the lower edge of the jaw with moderate induration of the surrounding tissues. In order to avoid a sear if possible, under ether I opened and curetted the abscess through the mouth, evacuating an ounce or two of pus that was not at all suspicious of anything beyond a simple alveolar abscess. Dr. Hardy carefully drained and cleaned out the cavity daily, but the bluish induration of the tissues did not soften down satisfactorily. Tuberculosis and actinomycosis were considered, but the former seemed much more probable from the family history and the failure to obtain any clue to the inoculation of the ray fungus. On March 8th, under cocaine, I opened the pocket from the outside and curetted out considerable granulation tissue. In the scrapings one granule was seen that looked suspicious, and that led us to have a pathologi-

¹ Read before the Surgical Section of the Suffolk District Medical Society, April 4, 1900.

² After complete immunity until August following, the disease reappeared in the neck.

cal examination by Dr. Mallory, who reported the actinomyces. The patient then entered the City Hospital, and under ether all suspected tissue was curetted and dissected and preserved *in toto* for examination, one colony being found. Ten days later a small area at one edge of the wound that looked suspicious was curetted out, and three colonies were found. Five days later another similar looking spot was thoroughly cleaned out, but no colonies were found. The patient is still under treatment, but without any evidence of further relapse.

The pathological examination was made in each case by Dr. Mallory.

All the face cases showed invasion of the soft tissues only, the bone being free. In none of them could any definite trace of the original infection be found.

All the cases were given iodide of potash, and the wounds treated with peroxide, tincture of iodine in full strength or solution, and packed in iodoform gauze until all evidence of presence of the fungus had disappeared.

TENDON SUTURE.¹

BY EDWARD S. HATCH, M.D., BRIGHTON, MASS.

D. J. A. entered the Carney Hospital, as an accident case, on August 28, 1899. This afternoon he plunged his right hand through a window and cut the anterior part of his wrist on the ulnar side. When he entered the hospital he had a cord tied around his arm which was not arresting the hemorrhage.

I applied a rubber tourniquet, and after having the patient etherized I cleaned up the cut and parts surrounding it with a solution of chlorinated soda, then soap and water, and finally with corrosive. The cut was about two inches long. This cut I enlarged, both vertically and horizontally, and found the following structures divided: The tendons of the palmaris longus, flexor carpi ulnaris, and flexor sublimis digitorum. The ulnar artery and the median nerve were also found cut. The ulnar nerve was cut about halfway through its structure. The tendons of the flexor profunda digitorum were slightly nicked. The tendons and nerves were united with fine silk sutures. The ulnar artery was tied, both the proximal and distal ends. No attempt was made to unite the tendon sheaths. The skin wound was united with interrupted silkworm-gut sutures. Sterile gauze was put over the wound, and the arm was put up in anterior and posterior splints, with fingers semiflexed. The operation took two hours and fifteen minutes, and the patient was put to bed in good condition.

August 29th. Patient feeling well today, has little pain. Says he begins to have feeling in fingers.

September 2d. Dressing and splints removed, wound healed by first intention. Sense of feeling not so good over the distribution of median nerve.

September 8th. Dressing removed. Sensation slowly returning. Fingers can be moved a little. Stitches removed.

September 12th. Patient is able to move all fingers slightly. Sensations better than on previous days. Hand put up in anterior posterior splints. Anterior splint shortened.

September 16th. Movements of fingers improved. Hand dressed as before. Patient left the hospital. Is to be treated as an out patient.

September 25th. Movements of fingers improving. Hand put up in more extended position.

October 2d. Sensations and motions gaining. Hand put up still more extended.

October 18th. Motions improved. Anterior splint left off today.

October 28th. Splints all removed. Not any pain. Motions better. Massage started today to be continued three times a week.

November 13th. Fingers gaining in extension all the time. Only a very light dressing put on.

February 15, 1900. Patient has had massage three times a week up to this time. Extremely good flexion and extension; good sensations. Massage discontinued.

April 4th. At the present time the patient has normal flexion and extension, with normal sensation over the distribution of the ulna and nearly normal sensation over the distribution of the median nerve. It is interesting to note in this connection that the nails of the thumb, first and second fingers, died and then grew again, so that now on these fingers he has half of the dead nail, which is being thrown off, and also half of the new nail. He can separate the fingers and draw them together again with perfect ease.

A METHOD OF TEACHING PRACTICAL MEDICINE.

BY THOMAS F. HARRINGTON, M.D., LOWELL, MASS.

SINCE the publication of an article presented to the American Medical Convention at Columbus, Ohio, in June, 1899,¹ entitled the "Philosophy of Sickness," several articles have appeared in the medical journals, either elaborating my ideas or suggesting similar methods of reaching the same end, therefore I thought it best to explain in detail what I had merely given in outline, in order that the profession could judge rightly of the value or uselessness of my method of giving medical instruction to classes at the medical schools. It is not my intention to criticize existing methods as practised in the best medical schools today, nor to attempt to offer a different plan for doing the work, but simply to give the views of one who has felt the shortcomings of the modern schools, and who has given considerable thought to the correction of the same.

I believe the courses offered in the best schools in this country are capable of giving the greatest amount of good to the largest number. It is not the addition of new courses, but rather the appreciation of the value and possibilities of the present courses that I would like to emphasize. Much of the criticism of today on the method of teaching medicine is due to a misunderstanding, both on the part of the teacher as to the needs of the student, and on the part of the student as to his duty in the work. It will be my object first to try to clear, to a degree at least, some of the causes leading to this state. That there is a science of medicine as well as an art seems to have been overlooked by those who are protesting against existing methods, and it is to the neglect of this funda-

¹ Read before the Surgical Section of the Suffolk District Medical Society, April 4, 1900.

¹ Boston Medical and Surgical Journal, August 17, 1899.

mental principle that many errors and much confusion are due.

It is an inherent quality of the human mind to form some idea of what is brought to it by the senses. If the mind has been stored with the right knowledge, the ideas formed will be true ones, but the absence of such knowledge, or of any knowledge at all, will not prevent the mind from forming some view; hence arise new theories or hypotheses founded on what is called "experience," all of which tends to overthrow the science of medicine and substitute in its place the art of healing. The science of medicine is not productive; it cannot change; it has its fixed laws, dealing with the conditions of health and disease, the best means of preserving the same, the action of certain agents, etc. When we begin to put these fixed principles into practice, with the view of producing certain definite results, we go from the science to the art of medicine. Now it is evident that the first can be learned only through study, while the proficiency of the art is founded on practice, having of course a good intellectual basis. The science of medicine fixes established principles in the mind of the student about which he can group other facts. It shows him that there is a fixed relationship between certain things, and that it is to the learning of this relationship that he should bend his mind, rather than to the creating of new relationships. The student should know that mere acquaintance with many theories, discoveries, etc., is worse than no knowledge at all, for it is not real knowledge, and is more apt to be dangerous to him, for it gives him false and misleading views of things. The science of medicine disciplines the mind to a certain end; it forms the habit of order and method, of grouping and comparing new facts learned, and adding them in their proper place to the fixed principles; it teaches the student to think, reason, and express himself logically; it stimulates in him the desire for obtaining information for himself, and gives him the means to do it; it forms the habit of judgment, a most necessary quality in the medical profession. The science of medicine teaches caution, exactness, analysis and discrimination, teaching the student to distinguish what he knows from what he does not know. It is evident therefore that no bedside teaching, however extensive, no library, however useful in itself, no laboratory work, however conclusive, can take the place of methodical and laborious teaching.

While I claim all these advantages for the necessity of teaching the science of medicine, I recognize that in these progressive days it is impossible for the medical student to keep pace with the advances made, and give the necessary time to other studies. Dr. George B. Shattuck put the condition aptly at a recent Medical Alumni dinner thus: "Medical science is expanding by geometrical progression, and the possibilities of the individual who seeks to follow it by an arithmetical progression." By the method of instruction which I am to suggest, it is possible, I believe, to give the student the basis of medical science, supply him with sufficient advanced ideas to keep him up to date, and at the same time give him a greater amount of *practical* knowledge than he now receives, leaving the more advanced part of the science for his study, if he is to be other than a general practitioner. To criticise lectures and recitations, with the argument that the time taken up in their behalf might be better

spent, is a misunderstanding of what a lecture should be. In the first place, a lecture is not intended as an oratorical display nor the rehearsing of funny anecdotes; the business at hand is of a more serious nature, and has for its object the understanding of the patient and his condition, with the end in view of bettering the same. This demands on the part of the student more than mere *passive* attention; he must be actively and actually a party in the work; he must not only be taught but he must learn; he must grasp the material offered, and use it as his own, even going more than half way for the same. There should be the freest and closest communion between the teacher and the student, both remembering that it is the slow, patient, persevering, routine method, making good each step taken, which is of the greatest benefit. While there are exceptions, which should not be overlooked, the primary object of medical education is to produce *practitioners* of medicine, and with this end in view most of the schools have provided courses capable of accomplishing that result.

I believe there should be a sharp line of distinction between the courses of the first two years and those of the last two years spent in a medical school. During the former I would have medical science taught in all its entirety, while the last two years should be the practice of medicine rather than the preparation for that practice. The student should get in his last two years, and not before then, just that work which he gets in private practice. It is to the production of this class of men that I would offer the method of giving clinical instruction herein described, as follows:

Cases are assigned to students in regular order, and a record kept of each case, with the name of the student in attendance; these cases can be either ambulatory cases (out patients) or hospital cases (in the wards); the student sees his patient as often as he thinks necessary, learns the history of the patient from birth, family history, past illnesses, nervous temperament, worry, occupation, environment, etc.; learns thoroughly the subjective symptoms just as the patient describes them; observes all objective signs of health and disease, — pulse, temperature, respirations, bodily weight, etc., — after which the student makes his own diagnosis, prognosis and treatment of the case, making use of lectures, demonstrations and textbooks, as needed, to assist him. Now the student is prepared to come before the professor and the class: here the *teacher* receiving the *student* in the same way and asking him the same questions that he would a patient in his private office, learns from the student (acting as patient) all that which he might learn from the patient himself, were he present; then the teacher gives his diagnosis and treatment to the student in the same way as he does to patients in his private office. The student at this point ceases to be the patient. Then would follow a discussion by the students on the question of diagnosis, pathology, therapeutics, the teacher correcting false conclusions expressed by the students, and referring them to the latest literature on the diseases under discussion. And then follows the professor's advice as to diet, clothing, climate and mode of living, the exercise ending with the student (patient) making known to the class the diagnosis and treatment of the teacher as given to him at the end of his consultation with the teacher. By a systematic grouping of the cases by

the teacher, a lecture could be given on the various groups by the pathologist, therapist or specialist. Each student would in this way come in personal contact with the teacher, who should always be a practitioner himself, and who, by his method of cross examination and mode of procedure would teach the student just what every young physician finds himself deficient in, namely, how to learn his *patient*.

Now let us see what the advantages of this method would be. In the first place, the student would be growing up, as it were, among sick people; he would have the same opportunity to study his patients which the physician has in actual practice; he could use the science of medicine, as learned in his previous courses, to guide him in reaching proper conclusions; his textbooks and lectures would be of great benefit to him; he would get his facts direct from the living patient, which is always a surer teacher than the best authorities. This method would develop a spirit among the students, from their close intermingling and common interests, of a sort of self reliance and self esteem, marking each student as an individual, and in time generating a *genius loci* which leaves its stamp on all who come within its pale; it will bring the teacher and student in closer contact, and form a bond of mutual advantage, which can never be reached under existing methods; it would avoid much of the repetition on the various subjects, as well as the tendency of teachers in special lines to make their specialty the prominent one; it would show the student the daily variations even in the so-called "type," a view hard to get from any written record; it would do away with the ward visits in large sections, yet permit the whole class to study the case through the student. Each clinic would be a lecture, demonstration and recitation combined, with the advantages of all; it would raise the student from the plane of a school boy to the dignity of a physician; while it does not destroy the opportunity for those who intend to pursue a special line, yet it would insist on a solid ground work, without which no one should be permitted to proceed. In a word, it would be combining the old method of preceptor and student, which produced such men as Willard Parker, Austin Flint, Calvin Ellis, Jackson, Storer and Bowditch, as well as our own Elisha Bartlett. Neither is it an untried method, for it is founded on the principles laid down by Hippocrates himself, of each student pushing each case to its scientific cause, a plan which made the schools of Holland, Vienna, Paris and Berlin the recognized medical centres of the world.

It is impossible to turn out completed physicians by any one method, but I believe the method described will give the greatest freedom to the individual student, rather than the binding influence of a fixed curriculum fitted to the average student. It is not so much the number of cases seen as it is the opportunity and necessity of not only studying but learning each case seen—it being as fatal to crowd the mind with so great a mass of knowledge that it is repelled as it is to force upon it a quantity of undigested knowledge.

As to the practicability of the method there is no question; it is merely using the present unwieldy amount of material to a better advantage. True, there may be some patients who would object to the method, but might it not serve as a remedy for the abuses now so prevalent in the clinics, driving out un-

deserving cases in a way that no system has yet accomplished? Then again the experience of the obstetrical department at Harvard shows that no fear need be entertained as to its effect on the quantity of material available.

There is another result of this method which would make it most valuable, that is, the feeling it would engender among the alumni of a school and the great benefit such allies in private practice would be to the carrying on of the work.

Medical Progress.

RECENT PROGRESS IN GYNECOLOGY.

BY EDWARD REYNOLDS, M.D., BOSTON.

ON THE USE OF THE UTERINE SOUND.

JOHN BENJAMIN HELLER¹ discusses the passage of the uterine sound to a distance far exceeding the depth of the uterus, and that without the exercise of force and usually without ill results. Either the womb must stretch, or the oviduct admit the sound, or the uterine wall be perforated. In many cases the evidence is inconclusive, but in some it has been possible to demonstrate what occurred.

As evidence that the sound may enter the oviduct, the most important case is Floeckinger's. In curetting a patient for incomplete abortion, who had also had a subserous myoma, he found that the sound would pass to the handle; some time later it was decided to perform abdominal section for the myoma, and during the preliminary sounding the instrument passed once up to the handle. On opening the abdomen, it was found lying in the left tube, the tube and uterine wall being considerably stretched; it was also found possible to pass it into the right tube. Ahlfeld records a similar case, apparently verified by bimanual examination; others have been verified post mortem.

In most cases actual perforation has occurred, judging by such cases as have been investigated by laparotomy. Courant reports such a case in curetting a myomatous uterus, Odebrecht in introducing Orthmann's instrument to raise the uterus for a ventrofixation, Glaeser in curetting three months after delivery, Rosenfeld in curetting preliminarily to vesicofixation, Donald in curetting for hemorrhage three months after abortion, Brothers in curetting for chronic endometritis, Donald in curetting for post-puerperal endometritis. In some of these cases the perforating instrument was the sound, in others the curette. Kelly has perforated six times without bad results, but one of his assistants had a death in such a case from septic peritonitis. The writer had a case of incomplete abortion two months after miscarriage, that had been flooding persistently; curettement was apparently simple, when suddenly the instrument passed 5 inches towards the right side of the uterus, though the distance to the fundus was but $2\frac{3}{4}$ inches; in the former position it could be felt through the abdominal wall. The cervix was lightly plugged with gauze and the patient manifested no untoward symptoms. This personal experience impressed the writer with what

¹ Quarterly Medical Journal, July, 1899.

others have reported, of the extreme ease with which in these cases the instrument penetrates, seeming to pass without the exercise of the slightest force; in fact, in one case, on examining the uterus after its removal, it was found that the sound's own weight was enough to carry it through the uterine wall. The conclusions are that the most needful precautions are asepsis, careful estimation of the size and position of the uterus, extreme gentleness, avoidance of powerful ovum forceps in abortion cases, and rest in bed and careful surveillance after curetting. It seems that the accident may occur even with the greatest gentleness. Gauze packing and rest is usually followed by recovery; in very serious cases exposure of the uterus and suture of the rent have been followed by excellent results.

PALLIATIVE TREATMENT OF INOPERATIVE CARCINOMA.

Gessner² summarizes this subject as follows: The three symptoms to be relieved are hemorrhage, offensive discharge, and pain; the two former may be checked by judicious operative interference. Narcosis is advisable, for the moral effect as well as for the purpose of doing thorough work. The technique is, briefly, disinfection of the field of operation, thorough curettement with a sharp spoon, deep cauterization, and tamponade with iodoform gauze after the application of borotannin. The tampon is removed in five or six days, and after separation of the slough strong tincture of iodine is applied. Chloride of zinc is more or less dangerous, since its action cannot be controlled. Chloride of iron, pure carbolic acid, and other similar caustics produce no permanent effect, and must be used repeatedly. Injections of alcohol, pyoktanin, etc., are painful and uncertain. The flap operations of Martin, Chrobak and others are of limited application. If no operation is possible the best local treatment is the application of dry disinfectant and astringent powders. Permanganate of potash (1-1,000) is the best solution for vaginal injection, peroxide of hydrogen and thymol being also recommended. Narcotics should be used sparingly at first, the coal-tar derivatives being tried before opium.

THE CAUSE AND PREVENTION OF UTERINE CANCER.

W. W. Grant³ says that statistics show that the mortality from cancer has doubled in the last twenty-five years, while Dührssen states that a woman during the climacteric is in as great danger of dying from cancer as a soldier is of being killed while engaged in active warfare. Seventy-five per cent. of the cases of cancer in women are of the breast and uterus, while the proportion of cases of cancer of the cervix to cases of primary cancer of the fundus uteri is as 16 to 2. Embryological cellular degeneration has been accepted as a theory of the causation of cancer, but more recent researches point to a distinct cancer bacterium, though its exact nature has not been fully determined. But traumatism, as an established predisposing cause, at least, must be recognized. Cancer of the cervix is rare in women who have never borne children, nor have suffered lesions of the cervix from the use of instruments in the hands of gynecologists. The disease usually begins in the

squamous epithelium, but may begin in the cylindrical or epithelial cells of the cervix and invade the body of the uterus by direct extension. It usually occurs in the latter part of, or soon after the close of, the child-bearing period, and is more common in the well-to-do than in the hard-worked classes.

Matthews Duncan, a most acute observer, aid of the diagnosis of cervical cancer: "We have no way of making sure of the beginning, even if we were constantly examining. The earliest and best grounds attainable are indications of disease already considerably advanced." The earliest possible diagnosis is of the greatest importance, as upon it rests the chief hope of curing the disease by the one reliable remedy—complete extirpation. A watery, irritating discharge and hemorrhage are generally the first outward manifestations of the disease. Histological examination of the blood may be of aid in the matter of diagnosis, but the disease, being local at the beginning, will have made some advance before blood changes occur.

Cervical cancer is a common sequel to laceration and contusion of the cervix; but it must be borne in mind that not all cervical injuries are apparent at the external os. Hard cicatricial tissue often exists in the cervix and at the internal os, while the external os seems normal. If there is as a result imnutrition, interstitial infiltration, hardness, interruption of the circulation and innervation, these are favorable environments for degenerate cell development and for parasitic infection. Prevention of injuries to the cervix during labor or during operative procedure is of first importance, but if they do occur, prompt repair is demanded. Trachelorrhaphy, by restoring the integrity of the cervix and its normal vascular, nerve and nutritive supply places it in the best possible condition to resist disease of any kind.

Dührssen, when suspicious symptoms present, removes the entire uterine mucosa, as some pathologists believe that cancer can only develop in epithelial tissue; but vaginal hysterectomy is preferable, being safer and more certain in results. Others advise high amputation of the cervix in the beginning of disease. The present mortality in operations for cancer of the uterus is about 40%. But with earlier diagnosis and more prompt and more radical operative treatment, this percentage should be greatly lowered.

ON THE SURGICAL TREATMENT OF UTERINE CANCER AND ITS RECURRENCES.

Theodor Landau⁴ says that of all methods of treatment for carcinoma the surgical still yields the best results; therefore it should be our aim to make as early a diagnosis as possible in order to render this treatment efficient. Each organ has, so to speak, its cancer characteristic, both in histological structure and tendency to metastasis; in carcinoma of the body of the uterus the disease is at first confined to the womb, then involves the pelvic connective tissue and the lymph vessels, then spreads to the neighboring organs, but affects the lymphatic glands and distant organs only very late; these facts are shown by post-mortem findings, and also clinically, most inoperable cases being such, not on account of metastasis in distant organs, but on account of the danger of injury to the bladder, uterus or intestine. The same thing is demonstrated by the tendency of recurrence

² Veit's Handb. d. Gynäk. [Abstract in the Centrbl. f. Gynäk.], 1899, No. 29.

³ Denver Medical Times, August, 1899.

⁴ British Medical Journal, May 27, 1899.

(whether due to foci left behind or to a new formation like the first) to be local in or around the scar. Especially is the essentially local character of uterine carcinoma shown by the fact that operations in which the entire broad ligament is excised or necrotised, even in far advanced cases, yield results relatively splendid, compared with those operations in which the uterus alone is attacked. Uterine carcinoma is, therefore, especially adapted to surgical treatment, and the indication for such treatment depends solely on the possibility of its complete removal. The writer prefers the vaginal operation in all cases except a few where the carcinomatous enlargement of the uterus or its complication with myoma is so great that not even with the aid of vaginoperineal incisions can the parts be brought out *in toto* through the vagina; he prefers clamps to ligatures on account of the wide crushing and necrotising effects of the former. Of 123 cases operated on under the above indications, 8 died from the operation; of 48 of these operated on more than five years ago, 13 have remained well; that is, we may consider 1 in 4 permanently cured.

A case is reported, first operated on at the age of thirty-seven years for cauliflower carcinoma, who three years later presented at the site of the scar in the vault of the vagina hard, knob-like prominences; anteriorly a cone-shaped body, of the length of an almond, projected into the vagina, while behind and to the left there were wart-like, friable, easily bleeding masses. A free vaginoperineal incision going around the rectum to the tip of the coccyx was made, and the left ischio-rectal fossa was separated up to the level of the vaginal vault, giving free access to the entire field of operation. An incision was made around the carcinomatous excrescence $1\frac{1}{2}$ centimetres from the edge of the diseased parts. No difficulty was encountered except to the left and anteriorly on account of the close proximity of the bladder. The excised mass was about the size of a hen's egg. The slit in the peritoneum was drawn together, a piece of gauze introduced for drainage; this was removed on the fifth day, and on the fifteenth day the wound was completely healed. It will be seen that this case was not one of metastasis, but a local recurrence in and around the scar. Attempts to remove these local recurrences are almost unknown in the literature, the writer having been able to find but 1 case.

DISAPPEARANCE OF RECURRENT MAMMARY CANCER AFTER OÖPHORECTOMY AND TREATMENT BY THYROID EXTRACT.

G. Ernest Herman, in the *Lancet* for June 11, 1898, reported a case of the above nature, and can now add to that report the fact that the patient has continued in good health since.⁵ A second case has since been similarly treated, of which a history is appended. In 1894, the patient then being forty-five years old, a lump was noticed in her right breast, and in June, 1895, the right breast, with the fascia covering the pectoral muscle, and four enlarged axillary glands, were removed. The growth proved to be carcinoma. In October of the same year three nodules situated just beneath the scar, together with some lumps in the axilla, were removed. In November, 1897, a lump was noticed in the left breast. On admission to the London Hospital the following July

there was an ulcerating surface over the third and fourth ribs on the left side, depressed at its centre with thickened margins. In the right axilla was a depressed cicatrix, separate from the ulceration and without sign of recurrence of cancer. In the left breast was a lump of stony hardness, measuring $3\frac{1}{2}$ by 2 inches. The left nipple was drawn in, and there were hard, enlarged glands in the axilla.

The day following her admission to the hospital both ovaries were removed, and as soon as vomiting ceased after the anesthetic, the patient was put upon thyroid extract, 5 grains three times daily. In September the ulcer had completely healed, and the left breast was much softer, and the patient had gained twelve pounds in weight. One month later there was no distinct lump in the left breast, and no enlarged glands in the axilla. When seen March 28, 1899, the left breast was apparently healthy, although the nipple was retracted. The patient's health was good, and she had gained much in weight. She has continued the use of the thyroid extract.

The relative importance of the two parts of the treatment, oöphorectomy and thyroid extract, must be alluded to. Stanley Boyd has collected 15 cases treated by oöphorectomy alone, but in only 4 was there "relief worth obtaining." He also publishes reports of 5 cases in which thyroid extract was given. In 1 case it was only given for a month; in another, where recurrence of the growth had occurred *after* oöphorectomy, and in 2 out of the other 3 cases some benefit seemed to follow. Four cases have now been published where the combined treatment was used, and in 3 of these the cancer disappeared. Of course, it is impossible to say that these patients are "cured" until they have been watched throughout the remainder of their lives. But if that condition of the organism can be maintained which led to the disappearance of the cancer, it is reasonable to expect that this condition will be incompatible with return of cancerous growths. They cannot develop new ovaries, and are instructed to continue the use of the thyroid extract as long as they live.

ON THE EXPERIMENTAL PRODUCTION OF HYDROSALPINX AND HYDROMETRA IN ANIMALS AND ITS RELATION TO HYDROSALPINX IN THE HUMAN SUBJECT.

C. J. Bond⁶ recalls that in a previous article he established the fact that in rabbits, guinea pigs and other animals a typical hydrosalpinx could be induced by antiseptically ligaturing the Fallopian tube close to the cornu of the uterus and also at its beginning; the fluid thus produced closely resembles the fluid of a human hydrosalpinx. If the ligature be placed instead about the uterine cornu, the cornu distends above the ligature and a hydrometra results, the fluid resembling that derived from the tube. The fact that in the lower animals the secretion of the uterus and of the tubes is so much alike corresponds with the slight degree of differentiation between these two portions of the oviduct; whereas in the human subject, differentiation having advanced further, the uterine secretion is a mixture of blood, mucus and epithelial debris, at least during the menstrual period; whether in the intermenstrual period a saline watery fluid be produced and reabsorbed we do not know.

In animals there is an important difference between ligature of the uterine cornu and ligature of the tube.

⁵ The *Lancet*, April 22, 1899.

⁶ *Lancet*, July 22, 1899.

If the tube be ligatured only at the uterine end no distention takes place, the secretion probably occurring, but escaping into the abdominal cavity, where it is absorbed. If, however, the cornu be ligatured at any point, the cornu distends above the ligature with resulting hydrometra, any backward current being prevented, even though the tube remains unobstructed and the passage seems to be clear in the other direction. This throws light upon the fact that distention of the human uterus with blood or fluids does not cause backward distention of the tubes, except in cases of mechanical displacement or bacterial infection; it does not oppose the view that spermatozoa may enter the tube. A number of points are illustrated by the following case: In a young girl, whose vagina was absent, an attempt to restore the canal by dissection resulted in a septic endometritis followed by a right pyosalpinx; on abdominal section the left tube was found normal, except that it ended in a cul-de-sac close to the uterus. Not only did this case illustrate the direct extension of the infective process in the case of the right tube, but also in the left tube that occlusion at the uterine end does not produce hydrosalpinx.

This absence of regurgitation from uterus to tubes, even under pressure, in animals, led the writer to think that the menstrual fluid occasionally found during menstruation in human tubes originated therein. Conditions in the human subject are different, however, and it appears that in cases of retroversion of the uterus regurgitation of the uterine menstrual fluid does actually take place into the tubes; it is suggestive that in these cases there was great congestion of the fundus due to mechanical displacement. This regurgitation has been proved in some cases by means of particles of carmine.

It seems to be demonstrated that in animals, and in the human subject as far as the Fallopian tube is concerned, the mucous membrane of the oviduct has a characteristic secretion. This secretion seems to be absent during pregnancy: A rabbit in which one cornu was ligatured became pregnant in the patent cornu; on killing the animal at term, it was found that no hydrometra had occurred in the ligatured tube, although it was somewhat larger than formerly from hypertrophy of the mucous membrane similar to, but less marked, than that in the pregnant cornu. An analogous condition is present when pregnancy takes place in one horn of a human uterus bicornis; and a case is cited of extra-uterine pregnancy in the subject of a uterus bicornis in which both uteri presented a well-marked decidua. It appears, therefore, that the uterine secretion is associated with the ordinary destructive processes of the generative canal and not with the constructive processes and increased tissue growth of pregnancy. We must not regard human hydrosalpinx as a final condition in infective inflammation of the tube, but only as a mechanical distention by normal secretion, due to closure of both ends of the tube by inflammation; while pyosalpinx occurs when the infection has invaded the whole tubal mucosa, destroying its secreting powers and changing it into an abscess cavity.

Another interesting fact — that the fluid in a simple parovarian cyst closely resembles that in distended Fallopian tubes — points to the origin of these cysts in a hyperdistention by a physiological fluid of a portion of the efferent ducts of the paroöphoron.

RELATIONSHIP BETWEEN UTERUS AND THYROID GLAND.

Dickson's observations are based on some 200 cases, and from them he concludes that diseases of the thyroid are much more common among women than men — 6.55 to 1. A direct sympathetic relationship, if nothing more, exists between the thyroid and the uterus and manifests itself in many ways. Thus, before the establishment of the function of menstruation the thyroid is often enlarged. This enlargement frequently is reduced on the establishment of the menses, and in those cases in which the gland is not reduced it is observed that some thyroid engorgement is present before each menstrual period, diminishing as the flow is established. Goitre occurring after puberty is frequently associated with amenorrhœa. When a woman with an enlarged thyroid becomes pregnant, the gland increases in size with each pregnancy, receding shortly after parturition. At other times pregnancy is directly responsible for goitre, it making its first appearance early after impregnation. The three periods in life during which the thyroid has been found most refractory to treatment are before puberty, during pregnancy and after the menopause.

MENSURATION AND CAPACITY OF THE FEMALE BLADDER.

Guy L. Hunner and I. P. Lyon state that in 25 women examined, the average bladder capacity by atmospheric distention was found to be 303 cubic centimetres, individual cases ranging from a minimum of 160 to a maximum of 545 cubic centimetres. The average fluid capacity was found to be 429.7 cubic centimetres, varying in individual cases from 210 to 840 cubic centimetres. The fluid capacity was thus found to be one-third greater than the air capacity.

The influence of child bearing on the capacity of the bladder is shown in the following table:

	Atmospheric capacity.	Fluid capacity.
Nulliparous . . .	313.8 c. c. (average 13 cases)	464.5 c. c. (average 11 cases)
Parous	291.2 c. c. (average 12 cases)	395.0 c. c. (average 11 cases)
	303.2 c. c. (average 25 cases)	429.7 c. c. (average 22 cases)

The average measurements obtained under atmospheric dilatation in the knee-chest posture were: To summit, 7.14 centimetres; to posterior wall, 5.77 centimetres; to left lateral wall, 6.70 centimetres; to right lateral wall, 6.92 centimetres. Taking the measurements separately for nulliparous and for parous women, the averages were found to be:

	Summit.	Posterior wall.	Left lateral wall.	Right lateral wall.
Nulliparous (average 13 cases)	7.43 cm.	5.75 cm.	7.03 cm.	6.12 cm.
Parous (average 12 cases)	6.83 cm.	5.79 cm.	6.35 cm.	5.72 cm.

The explanation of these figures, showing the greater capacity of the bladder of nulliparæ, is doubtful; it may be that it is purely accidental, due to the limited number of cases. They suggest, however, that it may be due to the greater elasticity of the

bladder in the nullipara, influenced both by her average younger age and the fact that her surrounding tissues have not been injured. In the above table of measurements it will be seen that the dilated bladder is asymmetrical. In 16 cases the left lateral measurement is greater than the right. This fact may be explained by the fact that the rectum in women is found much more commonly on the right side than on the left within the pelvis. The uterus is usually displaced somewhat to the left of the median line, thus lowering the point of greatest outward bulging on the left side. The bladder, when dilated with air and observed during operations within the pelvic cavity, was found to be ellipsoidal in form, flattened somewhat in the anteroposterior diameter. The average length of the urethra in 17 cases was 3.3 centimetres.

A NEW OPERATION FOR PERSISTENT INVERSION OF THE UTERUS.

Barton Cooke Hirst,⁷ after reviewing the history of this accident and enumerating the operations which have been proposed and practised for its relief, describes the operation which he used in a recent case. It consisted simply of splitting the vaginal portion of the cervix as high as possible in the median line posteriorly. This trifling procedure at once unlocked the difficulty, and the inverted uterus, which had previously resisted prolonged taxis, was immediately replaced by very trifling pressure. The little cervical incision was then stitched up, and the whole procedure occupied about fifteen minutes.

BACKWARD DISPLACEMENTS OF UTERUS.

Arthur E. Giles's⁸ conclusions, arrived at in this paper, may be summed up in the following propositions:

- (1) Retroversion of the uterus requires no treatment when it causes no symptoms.
- (2) A simple retroversion may cause symptoms of disturbances of circulation, by pressure, or reflexly.
- (3) Pressure symptoms are uncommon in the absence of enlargement of the uterus.
- (4) Reflex disturbances are most frequently gastric, vesical or nervous.
- (5) A simple retroversion can usually be cured by the temporary use of the pessary.
- (6) Retroversion with endometritis is frequently complicated with prolapsed ovaries.
- (7) In the treatment of this condition, the inflammatory condition must be cured before the introduction of the pessary.
- (8) Pronounced endometritis requires curetting, with trachelorrhaphy in some cases, before the displacement can be dealt with.
- (9) When retroversion is associated with fixation by adhesions, the first step must be to restore the mobility of the uterus.
- (10) To introduce a pessary in a case of retroversion with fixation is to add risk to inefficiency.
- (11) When milder measures fail, the abdomen should be opened, the adhesions separated and the uterus fixed in its proper position.
- (12) In the absence of adhesions, hysteroplexy is sometimes required to cure an intractable retroversion.
- (13) Retroversion of the gravid uterus is usually reducible with the help, in some cases, of an anesthetic.

(14) In cases of irreducible retroversion it is usually better to free the uterus by abdominal section than to terminate the pregnancy; but in some cases the induction of abortion will be necessary.

VAGINAL LAPAROTOMY.

Dührssen⁹ concludes his latest monograph on this subject by saying no one can reproach him with allowing an operation rich in blessings to be discredited by his silence in respect to its advantages. He has performed vaginal laparotomy 400 times in the last eight years, on account of retroflexio uteri. Vagino-fixation is superior to ventrofixation, he states, as it is less dangerous; there is no chance for ventral hernia, nor adhesions of omentum to the abdominal cicatrix, nor of ileus; less dread of the operation on the part of the patient; and much less subjective post-operative discomfort. Intra-peritoneal vagino-fixation ensures normal anteversion. It requires skill on the part of the operator, and possible failures due to the operator's technic should not be ascribed to the method. He has also performed anterior colpoceliotomy for vagino-fixation of the round ligaments, for vesicofixation of the retroflexed uterus, tubal pregnancy, extirpation of benign uterine growths and ligating the tube for the purpose of ensuring sterility. Fifteen died out of 503 thus operated on; 6 out of 358 cases of retroflexio uteri treated by vagino-fixation. Since 1895, when he slightly modified his technique, pregnancy has not been interfered with in any case.

NEW METHOD OF TREATMENT AND DRAINAGE IN GENERALIZED PERITONITIS.

F. Bode¹⁰ describes, in his preliminary communication, the particularly favorable results obtained at the City Hospital at Frankfort-on-Main, by taking out the entire contents of the peritoneal cavity after a median incision, pelvis elevated, without regard to slight fibrinous adhesions, but under constant sprinkling of warm physiologic salt solution, poured from a china pitcher holding one or two litres. The intestines are wrapped in compresses moistened with the salt solution, and the warm solution is poured over them from time to time to prevent their chilling. Strange to say, instead of this procedure inducing collapse, on the contrary, the weak, rapid pulse becomes fuller, probably from diminished intraperitoneal pressure and removal of toxic substances. The perforation causing the trouble is easily found and sutured. The empty peritoneal cavity is thoroughly washed out with 30 to 40 litres of the salt solution, with especial attention to the liver and spleen regions and the small pelvis. The fluid accumulating in the depressions is very gently mopped up with compresses, and when the cavity and the serosa of the intestinal loops have thus been cleansed of their suppurating secretions, the loops are replaced under continuous sprinkling with the salt solution. This is easily accomplished. The red and meteoric loops frequently contract with peristaltic movements under the influence of the salt solution. A loop about the centre is then lifted, the mesentery stretched taut, and a slit made in it at a point free from vessels near the radix mesenterii. A long drainage tube is passed through the slit, forming an arch as the loop is replaced, the ends of equal lengths passing through

⁷ American Journal of Obstetrics, January, 1900.

⁸ British Gynecological Journal (London), November, 1899.

⁹ Berlin. Klin. Woch., November 27, 1899.

¹⁰ Centrbl. f. Chir. (Leipzig), January 6th and 13th.

the peritoneal cavity and emerging through two new incisions to the left and right, just above the colon. The tube has a number of openings along the centre. Besides this main tube, another is inserted in each side incision, a third in the lowest point of the median incision and a fourth in the liver, stomach and spleen region. The abdomen is then closed; the air left in the peritoneal cavity is expelled by pouring in more salt solution as the suture is progressing, leaving a considerable quantity of salt solution in the abdomen. The permeability of the main drainage tube is also assured by sending a little salt solution through it, under slight pressure. The patient is put to bed with the head and shoulders raised, to send the fluid down near the drain tubes, and the abdomen is rinsed out two or three times a day with 1,000 to 1,500 cubic centimetres of the saline. "By this combination of rinsing and drainage it was possible to evacuate quite considerable quantities of pus from the abdominal cavity in seventy-two hours, without material discomfort to the patient. We frequently observed that the rinsing was followed immediately by increased peristaltic movements and passage of flatus, much to the relief of the patient, and amounting in some cases to slight diarrhea under the influence of the salt. There is nothing to prevent permanent irrigation through the main tube. Serious symptoms usually disappear by the third or fourth day, when the rinsing tube is removed and the drain tube replaced, at first with smaller drains and then with loose tampons, and the openings finally closed. Generally speaking, the course of peritonitis treated according to this method was remarkably smooth and mild, convalescence extremely short, and the patient usually completely recovered by the end of three weeks. Similar irrigations, practised on the cadaver with colored solutions, showed that the fluid penetrated to the remotest portions of the abdominal cavity, even under very adverse circumstances."

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, April 4, 1900, DR. J. W. ELLIOT in the chair.

DR. C. A. PORTER and DR. JOHN C. MUNRO read papers on

ACTINOMYCOSIS.¹

DR. ELLIOT: This very interesting subject is open for discussion. I feel as if Dr. Porter had made a true discovery in finding that the Out-Patient Department is full of these cases. Only a year ago we had a meeting on this subject, and several far advanced cases were reported and one or two others that were said to be cured. We then wondered if such cases could be cured. Now we have a view of the beginning of this disease by observations made in these cases. I think there is much interest in this subject.

DR. PAUL THORNDIKE: I should like to add 2 cases to the list. The first case I wish to speak of be-

cause it is one of the older and farther advanced cases and I wish to bring out one or two points in connection with the clinical history. A woman of fifty-four for several months had recurrent abscesses which broke and discharged periodically. At the time she entered the hospital she had an enormous brawny swelling of the right cheek, extending from the zygoma down to the clavicle, involving the whole side of the face. It was a dense, hard, purplish swelling with a number of sinuses in it. The mouth was foul and teeth carious. She was etherized and the sinuses dissected out as carefully as possible. No communication with the bone could be found anywhere, in spite of the fact that the case had been going on a number of months and was very much more extensive than any of the cases reported tonight. One of the points I want to emphasize is that even in a case as far advanced as this there were no glandular enlargements. The granules were found in the scrapings and smears, and the pathologist confirmed the diagnosis of actinomycosis. Since she left the hospital I have been unable to follow her up, so that I do not know whether the disease recurred.

The second case was in a woman, forty-eight years old, who had up to three weeks before entrance to the hospital no history except that of a pleurisy nine years previous, with a history of tappings. Three weeks before entrance a small lump appeared to the outside of the left nipple, and it was supposed by her physician that she had an empyema. If I remember rightly she was tapped before entering the hospital, but nothing found. Examination of the chest revealed nothing except that the respiratory sounds were not so easily heard on that side as on the other. The abscess was opened and a large amount of foul pus with characteristic granules was evacuated. Absolutely no connection could be found either with a rib or with the pleural cavity on this side. She died in two weeks from exhaustion and at the autopsy an actinomycotic area in the left lung and involving the pleural cavity was found. I am sorry I was not able to bring the autopsy record with me.

DR. CODMAN: I have a case of actinomycosis which I have followed five years, and reported to this society two years ago. I thought it was worth mentioning to the society that the man was still well, although he has a small abscess open on the chest wall every three or four weeks that heals in a few days. He is able to do ten hours' work a day. The disease is in the chest wall and was probably primary in the lungs. The first symptoms were cough and high fever and shortly afterwards an abscess appeared in the cardiac area. Since then several sinuses have been opened there. I have tried twice to dissect them out, but as they run under the ribs and directly over the heart it seemed to me unwise to go very deeply, particularly as the patient is getting along so well. He takes very large doses of potassium iodide, and, as I say, is perfectly well otherwise than these little abscesses that break now and then. The diagnosis was confirmed by Dr. Mallory several times.

DR. BALCH: I should like to add one more to the list of cases which have been seen in the Out-Patient Department of the Massachusetts General Hospital. I saw P. G. last December. He had been operated upon once for what appeared to be a typical alveolar abscess; then came to the hospital and was opened again, and Dr. Wright found the actinomyces in the

¹ See pages 251 and 255 of the Journal.

pus. He was curetted out two or three times, twice under ether and I think once under cocaine. The granules were found at least twice, I think perhaps three times, either in the curettings or in the pus. The thing which struck me most in the case was the way it would heal up and apparently be all well, and break out in another area a short distance from the first. He has finally healed up entirely, I am told. This case lasted a little over a month. He was treated by curetting and painting the inside of the abscess cavity with strong carbolic acid. Internally he was given iodide of potash in large doses.

DR. ELLIOT: A remark made by Dr. Wright, that we are in danger of forgetting that this may be a serious and general disease, is in great contrast with the last year's meeting, where in the cases reported the lungs or liver or whole abdomen were invaded, and it was quite refreshing to see another phase of the disease where it is getting well. We shall now be suspicious of certain localities, the neck, jaw, lung and liver. I have had cases where the disease had invaded the lung, liver and abdomen.

DR. EDWARD S. HATCH read a paper on

TENDON SUTURE.²

DR. GOLDTHWAIT: I think it would be hard to find more brilliant illustrations of what can be done in the way of tendon suture than is represented by these 2 cases, and it strengthens my feeling that much more can be accomplished in the way of tendon surgery than has commonly been supposed.

In regard to the adhesion of the skin, mentioned by Dr. Lund, it has been my custom in performing such operations to dissect up a layer of subcutaneous tissue and to use this for the first covering of the tendons, so that they cannot adhere directly to the skin.

DR. LUND: Dr. Richardson, in his article in the "International Textbook of Surgery," on suture of nerves, recommends suture of the nerve sheaths and the use of silk. I believe before function of the motor nerve can return, the peripheral portion has to degenerate, and from the central portion the axis cylinders have to grow down through and reproduce themselves. Leaving a material like silk in the substance of the nerve would, it seems to me, be more apt to interfere with the growth of the new fibres than the use of catgut, as catgut will be absorbed and out of the way more quickly. I have therefore used catgut for the nerve and silk for the tendons.

DR. GOLDTHWAIT: In connection with the question of nerve suture it might be interesting to speak of 2 cases recently operated upon and reported by Dr. Peckham, of Providence, in which for the relief of infantile paralysis he has transplanted a section of the peroneal nerve. In this, after a long period of complete paralysis, a distinct contraction is produced in the paralyzed muscles. Just what the permanent result or how perfect the use of the muscles will be it is, of course, too soon to tell.

DR. MUNRO: I have sutured tendons with catgut and begun passive motion in ten days. I do not believe it is always necessary to put in silk.

DR. ELLIOT: A remark of Dr. Lund's reminded me of a case I had in the hospital. Dr. Lund remarked that the extensor tendons were much less important; that therefore it is much more important to suture the flexors with care. I had a patient who was

a laundress, and whose hand was caught in a mangle. The hot cylinder came against the back of the hand and destroyed all the extensor tendons; the entire back of the hand was burned to the bone. That patient recovered with a solid scar on the back of the hand, and that hand is an entirely useful hand. She works in the laundry as before. Her flexor tendons pull down against this scar tissue, and when she lets go the scar pulls the fingers back. She can brush her hair and button her collar, and in fact is working at the same mangle that mangled her.

DR. J. COLLINS WARREN read a paper entitled

THE RADICAL CURE OF HERNIA.³

DR. LUND: In the Out-Patient Department you see a great many cases of hernia done with silk which after healing develop a sinus, which keeps the patient an invalid a very long time, until the silk is taken out.

DR. ELLIOT: I took out some catgut ligatures from a hernia about four years after the operation, and in another case I took out catgut from an umbilical hernia a year after. In the first case chromicized catgut had been used. I think chromicized catgut does not dissolve at all, and that it is one of the best materials for hernias, if there is any virtue in a suture which is not absorbed.

DR. MUNRO: I saw a hernia today operated on a year ago with absolutely no trace of the chromic catgut used. I am charitable on the animal tendon in hernias. I did a lot of hernias at the City Hospital several years ago with animal tendon. The cases went on all right for three or four weeks, and then suddenly broke down, and I lost faith in kangaroo tendon, until later we discovered that we had contaminated the wounds at the time of operation, through a defect in the autoclave, by which the sponges were not sterile. I am pretty sure that in cases where there is infection it may come from the operator, either from sponges or hands, or in some other way, and the catgut or tendon be blamed unjustly for the trouble.

DR. ELLIOT: I think there is no question that silk comes out because it is not antiseptic. Silk soaked in corrosive sublimate never comes out if it is put in clean. I have used silk for a year in the abdomen and never had any come out in a clean case.

AMERICAN NEUROLOGICAL ASSOCIATION.

TWENTY-SIXTH ANNUAL MEETING, HELD IN WASHINGTON, MAY 1, 2 AND 3, 1900.

FIRST DAY.

THE president, DR. EDWARD D. FISHER, of New York, in his address to the association, said that the position of neurology among the divisions of medicine and surgery has changed very much during the past twenty-five years. Among other things to be considered is that neurologists must not separate themselves from general medicine, and while specialists may remain narrow and limited, this should not be the case with neurologists. The tendency should be towards the study of general medicine. Neurologists must recognize and fully understand general diseases. They should be able to examine the heart, the lungs and the other internal organs in order to make out any

² See page 256 of the Journal.

³ See page 256 of the Journal.

disease of special nervous character. Therapeutics is also important. Neurologists are accused of being more interested in diagnosis and localization of disease. The fact is that physicians and patients not only look for diagnosis, but also suggestions in reference to treatment. The importance of the necessity of the continued study of the histology and pathology of the nervous diseases is not underrated. The note of warning Dr. Fisher would sound and especially to those about to enter this field of medicine, is to keep up as broad a knowledge of general medicine as possible. No one should enter neurology as a specialist without first having had an experience in general practice. If the signs of the times are read aright, that is the tendency of the neurology of the future.

CHRISTIAN PSEUDOSCIENCE AND PSYCHIATRY.

DR. SMITH BAKER, referring to the January number of the *Christian Science Journal*, in which an article appeared by Judge Joseph R. Clarkson, of Omaha, to the effect that "Christian Science makes stronger, healthier, more unselfish, more honest, holier, purer poor people," and that "through Christian Science there have been, as well as can be estimated, more than a million cases of healing every sickness," and that "in the opinion of the best qualified judges there is no disease Christian Science cannot meet, arrest and destroy"; he further quotes Mrs. Eddy as saying that "Christian Science aims to destroy the patient's unfortunate belief by both silent and audible argument." Dr. Baker notes that if a disease is really an acute one, it easily falls within one of two classes: Either it is natural, self-limited or readily cured by any means, or else it has been wrongly diagnosed. No intelligent person, he said, can suppose that a real fracture or dislocation or a case of crushed bone can be healed by Christian Science. No one can suppose a real case of typhoid fever or of smallpox or of pneumonia to be under the dominance of the healer. But that many cases of those, as well as almost every acute ailment, or, at any rate, of such as have been given some sort of technical name, are healed, there seems to be a question as to evidence. It is altogether more certain that every such includes a very large proportion of long-standing functional troubles like neurasthenia, hysteria, asthenopia, diffuse or shifting pains, joint aches or limitations, vicious digestion, faulty excretion, etc.

DR. EDWARD B. ANGELL read a paper entitled

IMPERATIVE IDEAS IN THE SANE AND THEIR MANAGEMENT,

and said that even in the normal mind constantly are recurring words, phrases, emotions or ideas which force themselves into prominence against the will. In the morbid state of mind these demands of imperative ideas become a disease against which the most strenuous efforts of the will seem impossible. Dr. Angell said his object was to determine how far our present knowledge through proper classification and analysis of these imperative ideas will enable us to recognize their significance. It is necessary in the investigation of these morbid ideas to study the mind in its automatic activity, a condition which, to a very large extent, prevails in states of sleep, hypnosis, somnambulism, hysteria and insanity, during which normal evolution is largely or wholly suspended. Dr. Angell thought hypnotism certainly formed a promising means

of relief. In a general way much may be done to lessen emotional influences by training the patient to withstand painful stimulation of the skin.

DR. SMITH BAKER thought that antecedent to all parental conception are certain conditions of the mind in the form of a stress brought about by deprivation, for instance in sexual obsession, this has been found when one of the patients or both of them have lived a life of absolute sexual stress of the order of deprivation. Take parents during the child-bearing period, who are eager for property and yet are deprived of obtaining it. That stress of mind or body seemed to be the ground field in which the child will bear a weak spot, where the imperative obsession will be developed later on. Dr. Baker was rather skeptical about hypnosis, and preferred rather to endorse the straightforward method of educating the mind by some such work as Emerson's "Essays," or some new science, or a new field of work.

DR. KNAPP did not think the claim Dr. Angell made of imperative conception and fixed idea is one that can be strictly maintained in practice. Removing a fixed idea in hypnosis seems like putting on a spinal brace to cure a weak back.

DR. S. WEIR MITCHELL related a case of a lady who possessed a condition of repetition; that is, when she moved a book, for instance, she would feel impelled to move it a certain number of times, associating therewith some one of her relatives. For instance, if she turned the book on the table when thinking of her cousin, she would do it three times. When her mind dwelt on her husband, she did it seven times. She referred this peculiarity to a similar desire in childhood to move her shoulders. She was practically cured by being pinched, associating the discomfort with the pinch.

DR. SACHS thought that the subject of imperative concepts is a psychical phenomenon which is closely allied to a physical condition, and does occur in persons otherwise normal. He expressed himself as of the opinion that to hypnosis was attributable the origin rather than the cure of imperative concepts.

DR. PUTNAM expressed the opinion that where there are severe sexual perversions and drug habit cases, the use of hypnotism proves helpful.

DR. BROWNING, in relation to imperative ideas, said that if a woman who comes from a good family and grows up with little to do, who has no opportunity for mental culture, could have a wider field of mental and physical application, she would be cured.

DR. ANGELL, in closing, said that he did not think the American men or women are as susceptible to hypnosis as are the French or German or other Continental races.

DR. HOWELL T. PERSHING, of Denver, read a paper on

A CASE OF WERNICKE'S CONDUCTION APHASIA, WITH AUTOPSY.

He reported a case of a man of robust appearance, aged forty-five years, who was brought into the hospital in an unconscious condition, November 19, 1897. The history, which was meagre, indicated that the man had fallen from his wagon into the bed of a small stream, where he lay for about thirty-six hours before being found. He was removed to the hospital, and on examination the right arm and leg were found rigid and tremulous, the head and eye showing

slightly marked direction to the right. There was no sign of an injury to the head; the pulse and heart were normal; respiration 20, somewhat stertorous; temperature $99\frac{1}{2}^{\circ}$; urine normal. A diagnosis was made of a vascular lesion with syphilitic thrombosis in the left hemisphere, and inunctions and potassium iodide were ordered. Consciousness returned in the course of a week, but the man's talk was a mere jargon. He generally failed to do all that he was told to do, but responded readily when shown by a gesture. No paralysis could be detected. During the second week in the hospital the word deafness disappeared, and no sign of the cerebral lesion then remained except jargon paraphasia and certain associated defects. His reading was markedly paralexia; acuity of vision was good. There was no hemianopia. He had a keen eye for all that went on about him. The patient's condition remained substantially the same until January 23d, when he suddenly began to vomit and was found to be unconscious. There was conjugate deviation of the eyes, and the left pupil was larger than the right. Pulse 64, weak and soft; heart sounds normal. Temperature in right axilla 97.7° , the left 97.2° . Respiration of the Cheyne-Stokes type. Unable to swallow. Death occurred from intercurrent anemia January 29th.

DR. JOSEPH SAILER read a paper entitled

A CASE OF BULLET WOUND OF THE SPINAL CORD.

This was a man of thirty-one years of age, formerly a major in the Cuban army, who was wounded November 2, 1896, by a ball that entered 1 centimetre to the left of the right nipple and just below it, and which passed out about 2.5 centimetres to the left of the spinous process on the twelfth dorsal vertebra, having penetrated the lung, the liver and the spinal column.

DR. S. WEIR MITCHELL thought that the most remarkable thing in this case was the disappearance of the buttock muscles.

DR. PUTNAM referred to a woman who came to him about a month ago suffering from a fall in 1897. She developed complete paraplegia and complete loss of sensation of the lower extremities and of the trunk, and blunted sensation of the arms, but no loss of power of the muscles of the upper extremities. Upon operation it was found that the cervical spine of the sixth vertebra had been broken and was freely movable. After operation the bladder resumed its normal function.

DR. SAILER said that Dr. Mitchell has instituted massage and electricity with the result of considerable improvement of nutrition of the muscles, particularly of the thigh.

DR. G. L. WALTON read a paper entitled

CONTRIBUTION TO THE STUDY OF THE PLANTAR REFLEX, BASED UPON SEVEN HUNDRED AND FIFTY TESTS, MADE WITH SPECIAL REFERENCE TO THE BABINSKI PHENOMENON.

DRS. CHARLES K. MILLS and W. W. KEEN reported a case of

TUMOR OF THE SUPERIOR PARIETAL CONVOLUTION ACCURATELY LOCALIZED AND REMOVED BY OPERATION.

This case was of unusual interest from the clinical, physiological and surgical points of view. The medi-

cal history of the case was presented by Mr. Mills, the surgical history by Dr. Keen, and a pathological report on the nature of the growth by Dr. William G. Spiller.

The patient was a man fifty-six years old, who had had some neurasthenic and other symptoms since 1884, but who first began to have paresthetic attacks affecting his right upper extremity in 1894. These attacks were of irregular and infrequent occurrence, and were variously described as ant-like feelings, of crawling, tingling or battery sensations. After the attacks the arm usually felt somewhat heavy. He frequently complained of a feeling of pressure or discomfort in the head and especially in the left frontoparietal region. Sometimes this feeling was described as a headache, but he never had the typical headache of a case of brain tumor. Optic neuritis was absent from first to last, and vertigo and vomiting were so infrequent as not to call for special consideration. The patient was frequently hysterical and despondent. About five months previous to the operation the patient began to show some ataxia in the right arm and later in the right leg, and when investigation of his condition was first made by the writer all forms of cutaneous sensibility were impaired, muscular sense was lost, and astereognosis was a marked symptom. As the case progressed paresis and eventually paralysis of the arm and leg supervened, this when complete of course masking the ataxia. The patient developed a disorder of speech chiefly showing itself as a verbal amnesia and fatigue on reading. At one examination the patient showed a temporary partial right hemianopsia. Reversals of the color fields and contractions of the fields for form similar to those supposed to be typical of hysteria were present at several of the examinations. The reflexes on the ataxic and paralyzed side were somewhat exaggerated, ankle clonus being present. The patient was emotional and markedly hysterical.

An operation which was successfully performed by Dr. W. W. Keen, November 24th, exposed a tumor in the exact region which had been assigned as the seat of the growth, namely, the superior parietal convolution. The patient made a complete surgical recovery, and improved in all his symptoms with comparative rapidity. His speech completely returned, the paralysis of the leg and arm largely disappeared, cutaneous sensibility was in time restored, and he was so far recovered that he was able in March to start for a short trip to Egypt. He reached this country again April 19th, and was seen last by Dr. Mills, April 24th, just one week before the meeting of the congress. He has regained all the movements of the extremities on the affected side, although he has not full strength in the affected limbs. The muscular sense, especially in the lower extremity, is still somewhat impaired, as would be expected from the tissue lost by the encroachment of the growth.

Operation, November 24, 1899. As the flap was not to be in the thin squamous portion of the temple, but in the parietal, which might cause great embarrassment from a very thick skull, not only by the time required to chisel through the bone, but the difficulty of fracturing the base of the osteoplastic flap, Dr. Keen first made two trephine openings .5 centimetre in diameter at the two points between which he wished to fracture the flap. The skull was found, as had been feared, unusually thick, a full centimetre. This

being the case a Gigli wire saw was passed between the two points and the bone sawn half through in order to weaken the base of the flap. A large flap, each side of which measured 10 centimetres long, was then made, the anterior border of it being a little in front of the fissure of Rolando, the upper border within 1 centimetre of the median line.

As soon as the dura was exposed at the lower portion fluid was suspected beneath it. A dural flap was then cut, with the base upward. The tumor suddenly came into view at the anterior superior angle. It measured 3.5 by 4.5 centimetres and it weighed 1 ounce and 3 drachms after removal. It was made up of small granular masses like those of an ordinary raspberry and was of a deep red or purple color. In order to remove the entire tumor a portion of bone was removed by the rongeur forceps anteriorly. The tumor had begun as a subcortical mass and recently burst through the cortex. The tumor, being separated from the brain tissue, was removed and with it a long finger-like cyst which extended, by measurement, 10 centimetres (4 inches) into the substance of the brain and contained $1\frac{1}{2}$ to 2 ounces of fluid. The patient made a complete and very smooth recovery, the wound being entirely well by the sixth day.

DR. WM. G. SPILLER made a careful microscopical investigation of the growth. He classes it as an endothelioma and believes that it probably originated in the walls of the blood vessels. He said that from a pathological standpoint, while the tumor first looked like a sarcoma, it was finally proved to be epithelioma. The tumor was dark in color, not adherent to the dura, and the wall of the cyst was intact. It resembled very closely the finger of a kid glove in appearance.

DR. DERCUM said that he had seen the patient himself and that he thought too much credit could not be given to Dr. Mills for the brilliant and successful outcome of the case.

DR. WALTON said it was of interest to place on record all such cases of established tumor. In the absence of headache, vomiting and optic neuritis, though this possibility is recognized, it requires courage to make the diagnosis. He reported a case of an elderly man commencing with tremors in the wrist and gradually replaced by paralysis, finally complete in the arm and practically so in the leg, the latter of the spastic variety.

(To be continued.)

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Continued from No. 10, p. 242.)

SECTION OF SURGERY.

PROF. ANDREA CECCHERELLI, of Parma, opened the discussion on

SURGERY OF THE PANCREAS.

He summarized his conclusions as follows:

(1) Surgical operation on the pancreas stands in direct relation with all questions affecting the function of the organ.

(2) Wasting, the presence of fat in the feces, sugar in the urine, bronzing of the skin, jaundice and pain, are the symptoms accompanying the majority of pancreatic affections.

(3) Considerable difficulties are met with in complete extirpation owing to the pancreas being deeply situated in intimate relation with other viscera, and being very rich in vessels and nerves.

(4) The surgery of the pancreas has not hitherto advanced as it appeared legitimate to hope from the progress of visceral surgery, because very often the diagnosis is difficult, and on that account it is seldom possible to attack the morbid process at its beginning. At present everything tends to show that the surgeon is warranted in operating on the tail of the pancreas rather than its head.

(5) It has been proved experimentally that extirpation of the pancreas is possible and compatible with the life of an animal. It has not been proved that the same thing holds good in the sphere of clinical surgery, notwithstanding a few positive cases. This is all the more true that the morbid processes which call for the operation are generally not limited to the pancreas. As a matter of fact one has to do with malignant tumors infiltrating the neighboring parts, or with adenomata which can be diagnosed only with difficulty. Extirpation is not justified in tuberculous or syphilitic disease. Partial extirpation should be performed in such a manner as to leave one of the two ducts, provided the duct of Santorini does not end in a blind sac.

(6) The tumors that most frequently develop in the pancreas are cysts. These may be blood cysts, the result of injury or apoplexy; retention cysts, or hydatid cysts. In these intervention is legitimate and useful, but extirpation of the whole organ is not necessary; extirpation of the cyst, if it be possible, or incision being sufficient. In regard to extirpation, one has to consider the question of opening Wirsung's duct, and of the probable escape of the pancreatic juice into the abdominal cavity. In incision of the sac it is prudent, if possible, to stitch the walls of the cyst to the abdominal parietes.

(7) In the case of pancreatic calculi the surgeon may usefully intervene for their extraction.

(8) An affection which has lately been studied with great care is necrosis of the pancreas. This may call for intervention for the elimination of the fragments of the necrosed organ.

(9) In cases of suppurating or gangrenous pancreatitis the rule is not to operate in the acute stage. Later, if there is an abscess, or if the organ is gangrenous, intervention may be useful. Three routes may be chosen: Lumbar, extraperitoneal, transplenal, or median subumbilical. Suppuration must be avoided, but sometimes it is necessary that a portion of infiltrated or necrosed pancreas should be eliminated.

(10) In cases of chronic pancreatitis complication may be produced by compression of the bile duct or the pylorus, but in that case the surgeon may usefully operate not on the pancreas, but on the liver or the stomach, in order to prevent the interference with function caused by compression.

(11) In hernia of the pancreas following wounds reduction and even fixation may be suitable. The thoracic route is preferable if the hernia is diaphragmatic.

(12) Intervention may be necessary in contusions and wounds of the pancreas, especially if bleeding occurs. In that case hemorrhage should be stopped either by suture or by ligation of the bleeding vessel.

sels; the clots found in the abdominal cavity should also be removed.

(13) Cases of movable pancreas may be observed. Experimental pathology justifies fixation of the organ.

(14) In invagination of the pancreas Ceccherelli thinks the surgeon should intervene if complications occur and if elimination is not regularly performed.

(15) If as the result of any process the opening of the duct between the pancreas and the duodenum is blocked, a new channel for the pancreatic juice may be made, or if that is not possible a pancreatic fistula may be established.

(16) Pancreatic hemorrhages may occur even without wounds. They depend upon disease of the pancreas, most frequently gangrenous. In this case the surgeon should intervene as if the hemorrhage were traumatic.

(17) In constricted pancreas surgeons have hitherto abstained from operating, but it might be necessary to cut the band or to intervene to remedy the results caused by it on the stomach or intestine.

(18) Sutures through the pancreatic parenchyma cause no disorder or change, and are tolerated just as they are in the kidneys, the liver and the spleen.

(19) Wounds of the pancreatic duct may be sutured, but as far as possible in such a fashion that the thread be not in the middle of the duct, in order to avoid the probable formation of concretions.

(20) Union of wounds of the pancreas takes place by proliferation of the cells, especially of the connective tissue.

(21) It is certain that regeneration of the pancreas takes place.

(22) After complete extirpation there is seen a great development of the glands of Galeati, and especially a karyokinetic increase in the epithelium, so that it may be supposed, in accordance with the experiments of Martinotti, that these are capable of adequately replacing the extirpated viscus.

(23) The escape of the pancreatic juice into the abdominal cavity does not always cause peritonitis because absorption is rapid. There is reason to believe that, like bile, pancreatic juice is harmless if it is healthy, and hurtful if it is altered.

(24) In extirpation of the pancreas care must always be taken to place ligatures before, so as to avoid hemorrhages and the escape of pancreatic juice. Neither thermocautery nor galvanocautery should be used. They are unsafe, and in such cases the separation of eschars is to be feared; moreover, by radiation they may produce dangerous effects in the neighboring parts.

PROF. MAYO ROBSON presented a

REPORT ON PANCREATIC SURGERY.

He began by stating that he is convinced that pancreatic affections are much more common than is usually thought. He bases his remarks on his personal experience, he having operated on 40 cases of pancreatic disease and having seen a considerably larger number of cases in which operation was either not consented to or not thought advisable. He dwelt on the importance of posterior drainage where practicable in acute and in suppurative pancreatitis. For reaching the main pancreatic duct he has found it practicable to incise the second part of the duodenum and lay open the termination duct from the papilla. Cancer, of which he has seen over 50 cases, he has

found usually to occur after forty, and he believes that the cases occurring earlier in life are, in many cases, chronic interstitial pancreatitis, which may resemble cancer not only in the symptoms but in the naked-eye appearance after death. After describing the symptoms he remarked on the importance of distinguishing between cancer of the head and that of the body and tail of the pancreas. He then discussed the diagnosis, advising that especially in young subjects, but also at times in older patients, a hopeless prognosis should not hastily be given before surgical treatment has been tried, as if the case turns out to be chronic interstitial pancreatitis a cure may result from treatment. He expressed the opinion that excision of the pancreas for cancer can seldom be feasible or justifiable except in those cases where the disease is limited to the body or tail of the organ, and then only when it is caught in an early stage. Of the 15 cases on which he had operated for the relief of symptoms by cholecystotomy or cholecystenterostomy, 9 recovered and lived for some time in greater comfort. The important fact, however, that some of the cases operated on and thought at the time to be cancer of the head of the pancreas, but which recovered and are now in perfect health — showing the tumors to have been chronic interstitial pancreatitis and not cancer — has led him to advocate operation in all cases not too far advanced, especially in young or middle-aged patients, not because much good will be done if the case be truly cancer, but under the hope that the tumor may be inflammatory and not malignant.

Pancreatic cysts. — He has operated on 5 cases of pancreatic cyst, for which as a routine treatment he advocates incision and drainage, which he has performed in 4 cases with 3 recoveries. In 1 case the cyst was so easily enucleated that it was removed in that way, and the patient made an uninterrupted recovery, but his experience, not only in his own cases, but in others seen under the care of his colleagues, would lead him to believe that excision can only rarely be justifiable. In none of his cases were any pathognomonic symptoms present, and the author thinks that the diagnosis must usually be made from the physical signs.

Pancreatitis. — He draws a parallel between the inflammatory diseases of the liver, such as infective and suppurative cholangitis and chronic interstitial hepatitis, and similar diseases of the pancreas and its duct. He believes he has seen functional ailments of the pancreas ending in recovery that would come under the heading of infective catarrh of the pancreatic ducts, and he adduces positive evidence of suppurative catarrh of the ducts, as well as of chronic interstitial inflammation of the gland. He believes that as diagnosis becomes more perfected these diseases will be more frequently recognized and awarded their proper place in medicine. The author assents to the pathological classification proposed by Fitz, of dividing acute pancreatitis into suppurative, hemorrhagic and gangrenous pancreatitis; for clinical purposes he considers the subject under acute, subacute and chronic pancreatitis. In discussing the etiology, he laid stress on bacterial infection as being the essential and immediate cause, but enumerated a number of extrinsic causes, such as gastroduodenal catarrh, injury, and pancreatic and biliary lithiasis. The mode of infection he believes is nearly always through

the ducts. Although pancreatitis is a disease without exact pathognomonic signs, the diagnosis can usually be arrived at by a careful study of the history, mode of onset, and the combination of symptoms and signs. A case of acute and infective pancreatitis coming under the author's observation is related, also 4 cases of the suppurative form which were operated on after abscess had formed; of 2 in which the pus was evacuated by an incision in the loin, recovery followed; of 2 opened from the front, both died. In both cases leakage of pus had previously occurred into the stomach and had been vomited. In 1 case of suppurative pancreatitis in which rupture of the abscess occurred in the bowel, the patient was too ill when seen to bear operation, and gradual recovery occurred without surgical treatment. The treatment of acute infective and frequently that of suppurative pancreatitis practically resolves itself into that of peritonitis, commencing in the superior abdominal region, and Professor Robson lays stress on getting rid of inflammatory products by lumbar drainage if practicable, although it may be necessary to make the diagnosis by an interior incision. In the acute form he draws a comparison between gangrenous appendicitis and acute infective pancreatitis and considers surgical treatment just as necessary in one as the other, as soon as a probable diagnosis can be arrived at. If there be great distention in the epigastrium it will be easier and safer to make the exploratory incision in the left costovertebral angle. Treatment other than operative in order to get rid of the distention, relieve pain, fever and other symptoms until a definite diagnosis can be made was also considered. The details of reaching the abscess when found were also discussed, whether the collection be lumbar, subdiaphragmatic, epigastric or pelvic.

Chronic interstitial pancreatitis.—He lays great stress on the importance of this disease, which he believes is often mistaken for cancer of the head of the pancreas and which he believes has not received much attention either from clinical observers or from pathologists, certainly not as much as it deserves. His experience in this class of cases has resulted from his having operated on a considerable number of cases of jaundice depending on obstruction in the common duct, the obstructive jaundice, wasting paroxysmal attacks of pain and ague-like seizures having given rise to the suspicion of gall stones, and the absence of relief by medical treatment having rendered surgical treatment necessary. He argues that its recognition is of vital importance, since it is a disease not only capable of relief but of absolute cure by surgical treatment. The author illustrates his assertion by a brief report of 15 cases on which he has operated, with recovery in 14.

JULES BOECKEL (Strassburg) said: Operations on the pancreas are indicated in cases of injury, inflammation and its consequences (suppurating, gangrenous or hemorrhagic pancreatitis, pancreatic necrosis with fatty necrosis), tumors, solid and liquid (cysts). In recent injuries the scope of intervention is very limited, wounds of the pancreas generally proving fatal very quickly from hemorrhage or concomitant lesions of the neighboring organs. Of 10 recorded cases death occurred in 8. The only rational treatment is to plug the wound after asepticizing it. The search for and ligation of injured vessels, though right in theory, are practically impossible in the

great majority of cases on account of the dangerous condition of the wounded person. In inflammation and tumors the surgical procedure is sometimes on the gland itself, sometimes in its more or less immediate neighborhood. The latter condition is realized when a collection of blood, pus, or other material developed primarily in the pancreas ruptures and becomes encysted between one or other of the numerous peritoneal folds near that organ, or when a solid tumor insinuates itself among the same folds. Under these conditions the operation is extremely simple. The tumor causes a more or less considerable projection, and the serous folds covering it are intimately bound together. One need generally only incise the most projecting part of the tumor to lay it bare and then act according to circumstances. On the other hand, when only the gland itself is involved, intervention is more delicate, more laborious, and necessarily limited. It is delicate because the pancreas lies deep, surrounded by numerous and important vessels, the wound or ligation of which may cause fatal accidents. It is limited because only small portions of the pancreas can be extirpated, complete removal inevitably inducing a rapidly fatal form of diabetes. These intrapancreatic operations are indicated in localized tumors and inflammation of the gland. When the affection has been diagnosed—and this is a difficult point, since diseases of the pancreas have no really pathognomonic symptoms—the first thing to be done is to lay bare the organ. According to the case it may be reached by three different routes:

(1) Subgastric, when, as is seldom the case, the tumor projects above the lesser curvature of the stomach.

(2) Gastrocolic; this is the procedure of choice.

(3) Transmesocolic, when the tumor has insinuated itself between the folds of the mesocolic omentum.

In exceptional cases recourse may be had to incision through the flank (tumors of the tail of the pancreas), the operation then being continued outside the peritoneum. The pancreas having been cleared, search must be made for the focus or the tumor, and then curetting or enucleation should be carried out. Intraglandular operations are of course more dangerous than extraglandular, but even as regards the latter, unless when one has to do with cysts, the prognosis is sufficiently gloomy. The limited statistics at present available prove nevertheless that pancreatic affections, which a short time ago were looked upon as incurable, may now be dealt with successfully by surgical intervention made at the right time. Thus among 20 cases of suppurating and gangrenous pancreatitis there have been 11 cures and 9 deaths; in 23 cases of hemorrhagic pancreatitis there have been 5 cures and 18 deaths; in 11 of solid tumors there have been 3 deaths and 8 cures, 4 of which were permanent. Cysts have been operated in 144 cases, which may be subdivided as follows: Operation in one sitting, 99 cases, 92 cures, 7 deaths, of which 2 occurred during the operation; operation in two sittings, 16 cases, all cured; total or partial extirpation, 25 cases, 21 cures, 4 deaths; cases of which no details are forthcoming, 4, 3 cures, 1 death. Extirpation, which is more rarely applicable, is more serious, more troublesome, and often incomplete. It should be attempted only exceptionally when the cyst is movable and a pedicle can easily be formed. In addition to these radical operations, palliative procedures may be practised

when phenomena of compression of the bile duct or of the duodenum place the life of the patient in danger, as in tumors and chronic inflammations of the head. The serious risks of these operations, and the very slender advantages obtainable from them, make it impossible to recommend them. In the case of solid tumors, cholecystenterostomy has given in 15 cases 7 speedy deaths and 8 recoveries, with a maximum survival of only fourteen months. As regards cholecystogastrostomy (4 cases with very transient improvement), pancreatico-enterostomy (1 case which ended fatally), gastro-enterostomy (2 cases of which 1 died speedily and 1 survived four months), they need only be mentioned by way of record. Jejunostomy, recommended recently by Maydl, seems to give better results. The same operations may be performed with success in chronic pancreatitis of the head, which is so often taken for cancer of the organ. They may even be curative rather than palliative when regression of the inflammatory process takes place, which may happen when the lesions are not too old. Cure is then definite.

RADIOGRAPHY IN THE STUDY OF FRACTURES AND OF LUXATIONS.

G. MAUNOURY, of Chartres, in opening a discussion on this subject, said that the errors that might be committed in the study of the results of radiography were attributable not to the method itself but to defective interpretation. To avoid such errors it was desirable to secure greater precision in the examinations, and to indicate on the prints certain data, notably the point where the vertical line let fall from the focus on to the plate meets the plate.

Fractures.—Dealing first with simple fractures, the author said that in diagnosis radiography rendered invaluable services by indicating the number, form and position of the fragments, their overriding—which, when the proof was clear, corresponded with sufficient exactness to the shortening of the limb—their displacement in different directions and the situation of splinters. To obtain precise information as to the disposition of a fracture it was necessary to radiograph it at two different angles; generally it was taken from the front (frontal plane) and in profile (sagittal plane). There was no absolute rule about this, and each fracture might require a special position of the tube. Very exceptionally a fracture might escape detection even when the bone was examined in different directions. Stereoscopy also gave valuable information as to the position of fragments. The clinical diagnosis of fractures was as valuable as ever, but radiography complemented it very successfully by making it more definite. It might even give it a character of certitude in cases where the complexity of the lesions or considerable swelling of the soft parts left it doubtful. Lastly, it made it less painful by reducing to a minimum the exploratory manoeuvres directed to the seat of fracture. Radiography is useful in all fractures, but especially in fractures of the upper end of the humerus, which are often at the bottom of stiffness and ankylosis attributed to peri-arthritis; of the lower end of the radius, which are often accompanied by lesions of the carpus; of the leg and especially those involving the tibiotarsal articulation—in these last radiography alone can give exact information as to the relations of the astragalus, with the tibio-peroneal mortise, a vital point in the prognosis and treat-

ment of these fractures; of the astragalus, which a few years ago were wrongly looked upon as being very rare; lastly, of the metatarsal bones, which are the anatomical lesion of an affection well known to military surgeons, as to the pathogeny of which there had long been much discussion without its true nature being suspected. The formation of the callus is very interesting if studied with the help of radiography. The first stage cannot be observed, but after some twelve days at the end of the fragments there becomes visible a light clouding which becomes gradually darker. If coaptation of the fragments is perfect the callus forms at the line of the fracture a diffuse globular mass, which by degrees becomes transformed into a distinctly limited fusiform sheath incorporated with the compact tissue. If there is slight overriding the cloudy deposit on each fragment forms the medullary canal and constitutes a thick layer where the fragments touch each other at the side. If the overriding is very extensive this lateral interfragmentary callus does not extend the whole depth of the line of contact, but is produced only at the level of one of the fractured ends, which seems to take a prominent part in the work of the bony union. The time taken in the formation of the definitive callus varies, seeming to be larger in proportion to the size of the bone. In certain cases, notably in oblique fractures of the tibia, the callus may remain a long time invisible even when consolidation appears to be complete. Radiography makes visible in the living body all the varieties of callus known to pathological anatomy, and shows how certain kinds of callus may simulate a perfect coaptation of two fragments which are nevertheless very badly reduced. It shows that in the child the work of bony consolidation, instead of, as is the case in the adult, being limited to the immediate neighborhood of the line of fracture, spreads far along the line of fragments. In treatment radiography enables us better to reduce fractures and to see to what degree such reduction is possible; it is easy to watch the position of the fragments and to rectify it as far as may be necessary during the work of consolidation. When the patient may be regarded as cured, radiography furnishes precise information as to the result. By its means the action of different splints and apparatus—immovable, for continuous extension, etc., can be studied. It has shown that if they are often very effective, they are far from always giving perfect anatomical results; fortunately, perfection of form is not indispensable for the satisfactory restoration of function. Radiography indicates in what cases wiring of the bones may be practised; it is especially in fractures communicating with a joint that this procedure is valuable, for example, in fractures of the elbow and the ankle. In such cases radiography enables one to see if the relations of the articular surfaces have been sufficiently re-established by reduction. If instead of a recent articular fracture one has to do with an old one, radiography alone can define the position of the bones and their deformities, and indicate what operation may be necessary, in what direction the bones should be divided, what should be removed, etc. It will also guide us in the treatment of faulty and irregular callus. In compound fractures radiography greatly simplifies the operative intervention so frequently indicated, obviating the necessity of groping about for splinters, and in cases where wiring is needed showing how the fragments are to be sawn. In fracture of the joint it

shows whether conservative surgery or resection is preferable. In fracture by gunshot it shows the presence of foreign bodies.

Luxations.—Radiography is much less useful in the case of luxations, although in some cases where a luxation has been overlooked it has shown its existence. But it has so far given no information as to the most frequent causes of irreducibility, which lie especially in the soft parts. In old luxations it shows the new-formed bone productions which oppose reduction and reveals the production of false joints. Radiography has enabled us to study and to treat better congenital dislocations of the hip, and it also gives interesting information as to luxations which supervene in coxalgia.

PROF. E. VON BERGMANN, of Berlin, presented a communication on the

PROGRESS IN THE TREATMENT OF FRACTURES SINCE THE INTRODUCTION OF THE RÖNTGEN RAYS.

During the last ten years our knowledge of fractures had made important progress in two particulars: (1) In regard to the operative treatment of certain simple fractures, with the object of effecting exact coaptation of the fragments, and (2) the diagnosis of the seat of fracture and the pathological anatomy of the bone lesions by means of radioscapy and radiography. There are obvious local causes that hinder the union of fractured surfaces: it is known, for instance, that in a broken femur the interposition of muscular fibres prevents the formation of the callus. Unfortunately, it is not possible, with the help of the Röntgen rays, to define this with sufficient exactness to warrant an incision. We can only suppose that the case is so if in the image given by the fluorescent screen we see a gap between the bone surfaces separated from each other in the sense of a *dislocatio ad longitudoem*, and this gap always remains equal in the most various positions in which we may place the broken limb. There are, however, other local causes of want of union, which are shown clearly by radiography; this is particularly the case in fractures of joints and of small bones. It is sufficient to quote an example, namely, fracture of the patella. Malgaigne had deplored the frequency with which cases of fracture of this bone remained unhealed, and recommended long before the antiseptic era an operative intervention by the application of the hooks known by his name. These hooks, however, are much more dangerous than incision and suture of the fragments with silver or bronze aluminium wire. Examination of fractures of the patella by means of radiography reveals three principal obstacles to union:

(1) The inequality in the size of the fragments, the upper being much larger than the lower; they therefore require wiring to keep them in place.

(2) The number of the fragments. In addition to the two principal fragments there are small accessory fragments, or small splinters which slip into the line of fracture, and thus prevent accurate coaptation.

(3) One of the fragments may be displaced by a movement of rotation in such a manner that the fractured surface of the other fragment meets it at its outer surface, so that contact of the fractured surfaces cannot take place. These various displacements being made visible by radiography, the surgeon is able to make up his mind as to the necessity of an operation, and to search for the seat of fracture, so as

to remove the obstacles which have been mentioned, and wire the broken fragments together.

Bergmann, in his clinic, has obtained complete bony union in more than 25 cases of this kind. The operations proved that the union was bony, and not fibrous, and that the metallic suture cured speedily and permanently. Therefore the operation is the general mode of treatment of fracture of the patella. The question of operation presents itself in a different aspect in the case of other fractures; for instance, when one had to do with a fracture of the lower end of the radius, a subject which has been thoroughly studied by E. Gallois. Whilst the treatment of fractures of the patella is almost uniform, the case is otherwise in respect of fracture of the lower end of the radius, the treatment of which varies according to the seat of the fracture and the displacement of the fragments. Professor Bergmann showed a series of photographs taken in his clinic demonstrating the different types of those fractures. Fractures of the tarsal and metatarsal bones were almost entirely unknown before the invention of radioscapy. The symptoms of those fractures were taken for inflammatory swelling or contusion of the foot, and were often treated by massage, with the result that the displacement of the fragments was increased. When the fracture is recognized, it must be treated by complete immobilization. Illustrations of these fractures were also shown.

(To be continued.)

Recent Literature.

Anesthetics: Their Uses and Administration. By DUDLEY WILMOT BUNTON, M.D., B.S., Member of the Royal College of Physicians; ex-President of the Society of Anesthetists; Member of University College; Administrator of Anesthetics and Lecturer in University College Hospital, etc. Third edition. London: H. K. Lewis; Philadelphia: P. Blakiston's Son & Co. 1900.

The third edition of this useful little manual has been carefully revised and brought up to date. Important procedures which have been developed since the previous editions were published, such as Schleich's solutions for general anesthesia, Bier's method of intrathecal cocainization, etc., have rendered this necessary, and are adequately treated in the present edition.

The manual will be found a reliable guide in the various methods of anesthesia, and will be especially valuable to those who wish to become acquainted with the complicated apparatus employed for anesthesia with ether, ether with nitrous oxide, etc., which are generally employed in England. Whether or not we consider that more complication than comfort results from the intricate methods and machinery of our English brethren, we ought, at least, to follow their practice of employing for all serious surgical work a skilled anesthetizer, rather than to entrust our patients to the chances which must be taken in the hands of an etherizer without special training. Our medical schools also ought to see to it that adequate practical instruction in anesthesia be a prerequisite for a degree.

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THEORY AND PRACTICE.

WE have frequently found occasion to comment on the popular idea that medicine is divided into two more or less sharply separated groups of men, one of which is devoted to the theoretical side of medical problems, and the other to the treatment of the sick. We have grown wholly weary of the expressions, now so frequently heard, of "the scientific man," and "the practical man," as if they represented two diametrically opposite tendencies. Surely nothing could be more practical than the discovery that cleanliness is prerequisite to surgical success, and nothing could be more scientific than the knowledge underlying the ability to bring a difficult obstetrical case to a successful conclusion. What we must have in the future is not a widening of the breach which separates the theoretical man from the practical man, but a clearer recognition of the fact that theory demands a constantly growing knowledge of practical application, and practice a no less increasing knowledge of theory. There is evidence on every hand to show that this state of things is coming. The routinist, whom Dr. Osler so sharply stigmatized in his recent address in London on "Post-Graduate Study," must, before long, be forced out of existence, and his place taken by Osler's rationalist, who finds time and opportunity to use his microscope and his instruments of precision. These comments, trite as they may be, are not out of place so long as we hear men criticised for being theorists, and hence unreliable in the practical conduct of their professional work. Within a few weeks this has been our lot. A man suggested as a consultant was declined by a physician of many years' practice and experience, because he was claimed to be a theorist, an opinion based upon the fact that he worked in a laboratory. This particular man may have been quite unfit to give an opinion in the case in question, but it was most certainly not because he worked in a laboratory, and tried thereby to get at his subject from all points of view. He may have been a theorist from natural inclination or previous training, but it appears to us extraordinary that in these enlightened days he should have been excluded on the ground

that he was a laboratory, as well as a clinical, student of disease. We claim no special gift of prophecy when we say that the next thirty years will see a readjustment of feeling on this matter, which will render such discriminations impossible.

AS TO PROFESSIONAL VISITS.

FROM time to time physicians are forced to appeal to the courts to obtain their just deserts in the matter of fees. The necessity is always an unpleasant one and one, no doubt, to which the large majority of medical men are slow, and we sometimes think too slow, in resorting. This is a matter of regret since it encourages a certain carelessness on the part of the laity in the payment of their debts and increases the laxity in business methods of which physicians are proverbially guilty. We are therefore always glad to see and to note opinions expressed by the legal fraternity on matters which will tend toward the establishment of generally recognized precedents. A case of this sort has recently been determined in the Supreme Court of Illinois, the question at issue being whether a physician should determine the number of professional calls he should make or should call only when expressly summoned by the patient. A physician sought to obtain payment for a certain number of calls, objection being raised by the defendant that the calls were made without the express request of the patient, and for which he therefore was not financially responsible. The court held that a physician was not called upon to prove the necessity of making the number of visits for which he charged. Citing a previous case, the court ruled as follows:

"Where a physician is called by a person to treat him or his wife, and he takes charge of the case and attends from day to day, evidently, in view of his responsibility for skilful and proper treatment, he must, in the first instance, determine how often he ought to visit the patient, and so long as the person employing him accepts his services, and does not discharge him or require him to come less frequently, or fix the times when he wishes him to attend, he cannot afterward be heard to say that the physician came oftener than was necessary. There was no proof that the claimant came when he was forbidden to come, or that he was discharged and continued to attend thereafter."

Such a ruling would appear to us to be the only one at all consistent with reason and justice. The physician must alone be competent to determine the necessary frequency of his visits and it is altogether unlikely that the confidence reposed in him is often abused. At the same time it is desirable that legal opinion should support the dictates of common sense in this as in other more or less self-evident matters. If such things were to be left wholly to the caprice of the laity it is evident that in the hands of designing persons a very considerable degree of injustice might be done, from which redress would often be impossible.

THE GALVESTON DISASTER.

It is difficult to imagine a more distressing situation than that resulting from the recent storm at Galveston, Texas. The general devastation and destruction of property and life are appalling to contemplate, and particularly when this includes the loss of various hospitals and the patients which they harbored. So complete appears to have been the work of the storm that ordinary means of relief of a medical and surgical sort were for a time quite impossible, owing to the cutting off of outside communication. Incomplete as the reports still are, it appears that the bodies of the dead are being taken out to sea for burial, to prevent the subsequent development of disease among the survivors. The one bright spot in the picture is the hope that future suffering may in great measure be obviated by timely precautions of this sort. Impossible to avert as such catastrophes are, their consequences are at least greatly mitigated by modern sanitary knowledge. Not many years ago we would have anxiously awaited the inevitable reports of suffering through epidemic disease brought on by ignorance of hygienic laws and inadequate means of meeting so unexpected an emergency. In these days of greater knowledge and more perfect equipment we are practically sure that disease will gain no foothold to add to the sufferings already endured. Tents and provisions have already been ordered from Washington, and extreme as the immediate loss of life may prove to be, we may rest assured that the added misery induced by deprivation and want, with their accompanying physical ills, will be wholly averted. Small as this consolation may be, it is at least something, when we pause to think of the effects of a similar disaster fifty or more years ago.

MEDICAL NOTES.

WORK OF CHICAGO MUNICIPAL LABORATORY. — The following details of the work of the Chicago Municipal Laboratory, as given in the July report of vital statistics, are of interest: Total bacteriological examinations, 328; city water, 112; other water, 37; ice, 42; suspected disease (diphtheria 20, typhoid 43, other 13), 76; glycerinated vaccine, 26; food, 35. Distributed: Glycerinated vaccine, 2,450 tubes; diphtheria antitoxin, 310 vials; outfits for bacteriologic diagnosis of diphtheria, typhoid fever, tuberculosis and influenza, 334. Total chemical analyses, 2,222: Milk and cream, 2,052; city water, 100; ice, 41; miscellaneous, 29. Of the 2,052 samples of milk and cream analyzed, 445 were brought to the laboratory by private individuals; the remaining 1,607 were collected by the milk inspectors. Of the 1,607 inspectors' samples 191 were tagged "skimmed milk" and 948 were not tagged, therefore sold for whole milk; of these 90 were found below grade. Out of 468 samples of cream 14 were found below grade. Per cent. of inspectors' samples of milk and cream below grade, 6.47. Of the 445 samples brought to the of-

fice by private individuals, 277 were milk, of which 20 were below grade, and 168 were cream, of which 1 was below grade. Per cent. of samples of milk and cream brought to office found below grade, 4.71. Per cent. below grade, all sources, 6.09. The mortality rate of bacteriologically verified diphtheria treated by antitoxin is reported as 0 in 46 cases treated.

APPOINTMENTS. — Dr. John B. Murphy has accepted a professorship in surgery and clinical surgery in the Northwestern University Medical School and Chicago Medical College. Dr. Murphy has also been appointed surgeon in chief of Mercy Hospital, with the direction of the surgical teaching in that hospital. Dr. Archibald Church has been recently appointed professor of nervous and mental diseases in Northwestern University Medical School and Chicago Medical College, and head of the Neurological Department. Dr. George P. Dreyer, associate professor of physiology in the Johns Hopkins Medical School, has been appointed professor in charge of the Physiological Department of the College of Physicians and Surgeons (Chicago), the medical department of the University of Illinois.

YELLOW FEVER IN HAVANA. — Governor-General Wood has appointed a board of immigration consisting of four physicians, who will draw up regulations concerning immigrants. Since July, 1899, 26,000 immigrants have arrived in Havana, and 10,000 are expected during the next two months. Fifty deaths from yellow fever were reported in Havana during August. While the general health of the city is better than ever before, there is a comparatively large number of cases of yellow fever, owing to the large number of immigrants. Seventy-five per cent. of the total number of cases were among immigrants who had been in Havana less than a year.

A BABY-REARING EXHIBITION IN VIENNA. — According to the *British Medical Journal*, a hygienic exhibition intended for the training of mothers was recently held in Vienna. The chief feature of the exhibition was the display of all that is necessary to the care and nursing of little children. It was intended that the exhibition of new-born babies in incubators should form part of the show, but the authorities forbade this on the ground that there are objections to a public exhibition of children requiring the extreme quiet.

ASSOCIATION OF WAR NURSES. — It is proposed to organize a society to be known as the Spanish-American War Nurses' Association, membership to be given only to those who were in active service at least one month during the war. Of these there are about 500. The president of the association is to be Dr. Anita Newcomb McGee, of Washington, Acting Assistant Surgeon, U. S. Army.

A CUBAN MEDICAL JOURNAL. — According to the *Journal of the American Medical Association*, Dr. John Guitéras, formerly professor of pathology in the University of Pennsylvania, who now holds a posi-

tion in the teaching faculty of the University of Havana, has established a medical journal there entitled *Revista de Medicina Tropical*.

CHOLERA IN INDIA.—Lord Curzon, Viceroy of India, reports that the deaths from cholera for the week ending September 1st were: Native states, 1,930; British districts, 4,021.

APPOINTMENT OF DR. TH. ZIEHEN.—Dr. Th. Ziehen, of Jena, has been appointed professor of psychiatry in the University of Utrecht.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, September 12, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 89, scarlatina 12, measles 11, typhoid fever 16.

BOSTON DEATH STATISTICS.—The total number of deaths reported to the Board of Health for the week ending September 8th is 214, against 168 the corresponding week last year, showing an increase of 46 deaths, and making the death rate for the week 19.9. Of this number 108 were males and 106 were females. The deaths from consumption were 24, pneumonia 18, heart disease 13. There were 10 deaths from violent causes. The number of children who died under one year was 55.

YALE MEDICAL SCHOOL.—The oldest professor in Yale University to leave its service this year is Dr. Moses C. White, for more than a quarter of a century at the head of the work in pathology in the Medical School. He will be continued as professor emeritus. The chair in pathology will be filled by Dr. Charles J. Bartlett, who has been assistant professor in the Medical School for five years. The chair of obstetrics and gynecology, which was made vacant by the death of Prof. George Campbell a year ago, has been filled by the appointment of Dr. Otto G. Ramsay, of the Johns Hopkins University.

CLOSING OF THE FLOATING HOSPITAL.—The season of the Floating Hospital closed Saturday, August 8th. Since the first trip of the summer was made, July 5th, there have been but two days when it was necessary to give up the trip on account of the weather. The summer has been a particularly trying one because of the excessive heat, and more patients have been cared for than ever before. It is hoped another year to extend the season from the middle of June to the middle of September.

DEATHS DURING AUGUST IN NEWTON, MASS.—There were 46 deaths in Newton during August, the rate per 1,000 being 20. Three of the deaths were from accidental drowning, 1 from diphtheria and 3 from typhoid fever.

NEW YORK.

CLOSING OF CITY BATHS.—At the request of the president of the Board of Health, Commissioner Kearney, of the Department of Public Buildings, has

closed two of the free city baths, one located on the Hudson and the other on the East River. With the request was enclosed a report from Dr. F. H. Dillingham, assistant sanitary superintendent, showing that sewers opened near these baths, and pointing out that this was a condition detrimental to those using them. The Health Department was not consulted by Commissioner Kearney when selecting the sites for the baths in question, and they will probably be reopened in more salubrious locations.

RESTRICTIVE LEGISLATION.—Several important changes in the laws which were adopted by the last legislature went into effect on September 1st. Among them was the total suppression of prize fighting in the State by the abrogation of the provision which permitted so-called glove contests (sparring exhibitions with gloves of not less than five ounces each in weight) under certain conditions. Another amendment to the penal code provides that no spring or air gun may be sold to a child under twelve years of age, nor any toy pistol shooting loaded or blank cartridges to a child under sixteen years, without the consent of a magistrate.

NEW HOSPITAL FOR TUBERCULOSIS.—At its annual meeting, held at Albany on September 6th, the Board of State Pensions passed a resolution adopting the report of Commissioner Mantanye, which recommends Dannemora (the location of one of the State prisons) as the site for the erection of the State Hospital for Consumptives, and urging the Hospital Commission to act in favor of the recommendation. Dannemora is situated in the northern part of Clinton County, in the Adirondack region.

PRECAUTIONS AGAINST PLAGUE.—Special precautions were adopted by the health officer in the case of the steamship *City of Rome*, which arrived at New York on September 3d, and was the first vessel to reach the port from Glasgow since the appearance of bubonic plague in that city. One of these was the taking of the temperatures of the passengers and crew and the retention under observation of two or three individuals in whom the temperature was found to be slightly abnormal.

BEQUEST TO A HOSPITAL.—By the will of the late Judge Francis O. Mason, of Geneva, N. Y., the residue of his estate, estimated at \$50,000, is left to the Geneva City Hospital. Judge Mason was president of the institution at the time of his death.

Miscellany.

OBSERVATIONS ON AN OUTBREAK OF DIPHThERIA.

We quote from the *Bulletin* of the New York State Board of Health the following summary of observations made by Dr. W. A. Macy on an epidemic of diphtheria occurring at the Willard State Hospital:

“Early in 1897 diphtheria was brought into the institution through employees who had been in con-

tact with a case near by. There followed an epidemic, a moderate number of cases developing from time to time for six months, when it ceased without recurrence then or during the following year. In June, 1899, diphtheria broke out again, probably likewise imported, spread rapidly, 75 cases occurring, of mild type. It has continued, with intermissions of a month or two, till now, there being at present no actual diphtheria, but a number of germ cases in isolation.

"The condition is of a long lasting epidemic, in an institution, mainly adults, of 2,700 population, under resident medical supervision, with a well-appointed laboratory used on so extensive a scale that every member of the community had cultures taken over and over again, all of which are recorded. It was observed:

"(1) That the type of the disease varies in different epidemics; in the first, 1898, nearly every one exposed, even slightly, took diphtheria, but the course of the disease was mild; in the present epidemic it was much less infectious, but much more virulent in character.

"(2) The germs of diphtheria can maintain activity with much persistence outside the body and resist the action of ordinary disinfectants. Recurrence of the epidemic after all the people were found germ free was found to occur in rooms which after occupation by the sick had been subjected freely to formaldehyde, sulphur fumigation, washing with bichloride, hot soap suds or soda solution, both walls and wood work. Twenty-five cultures were often taken before a building was found free.

"(3) It was found that cases discharged from quarantine after three negative cultures communicated diphtheria, and new cultures showed Klebs-Löffler germs present; the sick were discharged only after three negative cultures taken on alternate days. None of these thus tested were found afterwards to show the disease germs, but nothing short of this was found trustworthy.

"(4) Presence of the germs in healthy throats was found; they persisted there for weeks; cultures were almost or quite as pure as from membranous cases; virulence tests in the laboratory showed them to be as dangerous as those from cultures taken from clinical cases. Membranous diphtheria followed exposure to such, and even at second hand, for in one clear instance a person associating with a germ case without sore throat carried in his clothing the disease in virulent form into a family living several miles distant, bearing germs taken from that case. It would appear then that bacteriological diphtheria is as potentially dangerous as clinical.

"(5) Change in the shape of germs attended convalescence; when these 'degenerate' forms occurred the disease generally soon yielded. There was reason to think that these attenuated forms may under conditions favorable to rapid development increase in strength, but that they have not sufficient virulence to be actually dangerous. While in membrane cases the bacilli followed a definite life history, those from a normal throat may differ daily, a fact important to bear in mind.

"(6) Immunization by antitoxin of all employees, through whom almost solely it spread, and of all exposed patients gave reason for satisfaction, and this experience commends its use for all much exposed.

A lessened dose on repetition is commended, and to give it in fleshy parts of the body not protected on by clothing, not in the extremities. It was used with great confidence in treating the sick, and of 75 membrane cases there were no deaths."

A NEEDLE IN THE HEART.

A most curious case of suicide, as given in the *Medical Press*, has been reported from Ipswich, England. At a first sitting of the coroner's jury the inquest was adjourned, as the medical witness professed his inability to state the cause of death. A post-mortem examination was then made with results of an extraordinary nature. The pericardium was found to contain about two ounces of fluid blood. A darned needle some two inches in length was sticking in the muscular wall of the heart, but had not penetrated its cavity. On further examination a puncture was found in the left breast. The immediate cause of death, however, was not the foreign body in the heart, but poisoning by oxalic acid. The opinion of the medical witness who gave that evidence was that deceased may have taken the poison on account of the pain caused by the needle, which may have reached the position as the result of an accident. It was stated that an uncle of deceased shot himself. This case is of considerable clinical interest, as it shows that a heart can withstand for some time a good deal of traumatic irritation. Indeed, with the aid of a Röntgen ray localization and an operation the patient would possibly have had a chance of recovery.

Correspondence.

CALCIUM HYDROSULPHATE PASTE AS A SURGICAL EPILATORY.

BOSTON, September 5, 1900.

MR. EDITOR:—One of the most important points in surgical technique is the complete removal of hair from the field of operation. The razor is often badly tolerated, and shaving is difficult, especially of the scrotum, the vulva and anus. For some time I have employed with great advantage a paste of calcium hydrosulphate, as recommended by Raybaud, of Marseilles.

The preparation of this paste is as follows: Two parts of freshly slaked lime, from which all grit has been removed, are mixed with three parts of water. The resulting milk of lime is traversed by a current of sulphuretted hydrogen. The milk of lime becomes pasty, and from milky white the mass becomes a bluish green. The odor of sulphuretted hydrogen is not very pronounced.

This product is not caustic in the slightest degree, and may be manipulated without any fear. It will not soil the hands unless they are moistened with a solution of some mercurial salt whose metal is precipitated by sulphuretted hydrogen. The paste must be put up in brown glass bottles and well corked, because calcium hydrosulphate is decomposed by both light and air, more especially the latter. The carbonic acid in the air liberates the sulphuretted hydrogen and transforms the paste into an inert carbonic compound.

The way of employing this paste is very simple. With a spatula or spoon-handle a thin layer is spread on the parts from which the hair is to be removed. If the hair is very long it may be clipped off with the scissors first, but this precaution is not necessary if one is careful to see that the paste is applied down to the skin. The paste is left on

for five minutes and then with tepid water and a towel it is removed by gentle friction. The skin will then be found to be completely free from any trace of hair and better shaven than by the cleverest barber.

The paste is absolutely devoid of any irritating properties to the skin, is painless and leaves no trace behind. The hair grows again perfectly, just as when it has been removed with the razor. In scalp wounds, in genito-urinary, rectal and gynecic surgery it is much better than the razor, as a perfectly smooth skin results.

Truly yours,
CHARLES GREENE CUMSTON, M.D.

AN IMPOSTER.

BOSTON, September 5, 1900.

MR. EDITOR:—Please notify your readers that a man about forty-five years of age, a doctor from Ireland (such is his story), who has had all kinds of hard luck, etc., is looting (to use a military phrase) the medical offices of the city. He gave me his name as Dr. W. J. Campbell. I have excellent reason for believing he is an accomplished "crook."

Truly yours,
J. J. HANLEY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 1, 1900.

CITIES	Estimated population.	Reported deaths		Percentage of deaths from	Percentage of deaths from								
		in each.	Deaths under five years.		Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.				
New York . . .	3,654,594	1269	527	29.68	7.20	13.76	1.60	1.44					
Chicago . . .	1,619,226	—	—	—	—	—	—	—					
Philadelphia . . .	1,266,832	413	141	29.76	4.56	11.28	1.92	3.36					
St. Louis . . .	623,000	—	—	—	—	—	—	—					
Boston . . .	539,416	233	101	37.35	6.75	18.00	1.80	2.70					
Baltimore . . .	506,389	205	72	37.73	8.91	17.64	3.43	1.47					
Cincinnati . . .	405,000	—	—	—	—	—	—	—					
Cleveland . . .	350,000	—	—	—	—	—	—	—					
Pittsburg . . .	305,000	—	—	—	—	—	—	—					
Washington . . .	277,000	—	—	—	—	—	—	—					
Milwaukee . . .	275,000	—	—	—	—	—	—	—					
Providence . . .	150,000	63	24	32.97	—	15.71	—	—					
Nashville . . .	87,754	—	—	—	—	—	—	—					
Charleston . . .	65,165	—	—	—	—	—	—	—					
Worcester . . .	111,732	51	23	50.96	3.92	3.92	—	—					
Fall River . . .	103,142	35	19	31.46	—	28.60	—	—					
Cambridge . . .	92,520	24	8	50.00	12.50	25.00	—	—					
Lowell . . .	90,114	41	16	12.29	4.83	—	—	—					
New Bedford . . .	70,511	30	23	40.00	—	35.00	—	—					
Lynn . . .	68,218	—	—	—	—	—	—	—					
Somerville . . .	64,394	17	9	41.16	—	29.40	—	—					
Lawrence . . .	59,072	24	15	45.76	—	29.12	—	—					
Springfield . . .	58,266	24	7	45.76	—	12.38	4.16	—					
Holyoke . . .	44,510	23	12	43.47	—	39.06	—	—					
Brookton . . .	38,759	10	6	60.00	10.00	50.00	—	—					
Salem . . .	37,723	9	4	33.33	—	11.11	—	—					
Malden . . .	36,421	8	2	25.00	—	—	—	—					
Chelsea . . .	34,235	13	5	15.34	—	—	—	—					
Haverhill . . .	32,651	16	6	43.75	—	18.75	6.25	—					
Gloucester . . .	31,426	5	4	—	—	—	—	—					
Fitchburg . . .	30,523	7	4	42.81	—	28.56	14.28	—					
Newton . . .	30,461	12	5	8.33	—	—	—	—					
Taunton . . .	28,527	17	9	52.01	5.88	35.28	—	—					
Everett . . .	28,102	7	4	14.28	—	—	—	—					
Quincy . . .	24,578	9	1	11.11	—	—	—	—					
Pittsfield . . .	23,421	—	—	—	—	—	—	—					
Waltham . . .	22,791	5	2	20.00	—	20.00	—	—					
North Adams . . .	21,583	7	6	57.12	—	57.12	—	—					
Chicopee . . .	18,316	16	11	43.75	—	43.75	—	—					
Medford . . .	17,190	7	2	42.84	14.28	28.56	—	—					
Newburyport . . .	15,036	8	2	25.00	—	12.50	—	—					
Melrose . . .	14,721	3	—	—	—	—	—	—					

Deaths reported 2,618; under five years of age 1,032; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 831, diarrheal diseases 410, consumption 272, acute lung diseases 143, typhoid fever 45, diphtheria and croup 44, whooping cough 26, cerebrospinal meningitis 11, scarlet fever 11, measles 11, erysipelas 3.
From whooping cough New York 11, Boston 4, Baltimore and

Springfield 2 each, Providence, Cambridge, Salem, Malden and Haverhill 1 each. From cerebrospinal meningitis New York 6, Worcester 2, Somerville, Springfield and Newton 1 each. From scarlet fever New York 4, Philadelphia 3, Boston 2, Baltimore and Worcester 1 each. From measles New York 5, Boston 2, New Bedford and Taunton 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending August 18th, the death rate was 19.5. Deaths reported 4,346; diarrhea 797, whooping cough 90, measles 62, diphtheria 59, fever 35, scarlet fever 18.

The death rates ranged from 12.7 in Bristol to 25.0 in Liverpool; Birmingham 20.6, Bradford 13.8, Cardiff 14.0, Gateshead 14.8, Hull 18.1, Leeds 20.9, London 19.4, Manchester 24.2, Newcastle-on-Tyne 23.1, Nottingham 18.5, Portsmouth 16.9, Salford 23.6, Sheffield 23.9, Sunderland 18.4, Swansea 16.8, West Ham 21.2.

METEOROLOGICAL RECORD.

For the week ending September 1st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.		
	Daily mean.		Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S. . . 26	29.97		85	97	73	75	72	74	W.	S.W.	5	10	C.	F.	
M. . . 27	29.95		79	87	71	66	55	60	N.	S.	3	6	F.	C.	
T. . . 28	29.95		72	76	64	70	82	79	N.E.	E.	9	5	F.	C.	12
W. . . 29	30.02		70	74	66	81	75	80	S.E.	S.	4	9	O.	C.	
T. . . 30	30.05		77	88	66	88	47	68	W.	W.	7	7	O.	C.	
F. . . 31	30.19		71	75	67	58	88	73	N.E.	E.	5	6	C.	O.	
S. . . 1	30.37		66	70	62	67	83	75	N.	E.	6	8	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

SOCIETY NOTICE.

THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. — The meeting of the association will be held at Atlanta, November 13th, 14th and 15th, under the presidency of Dr. A. M. Cartledge, of Louisville. Members of the medical profession are invited to attend.

RECENT DEATHS.

JOHN LANGDON SULLIVAN, M.D., M.M.S.S., of Malden, died September 5, 1900, aged seventy-three years.

BENJAMIN WEBBER BARTLETT, M.D., M.M.S.S., died in Rowley, August 6, 1900, aged fifty years.

WILLIAM S. WARD, M.D., one of the oldest and most prominent physicians of Newark, N. J., died on September 1st. He had been ill for more than two years in consequence of injuries received by being thrown to the ground from a trolley car. He was born on July 12, 1821, at Bloomfield, N. J., where his father practised medicine for nearly fifty years. He was graduated from Princeton College in 1841, and from the College of Physicians and Surgeons, New York, in 1849, and had passed his entire professional life in Newark.

BOOKS AND PAMPHLETS RECEIVED.

Abortion. By A. D. Wilkinson, M.D., Lincoln, Neb. Reprint. 1900.

Annual Report of the Health of the Imperial Navy for the Year 1897. Toyko.

Contributo alla sintomatologia della frattura di Colles. Pel Dr. Santi Rindone Lo Re. Napoli. 1900.

Observations on the Treatment of Epilepsy. By A. N. Williamson, M.D. New London, Conn. 1900.

Report of the Committee of the American Surgical Association on the Medico-Legal Relations of the X-rays. Reprint. 1900.

Some Points in the Management of Obstetric Cases in Private Practice. By Joseph Brown Cooke, M.D., New York. Reprint. 1900.

Charles Frederick Wiesenthal, Medicina Practiens, the Father of the Medical Profession of Baltimore. By Eugene F. Cordell, M.D. Reprint. 1900.

Original Articles.

TREATMENT OF POTTS'S DISEASE AFTER THE DEVELOPMENT OF THE DEFORMITY.¹

BY EDWARD H. BRADFORD, M.D., AND F. J. COTTON, M.D., BOSTON.

The treatment of Pott's disease after the deformity has been developed presents itself to the examiner in two aspects: (1) Treatment of the disease itself for the arrest and cure of a pathological process, and (2) the treatment of the deformity, that is, its correction or the prevention of its increase.

The first of these, the treatment of the disease itself, is a topic which has hitherto been much discussed, but upon which the surgical world is at present in accord. It is agreed that the spinal column should be fixed in such a position as to diminish or abolish intervertebral pressure at the point of disease until complete cicatrization has been established. This fixation should be as complete as is compatible



FIG. 1. SPECIMENS FROM THE WARREN MUSEUM.

with the exercise and fresh air so beneficial in promoting healthy metabolic changes and so counteracting the invasion of the tubercular process. This exercise, however, should be limited according to the urgency of the surgical indication of protection from injurious trauma of the diseased portion of the spinal column. In short, treatment consists in the proper fixation of the spinal column, either in a recumbent position in the acute stage, or with thorough fixation and ambulatory treatment in the subacute and convalescent stage, that is, as soon as the slight jar

¹ Presented by Dr. Bradford at the Thirteenth International Medical Congress, Paris, 1900.

unavoidable in locomotion is permissible without ill effect.

CORRECTION OF THE DEFORMITY.

In the examination of a number of spinal columns affected with Pott's disease it will be seen that there is considerable variation in the condition and in the

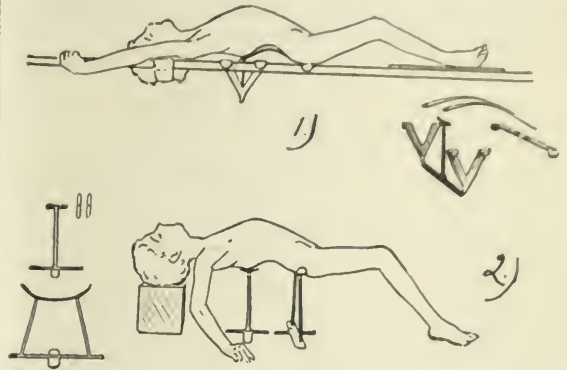


FIG. 2. METHODS OF CORRECTION.

(1) Metzger-Goldthwait apparatus; (2) simpler apparatus for producing hyperextension.

curves. In some instances the bodies are but slightly affected; in others the destruction is extensive. The curvature may in some instances not be great, owing to the resistance of unaffected bone tissue sufficiently strong to support the superimposed weight. If, however, the process continues unarrested, complete destruction of the vertebra, with falling forward of the column and an increased projection of the spines, results. If, on the other hand, a condensing osteitis is developed, a cure follows, with deformity. The deformity, as Ménard has shown, depends not only on the extent of the destruction of bony tissue, but also upon the portion of the spinal column affected, it being from static reasons greatest in the dorsal region.

Although attempts at correction of the deformity are as old as surgery, yet at no time have these been more actively considered than at present, thanks to the efforts of French surgeons. Formerly curvature was regarded as a condition not only not to be corrected, but a necessary result, indicating the establishment of a cure; at present, however, the kyphosis is looked upon more properly as an evil to be prevented or corrected if possible.

Since the publication of the recent French surgical writings on the subject, forcible correction has been attempted all over the surgical world, and the results

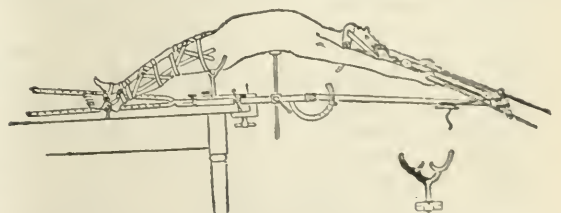


FIG. 3. DR. R. T. TAYLOR'S APPARATUS FOR CORRECTION.

obtained are worth careful consideration. The accompanying statement presents the statistics of for-

eible correction found in the literature on the subject:

Six hundred and thirty-nine cases were performed by thirty-four operators.² Time elapsed varied from a few days up to three years and more. Of the separate detailed cases in 7 more than one year had elapsed; in 35 more than six months.

Deaths reported from all causes, 25; various diseases, 5; general tuberculosis, 4; trauma of the operation and chloroform, 5; intercurrent disease, 7.

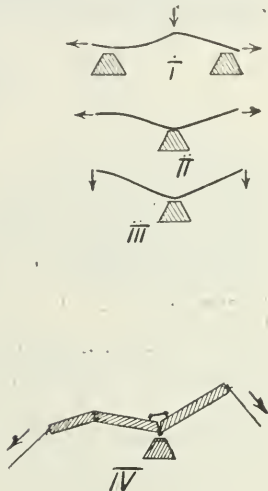


FIG. 4. DIAGRAMS ILLUSTRATING METHODS OF APPLYING FORCE.

I. With kyphos upward, traction in the long axis of the spine, support beneath the two ends, downward pressure on the knuckle. II. With the kyphos downward, resting on a point of support, traction in the long axis assisting the correcting influence of the weight of the two segments either side the supporting fulcrum. III. With the kyphos similarly placed, downward pressure at the opposite ends of the spine. IV. The apparatus used for experiment.

Immediate results: Respiratory embarrassment, 7; pain, 6; severe shock, 3.

Abscess present before operation, 19; ruptured, 4; benefited or absorbed, 6; appeared after operation, 2.

Paralysis present before operation, 23; relieved, 17; not relieved, 2; made worse, 1. Paralysis appeared after correction in 4.

Direct effect on deformity in 240 cases: Complete correction, 130; incomplete, 94.

Result in 77 cases: No relapse, 20; some relapse, 50; total relapse, 7.

Although it is irrational to place too much stress on statistics, yet from the figures here presented it appears that more force can be used with safety in the attempt at the correction of a kyphosis than was formerly considered possible (639 cases with but 5 deaths from the procedure itself). The amount of force to be employed with safety may be said to depend upon the amount of resistance and solidification of the affected bone. It is of course unsurgical to produce a severe trauma in tubercular bone in the process of a conservative cicatrization, but the rectification of a curve with the employment of comparatively slightly injurious force, as it diminishes the intervertebral pressure, is of benefit. The less force required in correction the more readily is the rectification to be undertaken. If force is needed to produce correction involving fracture of solidified tissue, the method is inapplicable. Osteotomy is also unadvisable. If a large gap is to be left, demanding too

great reparative power in the diseased tissue for the development of an ossifying osteitis, complete rectification is undesirable. If a considerable amount of caseous detritus lies in the concavity of the kyphosis, or if rectification would increase dangerously the pressure of the tubercular mass retained under a pleural or peritoneal wall, a correcting force should either not be applied or applied with great care and judgment. Existing paralysis of Pott's disease is sometimes relieved by correction. On the other hand, paralysis at times may be caused by forcible correction.

The accompanying drawings (Fig. 1) from specimens in the Warren Museum illustrate three stages in the development of the curve: (1) When the process is active and the curve flexible, permitting rectification; (2) when fusion of the posterior column has occurred with an unhealed gap; (3) where complete solidification and fusion and cure with deformity results.

Correction treatment is admissible in the first of the stages only.

When correction by force is undertaken several methods have been employed: (1) Vertical suspension from the head; (2) vertical suspension by the head and arms; (3) horizontal traction of the recumbent patient with the pull upon the head, arms and legs; (4) the same with downward pressure upon the projection and support at the neck and hips, the patient lying upon the face; (5) traction with the patient lying upon the back; (6) downward pressure upon the pelvis and upper portion of the trunk, with upward resistance at the back at the point of maximum projection, the patient lying upon the back, with or without traction to the head and feet; (7) the patient lying upon the back, with upward pressure by means of a strap passed under the patient at the point of greatest projection connected with a cord and pulley; (8) correction with the patient seated, the upper portion of the trunk being stretched backward while the point of projection is pressed forward at the knuckle and the pelvis secured by a strap.

These different modes involve the employment of two methods of application of force: one that of press-



FIG. 5. TRACINGS OF THE SPINES USED FOR EXPERIMENTS.

(1) Experiment No. 2, point of disease in lumbar region shown by cross; (2) same spine under traction; (3) same spine under slight anteroposterior force; (4) Experiment No. 4, below the cross marks the site of disease (without any knuckle). The cross above is at the artificial kyphos; (5) the corrected position of the artificial deformity.

ure, the other that of a pulling force. Experiments upon the cadaver show that the correcting force to be

² These figures are based on the statistics collected by Dr. R. H. Vose for the article by Drs. Bradford and Vose in the *Annals of Surgery*, vol. xvii, p. 223, 1899, the data from more recent reports being added.

preferred is that of pressure rather than traction, as the former is more precise in its effect upon the diseased tissue than a pulling force, which is partly expended upon the secondary curves. A pulling force involves an unnecessary strain upon the neck and on the lumbar region which, where an anesthetic is not used, causes pain not essential to correction. A pressure force may be made to act more directly and with less waste.

It can be said that the mode of application of a correcting force which is desirable varies necessarily according to circumstances, but that method is to be regarded the best by which the force applied can

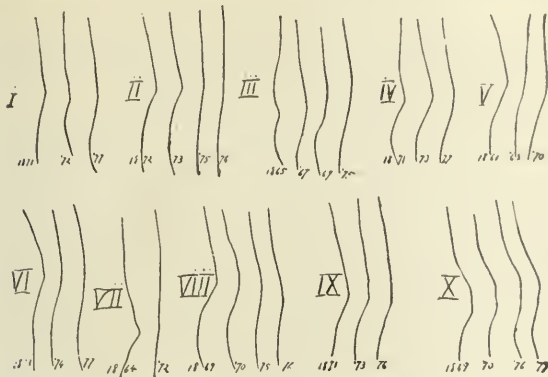


FIG. 6. TRACINGS SHOWING RESULTS OF BRACE TREATMENT AS CARRIED OUT BY DR. C. F. TAYLOR.

I. Two and three-quarters years, first and second lumbar disease, five years' treatment. II. Eight years, eleventh and twelfth dorsal, four years' treatment. III. Four years, first lumbar, ten years' treatment. IV. Three and one-half years, six years' treatment. V. Five years, twelfth dorsal, first and second lumbar, nine years' treatment. VI. Five and one-half years, sixth and eighth dorsal, four years' treatment. VII. About eighteen, dorsolumbar, eight years' treatment. VIII. Nine years, seventh to ninth dorsal, seven years' treatment. IX. Twenty years, five years' treatment. X. Ten years, eight years' treatment. (Dates are given with tracings, the age given is that at which treatment was begun.)

be more easily controlled by the surgeon and which can be employed with the least discomfort to the patient. That also is to be preferred in which the retaining jacket can be applied to a spine held in a corrected position with the least discomfort to the patient and the greatest facility to the surgeon. If no force is needed on the secondary curves or upon the neck, an anesthetic is often not needed to enable the surgeon to use as much correcting force as is desirable.

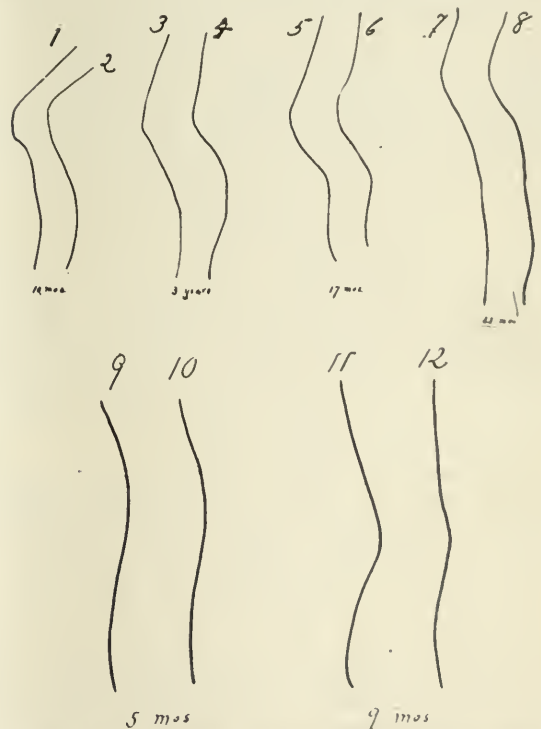
The difference in the effect of a pulling force from that of a correcting pressure force upon a distorted spine is demonstrated by the accompanying experiments:

EXPERIMENT I. The cadaver was of a five-year-old child, in whom death had occurred after Pott's disease of several years' duration, with abscess and amyloid. There was a marked lower mid-dorsal curve, involving two vertebrae, and an accumulation of pus under the quadratus lumborum of both sides, but more marked on the left. The curve was flexed and rounded. The abdomen was opened, all organs removed, and traction applied to the head and thighs. Pins were inserted into the bodies of the vertebrae adjacent to the point of disease at right angles to their long axis. During traction, the distance between the heads of these pins was measured. Under trac-

tion of great force, separation of half an inch was possible, the trunk being recumbent and the traction being in the same plane with the table on which the trunk was placed, with the face upward. If a support was placed underneath the projection, raising it, and a slight downward pressure applied (without traction) at the shoulders and hips, a separation of an inch was easily obtained.

EXPERIMENT II. Specimen at the Harvard Medical School: An adult spine with destructive disease of the third lumbar vertebra; moderate sized knuckle, but not much deviation in the axis of the vertebral bodies (see Tracing 1, Fig. 5). With the dorsum upward, a pull in the axis of the spine of about 150 pounds failed to correct the deformity or to do more than stretch some of the adhesions. On laying the spine with the dorsum down, however, and fixing the portion below the knuckle on the table, downward pressure applied at the upper end of the spine began to be effective with a force of 30 pounds, and an entire abolition of the kyphosis was possible with but little more force. After the adhesions had thus been ruptured, a direct pull in the axis of the spine was again tried; even with much force the best attainable correction was that shown in Tracing 2, while a few pounds of downward pressure at the upper end (the spine being supported with the back down) sufficed for complete correction or even reversal of the deformity (Tracing 3).

EXPERIMENT III. Specimen at the Harvard Medical School: This, like the previous specimen, was an adult spine, with an unhealed destructive disease



FIGS. 7 and 8. RESULTS OF HYPEREXTENSION TREATMENT (GOLDTHWAIT).

- (1) At beginning of treatment; (2) ten months later.
- (3) At beginning of treatment; (4) same three years later.
- (5) At beginning of treatment; (6) seventeen months later.
- (7) At beginning of treatment; (8) seventeen months later.
- (9) At beginning of treatment; (10) same five months later.
- (11) At beginning of treatment; (12) same after nine months.

of the third lumbar vertebral body. Here, however, the deformity was very slight (see Tracing 5). Traction in the axis of the spine had practically no effect on the deformity even when great force was applied. On supporting the knuckle from below, however, the mere weight of the upper segment of the spine sufficed to open up a considerable gap at the point of the disease, and a very slight downward pressure at the cervical region brought the spine into an approximately normal correction.

EXPERIMENT IV. The same spine was taken to produce an artificial kyphosis; parts of the bodies of the eighth and ninth dorsal vertebrae were chiselled away and the spine bent into a marked kyphosis (see

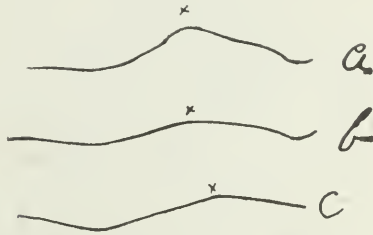


FIG. 9. TRACINGS OF A CASE OF FORCIBLE REDUCTION (PECKHAM). (a) Tracing (from profile photograph) before reduction; (b) similar tracing after reduction under ether; (c) direct tracing two and one-half years after reduction. Patient seven years old.

Tracing 4). Staples were then driven in, as the pins were in Experiment I, and between these staples strong rubber bands were stretched. By measuring the length of these bands under the different manipulations, and ascertaining the direct force necessary to stretch them to like length when unstrung from the staples, it was possible to obtain an approximate estimate of the direct disrupting force developed by the different methods of correction. Reduction of the deformity to the line shown in Tracing 5 was found to correspond to a stretching pull at this point of 9 pounds. To develop such a disrupting force by traction in the axis of the spine required a traction of 21 pounds. A 16-pound pull corrected the spine to a tolerably good position only. With the spine steadied by slight traction (the dorsum still upward) a downward pressure of 4 pounds at the knuckle was enough to accomplish a like correction. With the dorsum downward, on the other hand, with the knuckle supported and the lower spinal segment fixed, a downward pressure at the upper end of the spine of but $\frac{1}{2}$ to 1 pound sufficed for full correction.

EXPERIMENT V. The conditions of the last experiment were approximately reproduced in a wooden model (see Diagram IV, Fig. 4) similarly provided with staples and rubber bands; in this case full correction corresponded to a disrupting force of 12 pounds, as measured by the stretching of the rubber bands. To accomplish this by direct pull from end to end required a traction of 20 pounds. With the ends steadied, dorsum up, required a downward pressure at the angle of 3 pounds. With the knuckle and the lower segment supported, and the dorsum downward, a little less than 1 pound sufficed for full straightening.

Anteroposterior pressure corrective force of the type of the Metzger-Goldthwait appliance appears to meet the necessary conditions for correction and application of the bandage more precisely than Calot's method, as the correcting force can be accurately es-

timated by the surgeon and there is less wasted on the secondary curve.

In all methods difficulty is met in preventing an exaggeration of the lumbar curve. Traction is the most efficient way of preventing this, but flexion of the thigh (if the Metzger-Goldthwait apparatus is employed) can also be used to advantage. An advantage will be found in the dorsal over the abdominal recumbent position in a greater facility in the application of the bandage in the front, the position which most needs staying. The pressure plates (padded aluminum plates) can be left in the jacket, or flat steel rods can be used and drawn down and out after the plaster has hardened.

REPAIR AFTER CORRECTION.

After correction it is necessary to retain the spine in a corrected position until the gap made in correction is repaired or supported by ankylosis.

The reformation of bone may, under favorable circumstances, be rapid and considerable. For instance, in a case of Dr. E. H. Nichols, of Boston, where a third of the humeral shaft had been removed subperiosteally, after extensive osteomyelitis, a solid new shaft formed within nine months. A case reported by Dr. H. W. Cushing, of Boston, showed reformation of the tibial shaft (after excision for osteomyelitis) in nine months. Formation of new bone in the spine may be similarly rapid after fractures. Wagner and Stolper report autopsies (with plates) showing firm callus uniting fractured vertebral bodies at ten, eight and four months, eight weeks and even six weeks after the injury.

It does not follow, however, that such repair occurs after the forcible separation of diseased vertebrae. There is really no evidence that such gaps are ever filled up with bone. Ménard's investigations tend to show that the formation of new bone by the periosteum (shown to be essential to firm repair in fracture) is in most cases scanty and late. Drehmann has

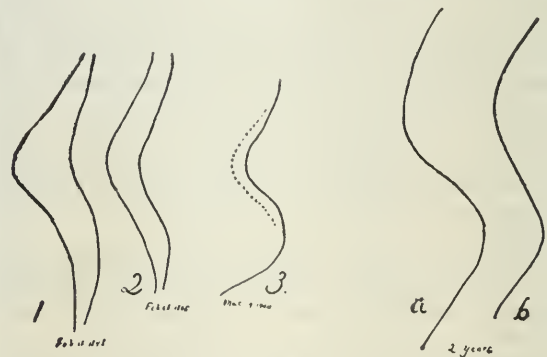


FIG. 10. TRACINGS OF TWO CASES OF FORCIBLE CORRECTION (GOLDTHWAIT).

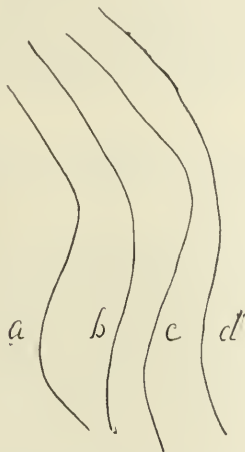
I. (1) Tracings before and after the first correction under ether; (2) tracings before and after the second correction, ten days from the first; (3) tracings two years later; the dotted line shows the first tracing of Fig. 1; the relapse of the deformity is seen to be almost complete. II. (a) Tracing before correction; (b) tracing two years later.

studied 47 specimens and comes to similar conclusions.

A study of 21 specimens in the Warren Museum in Boston shows in the more recent cases (numbering 10) only slight repair of any sort. Locking of the vertebral bodies by the progressing deformity is usual and in some cases there is partial fusion of the sur-

faces of the vertebral bodies where these come in contact, but there is no formation of new bone in mass. The older specimens show more extensive fusion, in some cases ankylosis of the posterior column, with or without a considerable new formation of bone in this region, but only 6 of the 11 show periosteal new bone at the seat of the disease itself.

Of these 6, 1 is a long-healed kyphosis dating back forty-three years before death. This had healed by fusion of the vertebral bodies, and the considerable masses of periosteal bone evidently belong to an ankylosing osteo-arthritis not limited to the seat of the



FIGS. 11, 12 and 13. TRACINGS IN THREE CASES OF FORCIBLE CORRECTION (GIBNEY).

FIG. 11. (a) Before correction; (b) at four and one-half months; (c) at five months; (d) at fifteen months.

old tubercular disease. A second similar specimen is evidently a long-healed process. The other 4 specimens show periosteal bone formation in small amount supplementing a firm fusion. The tubercular disease in these 4 cases dated back nineteen, fourteen, ten and six years, respectively, before death.

The specimens brought forward in argument by Calot, Krause of Altona, Gayet and others apparently date back as do these to long-healed tubercular disease. The conclusion is inevitable that formation of new bone in mass from the vertebral bodies is not the usual method of repair in Pott's disease, and that such formation only occurs after years, if at all.

As to direct evidence of cases examined after forcible correction, the autopsies reported by Malherbe, Murray (2), Sherman, Brann, Krause and Anders (4), all fail to show any evidence of new growth of bone. The skiagraphic illustrations do not seem to have proved any such new formation. Calot's drawings from radiographs are certainly not convincing.

RETENTION AFTER CORRECTION.

It is manifest that a retention appliance is as important as the correction itself, and it is necessary that careful fixation in a corrected position should be carried out for a long period. How long this period is is a question not yet definitely determined, but it is manifest that the time of the cure claimed by some surgeons is much too short.

It is evident that in small children with short spines and also in high curves adequate retention is impossible and a certain amount of relapse of the cor-

rected curve is therefore unavoidable in many cases.

Unremovable plaster jackets form the most feasible means of immediate fixation, accompanied at first with recumbency which removes the superimposed weight, but as recumbency is incompatible with the healthy condition necessary for repair, the patient should, as soon as possible, be allowed locomotion.³

ARREST OF THE DEVELOPMENT OF THE CURVE.

Where correction is not possible for various reasons, either on account of the situation of the curve or on account of the pathological condition, the treatment by fixation of the trunk with appliances is to be employed with the hope of arresting the development of the curve. The retention of the spinal column in the best possible position is therefore always important even if correction has been attempted. Where fixation treatment is neglected, even if satisfactory correction has been attained, a relapse of the curve will follow.

Preventing an increase of the curve by mechanical means involves a great deal of care and attention to detail, more than is usually possible in large hospital clinics. Increase of curve, therefore, can be checked by a treatment of rectification, using repeatedly the methods of application employed in forcible correction, but with the use of but little force. This constitutes, with proper retention measures, a rational means of treatment in Pott's disease applicable to a large number of cases, but necessary for a long period of time.

What can be accomplished by purely mechanical treatment applied with great care thoroughly for a long period is indicated by the accompanying tracings (see Fig. 6).

The results here shown, obtained through the courtesy of Dr. H. L. Taylor, indicate an unusual degree of success in the practice of the late Dr. C. F. Taylor, of New York. One of the writers had the opportunity to personally examine the cases to verify the



FIG. 12. (a) Before operation; (b) under traction at operation; (c) on removal of jacket fifteen days after operation.

accuracy of the records and later tracings. The treatment was entirely ambulatory in the convalescent stages, and consisted of the most thorough mechanical

³ A description of the variety of effective removable appliances which have been and are employed as convalescent devices would involve a greater amount of space than is allotted to this discussion. Reference is therefore made to the various handbooks on orthopedic surgery.

anteroposterior support carried out persistently through years. In a few cases actual improvement in the curve was observed after years of treatment, as has been shown also by Dr. H. L. Taylor in the *Transactions of the American Orthopedic Association*. In some an increase in the curve resulted; in most, however,

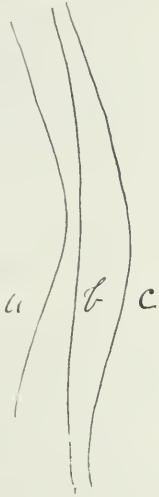


FIG. 13. (a) Before operation; (b) after operation; (c) one month later.

the progress of the curve was relatively slight, often none.

The tracings here presented are selected from a large number as being the most illustrative.

CHECK OF THE LATER INCREASE OF THE CURVE.

After the tubercular process in the spinal column is arrested, and complete bony anchylosis has occurred, and the cure established in a growing child, it will sometimes be found that an increase in the curve may take place in the course of the growth of the child, which is due not to a continuation of the tubercular process, but to a change in the shape of the vertebrae caused by the abnormal direction of superimposed pressure, as rachitic curves in growing children may increase in the long bones, even after the rachitic process itself is arrested. The extent of these secondary curves and their development depend upon



FIG. 14. TRACINGS OF A CASE THROUGH FOUR YEARS, SHOWING THE NATURAL TENDENCY TO INCREASE WHERE TREATMENT IS NOT CAREFULLY FOLLOWED OUT.

the rate of growth of the child and the amount of superimposed weight rather than upon a condition

of osteitis. In order to check this distorted growth it is found necessary to continue the use of supporting appliances longer than the pathological condition would seem to demand. In cases of this sort it is possible to check the increase of the curve only by the use of such appliances as will maintain the proper position.

OPERATIVE MEASURES.

It has been shown that the main support in the diseased spinal column is in the articular processes. Where these are welded together in connection with an anchylosis of the transverse and spinous processes, nature has furnished the most desirable support to a spinal column with diseased vertebral bodies. Attempts to promote solidification of these tissues naturally suggest themselves, but these can hardly as yet be said to present an established method of treatment.

The question of laminectomy for paralysis, as well as that of operative treatment for abscesses or vertebral sequestra, are not considered as coming within the scope of this report.

It may be said in conclusion that the correction or rectification of the curve in Pott's disease is to be considered in every case of active disease with a deformity. The employment of force should depend on the pathological conditions and not on the extent of the curve. Force should be used with great reserve. Improvement of the curve is to be considered in every case, and is to be attempted wherever the spinal column can be made straighter without great force. The main dependence, however, for an ultimate success remains in the surgeon's careful, continued, and thorough employment of retention appliances which hold the spine in the straightest possible position for a sufficient length of time for consolidation of the diseased bony structures. Success is to be won more by careful attention to detail than by an operative attempt.

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JOSEPH W. ENGLAND'S FAT-FREE TINCTURE OF DIGITALIS.¹

BY ELBRIDGE G. CUTLER, M.D., BOSTON.

In July, 1899, my attention was called to tincture of fat-free digitalis by Mr. Edward S. Kelley, of the firm of Kelley & Durkee, of Boston. This is a preparation devised by Joseph W. England, chief druggist of the Philadelphia Hospital, Philadelphia, to meet the serious drawback of bulk in the use of the infusion of digitalis when large doses are required to secure the desired needs of action on the heart and kidneys.

Mr. England, in 1892,² presented a paper to the Pennsylvania Pharmaceutical Association on the subject of infusion of digitalis. In discussing the subject of digitalis leaf, he said that the term digitalin had been given to a variety of products, but was generally reserved for the compound obtained by Schmiedeberg in 1875. He found that the commercial digitalins, whether crystalline or amorphous, were varying mixtures of Schmiedeberg's digitalin, digitoxin, digitonin, digitalein, and certain decomposition products. Of these, all except digitoxin were believed to be glucosides. Neglecting the decomposition products, these principles could be grouped best into two classes according to solubility: (1) Those soluble in alcohol and insoluble or almost insoluble in water; (2) those soluble in both water and alcohol. Digitalin and digitoxin would be assigned to the first class, and digitonin and digitalein to the second class, the tincture and fluid extract containing most largely digitalin and digitoxin, with some digitonin and digitalein, while the infusion contained digitonin and digitalein with no digitalin or digitoxin. Hence the difference in clinical value between the aqueous and alcoholic preparations of digitalis leaves. Mr. England spoke of the superior therapeutic worth of English over German leaves and this was ascribed to the fact of the English leaves being carefully freed from nerves and stalks (which had been shown to contain only one-fifth as much digitalin as the leaf parenchyma), thereby reducing the element of variation to a minimum. Since 1892, however, Mr. England (through personal advices from London) found that much of the so-called English leaves are simply very carefully sifted German leaves, and not English cultivated leaves, as was supposed. He also called attention to the fact that the freshly made infusion was feebly acid in reaction, while the tincture gave the acid action more promptly, owing, as he thought, to a greater solubility of the acids of the leaf in alcohol and the presence of a larger quantity in solution. The acids present in digitalis leaves are the odorous antirrhinic acid of Morin (1845) and the fatty digitoleic acid of Kosmann. The percentage of fixed oil obtained by petroleum benzine extraction and spontaneous evaporation was relatively high. In 1887 he obtained about 5%. The oil contained a volatile portion and a fixed oil. It was a dark reddish-brown liquid of heavy, persistently narcotic odor, largely soluble in alcohol, freely soluble in ether or chloroform and not readily inflammable, showing the absence of any trace of petroleum benzine. It left a permanently greasy stain on bibulous paper. Its specific gravity was about .850. Heated for eight hours it lost 5.4%, and also

¹ Read before the Clinical Section of the Suffolk District Medical Society, March 21, 1900.

² American Journal of Pharmacy, July, 1899, pp. 332-344.

lost its peculiar narcotic odor, becoming more fatty, thus indicating the loss of a volatile portion.

Tincture of digitalis, when given any way, sometimes causes profound gastric disturbance, even nausea and vomiting. Mr. England, believing that possibly this might be due in part, if not wholly, to the fixed oil in the leaf and its free acid, prepared some years ago a so-called fat-free tincture in which these two principles were eliminated.

For the past five years the tincture of fat-free digitalis made by Mr. Joseph W. England, to replace the official tincture, has been used in the wards of the Philadelphia Hospital. Dr. Daniel E. Hughes, chief resident physician of the Philadelphia Hospital, makes the following clinical statement to Mr. England, and it is printed in this paper:

"The vast majority of the cardiac and nephritic patients coming to the Philadelphia Hospital have had as a marked and subordinate complication chronic gastric catarrh, and could not stand the administration of the official digitalis tincture, but could take our more bulky infusion. To secure the desired cardiac and nephritic action of this valuable drug required large doses of the infusion, which was a very serious drawback to its use. Mr. England's attention was called to the subject, and he suggested that he might be able to prepare a tincture of digitalis of the same strength as the official preparation, but devoid of the nauseating proximate principles of the latter. He prepared his preparation, and we submitted it to extended employment. After the continued use of this particular preparation of digitalis I can speak of its efficiency and non-nauseating properties. I am confident that it is much more promptly absorbed than the official tincture and this makes the cumulative action of this drug almost, if not altogether, *nil*. Again, more prompt absorption is shown by its quicker action upon the heart, and increase in the flow of the urine.

"The non-irritating properties of this special tincture of digitalis are forcibly shown by its hypodermic use, abscesses having never followed its use, while the official tincture almost invariably causes pain, swelling and abscess formation from hypodermic use."

Mr. England makes his fat-free tincture of digitalis by exhausting the leaves while freshly ground to a No. 60 powder with purified petroleum benzine, either by maceration with solvent in excess for forty-eight hours, if in small quantities, or by maceration and subsequent percolation, if in large quantity, repeating the solvent treatment until all the fat, etc., is removed. The residue is then dried by exposure to air, taking care that no particle of benzine odor remains. While benzine is very volatile, the last portions of it volatilize rather slowly relatively when spontaneously evaporated, especially if adherent to vegetable structure. Exposure of the residue to sunlight, as well as to open air, he says yields the best results.

After the benzine treatment, the dried and powdered leaves are made into a tincture according to the process for the official product, 150 grammes of leaves being used to make 1,000 cubic centimetres with dilute alcohol, with this difference that the reservoir is removed when the total percolation amounts to 980 cubic centimetres, and it is then carefully neutralized with a sufficient quantity (about 10 or 15 cubic centimetres) of the official 10% ammonia water, and the

product is made to measure 1,000 cubic centimetres with fresh percolate or diluted alcohol, or, as he gives it, with the usual weights and measures 1,094 grains of the powdered leaves may be exhausted with dilute alcohol to yield 15½ fluid ounces, and then about 1 or 2 fluid drachms of 10% ammonia water will be required to effect neutralization, after which sufficient percolate or diluted alcohol should be added to make the whole product measure 1 pint. After standing for twenty-four hours the newly made tincture usually precipitates some coloring matter, etc., which should be removed by filtration through paper.

The product as finally obtained is a deep, reddish-brown, almost black, liquid, keeping perfectly for years, of not unpleasant odor and a pure bitter taste. It does not have the acrid odor or taste of the official tincture and, unlike the latter, does not become turbid on admixture with water, but remains transparent with any amount of dilution.

The purposes of this procedure are two-fold: (1) The benzine treatment removes the fat and probably all the nauseating odorous principles; (2) the ammonia treatment neutralizes the free acids present in the leaf, forming the ammonium salts.

It does more than this. The neutralization with ammonia makes all the proximate principles in the tincture water-soluble and not partly so as in the official product. (When the official product is diluted with water, it precipitates.) This is especially valuable for the reason that all compounds before absorption by tissues must first be made soluble before they can be absorbed. By this means absorption is facilitated and assimilation is hastened, as will be shown by pharmacological results later.

"When the fat-free tincture was first made, the object was to obtain a preparation which would not nauseate, and clinical results in the Philadelphia Hospital have shown that this end is very generally accomplished. A short time ago, however, an even more valuable feature of the fat-free tincture became evident. This was the *rapidity* with which the preparation was absorbed and assimilated in comparison with the official product. Observations were then made to determine clinically the relative rapidity with which the fat-free tincture and the official tincture were each absorbed, noting, (1) the time of primary effect; (2) the time of maximum effect; and (3) the pulse reduction or work, both in male and female patients and both hypodermically and by the mouth."

This work was performed by Mr. England with the assistance of Dr. F. A. Sherrer. Great care was exercised in obtaining patients in whom the physical conditions were as nearly uniform as possible, so that comparative results could be had. The cases chosen were mostly rheumatic with endocarditis. Patients were given the tinctures three hours after meals, when the stomach was practically empty, the fat-free tincture one day, the official the next. No food or water was taken during the time of administration. The beginning of each administration was so timed that there was no serious difference between the rate of pulse beats when the giving of each preparation was commenced. At most the primary time was never more than 6 beats. It is obvious that if a heart is beating almost normally one day when one tincture is given, and is beating tumultuously the next day when another tincture is used, that uniform conditions do not exist, and comparative results can-

not be had. The next essential is rest in bed and perfect quiet. No sphygmographic tracings were made to determine the rapidity of absorption and action more accurately, but the preliminary trials made by the mouth showed that primary effects were obtained with fat-free tincture in about fifteen minutes, and primary effects with the official tincture in about thirty minutes. The tinctures were both made from Allen's digitalis leaves. The fat-free tincture was made in January, 1898, the official in September, 1898. The following are some of the results which were obtained:

CASE I. Male patient; tinctures given by mouth; doses, 10 minims.

Fat-free tincture. March 29, 1899.		Official tincture. March 30, 1899.	
Pulse.	Time.	Pulse.	Pulse.
90	3.45 P. M.	86	
88	4.00 "	86	
88	4.15 "	82	
86	4.30 "	82	
84	4.45 "	80	
82	5.00 "	80	

Fat-free tincture.—Primary effect in fifteen minutes, full effect in seventy-five minutes; pulse reduction or work, 8 beats.

Official tincture.—Primary effect in thirty minutes, full effect in sixty minutes; pulse reduction or work, 6 beats.

CASE II. Male patient; tinctures given by mouth; doses, 10 minims.

Fat-free tincture. April 1, 1899.		Official tincture. April 2, 1899.	
Pulse.	Time.	Pulse.	Pulse.
78	3.45 P. M.	80	
74	4.00 "	80	
73	4.15 "	78	
72	4.30 "	76	
71	4.45 "	73	
71	5.00 "	72	

Fat-free tincture.—Primary effect in fifteen minutes, full effect in sixty minutes; pulse reduction or work, 7 beats.

Official tincture.—Primary effect in thirty minutes, full effect in seventy-five minutes; pulse reduction or work, 8 beats.

CASE VI. Male patient; tinctures given hypodermically; doses, 10 minims. Same patient as Case II.

Fat-free tincture. April 17, 1899.		Official tincture. April 18, 1899.	
Pulse.	Time.	Pulse.	Pulse.
58	9.30 A. M.	54	
54	9.45 "	54	
47	10.00 "	50	
46	10.15 "	50	
46	10.30 "	49	
48	10.45 "	51	
48	11.00 "	52	

Fat-free tincture.—Primary effect in fifteen minutes, full effect in forty-five minutes; pulse reduction, or work, 12 beats.

Official tincture.—Primary effect in thirty minutes, full effect in sixty minutes; pulse reduction, or work, 5 beats.

CASE IX. Male patient; tinctures given by mouth; doses, 10 minims.

Fat-free tincture. May 20, 1899.		Official tincture. May 21, 1899.	
Pulse.	Time.	Pulse.	Pulse.
54	10.00 A. M.	54	
48	10.15 "	52	
48	10.30 "	48	
46	10.45 "	48	
46	11.00 "	44 asleep.	
50	11.15 "	44	
52	11.30 "	46	

Fat-free tincture.—Primary effect in fifteen minutes, full effect in forty-five minutes; pulse reduction, 8 beats.

Official tincture.—Primary effect in fifteen minutes, full effect in sixty minutes; pulse reduction, 10 beats.

This is the only case in which primary effect took place in fifteen minutes with the official tincture; as the patient was in an especially quiescent state preparatory to sleeping, the tincture had less work to do than usual, and did it more quickly. The marked reduction of pulse beats is due to the same cause.

In all there were 15 cases examined. The following is a summary of results:

SUMMARY OF RESULTS.

Case.	FAT-FREE TINCTURE.			OFFICIAL TINCTURE.		
	First effect, minutes.	Full effect, minutes.	Work, or beats reduced.	First effect, minutes.	Full effect, minutes.	Work, or beats reduced.
1	15	75	8	30	60	6
2	15	60	7	30	75	8
3	15	60	5	30	90	5
4	15	45	8	30	75	6
5	15	45	6	30	60	5
6 h.	15	45	12	30	60	5
7 h.	15	45	10	30	60	6
8 h.	15	45	8	30	60	8
9	15	45	8	15 l.	60	10
10	15	30	6	30	30	2
11	15	—	9	30	105	9
12	15	45	6	30	60	8
13	15	45	10	30	45	6
14	15	45	3	45	105	6
15	15	60	8	45	45	4
Averages.	15	49	76	31	66	64

h. hypodermic cases; others, by mouth.
l. exceptional case, explained in text.

Twelve of the above patients were male, 3 female. In 12 of the cases the tinctures were given by mouth, 3 hypodermically. Mr. England arrives at the following conclusions: Of these results it may be said that practically the primary effects of the fat-free tincture were manifested in fifteen minutes, and the maximum in forty-five minutes; while with the official tincture primary effects were obtained in thirty minutes and the maximum in sixty minutes. In both cases, however, the duration of effect was the same, thirty minutes. The pulse reduction, or work, was slightly greater with the fat-free than with the official. The most striking difference, however, exhibited between the fat-free tincture and the official tincture was the *much greater rapidity of absorption* and action of the former, showing a speedy assimilation. The time element of direct action is a very important matter in some cases and might readily mean the difference between the life and death of a patient. No especial difference in the time of absorption between hypodermic injections and mouth administrations was observable, but when the tincture was given hypodermically the pulse reduction seems to have been greater with the fat-free tincture, though not extending over any greater length of time.

The short abstract of Mr. England's paper shown me by Mr. Kelley in one of the pharmaceutical journals was so convincing, coming as it did from such an authority, that I was eager to try the preparation, and

Mr. Kelley very kindly placed some of it at my disposal in a few days. This was early in August or late in July, 1899. The first patient to try it was a man of seventy odd, who had been a sufferer from cardiac disease for several years. Of late he had had broken compensation, shown by ascites and great edema of the legs, shortness of breath on exertion, frequent attacks of dyspnea, both by day and night, the latter especially severe, considerable cough, abundant expectoration, passive congestion of liver and spleen as shown by their great enlargement on palpation and percussion, passive congestion of the kidneys and digestive tract. He had no appetite, suffered from gastric oppression and distention after food, and felt generally miserable. He could only take the official tincture of digitalis in small doses for two days at a time with a week's respite, as it had been used for several years, and had frequently been pushed to its full limit of tolerance. Trial of the infusion was equally ineffectual because of the large dose and nauseating character of the preparation. From the very first dose the fat-free tincture agreed with the patient and he has been taking it uninterruptedly to the present time.

In another case where the official tincture of digitalis could not be used at all except for two days at a time, and where the drug was grievously needed, I have been enabled to give the fat-free form three times a day from the time I first began it in August till the present time, with the very best results. This patient was unable to endure even the smell of the ordinary preparation, although to my senses there was little difference in their odors. I have not used the preparation in the Massachusetts General Hospital sufficiently long (only since March 1st) to obtain any new ideas in regard to its action, but my experience of the past seven months has been confirmed with reference to its usefulness. This tincture does not do more than the official tincture will do, but it will not produce nausea or disturbance of the digestion as the latter may and frequently does do. In my experience it fills a place which is a very important one in practice, and I bring forward Mr. England's paper with the hope that the profession will be induced to make a trial of the preparation so as to see if the experience which has been recorded is correct, as seems to be the case now.

KNEE-JOINT SURGERY FOR NON-TUBERCULAR CONDITIONS.¹

A REPORT OF THIRTY-EIGHT OPERATIONS FOR SYNOVIAL FRINGES, INJURED SEMILUNAR CARTILAGE, LOOSE CARTILAGE, COAGULA, EXPLORATORY INCISION, ETC.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

In presenting this subject it is my hope that from a study of the cases and in the general discussion something may be added to our knowledge of joint surgery. The cases which are presented are those in which the knee joint has been freely opened, either for diagnosis or to render the function of the joint more perfect. The cases in which operations have been performed which would tend to lessen the

normal use of the joint, such as excision or erosion, are excluded, as are also all cases in which the operation has been performed as a part of the treatment of the septic or suppurative processes. All of the cases included in this series were at the time of the operation sterile, so far as the condition of the joint was concerned. In all the knee was the joint operated upon, but while this joint must, from its size and anatomical structure, more often require such treatment than the others, nevertheless the same principles apply to any of the other articulations.

The age of the patients varied from four to sixty-five years, and this fact seemed to be of about the same importance as in other operations.

There is, as you all know, a popular impression that for some reason it is more dangerous to open the large joints than any of the other large cavities, and while this impression is less commonly held than formerly, yet even now because of it operations are refused and patients are condemned to long courses of non-operative treatment, which frequently is not only inconvenient, but may disturb to an irremediable degree the normal character of the joint structures. The reason of this fear is undoubtedly very largely due to the serious results which attended such operations in the pre-antiseptic days, and the statements which are to be found in the textbooks of those days have to a considerable degree influenced the writings of the more recent times. That opening a joint is more feared by the average surgeon than opening the cranium or the abdomen is partly due to these traditions, and is similar to the fear formerly felt in regard to these very operations which are now performed so commonly and so successfully. Similar changes will undoubtedly take place in joint surgery as it becomes more common and better understood, and the occasional unfortunate result will be easily overlooked in the great general good which will result from such work.

It is my personal feeling that there is no more danger in opening the knee or any of the other large joints than in opening the peritoneum. Neither operation should be performed carelessly or without due preparation, but in case the symptoms cannot be relieved in any other way, there should be no hesitation in resorting to the operation. To go still further, if there is any question as to the diagnosis, and the doubt means otherwise a long period of inactivity, with the danger of destructive changes taking place which could be prevented, there should be no hesitation in opening the joint to determine the exact nature of the disease, so that proper treatment can be prescribed. It is practically impossible at times to differentiate between some of the beginning rheumatoid diseases and tuberculosis in the same stage, and yet it is at this very time that it is of the utmost importance to know the exact nature, as the treatment of the two conditions is so radically unlike, and if sufficient time is allowed to elapse for the diagnosis to become clear, the disease is so far advanced that nothing more than imperfect results can be obtained.

In children this question of doubt does not so often arise, as at this time of life the majority of subacute or chronic joint affections are tubercular, and as in these tubercular cases early operative interference is so rarely indicated, the exploratory incision is less often necessary. In adults, however, where the non-

¹ Read at a meeting of the Surgical Section of the Suffolk District Medical Society, and at the meeting of the American Orthopedic Association, held in Washington, May 1, 2 and 3, 1900.

tubercular chronic joint affections are in the majority and as even in the tubercular cases early operation is so much more often the best treatment, there should not, it seems to me, be the least hesitation in determining through the exploratory incision the exact nature of the disease if it is not possible in other ways.

This, I am aware, is an opinion not as yet held by many surgeons, whether in general surgery or in the special branch which constitutes our specialty, but it is an opinion which becomes stronger each year as the results are observed under the different methods, and I have not the slightest hesitation in urging its general adoption. As an illustration showing how impossible it is to differentiate between these different diseases, it has been my fortune during the past year to see one of the most hopeless, helpless cripples from rheumatoid arthritis that I have ever seen. This patient was treated for nearly two years by one of our best orthopedic surgeons for tuberculosis of the knees, first one showing the symptoms and then the other, and not until the other joints gave out was the real nature of the disease recognized. This is mentioned not in criticism, but to show how difficult it is to differentiate in many of these cases, even by those who are specially trained; and also to emphasize the importance of early diagnosis, as I feel convinced, from seeing a large number of these cases in the different stages, that if the exact nature of the disease in this case could have been known in the very beginning the result would have been very different. It is because of this great risk which is run by waiting in these doubtful cases that the exploratory incision is so strongly urged. In my own work before this procedure was adopted there was the same uncertainty, and cases which were supposed to be one disease proved to be another, and harm resulted at times from too little treatment and at other times from too much. In determining the exact nature of the disease with the joint open it has been found necessary to depend more upon the microscopic examination than upon the macroscopic appearance, as more than once a condition which was supposed to be non-tubercular has revealed the characteristic lesions of that disease in the microscopic preparation, and vice versa.

Of the cases which are reported there are 32 patients and 38 operations. In 5 cases both knees were operated upon; in 1 case, with displacement of the semilunar cartilage, a second operation was necessary. Of the 38 operations, 1 was for the removal of several loose pieces of cartilage. This patient was a woman of sixty-five, and the only point of special interest is the origin of the loose pieces. Three pieces, as large as hickory nuts, were removed, and were without question some of the osteo-arthritis nodes which formed a ridge at the edge of the cartilage of the femur, these, because of their size, having been broken off at some time in the joint motion.

Two of the operations were performed upon a case of irreducible dislocation of the patella of many years' duration, in which very extensive plastic operations were necessary to hold the bones in place and restore the function of the joint. This case has been previously reported,² and is here mentioned to show what extensive operations can be performed upon the knees without interfering with the normal

function of the joint. In both knees it was necessary to leave a gap in the capsule of the joint on the outer side fully an inch and a half wide and several inches long. This was closed only by the skin and superficial tissue, and yet one joint is normal in its function, and in the other there is only some limitation of extreme flexion.

In 1 case the exploratory incision revealed a beginning osteosarcoma. In 1 case the operation showed the symptoms to be due to osteo-arthritis nodes. In 5 cases the nature of the disease by incision was shown to be tubercular and appropriate treatment was prescribed. The incision did not change the course of the disease, but that which up to that time had been uncertain as to diagnosis was made clear.

Semilunar cartilage.—Nine of the operations were for the relief of symptoms produced by injury or displacement of the semilunar cartilage. In all of these cases conservative treatment had been thoroughly tried without success for various lengths of time, and the operation was performed as a radical cure. These cases have been of considerable interest especially as contrasted with the cases which have been treated without operation, and a more careful study may not be unprofitable.

All of the patients were young, and with one exception were young men. In all the inner segment of the cartilage was the portion affected, but the cause of the original trouble varied. In some there was severe injury, while in several nothing more than turning quickly or going up stairs was the explanation. The cases which have been brought on by such simple movements have all had lax joints, and the pinching or tearing of the cartilage has undoubtedly resulted from the unnaturally free motion. In a closely "knit" joint, with firm ligaments, apparently considerable force is necessary to make the motion possible that will bring about this result.

The lesion which has been present in these cases has not been, as I had expected, a dislocation of the cartilage due to rupture of the ligament which held it in place, but a crushing and laceration of the cartilage at some point with or without a rupture of the ligaments. In 4 of the cases the ligaments were intact at the time of the operation, the lesion being a crush or tear of the inner edge of the cartilage. In 2 of the cases there was a tear one-quarter of an inch long into the cartilage from the inner edge, and this inner edge commencing at the tear was folded over onto the rest of the cartilage, forming a ridge on which the femur caught in motion. With this condition present it is readily seen that a comparatively slight violence would tear the cartilage entirely across and away from its attachments. Clinically I am sure that I have seen this condition take place, where after occasional slight catches, causing comparatively little inconvenience, there has been a more severe catch associated with the protrusion of the cartilage on the inner side of the joint, which can usually be slipped back by careful manipulation. These cases at the time of the operation have shown a badly torn cartilage more or less detached. In 1 case over an inch of the cartilage was entirely free, except for a small bit of ligament, while in still another, with a piece nearly as large, even this attachment was lacking.

The point at which the crushing has taken place in all of these cases has been at the curve made where

² *Annals of Surgery*, January, 1899.

the anterior portion joins the lateral portion, and if the piece is finally torn free it is the piece anterior to this point. In the operation this anterior portion, which represents about one-third of the whole, has been the part removed, except in one instance, in which, as the result of a foot-ball accident, the ligament was torn more extensively, and the whole inner cartilage was removed.

For treatment, in 2 of the cases the cartilage was stitched into place. One of these relapsed and was entirely removed later. The other case, a woman, when last heard from was well.

In all of the other cases, representing the later cases, the injured portion has been entirely removed, and this I am sure is the better operation. Suture of any kind because of the structure of the cartilage must be uncertain, and at the best necessitates a long course of carefully supervised protection of the joint afterwards. With the excision of the loose fragment the joint can be moved in a few days, and the after treatment ends in from three to four weeks, with no possible danger of relapse.

Synovial fringes; coagula.—In the remaining 19 operations the symptoms were produced by masses of fibrin or unnatural folds of the synovial membrane, and as both conditions were usually associated they are included together in this report.

The folds of synovial membrane or fringes are undoubtedly present in any inflammatory process in or about the joint, and the membrane is thrown into folds simply because of its great vascularity, and that, whenever for any cause the normal supply of blood is increased, the membrane becomes swollen, and as the firm and comparatively unyielding capsule prevents the membrane from increasing its size in its long axis, it must increase vertically and the folds result. The size and extent of the fold depends upon the direct cause of the trouble. The simplest form is seen in the so-called dry joint, so commonly met with at middle life. In this type, in the general relaxation of the structures of the joint and the lack of tone of the muscles, the synovial membrane is relaxed and, as is true of the other parts, the relaxed tissues become passively congested and swollen. The creaking or snapping is due to these folds or fringes slipping over each other, and in these joints there is little variation from the normal amount of fluid. In the large majority of these cases under stimulating treatment that would tend to increase the tone of the part, the membrane resumes its normal condition, the creaking or snapping gradually disappearing as the strength returns.

If, however, this relaxed or swollen condition persists for any length of time, the power of contraction is much impaired, so that recovery is at least prolonged. Occasionally the folds which are near to the patella are caught in the articulation, with the result that the joint is more or less locked (depending upon the size of the fringe), and the fringe itself is bruised by the pinching and becomes swollen. It is readily seen that this swelling would make the fringe larger, so that it is more apt to be caught if motion is allowed. If it is caught or pinched but once, it may retract to its former size, but if this be repeated many times it loses its elasticity and a loose fold of synovial membrane or a true fringe results, which remains after the rest of the swelling has disappeared, as a tab or loose fold hanging from an

otherwise normal membrane. As this pinching in the articulation represents one of the chief causes of these permanent fringes they are, of course, found chiefly about the patella.

After a fringe has once formed it is evident that it may at any time become caught between the bones, and the frequent acute attacks in these cases are undoubtedly to be explained in this way. It is also apparent that the joint may be locked by such a fringe similarly to the action of a loose cartilage, although the catch is not so abrupt or so complete as in the latter case.

After the fringe has once formed the continued irritation which must result from movement of the joint is followed by an hypertrophy of the structural elements of the fringe and results in the papillomatous appearance of what originally must have been a simple tab. As the irritation goes on, however, the hypertrophy due to the overstimulation ceases, and degenerative changes begin following the rule which applies in other parts, that, in processes of degeneration, structures of a higher order are replaced by structures lower in the scale.

The change most commonly seen is fatty degeneration, and this has been seen in varying degrees from a small point of fat tissue to the replacement of almost the whole of the fringe, so that it exists as a lipoma inside the joint. In 1 case six or eight of these small lipomata or degenerated fringes were removed. In 1 case a calcareous degeneration was found and in the membrane there were numerous calcareous bodies, varying in size from the head of a pin to a good sized pea, which on section showed true cartilage and bone cells. These were entirely distinct from osteo-arthritis nodes and were found between the layers of the synovial membrane instead of on the outside of the membrane, as would have been the case had the change been due to that process.

Associated with the fringes in most of the cases were masses of coagulated fibrin, free within the joint, varying in size from small flakes to, as was present in one instance, a mass over an inch in diameter. These two conditions were so often associated and apparently are so similar in etiology that they are considered together.

Whenever for any reason there has been a large increase of the joint fluid, it is possible that instead of the fluid being absorbed as the inflammation subsides, the fibrin of the fluid may separate and form a coagulum. This, of course, has no color, but is simply a mass of white fibrin which moves about in the joint as a foreign body. The nature of the original inflammation does not seem to be of importance in the formation of these coagula, as is shown in the cases of this series. One was a case of acute articular rheumatism, which was referred for treatment because, after the active disease had subsided, the knee joints remained swollen in spite of all ordinary measures. In this case the diagnosis of the condition was made, and at operation the coagula were washed out with entire relief to the symptoms. The condition has also been seen in tuberculosis, in traumatic synovitis, in rheumatoid arthritis, and the largest coagulum of all was removed from a child who had had a small punctured wound of the knee, which had been washed out with hydrogen peroxide through the original small wound.

It is evident at once that these coagula represent a

foreign substance inside of the joint and that they are capable of producing irritation and symptoms similar to other loose bodies. That the motion of a joint may be seriously interfered with by such a substance is not to be questioned, and the only difference between the symptoms produced by it and those produced by a loose cartilage is that which would result from the different density of the two structures.

It is evident also that as this fibrin may produce continued and frequent irritation and that as continued and frequent irritation is the chief cause of the synovial fringes, these fringes are present in most cases where coagula are present. The reverse of this statement is also undoubtedly true, and that as the irritation caused by the presence of these fringes may result in an increase of synovial fluid, the opportunity for the formation of the coagula is presented.

As the operations have been performed the two conditions have usually been associated, but with varying predominance, and in the cases where both knees have been operated upon the two joints in the same individual have varied. In one the fringes have predominated, the coagula being of distinct secondary importance, while in the other joint the exact reverse of this has been the condition found.

Operation.—The operations which have been performed in these cases have varied somewhat with the nature of the trouble. For the exploration or removal of the semilunar cartilage a longitudinal incision about 2 inches long at or near the point of injury of the cartilage has been on the whole satisfactory. In case a more extensive view of the joint is desirable the incision can be enlarged transversely. The point of injury can usually be determined by careful examination before the operation. For the cases in which purely exploratory operations have been performed, an incision 2 or 3 inches long either just inside or just outside the patella has been used and this enlarged as much as necessary to determine the exact nature of the disease. Usually a piece of synovial membrane has been removed for microscopic examination.

Coagula could, of course, be removed through either of the above incisions, but where fringes are present an incision on both sides of the joint is desirable, so that the whole cavity can be explored. The fringes should be trimmed off so that all the irregularities are removed. No attempt need be made to close the wounds that are thus made in the membrane itself, and whatever bleeding there may be from these wounds can be satisfactorily controlled by flushing the joint with hot water. For closing the joint, fine silk sutures have been used for the capsule with silkworm gut for the skin and subcutaneous tissues.

The preparation for these operations has been similar to that for any other sterile operation, the only thing of special importance being rest of the joint for a few days previously in case there is any evidence of acute trouble.

The after treatment, unless the incision has revealed some serious disease, has consisted of complete immobilization of the joint for one week, plaster of Paris being the splint commonly used. During the second week most of the patients have been up on crutches, the dressings being removed once or twice daily for passive motion. During the third week a flannel bandage has been substituted for the stiff bandage, the crutches have been discontinued, and use, to-

gether with stimulating bathing, has been encouraged. During the fourth week all treatment except the stimulating bathing has been discontinued and this has been kept up for varying lengths of time, depending upon the strength of the joint.

Results.—The results in such a series of cases naturally depend upon the nature of the condition for which the operation was performed.

In those in which the operations were purely exploratory, the course of the disease was in no way changed.

The patients with whom the semilunar cartilage was at fault were well and at their usual occupations in four weeks with one exception—a circus acrobat, who waited six weeks before returning to his work; the longer interval being the result of caution rather than disability. All of these patients are, so far as I know, well, with the uncertainty of usefulness, which was present before the operation, entirely removed.

The cases in which the symptoms were due to the coagulated fibrin were naturally relieved by its removal, as was also the case of loose cartilage.

The fringe cases are improved in varying degrees, depending upon the nature of the disease which caused the fringes to develop. Where the fringes were simply the result of the weak or relaxed condition of the joints as the result of the operation and the after treatment the joints are normal. The other cases have been improved in just such proportion as would be expected from the nature of the disease.

One patient with osteo-arthritis is, I think, worse for the operation, which apparently made the disease more active, a condition which has been observed in operations performed upon other parts of the body where this disease is active. This result, together with a similar result which I have seen in the hands of another surgeon, and from my experience with this disease in other parts, leads me to the conclusion that operations should be avoided upon any part where this disease is present, unless it has been for a long time quiescent.

Conclusions.—The purpose of the paper is to show, by considering the results obtained in 38 operations, that operations upon joints need not be feared more than operations upon other parts of the body, and because of this to urge the importance not only of operating to relieve a definitely recognized condition, but also to make use of exploratory incisions in the doubtful cases to determine the exact nature of the disease. Without this it is impossible in many cases to differentiate in the incipient stage between several different conditions, and it is at this very time that the most can be accomplished in the way of treatment if the exact condition is known.

Of the 38 operations, 1 was for the removal of a loose cartilage; 2 were for permanently dislocated patella; 7 were for exploration to determine the nature of the disease; 9 were for removal of an injured or displaced semilunar cartilage; 19 were for the removal of synovial fringes or masses of coagulated fibrin.

No unpleasant results followed the operations except in 1, a case of osteo-arthritis, in which the disease was apparently made more acute. The exploratory incision, with this one exception, did not alter the course of the disease. The cases from which the semilunar cartilage was removed have functionally normal joints. The cases in which the synovial

fringes and coagula were removed are improved in proportion to the nature of the disease which caused the condition to be present.

Medical Progress.

RECENT PROGRESS IN THORACIC DISEASES.

BY GEORGE G. SEARS, M.D., AND JOHN W. BARTOL, M.D., BOSTON.

THE COIN SOUND IN PLEURISY WITH EFFUSION.

MOUSSOUS¹ speaks of the value of the coin sound (*signe du son*) in children as well as in adults in differentiating between pleural effusions and pulmonary consolidations. He says that when the lung is healthy the sound transmitted is obscure, muffled and without metallic quality, but when an effusion, either serous, fibrinopurulent or hemorrhagic, is present in a pleural cavity free from adhesions the metallic sound is perfectly clear. Neither ordinary congestion of the lungs, with the exception of splenopneumonia, nor the different forms of inflammatory and neoplastic indurations are able to produce this sign and it is the same with bronchopneumonic nodules, infarctions, tubercular infiltrations and even encysted pleuritis or fluid effusions in the pericardium, so that, without being pathognomonic, the coin sound gives very valuable evidence of an effusion, while it also allows one to recognize the height of the fluid in pneumonia accompanied by a pleural exudate, as well as that portion of the area of dulness in pleuritis with false membranes which corresponds to the liquid exudate. The only condition in which doubt may arise is in the diagnosis between pleuritis and splenopneumonia, since it is present in both conditions. The idea, however, of an ordinary inflammatory or congested condition of the lung can be immediately dismissed.

MYOEDEMA IN PULMONARY TUBERCULOSIS.

Myoedema is the name applied to the phenomenon occasionally produced by sharply striking the pectoralis major with the tip of the finger, and characterized by a fascicular or nodular contraction of that muscle. Its significance has been variously interpreted. Walsham² has examined 1,000 out patients with pulmonary tuberculosis with reference to the presence or absence of this sign. He found that it only becomes well marked when the wasting has advanced beyond a certain degree, although a suspicion of the fascicular variety, but never the nodular, may sometimes exist in an early case. In fact, the more the wasting, the more marked the myoedema unless the loss of tissue becomes extreme. A blush following the tap on the muscle is almost as characteristic as the contraction. He has found no alteration in the normal electric reactions, although many observations have been made.

He concludes that the phenomenon is nearly valueless as an early sign of pulmonary tuberculosis, since it only becomes well marked when other physical signs leave no doubt about the diagnosis, but it is useful as indicating the condition of the muscular system of the patient and of showing approximately the amount of wasting that has taken place. He has never found it in a perfectly healthy person, but agrees

with West that it can be obtained in other wasting diseases beside phthisis.

THE CAUSES OF IMMUNITY AGAINST TUBERCULOSIS IN HIGH ALTITUDES.

Mitchell and Crouch,³ working at Denver at an altitude of 5,290 feet, found that the tubercle bacillus, expectorated on a sandy soil, has lost but little of its virulence after twenty hours' exposure to the direct rays of the sun, and is still active after thirty-five hours. They therefore believe that Koch's statement that the bacilli, presumably in pure culture, are killed in a few minutes to several hours has given sanitarians a false sense of security. The fact is that sputum expectorated by consumptives, at such an altitude as Denver, has ample time to become desiccated and blown about in the air before it has been robbed of its power for harm. Another explanation for the great degree of immunity from tuberculosis which exists in that region and at that altitude must be found. It probably arises from the effects of the climate on the vital forces of the individual:

(1) By the slight humidity, both absolutely and relatively in the atmosphere, which with the lessened atmospheric pressure and almost constant winds greatly facilitates evaporation. The loss of moisture is very rapid from the pulmonary alveoli, and though these could scarcely become too dry to serve as a nidus for the tubercle bacillus, the constant evaporation may produce unfavorable conditions for its development. Owing to the absence of atmospheric moisture, the heat at high altitudes is not enervating.

(2) The lowered atmospheric pressure causes dilatation of the cutaneous and mucous capillaries. The pulmonary capillaries are dilated, and the blood stream is so slowed that it can better give battle to the invaders. The diminished amount of oxygen tends to increase the frequency and depth of respiration and the thorax is thereby expanded, while the heart's action is also increased for the same reason. The body warmth is continually lost in large quantities, and to replace it, other things being equal, the appetite increases, metabolism is more rapid and complete, and the need of nourishment greater. Evaporation also raises the specific gravity of the blood, and the number of red corpuscles and the percentage of hemoglobin are increased. In other words, the very factors which tend to heal or retard cases of phthisis in high altitudes account for the immunity of those who live there.

MERCURY IN THE TREATMENT OF HEART DISEASE.

Morison⁴ speaks enthusiastically of the value of mercury in certain cases of cardiac disease. Its influence upon the circulation may be said to be chiefly an indirect one. Brisk purgation may withdraw some of the watery constituents of the blood, and thus reduce the weight of the circulating fluid, but this direct action must not be overestimated. As a vasomotor relaxant the effect of mercury on the heart is wholly indirect. By removing an impediment the work of the heart is made easier.

In another way mercury is of value from its action on the kidneys, where it, at times, has so powerful an effect that it might be permissible to regard the diuresis resulting as a veritable renal purgation, the

¹ Rev. mens. des mal. de l'enfance, January, 1899.

² Lancet, January 27, 1900.

³ Journal of Pathology and Bacteriology, May, 1899.

⁴ Lancet, October 28, 1899.

effect continuing for a week or ten days after the calomel has been stopped. This is usually manifested on the fourth or fifth day, and the quantity of urine often amounts to 12 pints in twenty-four hours. It acts better in mitral than in aortic cases, and is useless when there is concurrent nephritis of non-cardiac origin. Its action is often increased by the addition of digitalis, strychnine or arsenic.

THE DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE OF THE DIAZO REACTION IN PHTHISIS.

Michaelis,⁵ after reminding the reader that the diazo reaction is never present in the urine of a healthy person, and is in no way dependent on the existence of fever, goes on to make four general groups of disease classified according to their relation to this reaction. In the first he puts diseases in which the reaction is practically never found, that is, the chronic affections of spinal cord, of kidney, of the heart (sclerotic origin), malignant tumors, or, in short, all processes not the result of acute or chronic bacterial invasion. If the reaction occurs in such conditions he considers it significant of secondary infection by bacteria. The second group comprises such diseases as ordinarily show the reaction and in which it is of value in diagnosis, that is, typhoid and measles. In the third group he classes diseases like pneumonia and diphtheria, in which the reaction is seldom present and when positive speaks for a grave prognosis. In the fourth group he places by themselves the tubercular processes. In these the reaction is often of diagnostic value; thus, in patients without fever or definite signs, a long persisting diazo is generally significant of tuberculosis; positive reaction in ascites speaks for tubercular peritonitis as against carcinomatous, or liver cirrhosis; its presence in meningitis throws the weight of diagnosis toward tubercular sources; in exudative pleurisy it has a similar value. It is always present in miliary tuberculosis. But a special value is given to it in the prognosis of phthisis, so much so that in phthisis with well-marked diazo the prognosis may be put down as absolutely bad. After a few precautions as to the technique and the necessity of fresh solutions attention is called to the fact that the reaction may be present when naphthalin or chrysarobin is being exhibited and that it may be inhibited by the administration of gallic or tannic acids and their compounds (tannigen, tannalbin, etc.), and also large doses of iodine.

The rest of the paper is taken up with a discussion, statistical and otherwise, of its value in the prognosis of phthisis. Mild and uncomplicated cases of phthisis practically never show the reaction, and its presence is significant of acute accompanying infection, or else suggestive of serious invasion of tubercle bacilli, with few physical signs. On the other hand, the absence of the reaction when the clinical picture is of an advanced stage is suggestive of a slow advance, or else of temporary improvement. As a result of recorded results in 167 cases, he concludes that a very large proportion of phthisical patients showing the reaction will die in less than six months.

PURULENT PERICARDITIS.

Manges⁶ reports a case of pericarditis secondary to pneumonia and due to the pneumococcus, in which,

after the aspiration of 18 ounces of pus, some 40 more were removed by open incision under local anesthesia with eucaine. Recovery was complete, and in six weeks the patient was able to leave the hospital. After the operation pericardial adhesions remained so that at each systole there was a retraction of the overlying tissues. The pulsus paradoxus was also present.

In speaking of the treatment of this condition he says that as soon as it is established that pus is present, pericardotomy should be done, as all the reported cases in which aspiration was thought sufficient have terminated fatally, while out of Roberts's 35 cases treated by incision only 20 died, of whom 10 were distinctly septic beforehand. Even when enormous amounts of pus are found, patients have a reasonable show, if an open operation is fearlessly done.

In speaking of pericarditis as a complication of pneumonia he says that of 500 at Mt. Sinai Hospital, it developed as a complication in 11, of whom 5 died, a mortality of 45%. This probably does not represent the frequency of this complication, as pericarditis during pneumonia is often overlooked.

Dr. Connor⁷ also reports a case following pneumonia, in which 30 ounces of pus were withdrawn by aspiration. As the symptoms did not improve and the patient was in an extremely bad condition, incision was made under local anesthesia and nearly 40 ounces more removed. During the operation, in spite of the utmost precaution, the pleura was slightly incised. It was at once carefully closed, but probably became infected. The patient died of a purulent pneumonia a few days later.

INVESTIGATIONS OF THE HEART AND CIRCULATION IN TUBERCULOSIS.

Regnault,⁸ in his "Thèse de Lyon," shows that atrophy of the heart is not the rule in tuberculosis, in spite of the fact that it is a disease especially productive of atrophy in the tissues in general. Dilatation of the right heart in tuberculosis affects chiefly the auricle and occurs less commonly in the ulcerative than in the fibrous form. It is the result not only of emphysema, pleural adhesions and pulmonary sclerosis, but also of the rapid diminution in the area of circulation.

Lowering of arterial tension is a constant phenomenon in tuberculosis, keeping pace with the fever and the cachexia, but also existing in the cases of slow progress and those without fever. It is the result of a toxin produced by the tubercle bacillus or an associated infection. It has a certain diagnostic value in those cases without physical signs and a prognostic significance in that the tension is found to rise in cases advancing to recovery. The instability of the pulse, so constant a sign, is dependent on the lowered tension, as is also a rapidity out of proportion to the temperature.

Genuine attacks of tachycardia are sometimes observed, due possibly to mechanical or toxic irritation of the sympathetic, possibly to a combination of the irritability of the vagus and the low arterial tension.

THE HEART WALL IN DIPHThERIA, RHEUMATIC FEVER AND CHOREA.

Poynton,⁹ from a study of 18 cases of rheumatic

⁵ Berlin, klin. Wochn., xxxvii, 13.

⁶ New York Medical News, January 29, 1900.

⁷ New York Medical News, January 20, 1900.

⁸ Gaz. heb., No. 26.

⁹ Lancet, May 12, 1900.

heart disease, 4 cases of diphtheria, 1 case of chorea, and 1 experimental case of staphylococcus infection, draws the conclusion that there may be extensive myocardial changes as a result of toxic influence without any demonstrable valvular or pericardial lesions, or any symptoms of nerve paralysis. He explains on this basis those cases in which there is unaccountable breathlessness, precordial pain and other indications of cardiac inadequacy. Dilatation as a result of these myocardial changes he finds much less common in diphtheria than in rheumatism. The practical aspect of the matter is the importance of not waiting for definite auscultation or percussion signs before assuming that the heart is implicated and consequently in need of appropriate treatment; such precaution being especially indicated in children.

THE INFLUENCE ON THE HEART OF MECHANICAL IRRITATION OF THE LIVER.

Heitler,¹⁰ who has already demonstrated the change in the extent of heart and liver dulness with change in size of pulse, — that is, small pulse, increased dulness; large pulse, diminished dulness, — found in an overworked mechanic a marked variability in size of pulse brought about by percussion of liver or by vibrating the anterior costal border. Thus when the pulse was small, percussion or vibration produced an immediate increase in its volume for from 5 to 25 beats or longer; the frequency of the pulse, meanwhile, showed practically no change. That the reflex arose from the liver was shown by control tests in the splenic and abdominal regions. These effects are thought to have a bearing on the recognized association of circulatory disturbances with certain disorders of the liver.

OLIVER'S SIGN IN MEDIASTINAL TUMORS.

Auerbach¹¹ reports 2 cases which, while they discredit tracheal tugging as a sign pathognomonic of thoracic aneurism, at the same time give it added weight as a symptom significant of intimate connection between the aortic arch and the primary bronchus. In both the cases tracheal tugging was exquisitely demonstrated, and in both was found to be caused by a firm adhesion between the arch and bronchus due to malignant growth, evidence of which had been given during life by marked dulness beneath the sternum simulating aneurism, the other characteristic signs of which, however, were absent. In the second case the adhesion was caused by a malignant packet of glands, which was not larger than a walnut.

Oliver's sign, however, still remains in doubtful cases more suggestive of aneurism than new growth, owing to the comparative rarity with which the latter would be so situated as to bring about the conditions necessary for the production of the tugging. The same conclusion holds true with Cardarelli's sign, a modification of the other. The technique for which consists in pushing the thyroid cartilage to the left of the middle line. When the sign is present there will be perceived a slight pulsation of the cartilages toward the right; on the contrary, displacement of the cartilage toward the right results in no such pulsation.

¹⁰ Wien. klin. Woch., xii, 52.

¹¹ Deutsch. med. Woch., xxvi, 8.

THE RELATIVE INTENSITY OF THE SECOND SOUNDS AT THE BASE OF THE HEART.

Dr. Sarah Creighton¹² draws the following conclusions from a study of 1,000 cases:

(1) Accentuation of the pulmonic second sound is almost invariable in young children and frequent in youth.

(2) After the fortieth year of life the reverse is the case, and it is rare then to find a pulmonic second sound as loud as the corresponding aortic.

(3) Between the ages of twenty and thirty years there is no marked accentuation of either sound.

(4) In view of the above facts, it is obvious that when one speaks of an accentuated pulmonic second sound as corroborative of a diagnosis of heart disease, such an accentuation must mean an increase in the loudness of the sound over that normally to be expected at the age of the patient in question. A comparison with the aortic second sound is not sufficient to settle the question.

(5) Further, when we speak of an aortic second sound as accentuated, we must mean (in patients over forty years) more accentuated than it normally is. Once more, the simple comparison with the pulmonic second sound will not settle the question; the comparison must be made with an ideal standard carried in the mind.

(6) In interpreting the meaning of an accentuation of the pulmonic second sound in suspected mitral stenosis, one must bear in mind the age of the patient. The presence of a pathological accentuation of the second sound can be determined only in relation to the degree of accentuation which is to be expected at the age of the patient in question.

THE ACOUSTICS OF THE SECOND PULMONIC.

Hecht¹³ discusses quite at length the conditions influencing the character of the second sounds at the base of the heart, both aortic and pulmonic, but with especial reference to the significance of variations of the latter from a normal standard. The chief interest in his studies is given by the fact that in his investigations the intensity of the sounds was measured with the stethometer. This is a stethoscope with a metallic conducting tube, in the side of which is cut a longitudinal slit situated in the upper half of the tube, and capable of being closed by a diaphragm sliding up over it, the theory being that the intensity of a sound heard through the instrument can be measured by the extent to which the diaphragm is slipped back in order to allow all sound waves to escape through the slit before reaching the ear. Thus, starting the auscultation with the slit entirely closed, the diaphragm is gradually moved downward until the sound disappears; the length of the opening is then read off on the millimetre scale and the sound given a corresponding value. By this method he studied the second pulmonic under a variety of conditions in health and disease and attained results which, if not entirely conclusive, are at least interesting. He does not draw attention to the marked differences occurring at different periods of life, but he notes a distinct increase in intensity during the stage of active digestion.

He investigated after this method the various diseases of the lungs and the functional and organic disturbances of the heart. The chief value of the

¹² Medical Record, January 13, 1900.

¹³ Wien. klin. Woch., xiii, 13.

method, and that perhaps a considerable one, must lie in the possibility of watching the progress of individual cases with regard to increasing or decreasing interference with the lesser circulation, or with regard to the maintenance of the heart's vigor.

THE MOVABILITY OF THE HEART WITH CHANGE OF POSITION OF THE BODY.

Determann,¹⁴ calling attention to the well-known clinical fact that the heart is not a firmly fixed organ and that its change of position can be readily demonstrated, goes on to detail the results of some experiments made by percussion and the Röntgen rays (500 patients investigated). In healthy subjects he found that turning onto the left side produced an average dislocation of the heart of $2\frac{1}{2}$ centimetres to the left and 1 centimetre upward; turning onto the right a change of $1\frac{1}{2}$ centimetres to the right and about $\frac{1}{2}$ centimetre upward. Only exceptionally was a change lacking; in some cases it was quite small, in others as great as $6\frac{1}{2}$ centimetres to the left and 4 centimetres to the right, without distress to the subject.

These greater movements were found, however, to occur as a rule in individuals flabby and ill nourished, and in such were often found also evidence of loosely anchored abdominal organs. There were certain influences of sex, age and occupations; thus, women as a whole have more freely movable hearts than men, especially after child-bearing, or tight stays; children have little sign of it, the newborn scarcely any; old people only slight. Individuals of sedentary occupation and feeble muscular development are especially subject to the condition. The physiological effect of the full stomach is noted and also anything which tends to elevate the diaphragm. During the latter part of pregnancy the heart is much pushed up and compressed, and thus shows very little movability. Immediately after delivery, however, the highest grade is found and the apex may be dislocated on the left side as far as 9 centimetres from its original position.

Of pathological conditions there are, of course, several obviously limiting in their effects on the liberty of the heart's position, such, for example, as emphysema or any abdominal disturbance attended by pushing up of the diaphragm. On the other hand, there are the conditions characterized by relaxed diaphragm and enteroptosis; in such cases we find and may speak of a "cardioptosis." Thus, according to the writer, we may have a secondary cardioptosis dependent on an enteroptosis, or we may have a primary form independent of the latter conditions; such, for example, is very common in neurasthenia and a very striking degree of displacement is often found in chlorosis.

In many of the cardiac neuroses he hoped to find an explanation of the disturbed function in an increased movability, and was able to prove that the two conditions did at least often co-exist.

As the effective causes of cardioptosis he selects laxity of the connective-tissue elements as the most important and concludes as the result of his observation that while cardioptosis, like enteroptosis, may be unattended by subjective symptoms, it may on the other hand make its presence felt by marked disturbances of functional nature.

¹⁴ Deutsch. med. Woch., xxvi, 15.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, March 21, 1900,
Dr. H. F. VICKERY in the chair.

Dr. E. G. CUTLER read a paper entitled

JOSEPH W. ENGLAND'S FAT-FREE TINCTURE OF DIGITALIS.¹

Dr. GREENLEAF: I think we are much indebted to Dr. Cutler for presenting this interesting account of Mr. England's work. We are all aware of the value of digitalis. We are also aware of the fact that occasionally patients are disturbed by it. The tincture is probably used much more than the infusion in this vicinity, and any measures likely to improve this preparation is certainly desirable. Where patients have been nauseated by digitalis it has been my custom to lessen the dose in the occasional cases where it occurred, or to substitute strophanthus or a similar drug for it. A preparation that will obviate the tendency to nausea is certainly a gain. The greater rapidity of action to which Dr. Cutler calls attention is also worthy of special note.

I think Dr. Cutler's paper emphasizes another fact which, while he did not make this particular point, impressed me as he was speaking, namely, the necessity of much closer relations than we have hitherto borne in the interrelations of pharmacy and medicine. Few physicians know the constituents of digitalis, and on seeing the notice of Dr. Cutler's paper it was natural to say, "What has fat to do with digitalis?" I did not know that fat was a constituent of its leaves and I find that several of the treatises on materia medica do not refer to it. The masters on the subject, however, do mention the presence of fatty acids and essential oils, so that we must look to the pharmacists for increasing our knowledge in this direction, and we should co-operate with them to a greater extent, so that they may be the better prepared to appreciate our needs. We owe this very preparation to a pharmacist. It seems to me we have been remiss in this direction in Boston of recent years. A short time ago I had the privilege of attending a meeting of physicians and pharmacists for the discussion of subjects relating to materia medica, and it brought out a mutually valuable discussion. I have yet to hear of any such meeting in Boston. We miss much in not having a better understanding between medicine and its allied sciences, and I hope Dr. Cutler's paper will prove an inspiration towards this desirable end.

Dr. SMITH: I have been very much interested in this paper of Dr. Cutler's, because about this time last year Mr. Kelley kindly called my attention to this preparation of fat-free tincture. At that time I had a very rebellious case of nephritis due to lead poisoning, with cardiac complications, where I had been unable to make any headway with infusion or the plain tincture, and I began after reading this account of the work of the Philadelphia Hospital to use this preparation, not telling my patient what it was, and I succeeded beautifully with it, in that it created no nausea, and also that I was able to push it a lit-

¹ See page 283 of the Journal.

tle more without fear that I had been able to push the ordinary tincture. I increased the dose of this cautiously, beginning with 5 drops, until I was giving 30 drops three times a day.

I can think of 8 cases in which I have given this preparation a good trial. The second case I saw with Dr. Sawyer, in Gardiner, Me., a physician seventy-four years old, with aortic insufficiency and obstruction and nephritis. There was present general anasarca, with a great deal of delirium at the time, and the dyspnea was so marked it was expected the patient would live but a very few hours at the time I saw him. The doctor had been obliged to give up all preparations of digitalis, and was relying on the other tonics, and we sent immediately for this fat-free tincture, and he began that cautiously with small doses, and increased up to 30-drop doses every four hours, and in one month this physician was riding around the town without any sort of discomfort whatever, and he remained evidently with a well-acting heart up to a few weeks ago, when he dropped dead. Now this could not have been obtained, I am perfectly sure, with any of the preparations of digitalis that we know anything about aside from this, because the doctor had persevered with them in every way at different times during the last two or three years. I felt less anxiety about pushing the drug in the physician's case, because, since an accident which occurred to him in our Civil War, he had been an opium eater, and it has been my experience that opium eaters have a pretty good tonic for their heart, and we can perhaps push some drugs a little more than we otherwise could. In every other case in which I have used it I have found it to work admirably, particularly in not creating nausea, and feeling that I could more fearlessly increase the dose.

DR. VICKERY: I would like to ask Dr. Cutler whether there is any effect upon the amount of urine in the way of diminution.

DR. CUTLER: It has rather seemed to increase the amount of urine. I have not observed diminution in any case thus far.

DR. VICKERY: Does Dr. Cutler know whether that fatty ingredient in the ordinary drug diminishes the amount of urine?

DR. CUTLER: I am unable to say.

DR. VICKERY: It would be an interesting point. Ordinarily we have been taught that nausea and diminution in the amount of urine are danger signals. I should think that this new preparation would be a very welcome addition to our armamentarium. It is a subject about which I have had no practical experience.

DR. CUTLER: The gentlemen have talked of Dr. Cutler's paper. All the conclusions and all the experiments are Mr. England's with the addition of this Philadelphia doctor. I simply have tacked on two or three patients of my own and it absolutely confirms what he has done. I was so struck with the fact in several cases, as the doctor says, where the people could not take the ordinary tincture, I gave this one. The first one I told what it was; those afterwards I did not tell. Every single one was able to take the drug uninterruptedly. I suppose I shall finally come across a case that will be unable to take it, but this fact was so striking that I was very much interested in it. The fat-free tincture can be mixed with water and it does not precipitate, and it can be injected sub-

cutaneously just as it is or diluted perfectly well. Every officinal tincture which I have ever seen, even though it has been assayed, has always, whenever we have added water, precipitated. What the precipitate is I will not undertake to say. I presume it is something soluble in alcohol and not in water. I presume it is some of those fatty products which England took out. The difficulty with the preparation by ordinary pharmacists would seem to be that he does not get rid of his benzine compound. According to Mr. England, that is best done by sunlight and exposure to air. I should suppose, unless very carefully handled, it would be a thing somewhat difficult to accomplish. Of course its inflammability or otherwise would be a point showing as to whether the benzine had been expelled. If not inflammable, or only as any organic matter would be, it would show the benzine was gone. If quite inflammable, or the odor of benzine remained, it would be clear that it had not been taken out. England takes this coarse powder and subjects it to the treatment with the benzine and gets all of the volatile and fixed fats out of it and then gets rid of the benzine. After that he follows the ordinary formula. It certainly is a more elegant preparation than the officinal tincture. At the Massachusetts Hospital I have been using the preparation for a few days wholly, and at my request the apothecary is going to prepare it for my wards and nowhere else, that is, the officinal tincture is to be used elsewhere all over the hospital and the fat-free tincture to be used in my wards for the next four months, and I am not going to draw anybody's attention to the fact that such is the case. We want to see whether our results show anything or not. So far as I have seen in private practice it seems to me it reaches a want we often feel very keenly—something we can give to a person whose digestion is upset, something we can give in a dose smaller than infusion of digitalis. Sometimes you want to give to a patient a quantity of infusion of digitalis which is tolerably large, and he finds the amount of liquid he must take somewhat troublesome to handle; but 30 drops of this preparation is a very small bulk to take several times a day. The largest dose I have seen given had no bad effects on the patient whatsoever. I have never seen very large doses given continuously, only this one dose I spoke of where the person took it by mistake.

What I want is to have a number of gentlemen try it and report the failures or what the limitations of the preparation are, rather than the opposite. I feel convinced that it is very important to have the fat properly removed. I can conceive of a preparation where the fat may be asserted to be removed and where in reality it is not. One apothecary told me that he found a good deal of difficulty in getting rid of the benzine and he consulted Mr. Kelley to find out how it could be done, and I saw a preparation which emanated from another source, and I thought the benzine was not all gone, but that, of course, will be a thing which will correct itself very soon. As I understand it from Mr. Dodd at the hospital, they use now amongst apothecary stores what they call assayed preparations, so that it is a pretty uniform and a quite exact form. I hope Dr. Vickery will be encouraged to try it. I value his suggestions very much.

DR. VICKERY: Dr. Cutler spoke about a large dose; Dr. Smith also. I might perhaps be pardoned for relating an interesting experience that I had. I

saw a case with Dr. Boland, of South Boston, of acute rheumatic pericarditis complicated with pneumonia. The man had been put on medicine put in two bottles, one digitalis, the other acetate of potash. The acetate of potash bottle had become empty, been sent to the apothecary's and erroneously filled with the digitalis prescription, so this man was taking digitalis out of two different bottles. His pulse was extremely slow when I saw him, but very good; and he bore this very severe illness with great equanimity and got well. If it had been a new method of treatment I should have thought it a most brilliant success. I do not know just how big the dose of digitalis was.

DR. CUTLER: I do not by any means wish to have anybody discard the officinal tincture. It is only in those instances where the officinal tincture cannot be taken or produces disturbance that I would urge anybody to try this new one. I do not bring it forward as a cure all. It is only where one finds the necessity of giving digitalis and finds his efforts are blocked, either because the patient cannot take and absorb the officinal tincture, or the dose of the infusion is so large that the patient refuses to take it; if under those circumstances he will remember this preparation I speak of, possibly he will get some advantage from it. I do not want to have it substitute anything else. We all know what a very valuable preparation the officinal tincture of digitalis is and the infusion also, but it is only in certain cases where those cannot be taken that I speak for this.

AMERICAN NEUROLOGICAL ASSOCIATION.

TWENTY-SIXTH ANNUAL MEETING, HELD IN WASHINGTON, MAY 1, 2 AND 3, 1900.

(Concluded from No. 11, p. 267.)

DR. JOSEPH COLLINS reported a

CLINICAL STUDY OF THE REFLEXES,

the object being to determine, if possible, the physiological nature of reflex tendon phenomena and to inquire into their relationship to, and probable dependency upon, muscle tone.

DR. S. WEIR MITCHELL spoke in reference to reinforcement of knee jerks, quoting the literature on the subject and referred in commendatory terms to the work of the American neurologists as compared with the Continental. He dwelt upon the feature of muscle reaction in its different phases.

DR. KNAPP spoke about certain peculiarities of reflexes not mentioned by Dr. Mitchell.

DRS. SACHS and SPILLER closed the discussion on the subject.

SECOND DAY.

The morning session was marked by a spirited discussion on the "Neuron Doctrine in its Relationship to Disease of the Nervous System."

The first paper was a deferred one from the previous day's session by DR. F. X. DERGUM, entitled

AUTOPSY OF A CASE OF ADIPOSIS DOLOROSA, WITH MICROSCOPICAL EXAMINATION.

The patient referred to was a woman who, on first examination, was fifty-one years old and a native of Ireland. There was nothing particularly striking about the family history. She continued well until she was forty-nine years old and was probably ad-

dicted to alcoholic excess. The first that was noticed was enlargement of the arms, accompanied with shooting pains in both shoulders, the sides and chest, but most marked in the upper arms. The skin was not thickened and was not adherent to the adjacent tissues. The muscles were not involved in the swelling. There were slight quantitative and qualitative changes noticed in the muscles and forearms. Cutaneous sensibility was diminished. There was no alteration of gait, but both knee jerks were lost. In two other cases reported by Dr. Dergum there was likewise noticed a loss of knee jerks. In the present case the face appeared pale, as was also the mucous membrane. The features of the patient were well formed and intelligent. Hair dark and fine; mind not impaired; skin dry. Examination of the eyes revealed nothing abnormal save some narrowing of the visual field. Urine and blood negative; no leucocytosis. The patient was under observation for eleven years. Small nodules would make their appearance and the enlargement involved likewise the abdomen, hips, thighs and legs below the knee. The feet and hands were not involved until the last. On several occasions the paroxysms of pain were severe and the patient would be taken with vomiting sometimes containing blood. She suffered from frequent attacks of bronchitis accompanied by dyspnea. At various times she exhibited cardiac trouble, which led to her death from fatty degeneration of the heart, in connection with adiposis dolorosa.

In making the autopsy it was found that the pubic hair was scant and there was none in the axilla. On opening the abdomen it was found that the intestines were distended with gas, but there was nothing abnormal except fatty infiltration. A microscopic study of the various changes did not exhibit anything significant, except the heart muscle, which was found very friable and of yellowish color, with marked change in the muscle itself. The microscopic examination included a study of the subcutaneous tissues, peripheral nerves, spinal cord, pituitary body and the thyroid gland. Earlier in the case small portions of the subdermal tissue were excised and it was thought that the fat was embryonal in character, but such was not the fact; the fat revealed nothing peculiar. There was marked diminution and atrophy of nerve fibres. The spinal cord presented a decided change in the dorsal and cervical regions. The lumbar cord failed to present any change. There was likewise no change in the brain nor in the pituitary body. The thyroid gland was very interesting. Though not weighed it was quite small and the microscopic examination proved it to be abnormal beyond all doubt. There was complete absence of colloid material. It was believed that the derangement of the thyroid gland caused certain substances to be thrown into the circulation of an abnormal character.

DR. BURR said that within the last six months he had had an opportunity of making an autopsy and examining a case of the same character. There was in association a new growth of the pituitary body. He thought that this was merely accidental, as he did not believe that disease of the pituitary body would cause any deposit of fat. There was distinct affection of the thyroid gland and interstitial neuritis within the muscles. There was degeneration of some of the voluntary muscle fibres.

DR. PUTNAM spoke of cases of progressive muscu-

lar dystrophy and congenital blindness occurring in the same family.

The first paper on the neuron theory was by DR. L. F. BARKER, entitled

THE ANATOMICOCYTOLOGICAL RELATIONSHIP OF THE NEURON TO DISEASE OF THE NERVOUS SYSTEM.

The paper dealt with the present status of the knowledge of the units in the nervous system. The history of the neuron doctrine was traced. The conception originated with the pathologist Ford and was supported by the embryological work of His and by histological studies made by Golgi's method. Wald-eier, in 1891, collected the evidence in favor of the view and gave to the nerve units the name "neurons." Barker sees in the neuron doctrine nothing more than the application of the cell doctrine to the nervous system. Until it was shown that the axis cylinder of a nerve fibre and its end ramifications are integral parts of a single cell, it was impossible to apply the cell doctrine intelligently to the nervous system. The retraction theory has never had any adequate basis. The studies of Apathy and Bethe are regarded as extremely important as bearing upon the intimate relations which exist between the nerve centres. They do not interfere in any way with the retention of the units themselves.

The next paper was by DR. W. G. SPILLER, on THE PATHOLOGICAL CHANGES IN THE NEURON IN NERVOUS DISEASE.

He suggested that the most important question is, Does pathology afford any support for the neuron doctrine, or do the changes occur of such character that we can obtain from them the existence of the neuron? It must be shown that the neuron is affected by disease; that is, whether the cell body may become diseased and die without the existence of the axon. It must be shown whether the disease of sensory neurons affects the motor neurons. Degeneration has a tendency to involve groups of nerve cells and processes. To what degree does a neuron become diseased? If we cut an axon, the cell body in which the axon arises undergoes rapid alteration and possibly death. An axon is only partially dependent on the nerve cells for vitality, and if the blood supply is cut off that portion deprived of circulation will die, but the cell body is necessary to the axon. A number of radiographs were exhibited at this point, showing certain pathological changes in the brain. He said that in a Gasserian ganglion which had been removed he found alteration of the nerve cells of that ganglion, but was not able to find any of the sensory root. The destruction of the nerve cells of the spinal ganglion was much less in certain experiments, and therefore it might be expected to find a slight alteration in the posterior root. There is a tendency for the entire neuron to undergo alteration when attacked by disease or injured. A very interesting question is the degree of limitations to one set of neurons. It is certain that a retraction exists, but this is occasionally overcome.

DR. B. SACHS read the following paper:

HOW DOES THE DOCTRINE AFFECT THE CONCEPTION OF NERVOUS DISEASE?

He said that the introduction of the neuron theory promised to bring about a general revolution in the

conception of nervous disease. With a single stroke the mysteries and doubts of years were to be cleared away. Granted that the structure and function of the nervous system can be interpreted much more readily in the light of this doctrine, it still remains a question whether it has been a great assistance to us in determining the cause and development of the various diseases of the nervous system. It has been shown that the nervous system is composed of a series of contiguous, not continuous, units; that in this nerve unit, composed of the cell body with its dendrites, the nerve fibre or neuraxon and the terminal tufts, the cell bodies exercise a trophic influence over the entire neuron; furthermore, that the nerve force, to speak in general terms, could travel from the cell body to the periphery and from the periphery to the cell body. This question of the trophic influence of the cell body had to be discussed before the profession could appreciate the value of the neuron in its relation to the nervous system. The doctrine helped us, of course, very little in our understanding of the cure of inflammatory processes, for such processes do not respect the final structure of the brain or cord, and are generally so destructive that it would matter little whether the nervous system were made up of contiguous or continuous units. *Tabes dorsalis* is to be accepted as a disease of the direct sensory neuron; whatever the nature of the poison circulating in the body may be, the sensory fibre is the part primarily affected. Even if the view could be maintained that the disease began in the spinal ganglion cell, this ganglion cell would not be diseased unless there was something wrong with the peripheral stimuli conveyed to it. It is not necessary to enter upon a discussion of the aid rendered by the neuron doctrine to the interpretation of nerve diseases.

DR. H. H. DONALDSON then addressed the society upon the topic,

THE PHYSIOLOGICAL SIGNIFICANCE OF THE SIZE AND SHAPE OF THE NEURON.

Dr. Donaldson presented interesting data concerning the study of the neuron elements in the white rat. He said that in these animals the examination was made of the cell bodies from the spinal ganglion, which send their axons to form the sciatic nerve. The ganglion cells become progressively larger. At birth the white rat is entirely devoid of any medullated fibres, central or peripheral. During the first six or eight days of life the medullated sheaths begin to appear. The appearance of the medullated sheath about the axons is a very rapid process in the first case.

DR. PUTNAM thought that the notion should be greatly modified or abandoned, that the cell body is the place for the storage of anything particularly standing for the function of the nervous system as a whole. He said that the term is very often used in books on clinical medicine of the storage of memories in the cortex in the brain.

DR. LANGDON said that it seemed to him that to begin at this day to criticise the neuron doctrine and neuron discovery or hypothesis is very much like criticising the architecture of a building of which the plans are not yet drawn. He thought that one could safely say, in regard to the neuron doctrine, that anatomically it had given much help.

DR. VAN GIESEN did not think that the neuron theory needed so strong a defence.

DR. MILLS thought that the term "neuron" in this connection had done harm rather than good in the teaching of the new doctrine, but he said that there could be no doubt that the neuron theory must stand—in other words, there is a certain degree of interdependence of nerve cells that has been demonstrated.

DR. DERGUM thought that it was best to wait until the knowledge on this subject is more complete, until more is known about the details of the relation of the neurons to each other in all portions of the nervous system.

DR. COLLINS said that in discussing the neuron doctrine we were not dealing with theories but with facts. He thought that one of the most valuable points which had been brought out in the meeting was the necessity of using the term "nerve cell" as represented by the neuron, and not speaking of the nerve cell as meaning the cell body. He thought this would bear fruit in the future.

DRS. THOMAS, SMITH and ANGELL expressed their views pro and con upon the neuron theory, its pathological, physiological and anatomical relationship.

In closing the discussion on his own paper, Dr. SACHS said that he did not want it to be construed that he was pessimistic in his belief, and that if it seemed that he was of that opinion it was simply because he was anxious. He simply wanted to show that even in the neuron theory there was some limitation.

DR. BARKER said that his conception of the neuron is not purely morphological. It is based just as much on physiological and pathological results as on morphological. Indeed, he thought there was a tendency to distinguish too much between the morphological and physiological concepts. In reference to diseased conditions and the relation of the neuron doctrine to the study of disease clinically, he thought that it had been of much help.

THIRD DAY.

The first paper presented this session was that by DRs. JAMES J. PUTNAM and E. W. TAYLOR, entitled

CLINICAL AND ANATOMICAL ANALYSIS OF CASES OF DIFFUSE DEGENERATION.

The case in question presented the aspect of pernicious anemia. The writer (Putnam) had seen a large number of cases belonging to that group and will be able to analyze 25. It was held to be a distinct disease, with definite clinical and anatomical characteristics. In the case described there was numbness of the extremities, which was very prominent, and cachexia, ending with anemic softening of the cord. The characteristic lesions are rather inclined to occur in foci. The essential point is that the nerve-root zone is not affected, so that as far as the lesions go they are confined to the spinal cord alone. As to the indications of anemia, as evidenced by large macrocytic corpuscles, they are very common, and it is quite possible that they are universally present in these cases. Another patient with pernicious anemia had shown great improvement in the blood; at the present moment the blood count has come up from 3,000,000 to 5,000,000, but the spinal symptoms continue.

DR. LANGDON said that we have two groups of pernicious anemia, one without this spinal degeneration, so much so that he has followed to the end 2

cases of marked pernicious anemia, and he had an opportunity to test them a few weeks before death without the slightest evidence of spinal symptoms. He recorded a case in his own practice of a lady with a spleen extending down to Poupart's ligament and to 3 inches to the right of the umbilicus; her nervous symptoms were exceedingly vague, and the most careful examination did not reveal any appreciable functional alteration. This patient with marked pernicious anemia, as shown by a thorough blood examination, and marked evidence of degeneration in the posterior and lateral columns, had mucous colitis, and he thought it was interesting to know the connection between the bowel condition and the hematic and degenerative states.

DR. MORTON PRINCE then read a paper entitled SECTION OF THE POSTERIOR SPINAL ROOTS FOR RELIEF OF PAIN IN A CASE OF NEURITIS OF THE BRACHIAL PLEXUS; CESSATION OF PAIN IN AFFECTED REGION; LATER DEVELOPMENT OF BROWN-SÉQUARD PARALYSIS IN AREA AND PAIN IN OTHER AREAS AS RESULT OF LAMINECTOMY.

The case related was that of a man who was struck by a train and received a Colles's fracture of the left wrist and paralysis of the right arm. The paralysis continued, rendering the arm useless from the shoulder down. The paralysis affected the muscles of the forearm and pronators. There was a diminution of sensation over the lateral areas. Pain was present in the thumb, forefinger and back of the wrist. Dr. Prince presented a diagram showing the location of the pains, for which operation was done for relief. The pain was intense, and three operations were undertaken at different times, but none seemed to have been based on neurological principles. Finally an operation was performed which was partially successful for the purposes for which it was undertaken. Six weeks after the accident and before the operation there were areas of anesthesia and analgesia over the radial aspect of the hand, thumb and forefinger, and extending upward over the same aspect of the arm. The reader then went over the nerve and root supply of the hand and arm. In time there gradually developed a severe pain in the neck behind. Even after the discharge from the hospital the man suffered severe pain around the neck and head; it was thought that this might have been caused by injury to a nerve during the operation. The arm was practically useless. His leg was spastic, and he could not support himself on it. There was anesthesia in the right leg. He has a sensation of extreme coldness in the right foot.

DR. S. WEIR MITCHELL asked the date of the operation, which was given as October 20th, and the injury fifteen months or a year and a half before, and the writer further said that the muscles are extremely atrophied, especially the deltoid, and the muscles of the shoulder joint and arm hang down and drag on the shoulder, and this is the cause of the present pain about the shoulder joint.

DR. MEYER said that the profession was again considerably at sea with regard to the anatomical and clinical correlation of the Brown-Séquad paralysis, since Brown-Séquad stated in his last publication on the matter that he had to change his view completely concerning this subject, since on cutting the posterior root he had obtained the Brown-Séquad symptom complex; further by making a second hemisection

lower down, after producing the Brown-Séguard symptoms, he was capable of simply reversing the whole picture in the posterior segments of the body. The question therefore arose whether it was really necessary to assume that the blood clot was concerned in the production of the Brown-Séguard paralysis.

DR. PRINCE said that he never had seen a laminectomy performed for any purpose of this kind without thinking of the possible dangers of an ordinary blood clot being produced.

DR. BURT G. WILDER spoke upon the subject of

REVISED INTERPRETATION OF THE CENTRAL FISSURES OF THE EDUCATED SUICIDE'S BRAIN EXHIBITED TO THE ASSOCIATION IN 1894.

With several charts and specimens of the brain of a suicide, Wilder described the anatomical relationship of the various fissures in the brain. The suicide in question was a dentist who had willed his brain (in writing) to the writer and who, shortly thereafter, killed himself by shooting himself twice, the first ball being deflected and producing no injury, while the second ball penetrated the region of the temple with fatal results. The persistency of the man in trying to take his life was emphasized; that it was a rare condition in a person not known to be a maniac which would force him to actually shoot himself again after the first shot had not taken effect. Wilder said that he had about one hundred well-preserved human brains and had compared them all with reference to the following point: Is there any absolute diagnostic feature of the central fissure on the one hand and the post-central on the other capable of demonstration?

DR. SPILLER asked whether it has been found that the cells of Betz are not numerous in the upper part of the parietal lobule.

DR. MEYER said, in reference to the determination of the fissures, we were too much inclined to speak of having taken a section out of the paracentral lobule, and that at times there is entire failure to find Betz's cells, while in other parts of the paracentral lobule down to the corpus callosum Betz's cells are found.

DR. CHARLES K. MILLS thought that the report of Dr. Wilder's case emphasized the importance of not coming too quickly to conclusions with regard to the duplication of fissures; that he had seen a great many human brains during the last twenty years, and while he could not say frequently, he could say that in a number of instances he had seen an appearance of the duplication of the central fissure. He thought that the conclusion should never be arrived at that duplication of the main fissure like the central fissure was present until other possibilities have been excluded.

DR. WILLIAM G. SPILLER presented a paper entitled

A CASE OF MALARIA PRESENTING THE SYMPTOMS OF MULTIPLE SCLEROSIS, WITH NECROPSY.

The case was one of malaria and disseminated sclerosis. Patient was in good health as far as could be learned. In 1890 he had a chancere. Being a sailor he was exposed to the malaria. In 1892 he lost power in the right side of his body, from which he recovered in four weeks. In December, 1895, he had headaches and vertigo, with feeling of drowsiness, and in the same year suddenly lost power in the left side

of the body. He recovered the power of this side rapidly. In 1896, upon examination, it was found that he stood unsteadily when resting on the right foot. He could not stand alone on the left foot on account of ataxia; ankle clonus on right side. These conditions terminated in death September, 1899. The necropsy revealed an enlarged spleen. Diarrhea, which was severe before death, was probably malarial in character; estivo-autumnal type, resembling cholera. There was moderate sclerotic condition in the cord, not intense, but unmistakable; slightly thickened band of neuroglia tissue. By carmine stain the cells of the anterior walls were normal; no recent degeneration of the spinal cord. Hemorrhage in the brain and symptoms of disseminated sclerosis marked, intention tremor of left upper limb; marked ataxia left lower limb; tendon reflexes exaggerated on right side.

DR. CHAS. K. MILLS said that while this was undoubtedly a malarial case, there was a question after all whether the ataxic symptoms—the unilateral symptoms which led to the diagnosis of disseminated sclerosis—were due to toxemia; were due, in other words, to the unilateral intoxication of the nervous centres. That while the malarial organisms were present in great number, there were also present in considerable number and in irregular location a number of hemorrhagic lesions. He would not attribute the symptoms in a case like this necessarily to toxemia, but rather consider the possibility of small or large disseminated foci—hemorrhagic foci—as the cause of the symptoms.

DR. CHAS. W. BURR, in connection with DR. McCARTHY, read the next paper, entitled

A CASE OF MULTIPLE SCLEROSIS, WITH AUTOPSY.

The patient was an electrical engineer. The first diagnosis was that of tabes, which was persisted in for a year and a half. Case subsequently developed other symptoms, involvement of the cord with marked spasticity, and some bladder trouble. Autopsy showed big patches of sclerosis; the whole spinal cord was affected. Microscopic examination showed the optic nerve to be extensively degenerated. In the acute patches there was marked proliferation of connective tissue surrounding the blood vessels.

DR. ADOLF MEYER spoke briefly of a few reconstructions of parts of the nervous system. He showed specimens and demonstrated the durability of the plates he used to present the specimens. He believed they were less fragile than others.

DR. CHAS. K. MILLS thought they were unusually good for the purpose of teaching the structures or parts of structures and the organs which have to be represented in different planes; by this method he thought the teacher could readily show and the student could readily see and get an idea quickly of parts he would not be able to comprehend.

DR. JOHN JENKS THOMAS read the last paper, entitled

TWO CASES OF TUMOR OF THE SPINAL CORD.

He reported 2 cases of tumor affecting the spinal cord. The first case was that of a young woman, twenty-one years of age, who, during the course of ten months gradually became paraplegic. At the time of the admission of the patient to the hospital the sensory and motor paralysis and the paralysis of the sphincter was practically complete, and certainly

so at a later period. From that time on the patient seemed to have had no pain. Gradually very marked contracture developed, and the patient remained in much the same condition for a period of thirteen years, except for an outbreak of mental trouble with excitement, from which she made a good recovery. Death resulted from exhaustion, from bed sores, diffuse nephritis and chronic cystitis. At the autopsy, besides these conditions, there was found a tumor of the dura in the mid-dorsal region, which had completely compressed the cord beneath it. Microscopic examination of the cord and of the tumor showed the latter to be composed of a mass of cells, which, in character, resembled endothelial cells, among them many small circular bodies, made up of concentric rings, many of which were calcified. The growth was enclosed in the dura, and the author considered it to belong to the endotheliomata. The cord showed at the level of greatest compression a complete destruction of nerve structure, which had been replaced by overgrowths of neuroglia. The cord was atrophied and showed the usual ascending and descending degenerations.

The second case was one of intramedullary glioma in the cervical region in a boy of six years. The symptoms developed two days after a slight injury, beginning with pain in the right hand and arm, the left forearm being congenitally absent, and with pain in the shoulder and rotation of the head to the left. At this time there were no sensory changes. Later the paralysis of the arm became more marked, and there was diminished electrical irritability of the muscles of this arm and slight paresis of the right leg, with increased tendon reflexes in that extremity. Two weeks later, and seven weeks after the onset of the first symptoms, the patient died suddenly with symptoms of interference with respiration. The autopsy showed a glioma of the whole of the cervical enlargement of the cord, into the upper part of which a large hemorrhage had taken place, and another large hemorrhage in the lower part of the growth and in the central part of the cord, extending well down into the thoracic region. Microscopical examinations showed this tumor to be a very cellular growth, but between these cells the characteristic fibres of neuroglia could be made out, while aside from the hemorrhage, to which the author ascribed the sudden death, there was a slight secondary degeneration of the pyramidal tracts in the cord. Sudden death from hemorrhage into the tumor is much rarer in tumors of the cord than in those of the brain, where it not infrequently occurs, though small hemorrhages into the cord tumors are frequent. The case was also unusual because of the rapid course from the time of the first development of the symptoms and because of the youth of the patient. The author thinks the extent of the tumor was too great for it to have developed entirely after the trauma, and he is inclined to ascribe the onset of symptoms after the injury to a small hemorrhage into the pre-existing tumor, similar to the large one which probably caused death, and rejects the idea that the trauma could have acted in this case as a causal factor. The absence of symptoms which could have led to the formation of the diagnosis of an intramedullary growth was probably more apparent than real, and due to the short duration of the symptoms before the sudden and early fatal termination.

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Continued from No. 11, p. 271.)

SECTION OF SURGERY.

THE TREATMENT OF INFECTED WOUNDS.

A DISCUSSION on this subject was introduced by Dr. OSCAR BLOCH, surgeon in chief to the Royal Frederick Hospital, Copenhagen. He said Lister's antiseptic method (treatment by carbolic acid) was based on the treatment of infected wounds (compound fractures). Although all surgeons were agreed as to the superiority of this method, it was not long before new remedies were sought more efficacious than carbolic acid. The most remarkable outcome of these researches was the replacement of the antiseptic by the aseptic method. All the experiments on various methods of treating wounds were founded on a considerable number of valuable investigations on all questions relating to the wounds and their complications, for instance, on microbes and their toxins, on the bactericidal qualities of various remedies, the best method of disinfection, ligature, etc. The author shows that the outcome of all these investigations is that, from a practical point of view, every wound, without exception, is to be looked upon as infected, and that infection and its complications are due to the retention of secretions containing microbes. From this it follows that for the efficacious treatment of wounds the surgeon must put before him two objects: To destroy the microbes or their hurtful products and to prevent the retention of secretions. In other words, antiseptics and drainage must be employed. In order to prevent reinfection of a wound so treated it must be dressed rationally; this is the only way to prevent secondary infection. The author dwelt on the want of agreement and conflicting results of different authorities, and concludes that a scientific experiment is incapable of settling the question, what method of treatment is the best; we must have recourse to clinical experience. As the result of his own experience the author holds that every wound must be treated antiseptically, that carbolic acid is the best antiseptic remedy, that wounds should be drained, and that to dress them in a rational manner an unquestionably sterile dressing must be applied and must be made antiseptic at least in part at the moment of application. Moreover, the dressing must be absorbent, so that it dries up the wound and prevents the surplus of the wound secretions from coming into direct contact with the surrounding air, which contains microbes. Lastly, the dressing must be of such a nature as to filter the air which gains admission to the wound and thus purify it from its microbes. Bloch has attained this object by means of sterilized gauze dressings, carbolized water and cotton wool. With regard to internal antiseptics and febrifuge remedies, with a few exceptions he said he placed little reliance on them, and he criticised the value of therapeutic serums, especially antistreptococcus serum. According to Bloch, it will be well, before using these remedies as curative, to wait till experiment has supplied a firmer basis for practice.

M. FELIX LEJARS, of Paris, said that in recent years the treatment of infected wounds had formed the subject of numerous experimental and bacteriologic-

ical researches. They had yielded valuable information, but all required to be controlled by observation. For the profitable study of the problem, which is very complex, it must be considered under two heads.

(1) Recent infected wounds in which the infection has not yet expressed itself in local or general reactions. These might perhaps be better designated recent wounds assumed to be infected. This assumption, however, should in practice be extended to every accidental wound, and bacteriological examinations show that it is well founded. It is known that even operation wounds are far from being amicrobial. On the other hand, there are no means of recognizing in a recent wound by what microbes it is contaminated, what is their virulence and what their ultimate effect. It has been proved that neither the look nor the visible course of traumatic foci are in this respect sufficient guides. Therefore, every accidental wound should be treated as infected. But how is it to be treated? It is known that the absorption of virus through the injured surface is almost immediate; the rapidity of absorption, however, varies with different microbes; moreover, the dose increases with the duration of impregnation. From this may be drawn the conclusion that the cleansing of the wound, in order to be efficacious, should be as early as possible, but whenever it is done it will be useful. Experience has shown (*a*) that we are powerless to destroy all the germs in a traumatic focus; (*b*) that the natural defensive power of living tissues plays a preponderant part in the fight against infection. The very first procedure, therefore, is mechanical cleansing, which should be minute and complete, aided if necessary by enlargement of the wound and removal of dead tissue. Care should, however, be taken to respect the integrity of living cells, which should be helped in their defensive reactions, nothing more. Sterile water, artificial serum, sterilized boiled compresses entirely answer these requirements; it is not the nature of the fluid used but the method of its employment that gives practical results. Hurtful in large doses, antiseptic solutions, when diluted sufficiently not to alter the living cells, have really no other useful effect than mechanical cleansing. Physical conditions of the same order have to be fulfilled by the dressing. It must be aseptic, absorbent, protective and immobilizing, in a degree applicable to the different regions and for a variable period.

(2) Infected wounds, the infection of which is expressed by more or less pronounced reactions local and general. Here, also, two conditions have to be distinguished: (*a*) The clinical signs of infection may be of recent date, and the wound is not suppurating; (*b*) the wound is in active suppuration. In either case specific serum therapy is indicated; this Lejars considers the scientific, natural method, and the method of the future. Unfortunately as yet only antitetanus and antistreptococcus serum are available. The former is only efficacious as a preventive, while the latter has mostly been used in puerperal fever and erysipelas. Against other microbial infections of wounds we have as yet no effective serum, and against associated infections we are powerless. This makes the treatment of the local focus all the more necessary, and, as in dealing with cases belonging to the first category, the surgeon has to set before him a twofold object. The first thing to be done is to cleanse the whole surface of the wound; then it should be dressed

so as to favor exosmosis, continuous drainage of the whole surface, and prevent all stagnation and super-added infection. The object of the cleansing is especially mechanical, while that of the dressing is especially physical. If these conditions are thoroughly fulfilled the surgeon will have, as far as is possible, protected the living cells against the attack of septic agents without hindering their defensive reactions. In dealing with a suppurating wound the same principles must be applied—thorough exposure of the suppurating focus, and complete and continuous drainage. In certain putrid and gangrenous forms, and in burrowing wounds, oxygenated water, which appears to have a powerful effect on anaërobic microbes, is most useful.

(3) Infected wounds with grave general infection—traumatic septicæmia. Here also it is to specific serum therapy that we must look for rational treatment, but its action is much less certain than in the early stages of infection. At present only experiments can be recorded, and even antistreptococcus serum has seldom been used in traumatic septicæmia. Lejars thinks that it deserves to be tried on a more extensive scale in large doses. In the meantime we must use local treatment preceded by thorough cleansing of the focus. On the other hand, artificial serum therapy, by restoring the blood pressure and stimulating diuresis, increases the natural defence and vital resistance of the organism.

(To be continued.)

Recent Literature.

Practical Anatomy. Including a Special Section on the Fundamental Principles of Anatomy. Edited by W. T. ECKLEY, M.D., Professor of Anatomy in the College of Physicians and Surgeons, University of Illinois; Professor of Anatomy in the Northwestern University Dental School; Professor of Anatomy in the Chicago Clinical School, and Director of the Chicago School of Anatomy and Physiology; Member of the American Medical Association, the Chicago Pathological Society, the Chicago Medical Society, etc., and MRS. CORINNE DUFORD ECKLEY, Instructor in Anatomy in the Northwestern University Dental School; Professor of Anatomy in the Northwestern University Woman's Medical School; Professor of Anatomy in the Chicago School of Anatomy and Physiology. With 347 illustrations, many of which are in colors. Octavo. Philadelphia: P. Blakiston's Son & Co. 1900.

This book is a dissecting-room guide to Morris's "Human Anatomy." As such it treats only of the gross anatomy as studied in the dissecting room on the cadaver. It is more thorough and detailed than the average dissecting-room guide and will be found proportionately more useful. The authors have not, however, escaped entirely from the quiz-compend method and unnecessary space is taken up by italicized questions. The illustrations are taken from Morris's "Human Anatomy," and are clear and artistic. The origins and insertions of the muscles are indicated in colors on the bones. The directions for dissection are plain and specific. The book will be found a clear and safe dissecting-room guide.

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ANOTHER ARGUMENT FOR CREMATION.

IN our editorial of last week on the Galveston disaster we expressed the belief that the suffering induced by disease would not be added to the immediate loss of life through the effects of the storm. This opinion seems to have been borne out by the facts. In spite of what would appear almost insuperable difficulties, which at first threatened to be more than could be successfully met, the devastated city is likely to suffer no further loss of life. The danger no doubt could have been entirely averted had public opinion permitted the immediate cremation of the bodies of the dead. As it was, for the first few days the attempt was made to dispose of the dead by burial at sea and also by hastily made graves on land, although the encroachment of the water had rendered this last undertaking extremely difficult. In spite of heroic efforts, however, the situation was rapidly becoming menacing on account of the impossibility of caring for the great number of dead by such means. Finally the decision was reached, as a matter of necessity, that general cremation should be resorted to, as a protection to the living. Had this decision been reached before there is no doubt that much of the distress and horror of the situation would have been wholly averted. It is hard to conceive the frame of mind which finds a melancholy satisfaction in consigning the body of a friend or fellow being to the sea, or to a rudely constructed grave, and hesitates to permit it to be decently and wholly destroyed at once. Particularly is such a frame of mind unjustified in a situation such as faced the survivors at Galveston. With all due respect to prejudice and established custom, we cannot but feel that the time is rapidly coming when the demands of health and sanitation will require a recognition of the fact that cremation is the only logical means of disposal of the remains of the dead, and especially when the unpleasant necessity comes of the rapid removal of a large number of dead. That popular feeling is awake to the situation is shown by the following excerpt taken from a daily contemporary: "This idea (cremation) has necessarily been of slow growth, though for the last few years it has shown a more

rapid development, and such striking instances of its larger value in an emergency like that at Galveston must act with the force of a general demonstration. Reforms work slowly when there is little to stimulate them, but a convulsion often proves the force and reason that there are in them. In an island located as that is upon which Galveston is situated, there ought to be no more cemeteries should the city again become a place of general residence. And what is strikingly true of Galveston is true in a less degree of all cities. Cremation will become, as the laws of health are better understood and better enforced, a sanitary necessity. With no abridgment of the ceremonies that declare our love and reverence, we shall show a higher regard for the living when cremation takes the place of burial."

SOLITARY IMPRISONMENT.

IT is not our concern to discuss the moral question involved in the justification for capital punishment as opposed to imprisonment for life. No doubt there will always be a difference of opinion on this point, in proportion as the disputants lay stress upon the relative importance of the individual and of the community at large in the social economy. The matter assumes a medical aspect when we stop to consider the possible effect upon the individual of a life imprisonment, to which is added the far greater punishment of solitary confinement. Not long since we noted in a highly reputable daily paper the following statement of the details of Bresci's sentence, the anarhist assassin of King Humbert: "He will be condemned to perpetual labor, but before beginning his toil he will be placed in a cell for ten years of solitary confinement. He will be chained to the wall; he will never see from the depths of his cell a ray of daylight; he will never hear the sound of a human voice. During those ten years of solitude not even a priest can visit Bresci, all occupation is prohibited, and no printed matter of any form ever reaches the eyes of the prisoner, who may not even talk aloud to himself. He receives his food through a little sliding door in his cell, without even seeing the person who brings it."

We are not disposed to place too much credence in these details, if for no other reason than that they are absolutely impossible of systematic execution. The one or two days of solitary confinement meted out to condemned murderers is said to be almost unendurable. To conceive the possibility of such torture extended over a period of ten years is beyond our power of imagination. No human being could endure an immolation which not only cut him off from human companionship, but also deprived him of light and of mental occupation, beyond the entertainment of his own thoughts. Without the slightest question insanity would be the fate of such a man long before the term of his sentence had been reached, and when such an event has occurred the sentence loses its significance wholly. It is well

established that the mere fact of imprisonment under conditions of special hardship is quite enough to upset mental equilibrium in a considerable number of prisoners. How far the law is justified in more or less deliberately bringing about such a result is a matter about which we should suppose there could be but one opinion. It is these possibilities that the advocates of life imprisonment need to take into account when they argue against the "crime" of taking one life as expiation for another. Italy is a country in which capital punishment does not exist, but we may sincerely wish that it did, if anything approaching the punishment described above is possible of execution. It is a variety of torture quite beyond those refined inflictions of physical pain which we are accustomed to regard as relics of a barbarous age and half civilized peoples.

MEDICAL NOTES.

CLAIMS AGAINST THE GOVERNMENT.—It is said that claims aggregating \$2,300,000 or more have arisen in connection with the efforts made, principally in Hawaii, to prevent bubonic plague from securing a foothold in this country and its outlying possessions, by burning a large part of the Japanese and Chinese quarters, where it was thought the disease might find lodgment. Two thousand Japanese residents are said to have lost their homes and practically all their belongings. Their loss is estimated at \$300,000. The Chinese loss was estimated at about \$2,000,000. It appears that there is no fund available by which the United States could pay for these losses, but it is hoped that some satisfactory adjustment may be made. It will be remembered that the area burned in Honolulu was more extensive than had been anticipated.

TYPHOID FEVER IN BALTIMORE.—Last week, as stated in the *Philadelphia Medical Journal*, 39 cases of typhoid were reported in Baltimore, and 4 deaths resulted from the disease. During August the unusually large number of 189 cases were reported, with 37 deaths. An effort has been made by the Health Department to trace the water supply of the sections where fever exists, but it is learned that the water from the different reservoirs intermingles before it reaches the consumer. The cases are confined to the crowded portions of the city. It is thought that the foul gases arising from the harbor, which have been augmented by the warm weather, may be responsible to a certain extent for the prevalence of the disease.

BRITISH CASUALTIES IN SOUTH AFRICA.—The following statistics of British casualties in South Africa are announced: Of the officers in South Africa 72.1 per thousand have been killed or have died from wounds; 30.6 per thousand of the officers have died from disease, while of the men 19 per thousand have been killed or died from wounds, and 31.3 have died from disease. These statistics not only illustrate that while the officers and men have suffered approximately

equally from disease, the risks of the officers in action have been greatly disproportionate, and also that the rate of mortality in South Africa is much greater than it was in the Franco-German War.

NEED OF A PORT HEALTH OFFICER FOR GLASGOW.—The recent appearance of plague at Glasgow calls attention to the fact that the city has no port officer of health. This is said to be due to the peculiar situation of the city with reference to neighboring ports, which must be passed in going by sea to Glasgow. No doubt the present emergency will lead to the appointment of a suitable officer.

SMALLPOX IN PROVINCE OF QUEBEC.—The Province of Quebec is now, according to the *Journal of the American Medical Association*, practically free from smallpox. The last case was disposed of about a month ago.

MEDICAL SCHOOL OF CORNELL UNIVERSITY.—The new building of the Cornell Medical School is not fully completed, but is expected to be ready for occupancy at the opening of the term on October 2d.

EDITORSHIP OF THE "MEDICAL NEWS."—By the retirement of Dr. J. Riddle Goffe, formerly editor of the *Medical News*, Dr. Smith Ely Jelliffe, of New York, assumes editorial control of the journal.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, September 19, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 86, scarlatina 21, measles 4, typhoid fever 32.

DIPHTHERIA IN BROOKLINE AND WALTHAM, MASS.—During the past six weeks 40 cases of diphtheria have been reported to the Brookline Board of Health. The disease thus far has been chiefly confined to children below the school age. The Board of Health has issued and distributed circulars, urging upon the people the importance of reporting all cases of sore throat, in order that bacteriological examinations may be made. As yet no schools have been closed. The two available hospitals for diphtheria are filled with patients, which will necessitate the opening of a third temporary hospital. A sufficient number of cases has also appeared in Waltham to excite some anxiety. New cases are being reported daily among children, many of which are being treated at the hospital for contagious disease.

NEW YORK.

MORTALITY STATISTICS.—The reports of the Health Department for four weeks in August show a considerable reduction in the mortality of the city as compared with four weeks in July, the death rate in August being 18.97 and in July, 22.98. The death rate in August was only very slightly in excess of that for the same period of 1899, namely, 18.11; a very gratifying result when the extreme and prolonged heat of the present season, as compared with the unusual coolness of last year, is taken into con-

sideration. The reduction in the number of deaths was most marked in the class of diarrheal diseases, in which the weekly average was 200 in August, against 313.75 in July. In diarrheal diseases in children under five years of age, the weekly averages were respectively 186.5 and 290.5. The deaths reported from sunstroke numbered 111 for four weeks in August, against 154 for four weeks in July; 88 of these were in the week ending August 8th. The weekly average of deaths from scarlet fever was lowered from 6.25 to 3.25; that from measles, from 16.25 to 5.5; that from pulmonary tuberculosis, from 149 to 143.75; and that from pneumonia, from 101.25 to 78.25. There was a slight decrease in the deaths from diphtheria, whooping cough and bronchitis, while the weekly average of deaths from typhoid fever increased from 10.75 to 14.

OPENING OF PUBLIC SCHOOLS. — The public schools reopened after the summer vacation on September 10th. In the Boroughs of Manhattan and the Bronx the accommodations for the children applying for admission were more nearly adequate than has been the case for many years past, and it is thought that when some new schoolhouses now nearly completed have been opened, there will be ample room for all. Mr. Jasper, who has been superintendent for twenty-one years, states that all the school buildings are in better condition now than at any time since he has held the position. In Brooklyn and Queens the state of affairs is not so satisfactory, and it is stated that in the former borough there are 17,000 and in the latter 10,000 children without adequate accommodation.

THREATENED WATER FAMINE. — The Borough of Brooklyn is threatened with a serious water famine unless there is a considerable rainfall soon. The figures of the Water Supply Department show a reduction of more than one-half in the storage supply in a month, and notwithstanding great economy in the use of water, but a small reduction in consumption. In the Bronx the situation is equally bad, and, according to the statement of Chief Engineer Birdsall, there are five thousand houses there which get water only at night.

PHYSICIANS AND NURSES FOR GALVESTON. — A number of physicians and nurses from Bellevue Hospital have gone to Galveston, and the Salvation Army has also organized a relief party of trained nurses and helpers to aid the sufferers there. The National Volunteer Emergency Service Medical Corps is represented at Galveston by Dr. George Rauchfuss, of New York, Adjutant General and Chief of Staff.

PREVALENCE OF PINK EYE. — At all the hospitals and dispensaries where diseases of the eye are treated large numbers of cases of contagious conjunctivitis, "pink eye," have recently been reported. The outbreak is thought to have originated in the public swimming baths, and extra precautions are now being taken at all the city baths.

Miscellany.

RATS AND PLAGUE.

SOME of the difficulties in the way of destroying the plague-spreading rat are described as follows in the *British Medical Journal*:

"The rat is so commonly associated with the spread of plague, if not with its actual incidence, that the destruction of the animal seems distinctly to be called for as a measure of precaution. The method of getting rid of the rodent is, however, of primary importance. Should poison or fumigation be resorted to, one common effort is to scare the rats in the neighborhood from the locality, and, if they are infected with plague, the consequence will be an increase of the infected area. Another plan is to offer a reward for each rat destroyed. When this plan is adopted the rats are caught and carried to some authorized place, where they are counted and the ratcatcher rewarded. This plan necessitates handling of the rats, and it is possible that the persons who do this become themselves the subjects of plague, or contribute towards the spread of the disease. There is some evidence that it is not the rat itself that is the major source of infection when a diseased rat is handled, but that the vermin which inhabit the rat are themselves inoculated with plague, and as vermin quickly leave a dead rat, the impregnated parasites getting on the clothing of the ratcatcher tend to the diffusion of the disease. It would therefore seem that the only method of killing rats which will do away with dread of their becoming a source of infection is by trapping them. This, however, is a slow process, and one which does not recommend itself to the ratcatcher, who is paid by 'piecemeal.' Even when the rat is trapped the trap should be immersed in a disinfecting fluid if the ratcatcher is being paid according to results, or the rat should be removed from the trap by tongs and burned immediately. The latter process, however, annuls payment by results, as even if the tail is kept as proof of the number caught it will become a possible source of infection by the vermin inhabiting it. The rats, however, might be immersed in a disinfecting fluid, provided the ratcatcher does not handle the animal. It is not safe to attempt to exterminate plague-infected rats by hunting them with dogs or cats, as these animals may catch the disease, or the vermin in the rats may cling to their coats. It might be worth while trying the plan proposed by M. J. Danysz, of the Paris Pasteur Institute, of which an account was given in the *British Medical Journal* of May 19th, 1900, page 1244. Briefly stated, this consists in the introduction into a given rat population of a coccobacillus presenting the general characters of bacillus coli, and thus resembling Löffler's bacillus typhi murium. The plan has been tried with considerable success at Lille, Hamburg, Copenhagen and Tunis, as well as in Paris."

Obituary.

JACOB M. DA COSTA, M.D., LL.D.

By the death of Dr. J. M. Da Costa, which occurred September 12th, the medical profession of America loses one of its most brilliant representatives. He had reached

his sixty-eighth year, though he had suffered for some years from an affection of the heart which finally led to his sudden death. Born in St. Thomas, West Indies, his early education was secured in Germany, whence he came to Philadelphia and was graduated at the age of nineteen from the Jefferson Medical College. After spending two years in study abroad, he returned to Philadelphia and began the practice of his profession. In 1864, he was appointed a lecturer on clinical medicine at the school from which he had graduated, and later was elected to the chair of theory and practice at the same institution. For a number of years he taught in this professorship, and finally resigned to accept the chair of the practice of medicine and clinical medicine. For the past few years he has been professor emeritus. During the active period of his life he was connected with the Episcopal, Philadelphia and Pennsylvania Hospitals, where the foundation of his wide clinical experience was laid. He published a large number of papers on general medical subjects and was the author of a well-known textbook. He was a member of the American Academy of Arts and Sciences, and the American Philosophical Society; he was also one of the organizers of the Pathological Society of Philadelphia, and at one time president of the College of Physicians of Philadelphia, and of the Association of American Physicians. He was a most successful teacher, an able diagnostician and a man much sought as a consultant.

From cerebrospinal meningitis New York 15, Everett 3, Boston 2, Baltimore, Worcester, Somerville, Springfield, Haverhill and Quincy 1 each. From whooping cough New York and Washington 4 each, Boston 3, Baltimore, Springfield, Taunton, Everett and Chicopee 1 each. From scarlet fever New York 2, Boston and Worcester 1 each. From measles New York 3, Washington 1. From erysipelas New York 4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending August 25th, the death rate was 19.8. Deaths reported 4,404; acute diseases of the respiratory organs (London) 149, diarrheal diseases 883, whooping cough 117, measles 62, diphtheria 50, fever 44, scarlet fever 24.

The death rates ranged from 11.3 in Cardiff to 30.7 in Preston; Birmingham 24.4, Bradford 13.2, Bristol 16.0, Gateshead 25.3, Hull 24.0, Leeds 19.6, Liverpool 22.8, London 19.2, Manchester 19.3, Newcastle-on-Tyne 19.4, Nottingham 19.8, Oldham 22.4, Sheffield 25.9, Sunderland 19.8, West Ham 18.4.

METEOROLOGICAL RECORD.

For the week ending September 8th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Baro-	Ther-		Relative		Direction		Velocity		We'th'r.		Rainfall in inches.	
	meter	mo-	mo-	humid-	of wind.		of wind.		*				
	Daily mean.	Daily maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S. 2	30.28	75	86	64	81	79	80	S.W.	S.W.	9	10	C.	C.
M. 3	30.13	80	91	69	80	78	79	W.	S.W.	12	15	C.	C.
T. 4	30.15	80	89	70	74	54	64	W.	N.	8	8	F.	C.
W. 5	30.16	80	77	64	57	62	60	N.W.	S.	4	11	C.	C.
T. 6	29.88	70	91	70	73	67	70	S.W.	S.W.	18	12	O.	C.
F. 7	30.10	80	75	62	67	74	70	N.	E.	6	10	O.	C.
S. 8	30.20	68	71	57	74	76	75	N.W.	S.W.	2	14	C.	O.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 8, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York . . .	3,654,554	1528	520	22.62	4.80	10.20	1.62	.60	
Chicago . . .	1,619,226	—	—	—	—	—	—	—	
Philadelphia . .	1,266,832	—	—	—	—	—	—	—	
St. Louis . . .	623,000	—	—	—	—	—	—	—	
Boston	539,416	214	77	33.84	9.40	14.57	.94	4.23	
Baltimore . . .	506,389	195	77	23.46	1.80	18.87	2.04	1.53	
Cincinnati . . .	405,000	—	—	—	—	—	—	—	
Cleveland . . .	350,000	—	—	—	—	—	—	—	
Pittsburg . . .	305,000	—	—	—	—	—	—	—	
Washington . .	277,000	102	42	—	—	—	—	—	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	68	25	33.81	5.88	20.58	—	—	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Charleston . . .	65,165	—	—	—	—	—	—	—	
Worcester . . .	111,732	52	19	40.32	5.76	15.36	9.60	1.92	
Fall River . . .	103,142	—	—	—	—	—	—	—	
Cambridge . . .	92,520	19	12	31.56	10.52	26.30	—	—	
Lowell	90,114	41	19	26.84	9.76	14.64	—	—	
New Bedford . .	70,511	36	29	55.40	5.51	49.86	—	—	
Lynn	68,218	20	11	30.00	—	15.00	5.00	—	
Somerville . . .	64,394	17	11	47.04	11.76	—	—	11.76	
Lawrence . . .	59,072	28	18	42.84	—	35.70	—	7.14	
Springfield . .	58,266	31	13	45.22	6.46	35.53	—	—	
Holyoke	44,510	18	15	61.05	5.55	33.33	—	27.77	
Brookton . . .	38,759	17	4	47.04	—	5.88	17.64	5.88	
Salem	37,723	18	8	16.66	—	11.11	—	—	
Malden	36,421	14	5	—	—	—	—	—	
Chelsea	34,235	15	7	—	—	—	—	—	
Haverhill . . .	32,651	11	1	27.27	9.09	9.09	—	—	
Gloucester . . .	31,426	3	2	—	—	—	—	—	
Elchburg . . .	30,623	13	5	53.83	—	30.76	7.60	—	
Newton	30,461	6	1	—	—	—	—	—	
Taunton	28,527	22	9	45.65	—	29.05	8.30	—	
Everett	28,102	10	5	50.00	—	—	—	—	
Quincy	24,578	7	3	42.84	—	14.28	—	—	
Pittsfield . . .	23,421	—	—	—	—	—	—	—	
Waltham	22,791	5	2	40.00	—	20.00	—	—	
North Adams . .	21,583	2	1	—	—	—	—	—	
Chicopee	18,316	6	2	50.00	—	33.33	—	—	
Medford	17,190	3	1	—	—	—	—	—	
Newburyport . .	15,936	—	—	—	—	—	—	—	
Melrose	14,721	2	—	50.00	—	—	—	50.00	

Deaths reported 2,535; under five years of age 950; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 753, diarrheal diseases 359, consumption 248, acute lung diseases 140, typhoid fever 56, diphtheria and croup 36, cerebrospinal meningitis 26, whooping cough 16, erysipelas 4, scarlet fever 4, measles 4.

SOCIETY NOTICE.

TRI-STATE MEDICAL SOCIETY OF ALABAMA, GEORGIA AND TENNESSEE.—The Twelfth Annual Meeting of the society will be held at Chattanooga, Tenn., Thursday, Friday and Saturday, October 11, 12 and 13, 1900.

RECENT DEATH.

JOHN McMAHON BROWN, M.D., of New York, died on September 12th, at the age of fifty-five years. He was a native of Ireland and was graduated from the University of Dublin. At the time of his death he was one of the attending physicians of the Metropolitan Dispensary.

BOOKS AND PAMPHLETS RECEIVED.

A New Method in Brain Study; Fissura Calcarina, Cerebral Eidola, Prothymia, Intention, the Anthemion. By Wallace Wood, M.D. Reprint. 1899.

The Microtometist's Vade-Mecum: A Handbook of the Methods of Microscopic Anatomy. By Arthur Bolles Lee. Fifth edition. Philadelphia: P. Blakiston's Son & Co. 1900.

Physical Fitness of Railway Employees. By R. C. Richards, Esq., Chicago, G. P. Conn, A.M., M.D., Concord, N. H., Joseph A. White, A.M., M.D., and L. L. Gilbert, Esq., Pittsburgh, Pa. Reprint.

Transactions of the Sixth International Ootological Congress, London, August 8-12, 1899. Edited under the Direction of the Editorial Committee, by E. Cresswell Baker, Hon. Secretary-General. 1900.

Medical Diseases of Infancy and Childhood. By Dawson Williams, M.D., London. Second edition, revised, with additions. By Frank Spooner Churchill, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

The Diagnosis of Chlorosis and Chloro-Anemia. Acute Enlargement of the Thyroid Gland, with Report of Cases. The Immediate and Remote Effects of Athletics upon the Heart and Circulation. Aortic Regurgitation, with Remarks upon Flint's Murrain and Paroxysmal Sweating. By Alfred Stengel, M.D., Philadelphia, Pa. Reprints. 1899, 1900.

Original Articles.

A STUDY OF THE X-RAY PLATES OF ONE HUNDRED AND FORTY CASES OF FRACTURE OF THE LOWER END OF THE RADIUS.¹

BY E. A. CODMAN, M.D., BOSTON,
Surgeon to Out Patients, Massachusetts General Hospital, Ski-
agrapher to the Children's Hospital.

MY object in showing you some lantern slides this evening is to illustrate the value of the detailed study of skiagrams in cases of fracture and in bone diseases. As the subject is a large one, I have chosen Colles's fracture as an illustration, hoping that I may show of what value the x-ray has been in this troublesome lesion. I am indebted to the out-patient surgeons of the Massachusetts General Hospital for the cases and to Mr. Dodd for most of the skiagrams.

The lantern slides which follow those of Colles's fracture are nearly all from cases of bone disease which I have taken this winter for the surgeons of the Children's Hospital. In several of the cases the skiagram led to early diagnosis, and in others it has aided operation in pointing out the exact limits of the diseased area. In osteomyelitis, tuberculosis and syphilitic disease of the long bones it has proved of particular value. In a future paper on this subject I hope to describe the characteristic appearances of these lesions.

Colles's fracture.—For purposes of study, the skiagrams of 140 cases of fracture of lower end of the radius, treated at the Massachusetts General Hospital in the last four years, were taken. It was found that these cases could be separated into ten or more distinct types according to the lines of cleavage and the directions of the displacements. Cases which were not strictly in the lower end of the radius were excluded. The following classification seems to be founded on pretty distinct lines, although it is realized that one type may fade into or be combined with another.

CLASS I. *Fracture through the base of the styloid process of the radius.*—In this type the displacement does not affect the hand or wrist, which are

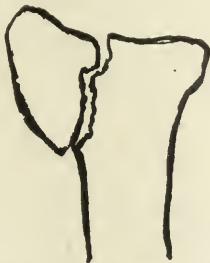


FIG. 1. Fracture through the base of the styloid process.

still in normal relation with the main part of the radius. The fragment is displaced but little—generally upward and backward by the supinator longus. There is the typical change in relationship of the styloid processes; little or slight backward displacement and no silver-fork deformity. There is crepitus; no impaction; no subluxation of the ulna.

¹ Read before the Boston Society for Medical Improvement, March 19, 1900.

The width of the wrist is increased, but unless the line of fracture extends far inward into the joint the hand does not follow the fragment as in Class VIII. If this is the case fracture of the styloid process of the ulna may occur. There were but 4 cases of this class in my series, in 1 of which the styloid process of the ulna was broken. A plaster strap about the wrist is the appropriate treatment.

CLASS II. *Fracture of the inner angle of the lower end of the radius.*—In this type the fragment usually remains in place or may be dislocated backwards.



FIG. 2. Fracture through the inner angle.

The relative lengths of the styloids are not changed; posterior or radial deformity is exceptional; crepitus is present; impaction is not. There is no subluxation of the ulna unless the styloid is broken. There is increase in the width of the wrist, but no radial displacement of the hand. Of this type there were 3 in the series. In 2 of these the styloid of the ulna was broken. A simple band about the wrist is the only necessary fixation, with splints only for rest.

CLASS III. *Transverse fracture at or a little above the epiphyseal line (in adults) without displacement.*—There are a considerable number of cases of this kind—sometimes slightly impacted, but often not. Owing to the fact that in all my cases I did not have lateral as well as anterior views, the percentage of 11% is probably too large, and some of these cases would more naturally fall into Class VIII. But in this, as in the other types, no hard and fast rules can be set. In some of my cases reduction had probably



FIG. 3. Transverse fracture without displacement.

been effected before the skiagrams were taken. In others the periosteum may not have been completely torn. The relations of the styloids are but little changed. There is no posterior deformity. Crepitus may be obtained as a rule and impaction can only be present in a very slight degree. No increase of width or radial displacement. Of this type there were 16, or 11% of 140, and there would no doubt have been less had those which had been manipu-

lated previous to the x-ray been ruled out. Sixty-six per cent. of these cases had fracture of the styloid of the ulna also.

CLASS IV. The distal fragment is comminuted, either as a simple T fracture or into several smaller pieces. The whole list of classical signs are present. The fragments are generally displaced posteriorly and radially, as in Class VIII, but part of them may go anteriorly. There may or may not be impaction.



FIG. 4. Comminution of distal fragment.

There were 13, or 9%, in my series, and all of these had also fracture of the styloid process of the ulna. The treatment to be described later for Class VIII is most appropriate for this class.

CLASS V. *Separation of the epiphysis of the lower end of the radius.*—These cases often present themselves with the fragment completely reduced, but may show a typical silver fork deformity. As a rule they are easy to reduce and do not tend to become displaced again easily. Fract-

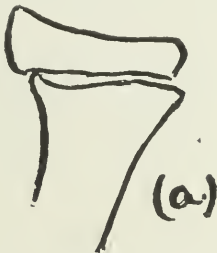


FIG. 5. (a) Separation of epiphysis.

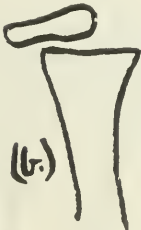


Fig. 5. (b) Separation of epiphysis, lateral view.

ure of the styloid of the ulna occurred in all my cases in which this process was ossified, that is, 6 of the 17. Careful reduction and fixation in splints or plaster for two weeks is almost sure to produce a good result.

CLASS VI. *Separation of the epiphysis of the lower end of the radius with a chip off the posterior surface of the diaphysis.*—This class proves to be quite common, 10 cases in 140, or 7%. Uncomplicated separation of the epiphysis occurred 17 times, or 12%. So that in 27 cases of separation of the epiphysis, a chip out of the diaphysis occurred in 10, or

over one-third of the cases. In these 10 cases fracture of the styloid of the ulna occurred also except in 2, in which the process was not ossified. Fixation

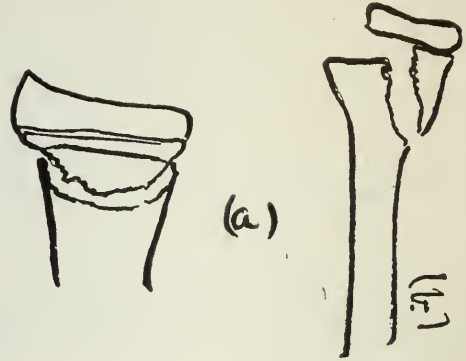


FIG. 6. (a and b) Separation of epiphysis with chip from diaphysis.

between two splints and a dorsal pad over the fragment are enough in most cases. If there is radial displacement also, cross traction as in Class VIII may be employed.

CLASS VII.—*Impaction of lower fragment into the shaft.*—This is a rare class, there being only 2 cases in 140. In one the styloid of the ulna was broken; in the other the skiagram was too indistinct to determine whether it was broken or not. The relations of the styloids are altered. There may be posterior

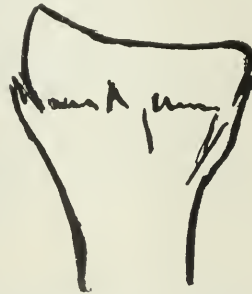


FIG. 7. Impaction of lower fragment into upper.

deformity. There is impaction without crepitus. The ulna is subluxated when the styloid is injured. There is increase in width and slight radial displacement. Unless contraindicated by age, it is better to break up the impaction and use anterior and posterior splints.

CLASS VIII. This is the typical Colles's fracture and may itself be divided into two forms: That with marked radial displacement of the fragment, and that in which the posterior deformity is more decided. There is usually both—at least to some extent. All the classical signs are present, the amount of crepitus and impaction varying in individual cases.

The lateral view is depicted in Fig. 8 a and the anteroposterior in Fig. 8 b. It is to be remembered in almost all fractures of the lower end of the radius that the hand and wrist bones follow the distal fragment to which the ligaments bind them. In Fig. 8 a the fragment, besides being pushed backwards, is tilted on its own axis, and pierced by the sharp dorsal edge of the diaphysis. It is this which causes the impaction. In the other plane (8 b) the frag-

ment is usually seen tipped to the radial side. This displacement may occur with practically no dorsal dislocation, or vice versa, we may get dorsal with no radial. In the former case it is usual to find fracture of the styloid of the ulna. In the latter it is less common.

In unusual cases the upper fragment pieces the lower almost directly, but, as pointed out by Dr. J. C. Munro, there is always some little tilting towards the radial side. In Fig. 8 *a* it will be observed that the sharp palmar edge of the upper fragment projects anteriorly. Where perfect reduction (which is rare) is not made, this lower edge is left as a menace to the tendon sheaths and median nerve. The author believes that undue pressure against this edge is responsible for many of the unhappy cases of contractures of the hand seen after this fracture. Provision against this is made by an anterior pad extending along the palmar side of the radius to just above this lower edge. The application of this will be de-

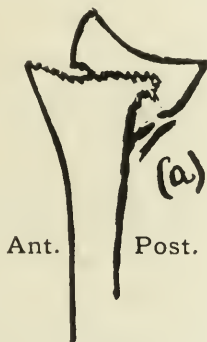


FIG. 8. (a) Lateral view, typical Colles's fracture.



FIG. 8. (b) Anteroposterior view, typical Colles's fracture.

scribed below. Of the 140 cases 64, or 46%, fell under Class VIII. In 89% of those in which the styloid process of the ulna could be made out clearly it was found to be broken. Those in which it was not broken were those in which the type was posterior and not radial.

As fractures of Class VIII are the most common and severe, I shall speak of the treatment at more length. The indications are to prevent posterior and radial deformity and to bring the whole hand into normal line with the forearm. The dangers to be avoided are pressure over the sharp edges of the fragments and constriction of the circulation. The parts must first be reduced and then held there.

In reduction it must be remembered that the fracture is in the radius, not in the wrist bones, and that the lower fragment is to be put in place, carrying with it the wrist and hand. *It must be pulled down and shoved over* the angle of the dorsal edge of the upper fragment. A similar and simultaneous move-

ment frees the radial edge. The fragment once reduced can be easily kept in place by the thumb and forefinger, but it has a tendency to slip out as soon as pressure is omitted. To keep it in place, a small pad of sheet wadding or felt is placed over the dorsal surfaces of the lower fragment, and an anterior pad along the front of the radius about three-fourths of an inch wide and one-fourth of an inch thick. This stops just short of the sharp edge and is fastened to the arm by adhesive straps before the splints are applied. A posterior splint to the knuckles of the first phalanges and an anterior to the thenar eminence hold these pads in position. To control the tendency of the hand to become displaced to the radial side, a cross traction method is used (Fig. 11.) Two adhesive straps are looped about the wrist in opposite directions, one tending to pull the ulna toward the radial side, the other to pull the fragment with the hand toward the ulnar side. These are laid in position at the same time as the anterior and posterior pads. The splints are held by an assistant, and after putting a circular strap about the upper end of the splints, traction in opposite directions is put on the lower straps and the ends curled about the splints and caught. This leaves the ulnar side free opposite the lower fragment and the radial side free opposite the upper fragment, and ensures a good circulation. The fingers and thumb are allowed free movement throughout, and the splints are cut off at the wrist at the end of the second week.

As this treatment was evolved by the study of the above cases, I have had but 4 cases in which it has been carried on throughout. These have proved very successful, showing almost complete reduction of the fragments and giving good motion at the end of the fourth week.

CLASS IX. *Stellate fracture of the lower end of the radius, with longitudinal fissures extending into the shaft.*—This fracture was described by Henry J. Bigelow, and a specimen prepared by him is in the Warren Museum. The relations of the styloids are but little if any changed. There is no posterior de-



FIG. 9. Stellate fracture.

formity and but little radial. No crepitus or impaction or subluxation of the ulna. There is more or less increase in width. In 140 cases this form occurred 6 times, or 4%. In 3 the ulnar styloid was broken, in 2 it was intact, and in 1 the skiagram was obscure. A simple band about the wrist is all the fixation required.

CLASS X. *Reversed Colles's fracture, that is, anterior displacement of the lower fragment.*—This fracture has been carefully described by Roberts, of Philadelphia. It is almost exactly the reverse of Class VIII, and is reduced and fixed in a similar

manner, except that the position of the pads is changed. Five cases are included in my series, nearly



FIG. 10. Reversed Colles's fracture.

4% of the whole. In all of them the ulnar styloid was broken.

In describing these ten types the author does not wish to assert that all fractures of the lower end of the radius must fall in one of these classes. The lines of cleavage vary to a great extent, and possibly other forms might have been included, as those cases

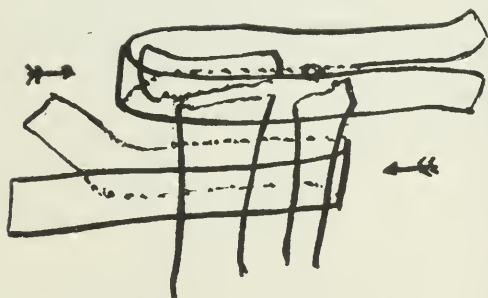


FIG. 11. Cross traction method for Class VIII.

in which the anterior or posterior lip of the joint cavity are alone broken. The study is made more with the object of calling attention to the variety of fractures in this region than to lay down absolute rules.

I wish to emphasize the following points :

- (1) That true Colles's fracture formed but 46% of 140 cases of fracture of the lower end of the radius.
- (2) That a knowledge of the position of the fragments is necessary for intelligent treatment.

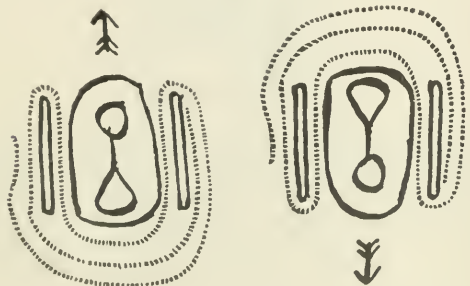


FIG. 12.

(3) That the application of padding and splints should vary according to the displacement shown in the skiagram.

(4) That if the x-ray shows that marked deformity is still present after the splints have been applied, ether should be given, and another energetic attempt at reduction made.

(5) That concomitant fracture of the ulnar styloid occurred in at least 62% of 140 cases, and if 39 cases in which this process was obscure in the skiagram are deducted, fracture occurred in 86%.

(6) That in true Colles's fracture pressure over the anterior edge of the upper fragment should be avoided and cross traction should be used to correct the radial displacement of the lower fragment.

(7) That statistics of the results of Colles's fracture are not of value unless the pathology of each case is determined by a skiagram.

To illustrate the use of the x-ray in diseases of the bones, the following lantern slides were shown :

BONE DISEASES.

1. Old tuberculosis of knee.
2. Old tuberculosis, showing ulceration of outer condyle.
3. Rheumatoid arthritis, showing sponginess of bone and erosion of joint surfaces.
4. Osteophite of elbow; osteo-arthritis.
5. Early caries of ulna.
6. Tuberculosis of lower epiphysis of tibia.
7. Tuberculosis of lower end of fibula.
8. Tuberculosis at lower epiphysal line of fibula.
9. Tuberculosis of tibiotarsal articulation.
10. Tuberculosis of lower epiphysis of fibula.
11. Osteophite of fibula.
12. Syphilitic periostitis of long bones of leg.
13. Osteomyelitis of femur, showing sequestrum.
14. Tumor albus, showing change in epiphysis.
15. Tumor albus; erosion of outer condyle causing abduction.
16. Tuberculosis in upper epiphysal line of tibia.
17. Old tumor albus; disappearance of external condyle.
18. Osteomyelitis of tibia.
19. Caries following compound fracture of femur.
20. Coxa vera; rickets.
21. Pelvis, acetabulum and head of femur eroded.
22. Sarcoma of humerus, disappearance of bone.
23. Tuberculosis of head of humerus.

TABLE I.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
Relations of styloids changed.	+	0	0	+	±	+	+	+	0	+
Posterior or silver-fork deformity.	0	±	0	+	±	+	+	±	0	0
Radial displacement.	+	±	0	+	±	±	±	±	±	±
Increase in width.	+	+	0	+	±	±	+	±	±	±
Subluxation of ulna.	0	±	0	+	±	±	±	±	0	+
Crepitus.	+	+	+	+	0	+	0	±	0	+
Impaction.	0	0	0	±	0	0	+	±	0	±

TABLE II.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
Number of cases in 140	4	3	16	13	17	10	2	64	6	5
Percentage in 140	3	2	11	9	12	7	1.5	46	4	4
Percentage of fracture, styloid of ulna	50	66	66	100	100	100	100	88	100	100
Number of cases in which styloid of ulna was too indistinct to recognize fracture or where it was not yet ossified	2	0	4	0	11	2	1	16	1	2

ENTERIC FEVER IN LONDON, ENG. — An epidemic of enteric fever is reported from South London. The disease is said to have been brought to England by soldiers sent home from South Africa.

TRAUMATIC JOINTS.¹

BY HOMER GAGE, A.M., M.D.,

Surgeon to Worcester City, Memorial, and St. Vincent's Hospitals.

IN his lectures on the "Principles of Surgery," John Hunter, in discussing injuries to the joints, observes that "sprains are at least seldom perfectly cured," and while I think so strong a statement would hardly be accepted as true today, it must still be acknowledged that seemingly trivial accidents affecting the joints often result in very long, and sometimes even permanent, disability. So that the saying, which must have been truer then than now, is still commonly heard, that a sprain is worse than a broken bone. Whenever the restoration of the function of the joint is long delayed or the pain persistent, the trouble is ordinarily ascribed to rheumatic complications. To what extent this is simply a convenient cloak to hide ignorance, and to what extent such complications do actually exist, it is the purpose of this discussion on diseases of the joints, as far as possible, to explain.

To introduce the subject, I wish very briefly to consider the effects of traumatism upon the joints, the changes which are commonly produced in the structures in and about the joints, how these explain in many instances the delay in the restoration of function, and what may be done to prevent such delays. For the purposes of this discussion I wish to exclude all injuries which are complicated by fractures or dislocations or by external lacerations, and to consider only those which come naturally under the head of sprains or contusions.

The effects of such injuries vary very much according to the amount of force used in producing them, and according to the manner in which that force is applied. But there is one thing common to all injuries which are sufficient to cause a suspension of function, and that is, a laceration of some of the soft parts in or around the joint. It may be from direct violence, as in a bruise or contusion; it may be from indirect violence, as in the stretching caused by a twist or wrench; it may be accompanied by synovial effusion. If severe, it may be manifested at once by the resulting discoloration, or the displacement of cellular structures may be manifest only upon microscopic examination. I believe, however, that as in concussion of the brain, so in sprains and contusions of the joints, impaired function can be produced only by structural change. These changes may affect the cartilages, the ligaments, the synovial membranes, the muscles and their sheaths which lie in proximity to the affected joint, or to the soft parts around and outside the joint; they may affect any or all of these structures. Injury to the cartilages may result in erosion and ulceration, must always be attended by injuries to the more superficial parts, and be slowly and imperfectly repaired. The ligaments, whether torn or stretched, will be thickened by the exudate which is deposited about the torn fibres, may contract adhesions to other structures, or be shortened or distorted by their resulting cicatrices. The synovial cavities may be obliterated by adhesions. Tenosynovitis may cause adhesions which prevent the play of the tendon in their sheaths, or the effusion of lymph in the soft parts about the joint may be so great as to interfere with its motion. The presence

of blood clots in the tissues, with their subsequent organization, furnishes another element to favor the formation of adhesions and the contraction of resulting cicatrices. To a greater or less extent these are the changes following every sprain or contusion according to the severity of the injury. The important feature of them all is the tendency to the formation of adhesions or contractions, and just so far as these are permitted to occur, delayed or imperfect results will be found.

That treatment will be most successful which, while controlling exudation, and permitting repair, provides at the same time for the maintenance of motion. This has been secured by various combinations of rest and compression, with both active and passive exercise. Fixation and compression are certainly the most efficient agents for the control of swelling and the relief of pain, and are therefore especially indicated at the outset. Compression also favors resolution, but does not prevent adhesions and contractions, and both are likely to follow too long continued rest. A healthy joint may be held immovable for a very long time, and yet promptly regain its usefulness; but an injured joint would, during the process of repair, have acquired at least a partial ankylosis, requiring weeks or even months to overcome, varying according to the extent of the damage. Rest and fixation should be continued only so long as is necessary for the relief of pain. They should give place first to the use of carefully applied massage, not indiscriminate rubbing, to stimulate the lymph currents and promote absorption of the effusion, and this should be followed as fast as the disappearance of pain will permit, by some form of active or passive motion to maintain the elasticity of the tissues and prevent the formation of strong adhesions. In the milder cases this may be secured by the method of strapping, revived by Gibney a few years ago, which permits of limited voluntary exercise, and may often be used from the time of the very first dressing. In the severer cases rest and compression must be maintained for a considerable time, but even then after the first two or three days must be supplemented by systematic passive exercise at frequent intervals, such exercises to be increased as fast as the subsidence of pain will permit, and the amount of fixation diminished as rapidly as possible. It is well for us to remember, I think, that the principle of rest, like many other good things, may be carried too far. It should give place to a carefully regulated and controlled use just as soon and just as far as the sensitiveness of the joint will reasonably allow. Keeping this always in mind, I believe that many of the delayed recoveries and imperfect results for which we have felt obliged to fall back upon the theory of some constitutional diathesis may be satisfactorily avoided.

In the neglected cases, in which swelling and stiffness have not disappeared, but, with pain and soreness, continue to interfere with the use of the joint, the problem is a different one. The effused blood and lymph have become partially organized, adhesions have been formed, and ligaments and tendons have already contracted. In these cases of chronic sprain, rest relieves pain, but favors ankylosis. Compression combined with exercise, as in the method of strapping with adhesive plaster, is often useful and sometimes sufficient. It is, however, es-

¹ Read before the Massachusetts Medical Society, June 13, 1900, and recommended for publication by the society.

pecially in these cases that massage with involuntary as well as voluntary exercises accomplishes most, and here we have much to learn from the violent methods of the bone setters and osteopaths. If the ankylosis is thoroughly broken up under ether, and the joint immobilized, the adhesions quickly reform; some rest is necessary for the relief of the pain which follows the operation, but the massage and exercise, to be efficient, must be as vigorous as the patient can comfortably stand—much more vigorous, frequently applied and persistent than in the case of freshly inflicted injury. A single instance from my own experience will, perhaps, best illustrate its necessity. A young man was thrown from a bicycle, injuring the elbow. No fracture was discovered at the time, and when he first presented himself to me five weeks later there was no swelling and no deformity, but almost complete ankylosis. He was advised to have it vigorously rubbed and exercised, and to use it as much as possible himself. Two or three weeks of this plan being followed by no relief, I etherized him, broke up the adhesions, found that there was no bony obstacle to the motions of the joint, and had the rubbings continued, but with no practical benefit. He was sent to a distinguished masseuse in Boston, who advised a continuance of active and passive motion, and assured him, as I had done, that good motion would ultimately be restored. At the end of a year, with the arm still ankylosed, he consulted a natural bone setter, and at the end of a month had a useful arm, which has steadily improved until it is almost as good as it was before the accident. He tells me that the method of treatment by passive motion and rubbing was identical with what we had been doing, but that very much more force was used; that it hurt him a good deal at first, but after a few treatments the pain began to diminish and soon ceased altogether. This and similar experiences have taught me that where tolerably firm adhesions and contractions have occurred, they can be overcome most quickly and most easily by the exhibition of a corresponding force in their manipulation, applied persistently, regularly, and at very short intervals. Recently a new agent has been brought forward to assist in relieving these most obstinate cases, namely, the hot-air treatment, given most easily by the so-called Betz apparatus. It is practically baking the limb in a hot-air oven in which the temperature is carried approximately to 300° F.

From the careful observations and experiments in the use of hot air reported by Frazier in the *Annals of Surgery* for 1897, we learn that when a limb has been subjected to a temperature of 300° F. for an hour, a diffuse hyperemia of the integument may be plainly seen, there will be a temporary numbness of the part, and if there be not complete ankylosis, less pain and more freedom in the movements of the joint. He believes that all the benefits are the results, not of any constitutional effects, but of purely local influences. These he finds chiefly in a locally stimulated circulation, which produces a temporary edema and permits of a certain amount of mechanical stretching, at the same time carrying away and flushing out the fluid that lies stagnant in the tissues. In other words, the hot-air treatment accomplishes, perhaps, a little easier and more thoroughly because the heat is greater, just what has been attempted by the more old-fashioned method of the hot pack or the steaming in hot,

moist flannels. It prepares the joint and puts it in a most favorable condition for massage and active exercises. To this extent it is a useful adjunct to the methods already described, but is of little avail without them.

In conclusion, I desire to express my belief:

- (1) That all injuries to joints accompanied by loss of function are always attended by more or less laceration of the tissues in or about the joint.
- (2) That the delays in the restoration of function are due in most instances not to any complicating diathesis, but to the changes incident to the repair of these lacerations and their effects.
- (3) That such delays are best avoided by an early resort to massage and active or passive motions, and are favored by too long a continuance of rest and fixation.
- (4) When such delays have occurred they are best overcome by more vigorous and persistent manipulation, supplemented by the application of heat or such other agents as may best stimulate the local circulation and favor the elasticity of the tissues.

A CRITICAL REVIEW OF THIRTY CASES OF PYOSALPINX.

BY G. S. WHITESIDE, M.D., AND W. J. WALTON, M.D., BOSTON,
From the Clinico-Pathological Laboratory of the Massachusetts General Hospital.

THROUGH the kindness of several members of the staff of the Massachusetts General Hospital, we are enabled to report a critical review of 30 cases of pyosalpinx; some of them were operated in the Massachusetts General Hospital, some are taken from the records of private cases of Dr. M. H. Richardson, and 2 of them are our own cases. Hence not more than 4 or 5 cases are the results of any one operator's skill. The clinical records are, in 25 cases, taken from the hospital record books, the remaining 3 are from Dr. Richardson's notebook and our own notes on 2 cases. The cases are not picked and chosen with regard to either clinical or pathological results, but are a consecutive series of operations from which *none* have been excluded to either decrease our mortality or improve our statistics. Only those cases have been excluded the specimens from which were received so long after operation that no accurate bacteriological conclusion could be drawn from them.

A study has been made in all cases of cover glasses smeared with pus from the affected tube and of cultures inoculated directly from the same material. These cultures have been taken on ordinary blood serum, plain agar, bouillon, gelatine, litmus milk, potato and specially prepared media with a view to growing the gonococcus. These special media were blood agar, prepared by smearing human blood drawn in a sterile manner over the surface of a sterile agar slant; urine agar, prepared after the manner advocated by those gentlemen who have given the subject such careful attention at the Johns Hopkins Hospital, and also ascitic fluid agar, prepared by the rules laid down by Dr. Hugh Young, of the above hospital. On none of these media were we brilliantly successful in cultivating the gonococcus. Some of these latter tubes, after having proved useless in our hands, were sent by mail to Dr. Young, who grew gonococci obtained in Baltimore upon our tubes and returned them

to us. We followed his directions minutely, but were unable to obtain a second generation.

We have carefully studied both bacteriologically and histologically the cut sections of tubal tissue after being properly hardened. In all cases we have found the histology bear out deductions made from clinical observations. We have become persuaded that the variety of organism concerned, has little, if anything, to do with the severity of the case and the outcome, except in the case of the streptococcus or the tubercle bacillus. On the whole, drainage, by gauze wicks, does not tend to reduce the mortality of the operation. On the other hand, in 3 cases drainage was followed by fecal fistulae, and 1 of these cases proved fatal from this cause alone. One, a tubercular case, never closed up during the lifetime of the patient, the other recovered without a second operation.

The operative mortality in the cases reviewed showed death from fecal fistula as above noted, death from general tuberculous infection one year and a half subsequent to operation in 1 case, death from general streptococcus peritonitis in 2 cases. In one of these the organisms were demonstrated and the peritonitis existed at the time of operation, in the other no organisms could be detected at the time of operation, the peritonitis developing immediately subsequent thereto and closure without a drain. In the fifth case death resulted from general peritonitis within twenty-four hours following operation.

It is clear to our minds from a review of these cases that the gonococcus cannot be proved to be the cause either directly or remotely in as large a number of instances as is generally supposed. Other organisms, which we cannot find recorded as being responsible for such a condition, have been demonstrated by us to be the only living organism present in a considerable number of cases. Among these may be mentioned the bacillus mesentericus, pneumococcus lanceolatus, bacillus tetragenous, and two organisms more commonly demonstrated by other observers, namely, the colon bacillus and streptococcus pyogenes. It cannot be proved that through the action of the gonococcus the normal integrity of these tissues has been impaired, and so made a suitable soil for the development of these other bacteria. Neither can this theory be disproved by such purely negative results as we have obtained.

Several experiments were made by us to demonstrate the possibility of experimentally producing pyosalpinx by the injection of pure cultures of the streptococcus pyogenes, the bacillus mesentericus and mixed cultures of the streptococcus with pus-producing staphylococci, into the uterus of rabbits. The experiments in all cases were entirely negative. One rabbit died of general streptococcus septicemia after an extremely large dose of a very virulent, pure culture of streptococcus. The other animals used developed a purulent vaginitis for a few days. They afterwards, on being replaced in the rabbit pen, became pregnant and bore healthy litters of six rabbits each.

It seems to us that the blood count is not of great diagnostic or prognostic value in pyosalpinx cases, or as differentiating between those having a larger or smaller amount of pus or between those of a more or less virulent type.

From the study of these cases, we believe that the majority of patients afflicted with pyosalpinx, when

first seen by the surgeon, have shown previous symptoms to the ones of the immediate attack, or give a history of former similar crises.

Having given this matter general consideration, let us take the signs and symptoms of the disease more in detail. The average age of the individual so affected is thirty-two, and all were of such an age as to be sexually vigorous.

Seventy-five per cent. were married or widows. In 50% the urine was normal and 50% showed pus, blood and casts. Leucocytosis was present in all those cases where a blood count was done, the lowest count being 8,800 and the highest 32,000. Apparently the amount of leucocytosis was without regard to the organism present or the amount of pus found at operation. The temperature was elevated in all cases. In 17 the temperature ranged from 99° to 101°. In the remaining cases an almost equal number were above and below these figures. The temperature apparently bears no constant relation to the leucocytosis present. Of the pulse, it may be said in general that it was not far from 100 in the majority of cases, and that no direct or definite relation can be established between the rate of the pulse and the leucocytosis. Sixty per cent. of the 30 cases showed acute symptoms referable to the pelvis for more than a year. The remaining 40% were all cases of less than one month's standing. Of these cases 4 were mixed pyogenic infections; the exact morphology of the bacteria present in these we were unable to determine. One contained the pneumococcus in pure culture; 1, the micrococcus tetragenous; 2, the gonococcus, and 2 were entirely bacteriologically negative. One other case of virulent streptococcus infection was probably an acute case, but no record of the duration of the attack was obtained before her death.

Vomiting was present in 72% of cases. All those cases in which it was present were either acute cases or acute exacerbations of a chronic trouble. A slightly larger percentage of individuals were constipated than those whose bowels moved normally. However, an almost equal number had diarrhea. Eighty-eight per cent. showed an abnormally increased bloody vaginal discharge, having more or less dependence upon menstruation. Pain was present in all cases, varying only in character and location. In 80% the pain was severe, being situated on the right or left side in about an equal number of cases. Thirty-three per cent. of these women had either borne children, had miscarriages, or both. In fact miscarriage was possibly a factor in 20%, in causing the disease or in preparing the way for it. Two of the streptococcus cases were post-abortive cases.

With regard to the examination of the patient we noted the following points: The chest examination was negative in all but 1 case, which showed a chronic heart lesion, and 1 tuberculous case in which there were doubtful phthisical signs in the lungs. The general abdominal examination showed a rigidity of the abdominal wall in 40% of the cases. Tenderness was said to be present in all those cases in which any note was taken in regard to this point. This tenderness corresponded accurately with the position of the most acute pain. An abdominal tumor is recorded as having been felt in 4 of 15 cases.

With regard to examination of the genitals themselves, leucorrhœa was present in 80% of cases, some-

CASE NO.	ACUTE OR CHRONIC.	SEVERE OR MILD.	TEMPERATURE.	PULSE.	BLOOD COUNT.	URINE NORMAL OR ABNORMAL.	ORGANISM FOUND.	QUANTITY AND KIND OF PUS.	REMOVED ONE OR BOTH TUBES.	DRAINED OR NOT.	CONDITION ONE WEEK AFTER OPERATION.	COMPLICATION AFTER OPERATION.	TIME IN BED.	RESULT.
1	Acute exacerbation.	Severe.	103°	114	15,200	Abnormal.	None.	Small. Thin.	Both.	Yes.	Good. Much pus from wound.	None.	8 weeks.	Recovery.
2	Chronic.	Mild.				Normal.	"	Small. Thin.	"	"	Good.	"		Recovery.
3	"	"	101.5°	113		Abnormal.	"	Considerable. Thin.	"	"	"	"	4 weeks.	Recovery.
4	"	Severe.	100.4°	120	17,000		Gonococcus.	Small. Thin.	"	"	"	"		Recovery.
5	Acute.	Mild.	99.4°	96		Normal.	None.	Very small.	"	No.		Peritonitis.	8 days.	Died.
6	"		100.4°	82	18,300	"	Pneumococcus.	Moderate. Thin.	"	Yes.	Good. Much pus from wound.		5 weeks.	Recovery.
7	Acute exacerbation.		100.2°	122	30,150	"	None.	Very small.	"	"		Fecal fistula.	7 "	Recovery.
8	Acute.	Severe.	103°	146	32,600	Abnormal.	Mixed infection.	Considerable. Thick.	"	"		Fecal fistula.	6 "	Died.
9	"	"	100.4°	120	19,800	Normal.	Mixed infection.	Considerable. Thick.	"	"	Good.	None.	45 days.	Recovery.
10	Chronic.	"	99.8°	100	8,800	Abnormal.	Gonococcus.	Considerable. Thick.	"	No.		Pocketed vagina tapped and drained.	7 weeks.	Recovery.
11	"	"				Normal.	"	Considerable. Thick.	"	Yes.		None.		Recovery.
12	Acute.						Mixed and gonococcus.	Small. Thin.	"	"	Good.	At operation intestinal resection of small intestine.		Recovery.
13	Chronic.						Negative.							Recovery.
14	Acute.	Mild.	99.6°	90			Mixed growth.	Moderate. Thin.	Both.	Yes.	Good.	Flowing.	27 days.	Recovery.
15	Acute exacerbation.		99.5°	62			Bacillus mesentericus.	Considerable. Thick.	"	"	"	None.		Recovery.
16	Chronic.	Severe.	101.6°	102			Streptococcus. Bacillus mesentericus.	Considerable. Thin.	One.	"		General peritonitis existed at time of operation.	5 days.	Died.
17	"	Mild.	99°	88			None.	Considerable. Thin.	Both.	"	Good.	None.		Recovery.
18	Acute.		100.5°	120		Abnormal.	Micrococcus tetragenous.	Small. Thick.	"	"	"	"	20 days.	Recovery.
19	Chronic.	Mild.	99°	96		Normal.	None.	Small. Thick.	Left.	"	"	"	19 "	Recovery.
20	"	"	98°	102		Abnormal.	Bacillus mesentericus.	Small. Thick.	Both.	"	"	"	5 weeks.	Recovery.
21	Acute.		101°	116	31,300	Normal.	Colon bacillus.	Moderate. Thin.	One.	"	"	Chronic heart disease.	15 weeks.	Recovery.
22	Acute exacerbation.	Mild.	98.8°	104	20,000	"	None.	Small. Thin.	Both.	"	"	None.	7 weeks.	Recovery.
23	Chronic.	"	99°	88	10,000	"	Tubercle.	Small. Thick.	"	No.	"	"	6 "	Recovery.
24	Acute.	Severe.	102.5°	110		"	Gonococcus.	Considerable. Thick.	Neither.	Yes.		Peritonitis.	24 hours.	Died.
25	Chronic.	"	100°	96			Tubercle.	Small. Thick.	Both.	No.	Good.	None.	3 1/2 weeks.	Recovery.
26	Acute.	"	103.2°	120			Streptococcus.	Small. Thin.	"	"	"	Stitch abscesses.	5 weeks.	Recovery.
27	"	"	102.8°	116	13,000	Abnormal.	Streptococcus.	Small. Thin.	Right.	"	"	None.	28 days.	Recovery.
28	Chronic.	Mild.	100.5°	90			Gonococcus.	Thin. Considerable. Thick.	Both.	"	"	"	25 "	Recovery.
29	"	Severe.	101°	100			"	Moderate. Thick.	"	"	"	Abdominal distention.	22 "	Recovery.
30	"	Mild.	99.6°	92		Normal.	Tubercle.	Moderate. Thick.	Neither.	Yes.	Fair.	Wound never closed; fecal fistula.	3 months.	Died of phthisis.

times being a simple vaginal discharge and other cases showing stringy yellow mucous protruding from the os uteri. The further vaginal examination demonstrated pain and extreme tenderness of the vaginal vault, especially the posterior cul-de-sac on one or both sides. The most tender spot in the vagina did not always correspond either with the side of greatest abdominal tenderness or with the situation of the tube proved at the operation to be most involved.

With regard to the operation performed in these cases, 4 cases were tapped by vagina and later required abdominal section. In 23 cases both tubes demanded removal. In 2 cases it was impossible to do more than open the abscess on account of very extensive adhesions. In the remaining 4 cases one tube only was removed, all by abdominal section.

The amount of pus evacuated or contained in the tubes was considered as coming under three almost equal headings, namely, small, moderate or considerable quantity. One case showed general peritonitis at time of operation. In the majority of cases the pus was walled off by adhesions which might be characterized as firm and general.

In those cases showing bacteriologically the gonococcus, the bacillus mesentericus, and in all cases where mixed pyogenic infection existed, the abscess cavity contained thick, greenish or yellowish pus in moderate or considerable quantity, except Case 4, which had shown symptoms for only a few hours before operation, and Case 20, which had been previously tapped per vaginam.

With the colon bacillus or the pneumococcus or the streptococcus pyogenes, the contents of the abscesses might be said to be a thin, purulent fluid. Those abscesses containing bloody fluid were all bacteriologically sterile. In more than 75% of the cases recorded the tubes were ruptured and pus set free during removal. This apparently had no bearing on the after history of the case, except in 1 patient who died of a general peritonitis following the opening of two large abscess cavities, in the pus from which the gonococcus was proved abundantly present (Case 24).

Of those cases, 7 in number, which were closed and filled with salt solution after Clark's method, 6

BACTERIOLOGICAL EXAMINATION.¹

	Pneumococcus.	Tubercle.	Streptococcus.	Gonococcus.	Bacillus Mesentericus.	Micrococcus Tetragenous.	Colon Bacillus.	Mixed.	Sterile.
Cover glass from pus	N.	N.	N.	P.	P.	P.	P.	P.	N.
Cultures on any media	P.	N.	P.	N.	P.	P.	P.	P.	N.
Stained section of tissues	N.	P.	N.	P.	N.	N.	N.	N.	N.

Pneumococcus, 3 %; tubercle, 10 %; streptococcus, 10 %; gonococcus,² 20 %; bacillus mesentericus, 7 %; micrococcus tetragenous, 3 %; colon bacillus, 3 %; mixed,³ 14 %; sterile, 30 %; total, 100 %.

¹ N., negative; P., positive.

² The gonococcus was demonstrated in each of these cases to be present in the pus from the tube. The method used was the usual one of smearing a cover glass and staining by gentian violet and Bismarck brown. In one case the organism could not be shown in this way and was only found by treating a thin section of the hardened tissues with appropriate stain.

³ By "mixed infection" we intend to convey the idea of many organisms existing together. Most of these were possibly the pyogenes aureus or albus or a short, thick bacillus often found in the vagina. It proved impossible to isolate and name these. Perhaps they were dead.

recovered and I died; the death being due in this instance to a general streptococcus peritonitis following the removal of apparently sterile, chronically diseased tubes.

From this series of cases we may draw conclusions as follows: The mortality of the operation taken as a whole is 16%. The greatest dangers to be apprehended are in streptococcus infections from peritonitis, in all drained cases from fecal fistula, in tubercular cases from extension of the disease to other organs.

The foregoing tables will be of possible help in determining the cause of pyosalpinx and defining the symptom complex of the condition.

Clinical Department.

POST-OPERATIVE HEMATEMESIS.

BY KENELM WINSLOW, M.D., GROTON, MASS.

POST-OPERATIVE hematemesis, or capillary hemorrhage from the stomach, following surgical operations and occurring without any visible lesion and without any apparent cause, is very rare. No description of the disorder is to be found in the textbooks, but it has recently received able consideration by Mayo Robson¹ in his Hunterian lectures, and by William L. Rodman² in the oration in surgery delivered by him before the American Medical Association, at Atlantic City, N. J., in June, 1900.

Of fifty surgeons interrogated by Rodman, nine have observed cases of post-operative hematemesis. Finney, of Johns Hopkins Hospital, is not aware of a case ever having presented itself in that institution. On the other hand, Robson has reported 7 cases occurring in his own practice, 2 of which were fatal, and he quotes 6 cases observed by Eiselberg in the Königsberg clinic, and 3 fatal cases related by Reichard in the Free Society of Surgeons, in Berlin, December, 1899. Johnston, of Richmond, has recorded 5 cases, 3 fatal, but accompanied by general peritonitis.

Post-operative hematemesis has occurred after abdominal operations in only 2 instances, when it followed nephrorrhaphy, and in these the peritoneum may have been opened. Thus it has been noted succeeding operations on the peritoneum, omentum, intestines, gall bladder, kidneys, uterus and ovaries. The disorder arises from the second to tenth day subsequent to operation.

While there is no macroscopic lesion or pathological condition visible after death to account for the gastrorrhagia in many cases, in some there are numerous hemorrhages into the gastric mucosa and in others small recent ulcers have been found. The causation I believe to be yet unsolved, although Robson notes that in 6 of Eiselberg's cases there was ligation of the omentum, and in the seventh the omentum was probably contused, also that in an experiment on an animal multiple hemorrhages into the stomach followed twisting of the omentum. Rodman, however, failed to produce any bleeding or even congestion of the stomach in four experiments conducted by him on dogs, in which the omentum was twisted into a rope

¹ Lancet, March 10, 1900, p. 671.

² Philadelphia Medical Journal, June 9, 1900, p. 1313.

and ligated high up, and the liver, spleen, pancreas and intestines likewise subjected to pressure and mechanical violence under the supposition that blood might be forced back into the small veins of the gastric mucosa by these procedures.

Rodman regards sepsis as the etiological factor in post-operative hematemesis, since sepsis favors disintegration of blood corpuscles and predisposes to hemorrhage, and because the gastric mucous membrane is specially prone to congestions both on account of the frequency of vomiting after operations and the tendency of the thin, partially disintegrated blood to settle in the internal organs.

Post-operative hematemesis has occurred after the use of cocaine, and again when vomiting did not follow the employment of general anesthetics, so that vomiting, ether and chloroform may be ruled out as causal factors. There were no evidences of sepsis in most of the reported cases, neither in Mayo Robson's nor in the one detailed below by the writer, and as gastrorrhagia has followed within twenty-four hours of an operation and after simple exploratory laparotomies, it would seem as if sepsis was not an altogether satisfactory explanation of the phenomenon. The relation of a case of post-operative hematemesis following omphalectomy may be permitted.

Mrs. J. was a short, very stout woman, about sixty-five years of age. Her general health had been good with the exception of some shortness of breath on exertion. She had an umbilical hernia as large as an infant's head, which had existed for perhaps twenty years; it had been incarcerated at times, but reduction had spontaneously occurred. The reduction was probably only partial.

I saw the patient for the first time with Dr. Steere, of this town, on the evening of December 24, 1899. There was a history of colic and vomiting for the previous six hours, with unsuccessful attempts at reduction of the hernia by taxis, ice bags, etc. An endeavor on my part did not prove any more satisfactory under ether, and at midnight I operated, assisted by Dr. Steere and Dr. Cowles, of Ayer. Two elliptical incisions were begun in the middle line of the abdomen at a point 3 inches above the hernia and were continued as close as possible to either side of the hernial mass, meeting about 2 inches below it, and dividing all the structures of the abdominal wall down to the peritoneum according to the method originated by Condemin in 1892. The peritoneum was then opened on the left side and the finger introduced into the abdominal cavity and thence into the hernial ring. With the finger as a guide, a knife was introduced into the ring from the abdominal cavity and the sac was completely divided from within outwards by a transverse incision through all the tissues of the wall from the peritoneum to the skin, beginning at a point just to the left of the umbilicus and joining the middle of the left vertical or elliptical incision. The contents of the sac, transverse colon, small intestine and omentum were thus easily exposed. The sac was multilocular and there were many adhesions uniting the bowels, omentum and sac walls. The adhesions were readily separated; a small portion of the omentum was ligated and removed and the intestines were returned in good order into the abdominal cavity. The whole hernial sac and adjacent parts were then excised by dividing the peritoneum through the original incisions. It now appeared that the edges of the

wound could only be approximated with the greatest difficulty and an attempt to suture the peritoneum, fascia and skin was of necessity abandoned on account of the strain on the peritoneum, more particularly in the upper part of the wound. The wound was finally brought together and held in good apposition by interrupted silkworm-gut sutures placed through all the layers of the abdominal wall.

The operation consumed a little over an hour, the patient rallied satisfactorily and was talking with the etherizer before the dressing was fully completed.

The after progress of the case was at first fairly satisfactory, although there was some vomiting following the anesthesia and the pulse was intermittent and not very strong. The temperature was elevated a degree on the second day, but fell to 99° F. on the third; the pulse rate was not high; there was no pain and the patient wanted to sit up on the day following the operation. On the evening of the third day the patient began to vomit, and the nurse noticed for the first time that a dark fluid was frequently brought up in small quantities and without retching. About midnight a messenger came to my house in hot haste, saying that the patient was dying. She was in fact dead on my arrival, in fifteen minutes, having suddenly vomited an enormous quantity of dark blood and then had immediately expired.

At the autopsy considerable dark, clotted blood was found in the stomach and small intestines, but no lesion of the mucous membrane was discovered on careful search. There was no evidence of infection; the bowel was wholly normal; the wound had healed perfectly by first intention and I was surprised to find no sign of tension on the stitches, notwithstanding the difficulty experienced in coaptation of the wound at the time of operation. The lungs were much congested and there were some clots of blood in the bronchial tubes, so that at first sight it seemed as if the hemorrhage had been pulmonary. But there had been no pulmonary difficulty, no coughing, no spitting of bright, frothy blood. The blood was dark and had been distinctly vomited in great quantity just before the end, so that the blood found in the lungs must have been inspired in the latter moments. Nothing else noteworthy was found post mortem.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

CUTANEOUS AFFECTIONS FOLLOWING THE INTERNAL ADMINISTRATION OF ARSENIC.

It is thirty years since Hutchinson raised the question of an arsenic zoster, and Bettmann¹ considers that all are not yet in accord upon this question. He points out that Kaposi, who had previously totally denied that there was a causative connection between the ingestion of arsenic and the occurrence of a zoster, speaks much more guardedly in the last edition of his work. The question, it would appear, must remain one of statistics. Bókai observed 3 cases of zoster among 113 cases of chorea treated with arsenic (that is, in 2.6% of the cases), and this was al-

¹ Arch. f. Derm. u. Syph., 1900, II. 2.

ways after the patients had been on arsenic for a considerable period, and when there had been an essential improvement in the nervous affection. Nielsen reported 557 cases of psoriasis, occurring in 390 persons treated with arsenic, of which 1.9% of the cases and 2.6% of the persons developed a zoster while under observation. On the other hand, no case of zoster was observed in 220 cases of psoriasis which were not treated with arsenic. These figures were an indication, in Nielsen's eyes, of the causative relation of the arsenic. He affirmed also that the appearance of zoster in hospitals was a very great rarity.

It has been affirmed that zoster has occurred with some frequency in cases of poisoning from arsenic. In an epidemic of arsenic poisoning in Reichenstein Geyer estimated its occurrence in from 15 to 20% of the cases. In other instances where large numbers of people have been poisoned by arsenic no association with zoster could be claimed.

Lewin classes arsenic zoster as a dermatitis medicamentosa, and points out that in other drug eruptions the appearances are often confined to certain limited portions of the body, or nerve tracts. The fact that animals treated with arsenic have never been shown to develop zoster is in accord with the infrequency of drug eruptions generally in animals. Attempts have been made by Hutchinson and others to prove that there are special clinical peculiarities that would go to show the existence of an arsenic zoster, but these have not succeeded.

Bettmann reports the case of a woman of fifty, who was suffering from malignant lymphomata, who was taking moderate doses of arsenic both internally and subcutaneously, and developed, together with severe constitutional symptoms, a typical herpes zoster, as well as a generalized vesicular eruption. The latter affection, although not fully clear, seemed most probably due to the arsenic also. In the further course of the affection there appeared a hyperkeratosis of the palms and soles. The writer was able to find in the literature several cases of generalized herpetic eruption, somewhat similar to his own, following the use of arsenic. In his case, and not in the others, the mucous membranes were affected.

Keratosis from arsenic may be regarded as a comparatively rare occurrence, and it has not yet been definitely established that a keratosis from this cause has any characteristic clinical symptoms (? Rep.). In the case reported by Bettmann there was a splintering of the nails also. It is impossible to draw a strict line between an infectious zoster and toxic erythematata of the type of zoster such as we have in this case.

MERCURY IN RESORBIN.

Ledermann, of Berlin, has lately introduced into dermatological practice an ointment base which he has named resorbin. It is an emulsion formed by incorporating water with almond oil and wax, with the addition of small amounts of soap, etc. In this emulsion the fat drops are so finely divided that they readily penetrate the skin. It has been recommended as a cooling ointment on account of its large percentage of water, in pruritic skin affections, and on account of its penetrating properties in softening crusts and in ichthyosis.

A combination of resorbin and mercury, as a substitute for the ordinary mercurial ointment, has been

recommended, and tried with much success in Neumann's clinic in Vienna.² Whereas, in the ordinary mercurial ointment the globules of mercury are very varied in their size, some being so large that they cannot penetrate the skin but are left to set up an eczema, in resorbin the globules are finely divided and closely incorporated with the fat. Lanolin, fluid vasogen, myronin, mollin, etc., were previously tried with indifferent result. The mercurial ointment with resorbin as a base has a bluish-gray color, and contains 33 $\frac{1}{4}$ % of mercury. It smells slightly of almond oil. It is easily rubbed into the skin, and while an ordinary inunction requires from twenty-five to thirty minutes, by the use of this preparation the ointment is found to have disappeared under the hand in eight minutes, leaving a dull-gray mirror on the skin, which feels perfectly dry. This diminishing of the time of inunction by one-third is an essential advantage, especially in private practice, where the person has not the time or patience to give to it, or in the case of pregnant women, or weakly and anemic people.

Ledermann maintained that the action of resorbin mercury was at least equal to that of the official ointment. Corresponding to the quicker absorption of the mercury, there was a more frequent exhibition of slight stomatitis, which necessitated an occasional suspension of the treatment. Seventeen cases, representing the various forms of syphilis, were treated by this remedy at Neumann's clinic. No disagreeable general or local appearances were observed, and especially no cases of eczema. Stomatitis occurred only once in 17 cases, which does not bear out Ledermann's assertion that it is relatively more common. The duration of treatment was less than with the ordinary preparation, and in certain cases the disappearance of symptoms was remarkably quick. In a case of primary lesion of the gum the ulcer was completely healed after fourteen inunctions, and the exanthem had entirely disappeared. In another case the patient was dismissed from the hospital cured after twelve inunctions, and in 4 cases after fifteen inunctions. There were no recurrences during the short observation period of three months. The reporters conclude that this treatment was successful in all the cases tried. It has the advantage over ordinary mercurial ointment of shortening and simplifying the inunctions, and diminishing the duration of the treatment.

FUNGOID BROMODERMA.

Pini,³ of Bologna, proposes the term bromoderma for the various cutaneous manifestations caused by the ingestion of preparations of bromide, as more appropriate than that of bromide exanthem, or bromide eruption. The multiformity of the lesions due to this drug is referred to, Brocq having described eleven different forms. An instance of the anthracoid or fungoid form that came under Pini's observation gave an opportunity for pathological investigation. The case was that of a woman of fifty-one, who had taken bromide during a period of fourteen years for epileptiform attacks, in varying doses, without causing any cutaneous outbreak. Fifteen days before she was seen she had experienced malaise, loss of appetite and pruritus of the whole body, and on the following day red, painful nodules appeared on the

² Wien. med. Woch., No. 8, 1900.

³ Arch. f. Derm. u. Syph., May, 1900.

backs of the hands. These increased in number, and made the hands painful and almost immovable. The eruption was found to be limited to the backs of the hands and wrists and to be quite symmetrical. It was made up of lesions of different form and size, some of which had seropurulent contents, while others were quite firm. The former lesions were scattered about between the fingers and along the ulnar border of the right hand, and were surrounded by a deep red areola. They were either conical or flattened. On both hands there were also large elevations which projected 5 to 8 millimetres above the surface of the skin, of a violet-red color and pasty consistency, punctured with from two to five openings, from which more or less thick pus was expressed. Under treatment and stopping of all bromide, the lesions gradually disappeared, leaving thickening and pigmentation of the skin. After a time the bromide was resumed, but without further cutaneous lesions.

The fact that the patient had taken bromide for fifteen years without any symptoms was somewhat cleared up by the discovery that she had taken far larger quantities of the drug of late, varying from what would cover the point of a knife to half a handful in a small quantity of water. The writer believes, contrary to many, that within certain limits there is a relation between the size of the dose and the degree of reaction on the part of the skin, not on theoretical grounds, but from clinical experience.

The writer's histological studies of one of the larger nodules, which he excised, showed that the epidermis had lost its normal appearance almost everywhere, being greatly hypertrophied and dipping deeply down into the corium, with interlacing septa in every direction. The papilla, which were greatly increased in size, were filled with numerous capillaries of double the normal size, and with a greatly thickened endothelium, surrounded by a few leucocytes. Beneath the papilla there was a diffuse mass of polynuclear leucocytes and a few lymphocytes, which were separated from one another by their connective-tissue septa, which contained numerous blood vessels. The middle layer of the corium was thickly packed with leucocytes, so that the collagenous and elastic fibres had entirely disappeared, and hardly a fixed connective-tissue cell could be seen. There were no plasma or mast cells in the region of the infiltration of leucocytes. Just above the subcutaneous fat tissue the leucocyte infiltration became less thick, and large cells, of endothelioid appearance, and varying form, oval or spindle-shaped, were seen, which were in intimate connection with the fibrous connective tissue. Everywhere, both in the upper and the lower layers, the vessels were found with thickened intima, and proliferation of the outer coat. As a whole, it may be said of this lesion that three zones are to be distinguished in the corium: an upper, composed chiefly of dilatation and proliferation of the vessels; a central, the most pronounced, composed of an infiltration of leucocytes, and therefore hematogenous; and a lower zone, composed of the elements of both upper and middle, and especially rich in connective-tissue cells. At the same time there is an epidermidosis vegetans, and in places a periendoarteritis, and a periendothelitis.

In order to prove that bromine was actually the cause of the lesions, several interesting experiments were made. No free bromine was found to be given

off by the skin of the affected patient, and examination of the pus from the lesions gave a similar negative result. An examination of the urine, on the other hand, on the fifth day after the drug had been stopped, gave a positive result. Examination of the blood showed a slight leucocytosis at the acme of the cutaneous disturbances, as well as an increase in the eosinophiles. The eosinophiles were also found increased in the pus from the large fungoid nodules.

The writer believes that the bromide causes an angiodermatitis by its irritative action on the vessels of the skin, which for some reason at one time takes the form of a glandular inflammation, at another of a bullous inflammation, and again of a hemorrhagic or nodular infiltration. Under this hypothesis it is unnecessary to invoke the agency of a neuropathic or bacteriological cause. Furthermore, bacteriological investigation proved fruitless.

GENERALIZED VACCINIA.

Dr. Gustav Paul, director of the Vaccination Bureau in Vienna, contributes an article on the etiology and pathogenesis of so-called generalized vaccinia in subjects with preceding healthy or affected skin.⁴ He considers it necessary to make a strict division of the complications of vaccination that have been loosely classed under the heading "generalized vaccinia," reserving this latter term for those cases of general eruptions occurring after vaccination in which their vaccinal character has been proved by experimental inoculation on man, or on animals susceptible to vaccinia. The polymorphous, erythematous eruptions which so frequently follow vaccination are to be considered analogous to the drug eruptions.

It is very common to find isolated vaccinia lesions, either in the vicinity of or at a distance from the point of inoculation, caused by the transference of the virus to excoriated, but otherwise normal, parts of the skin. This has been called *Nebenpocken*, *Beipocken*, etc., and usually has a favorable course except when the eyelids or conjunctiva, for example, are affected. Such chance inoculations on the vulva have been mistaken for syphilitic lesions at times.

Eczema and prurigo are considered the most common cutaneous affections to be complicated with vaccinia. In the case of prurigo the vaccinia lesions are naturally seen on the extensor surfaces, the seats of predilection of the prurigo lesions. In the case of pre-existing eczema when complicated with vaccinia the first symptom observed, about the third or fourth day after infection, is a general increase in the eczema. An eczema previously dry takes on an acute phase and begins to weep, with increasing redness and swelling, and places which had been healed take on an exacerbation. When situated on the face, there may be great tumefaction. At the borders of the eczema, often on parts where the skin was normal, are seen numerous solitary and confluent pustules, which have the character of true vaccinia lesions. Toward the centre these pustules become more and more confluent and at the centre are converted into ulcerated surfaces. There is very seldom scarring. The affection never oversteps the boundary of the original eczema. As a rule, the eczema, even if of long standing, disappears. There is usually a high fever, corresponding in intensity and duration to the extent of the local process. In unfavorable cases there may

⁴ Arch. f. Derm. u. Syph., Bd. lii, H. 1.

be vomiting and diarrhea followed by delirium and death. In some of these cases a considerable similarity with variola may be traced, but variola can be excluded by the localization, and absence of prodromal symptoms and lesions upon the mucous membranes. Writers are not all in accord as to the way in which these cases are produced. Some think that an especial virulence of the vaccinia material must be supposed, others that there is an absorption of the virus into the lymph and blood vessels by means of the eczematous surface. Paul is in accord with those who believe that the eczema is not only an easy door of entrance, but also an especially favorable soil for the reception of the virus which has been brought in contact with it.

The following conclusions are reached: It is advisable that children who are suffering from extensive eczema should not be vaccinated, unless there is urgent need, until the eczema is wholly healed. When vaccination becomes imperative in such cases, it should be carried out with especial care, under a protective dressing. It is to be noted that the favorable influence that has frequently been observed in eczemas as a result of vaccination cannot justify the inoculation of eczematous children, in view of the often dangerous character of the artificial infection. Even in the cases that pursue a favorable course scarring is quite likely to result.

THE VISCERAL LESIONS OF THE ERYTHEMA GROUP.

Osler⁵ returns to this subject, which has interested him before. In 1895 he published an account of 11 cases, similar in many respects to those previously grouped by Hensch and Couty, which were characterized by (1) multiform cutaneous lesions; (2) multiform visceral lesions, and (3) arthritic manifestations. The skin lesions comprised acute circumscribed edema, urticaria, purpura and ordinary exudative erythema. The visceral lesions consisted of circumscribed serous or hemorrhagic exudation in the walls of the stomach or intestines which gave rise to attacks of colicky pain, hemorrhages, acute nephritis and certain rare pulmonary and other lesions.

In this paper Osler details 7 additional cases, together with the subsequent history of Case II of his first series, making a group of 18 cases, of which he presents an analysis of the symptoms. The second case was interesting from the great variety of the symptoms. A boy had, in his tenth year, severe attacks of colic, cough, and one attack of urticaria. In his eleventh year he had colic with an outbreak of urticaria and purpura, and soon after a circumscribed edema of the back of one hand, signs at the apex of the right lung and enlargement of the spleen. In the thirteenth and fourteenth year there were emphysematous symptoms, and he died in his fifteenth year with emphysema, dilatation of the heart and pericarditis. Osler justly remarks that as far as the skin lesions were concerned, a physician seeing him in but one of the attacks might have diagnosed urticaria, purpura with urticaria, angioneurotic edema and exudative erythema.

It may be of interest to copy Osler's summary of the 7 cases of his second series:

CASE XII. Neurasthenia; dilatation of the stomach; colic for two years at intervals; exudative erythema; leucocytosis.

CASE XIII. Attacks of colic every week or ten days for six months; on admission typical lesions of erythema multiforme; high fever; improvement; recurrence; pains in the joints; arthritis in one joint of finger.

CASE XIV. Physician, fifty-seven years; from twentieth year, every few months, attacks of nausea, vomiting and abdominal pain, associated with outbreaks of urticaria; no hemorrhages from the mucous membranes; final attack with purpura and urticaria.

CASE XV. Physician, twenty-nine years. When a lad one attack of hemiplegia with aphasia lasting for a week; within a year five or six attacks of transient hemiplegia; history of migraine in 1896, and a mild attack of rheumatism; angioneurotic edema of the upper lip; outbreaks of urticaria; in 1897 attack of abdominal colic, with pains in the legs, and an outbreak of purpura and urticaria; in 1898 hematuria and albuminuria.

CASE XVI. Boy of eleven years. For three months attacks of pain in the abdomen with vomiting; swelling of the joints; purpura; recovery.

CASE XVII. Man, eighteen years. Following influenza, in January, attacks of arthritis with cramps in the abdomen and an outbreak of urticaria; eight attacks between January and May; during stay in hospital, swelling of wrists and back of hand; erythema; urticaria, spontaneous and factitious; no purpura; recovery.

CASE XVIII. Girl of seven years. During first year swelling of knees; from second to seventh years, frequently recurring attacks of pain in the abdomen, with vomiting and swelling of the knees, but no skin rash; following vaccination attack of great severity, with extensive lesions of erythema, purpura and urticaria; melena; recovery; recurrence of the skin lesions; enlargement of the spleen.

(1) *The gastro-intestinal crises.*—In discussing this feature Osler finds that the attacks may be characterized by colic alone, oftener colic and vomiting, colic with vomiting and diarrhea, and lastly colic with vomiting of blood or the passage of blood in the stools. Usually, but not always, there are cutaneous manifestations with the crises. In Case XIV the relationship between urticaria and the gastro-intestinal crises is well shown, and Osler thinks it reasonable to suppose that the abdominal pain is due to urticarial lesions in the mucous membrane of stomach and intestines. In support of this, Packard has recently shown that there are numerous instances of the formation of wheals in the mouth and throat, although the lesions have not been actually seen in the stomach and intestines. In the 18 cases reported urticaria was present in 8 at some time or other.

(2) *Hematuria and nephritis.*—Acute nephritis occurred in 6, chronic nephritis in 1 of the cases. In 2 of the cases death was directly due to this complication.

(3) Hemorrhages from the mucous surfaces occurred in 6 cases; from the bowels in 5 cases; from the nose and gums in 1, from the stomach and kidneys in 2 each.

(4) Cerebral symptoms were present in 2 cases.

(5) In only 1 case were there marked pulmonary symptoms.

With regard to the skin lesions purpura alone was noted in 4 of the cases. In the other 14 cases exu-

⁵ British Journal of Dermatology, July, 1900.

dativ erythema, urticaria, or urticaria with purpura, acute circumscribed edema or typical erythema multi-forme were observed. Acute circumscribed edema occurred in 3 cases, associated with other exudative lesions. The different forms of skin lesions may be present in the same case in recurrent attacks, as in Case II, where there was an urticaria in the first outbreak, urticaria and purpura in subsequent ones, and later angioneurotic edema and exudative erythema.

Swelling of the joints or synovial sheaths occurred in 10 of the cases. It may be transient or of great intensity. In some of the cases the swelling was chiefly along the tendons, in others a whole extremity was involved.

It is pointed out that precisely similar skin lesions may result from a variety of causes, as is well shown in the case of purpuric lesions, which may appear precisely the same, whether caused by iodide of potash, scurvy or variola. Furthermore, the same cause may give rise to a great variety of skin lesions in the same subject. So that etiologically Osler is unable to offer us much aid with regard to this group of symptoms. Two of his cases suggest a relationship with migraine, others some gastro-intestinal poison, combined with individual susceptibility. One following gonorrhoea he thinks belongs among the acute infectious erythemas. He does not regard the arthritis as necessarily indicating rheumatic poisoning.

WINTER AND SUMMER RECURRENT ERUPTIONS.

Under the title, "A Clinical Study of Some Winter and Summer Recurrent Eruptions," Crocker⁶ describes 7 cases of eruptions recurring in winter and 14 cases of those that recur in summer. Under the winter eruptions he describes a papulopustular eruption of the hands, of which he cites three examples. The hands alone are affected, especially about the knuckles, and the lesions are indolent indurated papulopustules, isolated, and few in number at a time, appearing as a succession of lesions throughout the winter and early spring. The most beneficial treatment is that directed to improving the circulation of the extremities. Crocker thinks that *aerodermatitis pustulosa hiemalis* would be an appropriate name for this affection. He is not sure, however, that it may not be a variety of the folliculitis of the French, differing from the latter affection by its limitation to the fingers, its connection with a poor circulation and its occurrence solely in cold weather.

Other examples of winter recurrent eruptions are a recurrent pustular eruption of the hands in a boy of twelve, a recurrent erythema of the face in a young woman of nineteen, an acniform eruption in a man of twenty-three, and a diffuse erythematous and finely papular eruption of the face in a woman of thirty-five. It is to be emphasized that in some of these cases exposure to the sun was also an exciting factor and that in all the cases the parts of the body covered by the clothing were spared.

The class of essentially summer recurrent eruptions is made up of *hydroa estivale*, of which Bazin's *hydroa vacciniforme* is a variety, and the recurrent summer eruptions described by Hutchinson. Of the 14 cases described by Crocker, 9 are grouped in the same class and are characterized by their vesicular, vesiculopustular and erythematous lesions, by their tendency to commence at any time from infancy to puberty, and

to get well at the age of twenty to thirty. By far the most frequent localities affected were the face, neck and hands. There were 2 adult cases of much the same character, which Crocker thinks better to keep apart for the present at least. His Cases XII and XIII were those of diffuse erythema and diffuse urticaria, respectively, and are regarded as vasomotor neuroses of a pathology similar to the preceding cases. In both of these the eruption was confined to the face and hands.

[The relationship of many of these cases, especially those of the vesicular type, to *hydroa estivale* and *hydroa vacciniforme* would seem to be a very close one. Dr. Crocker says he hopes to take up a consideration of the cases that come under the head of *hydroa estivale* on a future occasion. It seems probable that some of the cases of summer eruption here reported are mild forms of that affection. — REP.]

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, March 19, 1900, DR. E. H. BRADFORD in the chair.

DR. E. A. CODMAN read a paper on

THE STUDY OF THE X-RAY PLATES OF ONE HUNDRED AND FORTY CASES OF FRACTURE OF THE LOWER END OF THE RADIUS.¹

DR. SCUDDER: I have only a word to add to what Dr. Codman has already said, from my personal experience in the study of these plates, as a great many of the cases have occurred in my services at the hospital. It seems to me — and I think Dr. Codman would agree — that we must withhold any final classification until the number of observed cases is much larger than those under discussion. Probably other varieties of fracture will appear, and the percentages, which are extremely interesting, will increase and decrease in certain classes, and a later classification will be much more satisfactory. Practically I have found that the x-ray has helped materially in preventing the use of undue force and in properly directing the force in setting fractures at the wrist. If we remember the old-fashioned method of reduction of Colles's fracture, by grasping the hand and making traction on the wrist, it will appear that that method must necessarily have led to an additional sprain of the wrist and possibly to additional damage to the wrist. The x-ray demonstrates that gentle force is often sufficient to reduce the fracture. In certain cases where great force is necessary the x-ray shows how such force may be intelligently employed. I have been very much impressed by the early consolidation of the fractured bone in these cases of fracture of the lower end of the radius. After about one and one-half to two weeks a fracture is firm enough for very little more than a short dorsal pad of about 2 to 3 inches long and an adhesive plaster strap with a small pad placed in the anterior radial arch. That has been my method of treatment for the past four or five years. The x-ray

⁶ British Journal of Dermatology, February, 1900.

¹ See page 305 of the Journal.

shows that the fragments remain in their proper position when treated in this simple way. The hand is left free and there is very much less of the stiffness of the fingers and loss of motion at the wrist than in cases treated by long immobilization. There almost always is a little broadening of the wrist following a Colles's fracture.

In connection with the disease in bone which Dr. Codman referred to, I personally had an illustration of the value of the x-ray a week ago in the case of a man of thirty years of age, who had an osteomyelitis of the femur. He came to the hospital with a sinus in the middle of the thigh. An x-ray was taken to determine if the disease could be localized. The x-ray plate showed a distinct area, about the size of a quarter of a dollar, in the centre of the enlarged femur, which was different in appearance from the rest of the bone. That area was found to be at the bottom of the sinus. Upon laying the sinus open the area seen in the plate was found to correspond with a well-defined osteomyelitis. The softened bone was entirely cleaned out as a dentist might clean out a cavity in a tooth. The acute symptoms subsided. The x-ray plate localized the disease very definitely.

DR. LUND: I wish to speak of the great interest I have felt in Dr. Codman's excellent and interesting classification of these cases, and I can add my testimony to what he has said about the slight posterior displacement after efforts at reduction being masked by the filling in of the soft parts until such time as the swelling has gone down, when the surgeon finds he has a poor result. I think that reduction of the antero-posterior deformity is the most important thing, because it is that which causes the neuritis and stiffness of the hand, and I also believe that this anteroposterior displacement can be reduced even in cases where there is destruction of the bone. Where there is destruction of bone, or comminution of fragments, which cannot be got back into place, your radius has got to be shorter than the ulna, and you cannot prevent lateral deformity, but that lateral deformity does not in my experience complicate the final functional result to any extent.

I had a rather interesting experience in regard to short immobilization of the fragments. Some years ago I got along very well with a large number of Colles's fractures by taking off every splint after two weeks. Then I had 1 or 2 cases in which I tried that in which deformity returned and I concluded that I must immobilize them all three weeks. Now by the aid of the x-ray it is easy to decide what cases can be treated by early removal of the splints and those that require them to be kept on longer. In simple cases in which there is no destruction of bone the deformity will not tend to be reproduced and the splint can be removed early. I always apply an anterior and a posterior splint, then remove first the posterior splint at the end of five days to a week, and the other splint generally at the end of two weeks. Cases in which there is comminution and non-union will require a longer immobilization, but it is unnecessary to get a stiff wrist because you keep up a longer immobilization of the fragments by a splint. From the very first day the fingers are moved. I always apply a carved wooden splint, either Dr. Bolles's splint or a similar one, to the front of the hand, which allows flexion of the fingers, so that the fingers can be moved from the very first day of treatment without

disturbing the fixation of the fragments. Early mobilization of the fingers prevents the later stiffness of the wrist and hand. I think the x-ray has given us very great help in diagnosis, prognosis and treatment of these fractures.

DR. MURRO: There are a number of things I should like to take up tonight in detail and talk about, but I will only speak of the widening of the wrist in Colles's fracture. These seventeen radiographs passed around are from 30 or 40 routine cases. In the Medical and Surgical Report of the City Hospital for 1896 the Surgical Out-Patient Department published some statistics of measurements in Colles's fractures, that is, measurements of the elevation of the styloid and the widening of the lower end of the radius and ulna. I have kept on measuring wrists ever since, and have measured probably 200 separate fractures, each one being measured many times, and I have accurate statistics of 85 hospital cases that I gathered at random from the records yesterday. Of these 85 cases of so-called Colles's fracture there was radial displacement in 79; in other words, if the wrist is carefully measured, there is a widening easily detected by measurement by calipers in probably 90% of all fractures of the lower end of the radius. In all but 1 or 2 of Dr. Codman's cases shown tonight there is what I should call a radial deformity, and I think if he had measured those wrists and compared the width with the opposite wrist he would find the typical widening. Many and many a wrist entered in the records as having no widening shows at least $\frac{1}{2}$ inch widening and a displacement toward the radial side. If a line is drawn, extending the longitudinal axis of the forearm through the radio-ulnar joint, that line will be seen to pass through the ulnar side of the unciform quite a distance from the os magnum in cases of fracture. The widening has interested me very much and I have tried for a good while to find some definite explanation. At first I thought it was simply from the wedge-like action of the upper fragment driven into the lower fragment and pushing the ulna away from the radius. That does not seem to be the explanation except in certain cases. There is another point that appears to explain it after studying the x-ray pictures and measuring it with the calipers carefully from the time of the injury up to months or years afterwards. One practically always finds the deformity and I believe it is produced in this way. If we take an ordinary radius and make a longitudinal section we will find that on the ulnar side the cortex of the bone is pretty thick and straight, but thin and angular on the radial side about $\frac{3}{4}$ inch from the tip of the styloid. All the central portion is weak and spongy. When a man falls on the extended hand, he falls almost always on the radial side. Practically in all these cases there is more or less impaction and a driving upwards and radialwards of the styloid process. The anteroposterior displacement I will not take up. In the large majority of cases careful measurement shows that that styloid remains higher than on the other side in spite of treatment. You cannot pull it down to normal and keep it there except in a very small proportion of cases. What happens I think is this: In the fall the force is transmitted in two directions, directly upwards through the shaft, and also, because of the cup-shaped obliquity of the radial half of the surface, the force must be transmitted against the radial side. That is, the force is transmitted directly against the

cortex on the ulnar side of the bone, which does not give way so much as does the weaker radial cortex. By careful measurement one finds that as the radial half of the surface is forced upwards the distance from the ulna to the radial side of the styloid is increased at least $\frac{1}{8}$ inch; in other words, you have an isosceles triangle which rotates on a pivot placed in the ulnar cortex of the radius, roughly speaking. I believe that is nine-tenths of the explanation of the widening at the wrist and the shortening of the styloid in these fractures. The ulnar cortex gives way also, but being stronger it does not crush so easily and hence does not move upwards as far as the thin radial cortex and medulla.

Most of these 85 cases show more or less impaction. Occasionally there is apparently no impaction. Now the width of these 85 wrists varied from $\frac{1}{16}$ to $\frac{6}{16}$ of an inch as compared with the width of the healthy side. The large majority, 57 out of 85, showed $\frac{1}{8}$ to $\frac{3}{16}$ of an inch widening. That is almost the routine increase in width one finds, and inevitably in those cases there is deformity just as plainly to be seen as can be if one is looking for it. In 13 of the 85 there was widening through the wrist of $\frac{4}{16}$ to $\frac{6}{16}$ of an inch, but these were very bad fractures, one of them an extremely bad fracture, much comminuted, difficult to get in place and with a very marked tendency to radial displacement; another was a bad case; one of the $\frac{4}{16}$ widenings was an earlier case when I had not mastered the trick of measuring accurately and probably overmeasured in this case. There were 4 cases out of the 85 in which there was no widening to be found and I think it is worth while to speak of those in detail. In 1 there was no shortening of the styloid at all and it was considered a doubtful case. Probably it was not a Colles's; no x-ray was taken. In the second the fracture was 1 inch above the styloid; no shortening of the styloid; possibly a cross strain Colles's, without impaction, or fracture of the shaft, which does not count. The third was a fresh case; at the time of injury $\frac{1}{8}$ inch widening, crepitus; in two and a half weeks the $\frac{1}{8}$ inch widening had diminished; in five and a half weeks there was no widening. Then we discovered there had been an injury to the other wrist which had been called a sprain, and probably was an old Colles's; in other words we found the same measure on both sides; it was a widened wrist after all. The fourth case was a young girl who fell with the hand under the body in acute flexion. There was no shortening of the styloid, but much swelling. At that time I could get no accurate measurement of the widening. Six weeks later Dr. Bottomley found $\frac{1}{8}$ inch and it seemed to me possible that this was one of those cases of cross strain where there had been separation without impaction, and with a tendency to radial displacement which I believe occurs from the pull of the muscles on the radial side.

Some of these cases at first and later on showed a difference in measurements, the width being reduced, which may have been due to swelling of the soft parts or inaccurate measuring. There was much synovitis in one of this group and the fracture was simply through the styloid tip, so that very likely the difference may have been explained in that way. In a patient with separation of the epiphysis there was no widening at all. The epiphysis slid off and then back again and stayed in place without producing widening, which I think helps out the theory that in the large

majority of cases there is a rotation towards the radial side of the lower fragment.

In addition to the 85 cases, there were 2 cases of reversed Colles's that are interesting. One of these was a man who fell first on the palm, producing a Colles's, then he rolled over and produced a reversed Colles's. He came in with slight shortening of the styloid and $\frac{1}{8}$ inch widening. Another case I have called a reversed Colles's. It is the only case I have seen where there was narrowing instead of widening—a young girl who, when fifteen years of age, was fooling with another girl and the wrist was twisted. She came in three years later with the typical deformity of a reversed Colles's. Dr. Barrell, with a wrench, partly reduced it under ether. I took measurements and there was $\frac{1}{8}$ inch narrowing. I have always supposed that there was some injury of the epiphysis and consequent lack of development; no x-ray was taken.

I have never seen any case of fresh Colles's that required the great force for reduction under ether that Dr. Scudder speaks of. I have tried to break up old unrecognized Colles's fractures that occurred years before and came with a fresh sprain, but the ordinary Colles's fracture breaks up, in my experience, without the least difficulty under ether, and I still stick to extension over the knee, pulling down and manipulating the fragments into position.

On the question of splints every man has his own hobby. I use the palmar splint with the hand curled over a pad, the fingers being left out and I let them use the fingers as soon as they wish. The only pad that I am careful about is the pad to preserve the anterior arch of the radius. I still believe in a certain amount of adduction, because it does tend to reduce the radial displacement, but I do not believe that in the large majority of cases the radial styloid can be brought down to normal and held there; at any rate I have rarely seen it done.

The process of measuring for lateral widening is not difficult with a little practice and is approximately very accurate in most cases. As a means of diagnosis I consider it invaluable. To measure, both wrists are held in exact degrees of pronation with the hands naturally and easily flexed. With a pair of graduated calipers the greatest width of the normal side is found and noted; then the width of the injured side is found, noted and compared. Except in rare cases the difference in thickness of the soft parts does not and cannot account for variation in measurements. Of this I am very positive after long experience in this procedure and with this possible factor constantly in mind.

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

FOURTEENTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

THE association was called to order by the president, DR. JAMES BELL, of Montreal. After a short business session the scientific programme was taken up at 10 A. M.

DR. J. P. BRYSON, of St. Louis, read a paper upon CHRONIC UNILATERAL PYELONEPHRITIS AND ITS PATHOGENIC RELATION TO DISEASE OF THE OPPOSITE KIDNEY.

This question is becoming of greater importance as the diagnostic and prognostic value of urine segregation is recognized, and there is ground for hoping that the question may thus be solved. Observations need to be extended over considerable periods of time, as single tests are misleading. Notes of 4 cases were given, in 3 of which there was evidence that trouble had been caused in the opposite kidney, though the conclusions in 1 were rendered uncertain by the presence of tuberculous areas in both epididymes. Conclusions reached were: (1) Post-operative observations confirm the belief that long-continued pyelonephritis, suppurative or not, has an effect on the opposite kidney; (2) the pathogenic effect is manifested in the tubular epithelium, causing a parenchymatous nephritis; (3) suppuration adds amyloid change to the other; (4) the mechanism of the involvement is not yet determined; (5) the benefit of frequently segregating the urine is not only to localize the disease, but to warn the surgeon when to operate.

DR. FRANCIS S. WATSON, of Boston, reported

SOME CASES OF RENAL SURGERY.

An interesting case was that of a man who had been the subject of traumatism over the right kidney at five different times, hematuria following each. A blood clot was removed from the pelvis of the kidney and the organ gave no further trouble. In a second case of simulated renal colic the kidney was opened; no stone was found, but entire relief followed. The capsule was thickened, which would confirm the belief that such cases were due to pressure of the capsule. In a third case, in which nephrotomy had been done on a tuberculous kidney and fistula followed, the upper half of the kidney was removed in three pieces.

DR. KEYES has split the capsule of kidneys with the relief of pain even when no calculus was found. Relief was given in 1 case of chronic granular kidney by splitting the organ. He is in favor of splitting the kidney in cases of intractable pain simulating colic.

DR. BRYSON stated that a displacement of the kidney or ureter sufficiently great to produce symptoms of colic might exist without the operator recognizing it in these cases unless it was sought for particularly. Such cases would be cured by fixation.

DR. A. T. CABOT, of Boston, gave

SOME OBSERVATIONS UPON HYDRONEPHROSIS.

A case which brought out several interesting points was the basis of his remarks. The patient was a boy of eleven years, who had had symptoms of hydronephrosis since he was one and a half years old. When operated upon, a sac containing dark-colored urine was opened, when a mass, which proved to be the kidney, was seen at the bottom of the sac, the condition proving to be one of a ruptured hydronephrotic sac with a pseudohydronephrosis around it. The rent in the kidney was closed, but the ureter did not act and the kidney again dilated. The sac was reopened and a tube introduced. After continuous drainage for two years relief was sought from the fistula. To increase the urine before operation diuresis was instituted for five days. Not only did the sound kidney increase its output, but the urine from the affected organ rose from 9 to 30 ounces. This is

considered an evidence that the surgeon should seek to restore the outlet of the ureter even when the kidney substance is thought to be destroyed. Operation in this case showed the ureter looped in an S-shaped manner over an accessory renal artery, and nephrectomy was performed, as the ureter could not be probed after the artery was cut. After operation the urine fell from 40 to 15 ounces on the third day. The point emphasized was that preliminary diuresis is of the greatest importance before any operation which is to bring increased stress upon the kidney.

DR. BANGS stated that he had removed a kidney on which nephrotomy had been performed one year previously for hydronephrosis, the opposite kidney showing signs of irritation. Shock followed and saline solution was given by the rectum. The remaining kidney secreted 98 ounces of urine during the first twenty-four hours after operation. He prefers Mayo Robson's incision for reaching the kidney. In seeking the cause of renal colic the x-rays have given very unsatisfactory results in proving the presence or absence of a calculus.

DR. BRANSFORD LEWIS, of St. Louis, read a paper upon

THE PATHOGENY OF GONORRHEAL NEPHRITIS,

and exhibited a specimen. The condition of the kidney was that of an acute interstitial nephritis added to chronic nephritis. Gonococci were demonstrated in pus found in the kidney. Dr. Lewis does not understand why an infection of the kidney by gonococci alone should be a rare occurrence, and thinks it is not so rare as supposed. He believes that infection of the kidney by means of the lymphatics which accompany the ureter, and by metastasis through the blood vessels, is also much more common than has been thought. Infection without bladder involvement, which has been found, would rule out ascending infection by continuity. Cultures of gonococci have also been made from the blood of a patient suffering from gonorrhoeal arthritis.

DR. YOUNG, of Baltimore, reported a case of chronic cystitis and double pyonephrosis which was due to infection by the gonococcus alone. He has aspirated the bladder suprapubically over 100 times, and thinks it the only way to get a pure culture from the urine. The gonococcus may be the cause of cystitis, but cannot be cultivated unless the medium in the bladder is favorable to its growth. In one case the gonococcus was demonstrated to be present in the bladder for five years without giving rise to marked symptoms. In a second case the patient had had chronic cystitis for seven years, this following typhoid fever. A pure culture of the typhoid bacillus was obtained from the bladder. Afterward a gonorrhoeal infection was added with no aggravation of the symptoms. The gonococcus drove out the typhoid bacillus, as a short time afterward only the former could be detected in pure culture.

DR. W. K. OTIS, of New York, read a paper on

THE MODERN URETHROSCOPE.

Several improvements upon his most recent instrument were described, the principal ones being that it is smaller, the lamp is of low tension or a "cold" lamp, and a conical diaphragm cuts off some of the light.

The following papers were read by title: "General

Sepsis following Gonorrhœa," Dr. G. E. Brewer, of New York; "Radical Treatment for Curvature of the Penis," Dr. Eugene Fuller, of New York.

(To be continued.)

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Continued from No. 12, p. 300.)

SECTION OF SURGERY.

INTESTINAL AND GASTRO-INTESTINAL ANASTOMOSES.

DR. ROUX, of Lausanne, opened a discussion on this subject. He said experiments on dogs did not give a faithful picture of what was observed in man, whose digestive canal presented a material more manageable and less untrustworthy. Anastomosis had for its object the turning aside of the course of the food, whether on account of the dangers or inconvenience caused by its presence, or its passage over certain points of the gastro-intestinal canal, or on account of one or more obstacles which it would be impossible, dangerous or inopportune to remove. It is a procedure palliative in appearance, but has often a curative effect. In regard to risk, technique and results, it stands midway between fistulæ (jejunal fistulæ, enterostomy and preternatural anus) and radical operation (pylorectomy, excision of tumors or diseased loops). Anastomosis is effected by lateral apposition. It is the most practical of intestinal unions (*a*) because it requires less strict precision; (*b*) because it allows a larger junction without risk of forming a diaphragm or valve; (*c*) because it allows an opening of unlimited length which is less subject to later contraction; (*d*) because it is independent of the calibre of the tubes to be united. It is also the procedure most within reach of all operators.

Entero-anastomosis.

Acute affections.—Anastomosis is contraindicated: (1) When the state of the patient does not allow more than enterotomy; (2) when the state of the intestine demands, under penalty of death, the immediate removal of one or more loops; nevertheless it may be combined in some cases with extraperitonealization of these loops (for instance, strangulated hernia); (3) when the state of the patient and that of the intestine, together with the skill of the operator, allow something better to be done. Anastomosis is indicated: (1) When the re-establishment of a channel for the feces is alone in question, especially if a more radical operation appears to be too long or too dangerous; (2) even after the success of a disinvagination or untwisting, if fear is entertained for the peristaltic function.

Chronic affections.—(1) Anastomosis should be preferred in cases where there are numerous adhesions, where it offers a better chance, leaving out of account the nature of the disease. (2) It should be the operation always chosen: (*a*) In cases of inoperable tumors; (*b*) in presence of certain complex, multiple, inaccessible inflammatory foci (tuberculosis with burrowing, actinomycosis). (3) Recourse should be had to anastomosis as a preliminary operation: (*a*) In cases of operable tumors in very debilitated patients (for instance, in commencing occlusion); (*b*)

in cases of inflammatory affections with deep furrowing, external pyostercoral or genital fistulæ, etc., which are often cured by this first intervention if care has been taken to combine anastomosis with unilateral exclusion, a procedure which only takes two or three minutes, and which is suitable for all cases of Classes 2 and 3. Life is compatible with 1 metre and 50 centimetres of jejunum and the half of the colon, the rest being excluded. The surgeon therefore need not be afraid to operate on healthy loops at a distance from the focus of disease.

Gastro-intestinal Anastomosis.

Gastro-enterostomy, as being less dangerous, should precede pylorotomy as a preliminary operation when the condition of the patient makes it desirable. It may replace it if the tumor is inoperable. It should always complete it (Billroth's second method) so as to give the patient at once the benefit of the radical and of the palliative operation when recurrence takes place, by making a new pylorus at as great a distance as possible from the old one. In non-cancerous affections of the pylorus and the stomach, for which an easier evacuation of the gastric contents is desirable, gastro-enterostomy should be preferred to pylorotomy and pyloroplasty, because it is easier and equally efficacious whether in its ordinary form or as duodenostomy. Gastro-anastomosis is very much superior to gastroplicatio and gastropexy; if done by the Y method it is an ideal operation. For the surgeon who is equally handy with the scamstress's needle and with the more or less automatic approximation apparatus, suture will remain the method of election, because it alone gives reunion of the mucous membrane by first intention, and because it allows easy post-operative treatment, an important matter in all cases. Murphy's button, the best thing of the kind, should be reserved for cases — and they are too numerous — where minutes have to be counted. It gives unlooked for results. In all these operations a surprising proportion of deaths from pneumonia takes place; these are not sufficiently explained by the necrosis.

DR. SOULIGOUX, of Paris, said: Intestinal anastomosis constitutes most frequently the principal operation in the treatment of cancer and of stricture of the intestine; or the operation may be complementary. In presence of a case of acute or even chronic intestinal obstruction, intestinal anastomosis must yield precedence to preternatural anus, even if one has to intervene by a secondary procedure later. In case of retardation in the flow of feces without obstruction, if the surgeon finds himself in presence of a movable tumor which can easily be taken away, it is enterectomy that should be practised; but the operation should be completed by anastomosis, either lateral or terminolateral, operations which are more simple, more rapid, and more certain than circular enterorrhaphy. If the tumor is adherent, and its removal greatly complicates intervention, anastomosis is the only operation to be performed. It is of slight gravity, and, although only palliative, gives a fairly considerable survival. In cases of stricture or cancer of the cecum it should consist of turning of the ileum into a sigmoid flexure, and in the rest of the large intestine of a junction of the parts of the colon situated above and below the obstacle. In the case of strangulated hernia it may be either a preparatory or

a definite operation, much simpler and more certain than a circular enterorrhaphy. Souligoux summarized his conclusions as follows: The stomach has become an organ essentially belonging to surgery. Only dyspepsia of nervous origin lies outside the sphere of intervention. In cases of cicatricial stenosis of the pylorus or of the first part of the duodenum gastro-entero-anastomosis is the operation of choice, indeed the only one admissible, since it is almost free from danger, it provides against all accidents, and thanks to it, patients recover flourishing health. Moreover, it is less serious and more sure than pylorotomy or gastropasty. In cases of stenosis of cancerous origin it is also gastro-entero-anastomosis that in the present state of opinion, both of medical men and of patients, will be most frequently employed. Pylorotomy is to be preferred to it only in cases of commencing cancer, without adhesions to the liver, pancreas or colon, without involvement of the pre-aortic, pancreatic and hepatic glands, and of course when there is no trace of generalization; in a word, when it is easier of performance, and provided the surgeon adopts the technique recommended by Hartmann and Cunéo. Gastro-entero-anastomosis will most frequently be the necessary complement of pylorotomy when extensive resections of the stomach and duodenum have been performed. In the case of gastric ulcer in process of evolution gastrojejunal anastomosis will still be useful, not to stop hemorrhage, but to place the organ in a state of repose, and to allow cicatrization of the lesion to take place. In bilocular stomach of cicatricial origin gastro-entero-anastomosis is the operation of choice; it is much superior to gastropasty. In cases of dyspepsia when no improvement has been brought about by medical treatment, when phenomena of retention of food with violent pains causing contraction of the pylorus persist, it will be the operation of necessity. Done early it is not very serious, and allows the stomach to get well by establishing a means of escape for the gastric contents. Von Hacker's method is much the best when it is feasible. The anterior route should be followed only when it is impossible to perform posterior anastomosis. The operation which is physiologically the most complete is that of Roux. Nevertheless the posterior route, which provides against most of the accidents of *circulus vitiosus*, appears preferable to Souligoux. Whether carried out with the help of suture, of anastomotic buttons, or of crushing, as he has recommended, it is the most rapid and therefore the least dangerous. In cases where phenomena of obstruction by adhesion may occur, one should not hesitate to perform a secondary jejunojejunal anastomosis as Ricard himself and many others have done.

EXPLORATORY OPERATIONS ON THE STOMACH.

MR. A. ERNEST MAYLARD, Glasgow, presented a communication on this subject. He said its object was threefold: (1) To indicate those conditions for which the operation of early exploration is of special value; (2) to make clear the safety and simplicity of the operation, and (3) to demonstrate the best method of performing it. With regard to the first point, early direct digital examination, with visual inspection would, in obscure cases, determine whether the disease was innocent or malignant. If the former, the appropriate treatment would be suggested, and the

patient's mind relieved of all doubts and fears, so distressing and harmful in their indirect effects; while in the latter the growth might be removed at such an early period of its development that its eradication might prove complete and permanent. With regard to the second point—the extreme safety and simplicity of the operation—the greatest encouragement may be held out to the patient to submit to the operation. When no harm can follow even if no practical result can be obtained, there need be no hesitation on the part of the practitioner in advising the operation, and none on the part of the patient in submitting to it. The third point concerns the operation itself. Upon the thoroughness with which this is executed to a large extent may depend the value of the procedure. The steps of the operation, including the fore and after treatment, are as follows:

(1) *Preparation of the patient.*—Lavage is practised for two days previously; the diet is simple; the bowels are well emptied. A nutrient enema and a subcutaneous injection of liquor strychnine are given just prior to operation.

(2) *Abdominal incision.*—In most cases the median incision above the umbilicus is sufficient. In some cases, however, the left oblique (Fenger's) is necessary.

(3) *External examination of the stomach.*—The mobility of the organ is first noted to determine the presence or otherwise of adhesions. The anterior surface is palpated, and the posterior, by tearing to the required extent, through the gastrocolic omentum. Bidigital palpation should also be practised.

(4) *Internal examination of the stomach.*—This is effected, first, by direct inspection, and, secondly, by digital exploration. To render inspection efficient, the stomach must be completely cleared of its contents through an incision in its anterior walls. This is effected by a specially devised siphon apparatus. Fluid is introduced as required, and withdrawn until the cavity of the organ is perfectly clean. All proper protective measures are taken to guard against infection of the peritoneal cavity. As soon as all fluid is withdrawn the speculum is introduced. The specula employed are of special sizes. They resemble the ordinary large-size glass-reflecting vaginal specula (Fergusson's), only are much longer, and cut both obliquely and transversely at their ends. By means of these, and either direct daylight or reflected artificial light, a perfect visual inspection of the mucous membrane is obtained. Digital exploration follows visual, and is executed by the index finger of the right hand, coupled with, if necessary, the external manipulation of the stomach with the fingers of the left hand.

(5) *After treatment.*—The gastrotomy wound is closed by a continuous Lembert, and the abdominal incision united in three separate layers. The patient is fed for the first forty-eight hours by nutrient enemata. Of various illustrative cases cited the following is a good example: A lady had suffered for years from dyspepsia. Various medical opinions had been expressed, and the commonest conception of her troubles was that they were due to antecedent ulceration. She was much depressed by the various opinions expressed as to the cause of her complaint, and the more or less apparently useless effects of the innumerable drugs administered. An exploratory op-

eration revealed a chronic gastric catarrh. So far as the operation itself was concerned the patient suffered not the slightest ill effects, while the result mentally upon the patient was of the very best. To her all doubts in her case were settled, and, aside altogether from the use of appropriate drugs and suitable food, the beneficial effect of the mind upon the body seemed to have most to do with her comparatively rapid and complete recovery.

GASTRO-ENTEROSTOMY.

DR. A. MONPROFIT, of Angiers, presented a communication on gastro-enterostomy, which, he said, at first used solely in the treatment of inoperable tumors of the pylorus, may also be employed as a palliative in malignant tumors of the stomach not involving the pylorus. Such patients are relieved and their life is prolonged. Gastro-enterostomy and gastrotomy should not be opposed to each other, but an endeavor should rather be made clearly to determine the limits where one and the other of them stop. There is at the present day less tendency to remove, at the cost of considerable mutilations, large extensive and adherent tumors. These cases derive much more benefit from gastro-enterostomy. On the other hand, limited small movable tumors of the pylorus can be removed with excellent results. The procedures that have been successively used have been anterior gastro-enterostomy by Wölfler's method, which does not always give good results; then the methods most employed are those of von Hacker and Roux. The procedures of apposition by means of Murphy's button or by the method of Souligoux have each their partisans. Monprofit has always employed sutures with excellent results. He does not produce coprostasis, but contents himself with carefully protecting the abdominal cavity. When the stomach is much distended with liquids, he empties it by means of an india-rubber tube introduced through a puncture made in the mucous membrane before complete incision. Following the example of Roux, he feeds his patients as early as possible, giving them first liquid, then solid food within the first few days.

DR. BOURGET, professor of clinical medicine in the Cantonal Hospital, Lausanne, read a paper based on 100 cases of stricture of the pylorus, in 46 of which gastro-enterostomy had been performed. The communication was presented to the Section of Medicine, but an abstract of it may conveniently find a place here. His conclusions may be summarized as follows:

(1) Gastro-enterostomy is required whenever the calibre of the pylorus is insufficient to allow the free passage of food from the stomach into the intestine.

(2) To warrant the performance of the operation the cause of the stricture must be permanent or definitive in character, either tumor band, cicatrized ulcer or fibrous ring.

(3) It is contraindicated in cases of temporary narrowing of the pylorus, as by pyloric spasm in neurasthenic persons, and in gastric stasis from ptosis or atony of the walls.

(4) It should be done only after a careful study of the mechanical working of the stomach, which should be examined in different stages of digestion by means of test meals, these being strictly the same by each examination. In cases where a transient cause of stricture (neurosis) is suspected similar explorations

should be made, but should be repeated more frequently on account of the variability in the results. The effect of a prolonged tepid bath, bromide of potassium and even suggestion should be tried.

(5) Insufflation of the stomach is necessary to obtain information as to cases of gastric ptosis or as to the importance of the dilatation.

(6) Gastro-enterostomy is a curative operation in cases of pyloric stricture from cicatrized round ulcer, fibrous ring, or peripyloric adhesions.

(7) It is palliative in cases of malignant tumors involving the pylorus, but it may prolong the life of the patient to an altogether remarkable extent.

(8) The results of the operation have not been satisfactory in neurotic patients or in those who are the subjects of ptosis.

(9) After the operation the chemical function of the stomach is but slightly influenced, although the standard of acidity is lowered.

(10) The mechanical work of the stomach is considerably modified. The evacuation of the gastric contents is ensured; it is performed in a normal and rhythmical manner, as if it were regulated by a normal pylorus. The duration of work of gastric digestion in a patient who has been operated on (after healing of the surgical wound) is the same as in the normal individual.

(11) The stomach gradually regains its normal size and position.

TRANSPLANTATION OF THE TENDONS IN TREATMENT OF PARALYSIS.

DR. OSCAR VULPIUS, privat docent of surgery at Heidelberg, read a paper on this subject. He said that the transplantation of tendons had come into use only in recent years, although the idea of replacing the action of paralyzed muscles by that of healthy muscles was sufficiently obvious, the procedure not very difficult, the danger infinitesimal, the results good, and the occasion of operating frequent. He based his communication on 160 operations done in his clinic. Thanks to the most rigorous asepsis, including the use of gloves and a mask, he had had a series of 130 transplantations without any trace of infection. He prefers what he calls the "descending" method; he sacrifices no muscle, but brings the distal end of the divided tendon into connection with the neighboring muscles. In this way he benefits the paralyzed muscles without damaging the healthy muscles which are to replace them. The most important indications for the operation are: Destruction of muscles, tendons and nerves by injury and spinal paralysis, foremost among them being infantile spinal paralysis. In partial paralysis the operation is distinctly indicated; in total paralysis the surgeon must choose between it and arthrodesis. Transplantation has shown that total paralysis is in truth more rare than is believed. As regards results, success should be instantaneous in this sense that, at the end of the operation, a normal position of the articulation should have been obtained. Vulpius's 160 operations have shown that this improvement of position is permanent, and that it is followed by a return of more or less normal mobility. The success is sometimes increased to a surprising extent under the influence of post-operative treatment. The more circumscribed the paralyzed territory, and the nearer healthy muscles having a similar function are to be found, the

more brilliant will be the success of the operation. In spastic paralyses success consists not only in correction of the attitude but in disappearance of the spasm. The results also depend on the localization of a paralysis. The most favorable part for the operation is the leg, the thigh is less so; the musculature of the forearm presents greater difficulties, although Vulpinus has had some very satisfactory results. Complete failures are very rare if there has been no defect in technique. Relapses have become much more rare as experience has increased, and in such cases a second operation may correct the first. On the whole, Vulpinus thinks himself justified in warmly recommending transplantation of tendons in the treatment of paralysis. A rational combination of the various modern methods may at least make life worth living for thousands of poor paralyzed sufferers.

SURGICAL TREATMENT OF HYDATID CYSTS OF THE LIVER.

PROF. THOMAS JONNESCO, of Bucharest, said that at the present time four kinds of operations are performed for hydatid cysts of the liver: (1) Puncture, whether or not followed by parasiticide injections; (2) marsupialization; (3) incision followed by evacuation and suture of the cyst; and (4) enucleation and extirpation of the cyst. The last operation, which is ideal, is so rarely applicable that it can hardly be taken into account unless as an exceptional intervention. Puncture should be given up as uncertain and even dangerous. Marsupialization, in view of the duration of the treatment, remains an operation of necessity applicable to suppurating cysts, and to those in which the calcified adventitia no longer allows retraction of the pouch to take place. The operation of choice consists in incision of the cyst, which is emptied of its liquid contents, daughter cysts and germinal membrane, and suture; the pouch is left without drainage or fixation of the cyst to the abdominal wall. Jonnesco has operated in 6 cases of cysts varying in size from that of a man's fist to a diameter of 20 or 30 centimetres, and always with success. The effusion of bile into the cyst is not a contraindication. He has cured 1 case of this kind. In a woman operated on by him he was able in the course of a second intervention for a fresh cyst to observe the result of the first operation two years afterwards. The pouch had completely disappeared, and in its place there remained only a hard cicatrix adherent to the under surface of the liver.

ANESTHESIA BY SUBARACHNOID INJECTIONS OF COCAINE IN THE LUMBAR REGION.

DR. SEVEREANU, of Bucharest, said he had induced surgical anesthesia about 70 times by injecting hydrochlorate of cocaine into the spinal canal. This method seems to him to have certain drawbacks which he considers it important to point out. The amount of cocaine which he used varied from 1 to 4 centigrammes. In all the cases he observed a general weakness lasting one or two days, and sometimes causing great anxiety. There was very frequent vomiting, with headache, which was generally very severe. Independently of the dangers of the use of cocaine, he finds there is a very serious inconvenience attaching to this particular procedure—namely, that it allows the patient to witness the operation.

M. TUFFIER said he had performed 125 operations,

among them 58 laparotomies, after cocaine anesthesia by Bier's method. The phenomena which follow the injection are nausea, which may go on to vomiting when too large a dose has been injected; pallor of the face, respiratory distress, increase in the frequency of the pulse on the day after the anesthesia; there may also be some vomiting, and more or less violent headache lasting fifteen to twenty-four hours is practically always observed. Of the 125 patients operated on, 5 died; in 4 of these the method of anesthesia could not be held responsible for the result. The other patient died on the very day of the operation. Post-mortem examination showed the existence of a heart lesion complicated with pathological condition of the lung, and M. Tuffier thinks that in that case, too, the injection of cocaine had nothing to do with the death.

M. V. NICOLETTI, of Naples, said he had been able to show by numerous experiments on the rabbit and the dog that there is no histopathological lesion of the nervous system following subarachnoid injections of cocaine in the lumbar region. This appears to warrant the inference that the anesthetic property of cocaine results solely from its action on the vascular system of the spinal cord. He has been able to produce anesthetic effects in animals by subarachnoid injections not only of cocaine, but of ergotin, antipyrin and quinine.

M. RACOVICIANU-PITESCI, of Bucharest, said that, like M. Tuffier, he had operated on 125 patients after anesthesia by Bier's method, using doses varying from 1 to 4 centigrammes. In 80 cases he noticed symptoms of slight intoxication which sometimes lasted four and even five days. In 3 patients the symptoms were so severe as to necessitate artificial respiration and subcutaneous injections of ether. He further stated that he knew of 2 cases in Roumania in which death had followed cocaine anesthesia produced by injection in the lumbar region. He does not think, therefore, that this method can replace chloroform anesthesia.

PERICARDOTOMY THROUGH THE THORACIC INSERTION OF THE RECTUS ABDOMINIS.

DR. A. VOINITCH-SIANOJENTZKY presented a communication on this subject, in which he said that pericardotomy by a single longitudinal incision through the thoracic insertion of the rectus abdominis is a perfectly simple procedure. The incision corresponding exactly to the anatomical axis of the anterior mediastinum makes it possible to penetrate the pericardium without touching the pleura, and this can be done with perfect certainty, whatever may be the size of the pericardial effusion. This procedure should always be preferred for cases of small pericardial effusions or when it is impossible to diagnose the size of the effusion. The longitudinal incision can be enlarged without difficulty downwards to the bottom of the pericardium as soon as that has been laid bare: in consequence of this the best drainage can always be obtained. The tubercle of the left sixth chondrosternal articulation is a landmark in the incision and in the puncture of the pericardium.

SURGERY OF CANCER.

J. L. FAURE, of Paris, holds that cancer is a local disease which can be cured by a local operation. It is necessary that the operation should be complete, going far beyond the limits of the disease. Every incomplete operation is invariably followed by recur-

rence or rather continuation of the disease, for "cancer does not recur, it continues." While removing the disease, therefore, the surgeon should take no heed of how the breach is to be filled up—the wound must be dealt with afterwards as may be possible. Taking these principles as his guide, M. Faure has during the last five years operated on a considerable number of cancers in all regions—face, tongue, jaw, pharynx and larynx, thyroid body and glands of the neck, branchial remnants, stomach and intestine, testicle, ovary, breast, uterus and rectum, scapula, femur and ilium. He groups together all kinds of malignant tumors, whether epithelioma or sarcoma, as he holds that the same rules should apply to both these affections. He does not include in his statistics any case dating from less than a year back. Under the conditions defined he has had 93 cases of cancer in every situation and of every degree of gravity. In 18 no recurrence occurred within a space of time varying from twelve to forty-seven months. Of these, 2 who had extensive epithelioma of the upper jaw and of the floor of the mouth died, after twenty-four and forty months, respectively, of an intercurrent malady without sign of relapse. This gives in round numbers 20% of cures. Faure admits that the period mentioned is not sufficiently long to justify him in speaking of definite cure, although he has never seen, at least in external cancers, recurrence take place after a year of apparent cure; but 14 of his patients, or 15.05% of the whole number who were discharged from the hospital cured, have disappeared and cannot be heard of, and Faure assumes that among them there have been some other instances of prolonged freedom from recurrence. He regards his statistics of 20% of cures, which include favorable, moderately favorable, and extremely unfavorable cases, as "truly consoling," and as enforcing the conclusion that it is wrong to despair of curing cancer and that we have the right, and should consider it a duty, when confronted with this disease to "undertake everything and dare everything."

CANCER OF THE CHEEK.

M. MORESTIN, Paris, said that 12 patients suffering from primary cancer of the cheek had come under his observation. Of these 1 was a woman and 10 of the 11 men were smokers, while the eleventh, who did not smoke, chewed. All had very bad teeth, and some had leucoplasic patches in the immediate neighborhood of the tumor or on the opposite cheek. In 10 of the 12 cases the growth started in the immediate neighborhood of the lower gingivogenial cul-de-sac, extending afterwards on the one hand to the internal surface of the cheek, and on the other invading the mucous membrane of the alveolar portion of the jaw. The glands became enlarged early, they became fused with each other and with the submaxillary gland and soon became adherent to the jaw. The upper gingivogenial cul-de-sac is not involved, and below it there remains a band of healthy mucous membrane. The floor of the mouth, too, generally remains intact for a fairly long time. The prognosis of cancer of the cheek is always very grave, its evolution takes place in a few months, and it soon gets beyond surgical treatment. In the cases in which intervention is possible the most general plan will be to remove

en bloc the tumor of the cheek, the submaxillary glandular mass, and the corresponding part of the maxillary bone. Of the 12 cases reported by M. Morestin, 7 were inoperable. In the other 5 he operated, and 1 of the patients, who was absolutely cachectic, died the same day. The other 4 bore the operation well; in 3 relapse occurred, death occurring in from three to eight months; the fourth was lost sight of.

(To be continued.)

Recent Literature.

Saunders's Question Compend No. 3. Essentials of Anatomy, including the Anatomy of the Viscera, arranged in the form of Questions and Answers, prepared especially for Students of Medicine by CHARLES B. NANCREDE, M.D., Professor of Surgery and Clinical Surgery in the University of Michigan; Senior Vice President of the American Surgical Association, etc. Sixth edition, thoroughly revised by FRED J. BROCKWAY, M.D., Assistant Demonstrator of Anatomy, Columbia University, New York. Philadelphia: W. B. Saunders & Co. 1899.

When medical students learn by study of the part itself and not by memorizing from a quiz compend, and when they are passed in courses on the basis of the actual practical knowledge and ability to describe things put before them and not on the amount of quiz-compend material they can spread on paper in an hour or more, then the quiz compend will have fulfilled its function. May the time soon come! If we must use a quiz compend this is a rather satisfactory one, though it seems inconsistent in a book where conciseness is sought to the extent of leaving out "a's," "an's" and "the's," space should be given to the definition of such terms as "schindylesis" and "gomphosis," which certainly seem non-essential. Why it adds to a description of the thoracic nerves to have "Describe them" in coarse print precede their description in fine print, or why it is necessary even for a quiz compend to adopt the cumbersome form of question and answer it is difficult to see. Certainly a very material reduction in the size of the book could be made by leaving out the coarse-print questions.

Heavy type headings are useful in a book of this sort, but the book has already enough of them without the questions and commands to describe the various organs.

The Treatment of Fractures. By CHARLES LOCKE SCUDDER, M.D., Surgeon to Out Patients, Massachusetts General Hospital, etc., assisted by FREDERIC J. COTTON, M.D. Pp. 433, with 585 illustrations. Philadelphia: W. B. Saunders & Co. 1900.

This carefully written volume is an interesting treatise on the subject of fractures. The book is written to serve as a guide to the student and practitioner in the treatment of this class of injuries, and an effort has been made to introduce the additional knowledge of the subject contributed by skiagraphy and the methods made possible by modern surgery. The book deals only with specific fractures, each of which is considered anatomically, its prognosis stated,

and the details of its treatment described. The text is profusely illustrated, many of the pictures being of especial interest. While one might differ with the writers in regard to some minor details, the book as a whole appears to be an excellent piece of work, which is the result of a careful study of the subject. It contains information (specific data) relating to the actual prognosis, rapidity of repair, treatment and "end" results frequently much desired but often not found in such works. It is well arranged, and is concisely and systematically written. The facts stated are derived from an extensive bibliographical study, as well as personal clinical experience. The volume will well repay a careful perusal.

Lectures upon the Principles of Surgery. Delivered at the University of Michigan. By CHARLES B. NANCREDE, A.M., M.D., LL.D., Professor of Surgery and of Clinical Surgery; Emeritus Professor of General and Orthopedic Surgery, Philadelphia Polyclinic; Senior Vice President of the American Surgical Association; Corresponding Member of the Royal Academy of Medicine of Rome; Member of the American Academy of Medicine; late Major and Chief Surgeon, U. S. V., etc. With an Appendix containing a Résumé of the Principal Views held concerning Inflammation. By WM. A. SPITZLEY, A.B., M.D., Senior Assistant in Surgery, University of Michigan. Illustrated. Philadelphia: W. B. Saunders & Co. 1899.

All things considered, Dr. Nancrede's work on the "Principles of Surgery" is a very satisfactory book to place in the hands of students. The work has been done in a thoroughly scientific spirit. The book is the course of lectures that Dr. Nancrede gave at the University of Michigan, and it is a pleasure to read it.

The strong point in Dr. Nancrede's writing is that, while the recent scientific research is presented, the theory of a given subject is always offered from a practical standpoint. The writer does not sink his individuality in presenting many of the vexed questions, for he clearly states where his views diverge from those of other teachers. It is a book that may be highly recommended to both surgeons and medical students.

Surgery. A Treatise for Students and Practitioners. By THOMAS PICKERING PICK, Consulting Surgeon to St. George's Hospital; Senior Surgeon to the Victoria Hospital for Children; Her Majesty's Inspector of Anatomy in England and Wales. London, New York and Bombay: Longmans, Green & Co. 1899.

We have delayed a little while before writing a review of this book that we might submit it to the test from time to time of using it as a reference book. The more we use it the better we like it. The author states that the book is the substance of his lectures on surgery delivered at St. George's Hospital for fifteen years, and it is evident that, as the author says, "the work may be regarded as an outcome of the experience of a hospital surgeon and teacher for nearly thirty years." It is of necessity dogmatic, but it clearly states the author's views of the nature of the various injuries and diseases that are discussed. The book is perhaps a little too large, 1,176 pages, but we can readily understand that the author has condensed on every page. It is a treatise,

but would serve very well for a textbook. Many of the illustrations are excellent, in that they are new and not meaningless "process" work. We feel that Dr. Pick is to be congratulated, for this work is evidently the result of a life labor. It reflects the greatest credit upon the author.

A Treatise on Appendicitis. By JOHN B. DEEVER, M.D., Surgeon in Chief to the German Hospital, Philadelphia. Illustrated. Second edition, thoroughly revised and considerably enlarged. Philadelphia: P. Blakiston's Son & Co. 1900.

This new edition of 300 pages is a volume of convenient size and attractive appearance. The author states that the book has been virtually rewritten; that every chapter has been carefully revised and much new material introduced. This is especially the case with the section relating to the Pathology of Appendicitis, which has been written by Dr. A. O. J. Kelly, Director of the Pathological Institute of the German Hospital. These additions have increased the size of the book. The plates seen in the former edition relating to operative technique have been omitted, and a series illustrating the histology of different varieties of the disease are substituted. The plates illustrating the ileocecal, ileocolic and subcecal fossæ are new. The volume contains 22 full-page plates, many of them colored. The subject of appendicitis has been well classified by the writer and extensively studied. A full index and a bibliographical table are appended.

The Microtometist's Vade-Mecum. A Handbook of the Methods of Microscopic Anatomy. By ARTHUR BOLLES LEE. Fifth edition. Philadelphia: P. Blakiston's Son & Co. 1900.

Five editions of this now well-known book have appeared since 1885. This latest edition has been thoroughly revised, in part rewritten, and obsolete methods have been omitted. This latter change is most highly to be commended, and we wish had been carried a little further. The unnecessary multiplication of histological methods is always to be deprecated, and particularly when the suggested modification is merely different from, but no better than, established procedures. In general this new edition, while keeping within the bounds of size prescribed by earlier ones, contains much that is new and excellent. The book will, no doubt, long stand as one of the best manuals of histological technique in the English language. Much care has been taken in the making of the volume; the binding and type are altogether satisfactory.

Quiz Compend. A Compend of Gynecology. By WILLIAM H. WELLS, M.D., Adjunct Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic; Instructor of Clinical Obstetrics in the Jefferson Medical College; Fellow of the College of Physicians of Philadelphia and of the Gynecologic Section thereof; late Assistant in the Out-Patient Gynecologic Department of the Jefferson Medical College Hospital, etc. Philadelphia: P. Blakiston's Son & Co. 1899.

This handy little manual is exactly what it implies in its title, the briefest possible extract of a textbook on gynecology. It is a good specimen of its class.

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THE HYGIENE OF CHURCHES.¹

DR. REMLINGER,¹ chief of the Military Laboratory of Hygiene of Tunis, in an excellent article on the hygiene of churches, calls attention to the fact that the hygiene of almost all other edifices and public establishments (schools, theatres, prisons, hospitals, etc.) has received careful attention, while the hygiene of churches has been much neglected. He treats of their general sanitary condition, fire protection, liability to the spread of contagious diseases, preventive measures, and to the peculiarities of the churches of different sects, especially those of the Mussulmans.

He pictures an ideal sanitary church very much as follows: "The future sanitary church will be without a nave, or low side walls. There will be an open space below, which may be used as a crypt, or not. The floor made of marble, cement or tiles. The windows large enough to admit abundance of light, the glass of such a character as to admit the sun's rays freely." He suggests that electricity be employed to furnish the heating, ventilation and the artificial lighting at night. Otherwise he prefers steam or hot water for heating, in place of hot-air furnaces. The seats should be of light material and easily movable. He would forbid the use of carpets, mats, wallpaper, gaudy decorations, and other material liable to collect dust and to increase the danger of fire. The doors should be sufficient in number and should open outwards.

Cuspidors placed at a convenient height (*à hauteur d'homme*), and containing an antiseptic, should be placed at the entrance, along the walls, and upon the pillars of the church. Inscriptions in plain sight should call attention to these, especially to those at the entrance of the church, stating that "Out of respect for the holy place, and as a sanitary measure, spitting upon the floor is forbidden."

He also advises the protection of the holy water

from the pollution which it must necessarily receive from filthy and diseased persons.²

The condition of the confessionals also receives his condemnation and measures are suggested for their improvement.

The sweeping and dusting of churches should not be allowed, but wiping with damp cloths should be used instead. Sawdust moistened with an antiseptic is also advised.

The author also gives suggestions as to the correction of evils in churches already existing.

He states that great pains have been taken to ascertain the amount of carbonic acid in the air of school-rooms, factories, etc., before and after their occupancy by large numbers of people, but never to his knowledge have such examinations been made in the churches.

He compares Notre Dame, at Paris, to a dark cave, where the visitor has difficulty in adapting his vision to the gloomy interior, and on the contrary, the sudden change to the brilliant outdoor sunlight is still more painful to the eyes.

He cites the investigations of Casagrandi and Mazza with reference to the practice of kissing the statues of the saints. They had examined such statues at Rome and Turin, and found the bacilli of Koch and Löffler, etc., upon them. These customs, however, are not peculiar to Christianity, since the pilgrims at Mecca are accustomed to kiss a black stone which is said to have fallen from heaven, and those who cannot touch it with their lips touch it with their hands, which they afterwards kiss. At first thought the remedy suggested in the case of the holy water is the addition of an antiseptic to the water, and he naively adds that "there cannot be found in the Holy Scriptures a text forbidding the addition of an antiseptic to the holy water." A new difficulty here presents itself, however, on account of a popular belief in certain places that a dose of holy water administered to the sick is attended with miraculous results. The addition of the bichloride of mercury to such water might perhaps interfere with such miraculous action. The author tells the story of a man who, after an operation for appendicitis, was in a fair way for recovery, but being desirous of hastening his convalescence, swallowed a draught of some filthy holy water, which had been kept in a cupboard for several years. He was taken soon afterward with an infectious bronchopneumonia, of which he died. He cites two recent inventions which have been made to obviate this difficulty, one of Dutch and the other of Italian origin, the principle consisting in the use of a faucet or siphon in such manner that no person can come in contact with water which has been once used by another. Such appliances have already been adopted in some parts of Italy.

¹ Les églises au point de vue de l'hygiène, par le Dr. Paul Remlinger, médecin major, chef du laboratoire militaire de bactériologie de Tunis.

² See the investigations of Abba, at Turin, upon samples of holy water taken from the cathedrals. (Sur les conditions déplorablement bactériologiques de l'eau bénite dans les églises, Revue d'Hygiène, October 20, 1899, and May 20, 1900.)

With reference to the dust which accumulates upon the floors of churches he presents a graphic picture of a visit to St. Peter's, at Rome, on an evening of Holy Week, when as many as 80,000 persons attend the services. He says, "The immense nave was filled with a cloud of dust, so dense as to obscure the architectural details of the edifice. What becomes of this dust? On the following night it settles upon the floor, the altars, statues, and the thousand and one projecting points of the interior. At daylight, when the air of the church has become clearer, the sweepers and dusters make their appearance. With brooms, dusters and brushes of various shapes, they stir up the dust. It arises again throughout the church, and again fills the air. It settles once more, only to be stirred up again by the crowd of attendants."

Measures for the correction of some of these evils have already been taken by at least two Italian ecclesiastics, the bishops of Fano and Reggio.³ The latter says in a communication to the local health authorities in his diocese: "The greatest natural blessing which man can enjoy in this world is good health and the preservation of his life. He should, therefore, employ all the resources of hygiene for this purpose. The Divine Founder spent his life in doing good to mankind, and in restoring health to those who had lost it." The bishop, therefore, issues a series of practical hygienic measures to be adopted in the churches of his diocese.

THE BABINSKI PHENOMENON.

IN matters of diagnosis relatively few new signs stand the test of time, and prove themselves of permanent value. This, however, cannot be said of the reflex phenomenon which bears the name of its earliest describer, Babinski. Not only to the neurologist, but also to those working in the more general fields of medicine, this sign should prove of great value, because of the simplicity of its execution, and also because it is likely to form an important determining factor between so-called functional and certain organic disorders of the central nervous system. The test, in its simplest form, consists merely in an extension of the toes, best observed in the large toe, when the sole of the foot is irritated. It differs from the ordinary plantar reflex in that the toes are extended and not flexed, as occurs under normal conditions. A further interest is added to the test, because of the fact of our relative ignorance of the significance of cutaneous reflexes in general. A solution of the difficulty seems in part accomplished by the work inaugurated by Babinski, and carried out since his publication in 1896 by a considerable number of other investigators. The plantar reflex at least should no longer be taken in a purely routine way, regardless of its significance, as the habit has been in the past. The final establishment of the principle, however, that extension of the toes indicates a distinct disturbance

³ Rivista d'igiene e sanita pubblica, May 16, 1900.

with the function or structure of the pyramidal tracts of the brain or cord, demands a very large number of carefully taken and tabulated observations. These are by degrees coming in, and already a number of excellent papers on the subject have appeared. Among the most recent is one by Walton and Paul, of Boston, published in the June number of the *Journal of Nervous and Mental Disease*. These writers have examined seven hundred patients with special reference to the Babinski phenomenon and have reached certain conclusions of value to the general subject, among which are the facts that the Babinski reflex obtains in about seventy per cent. of cases of hemiplegia and diplegia, and in approximately the same percentage of cases with disease involving the pyramidal tract in the spinal cord; that the reflex is never present in health; that it is often the earliest to appear in pyramidal tract disease, and that it very exceptionally appears in cases not conforming to recognized types of pyramidal disease (meningitis, hydrocephalus, poisoning, as by alcohol or uremia). These general conclusions are certainly of great value in themselves, and as a basis for further work, particularly in the type of case last described, and in various obscure affections of other organs, as well as of the nervous system, accompanied with cachexia and a general lowering of the physical condition from whatsoever cause. The matter is clearly of sufficient diagnostic importance to justify continued study.

MEDICAL NOTES.

MEDICAL CORPS OF THE NAVY.—A naval medical board of examiners for examination of candidates for admission to the Medical Corps of the Navy is now in session at the Naval Laboratory, Brooklyn, N. Y., and will remain in session for several months. There are now seventeen vacancies in the list of assistant surgeons. Congress at its last session passed a law taking assistant surgeons out of the steerage and making them ward-room officers as soon as they entered the service, giving them the rank of junior lieutenants and the pay of assistant surgeons in the army. Candidates must be between the ages of twenty-one and thirty. Circular of information can be obtained on application to the Surgeon-General of the Navy, Navy Department.

AN "ANTIEN FISH-LIKE SMELL."—A correspondent of the *Medical Press and Circular* sends the following as "a fact": A poor fellow in bad health was taken from the London slums to the top of Hampstead Heath. He fainted soon after, not being used to fresh air. A bystander with great presence of mind placed a stale fish under his nose. The effect was immediate. The poor fellow opened his eyes and exclaimed with a sigh of relief, "Ah! that smells like home!"

CIVILIANS FOR THE ROYAL ARMY MEDICAL CORPS.—According to the *Medical Press*, civilian

medical men at present serving with the troops in South Africa are to be offered commissions in the Royal Army Medical Corps, by which means it is hoped to fill some, at any rate, of the numerous vacancies in that service. It remains to be seen to what extent advantage will be taken of the opportunity. It is quite possible that experience at the front will have a deterrent effect on those who have been exposed thereto. In any event more elaborate measures will be required if the service is to be maintained in a state of efficiency.

A MONUMENT TO THE LATE PROFESSOR KÜHNE. — It is proposed by the friends and students of the late Prof. Willy Kühne to erect a suitable monument to his memory, to be placed in the lecture room of the Heidelberg Physiological Institute. To this end funds must be raised, which it is hoped may be forthcoming from the numerous friends, students and colleagues of the distinguished physiologist. Contributions may be sent to the Oberrheinische Bank in Heidelberg, with the statement that they are to be used for the "Kühne Monument."

TUBERCULOSIS DECLARED AN INFECTIOUS DISEASE IN IOWA. — According to the *New York Medical Journal*, the Iowa State Board of Health has placed tuberculosis on the list of infectious diseases, and recommended that persons afflicted with it and infected premises be dealt with accordingly. In a pamphlet just issued are numerous suggestions and instructions for dealing with the disease.

DEATH FROM CIRCUMCISION. — A fifteen-day-old infant died from hemorrhage following circumcision by a rabbi in Philadelphia last week, according to the *Medical News*. A physician was called after unsuccessful efforts to check the hemorrhage had been made for two hours. The child died five hours after the physician was called to see the case.

STATISTICS OF MOLOKAI. — The leper colony at Molokai contains 1,100 persons — 625 males and 475 females. Of the entire number 984 are Hawaiians, 62 are half breeds, 37 are Chinese, 5 Americans, 4 British, 3 German, and 6 Portuguese. — *Medical Age*.

DR. OCHSNER. — Dr. A. J. Ochsner has been appointed professor of clinical surgery in the Medical Department of the University of Illinois (Chicago College of Physicians and Surgeons).

PLAGUE IN GLASGOW. — An occasional case of plague is still reported from Glasgow.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, September 26, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 121, scarlatina 21, measles 8, typhoid fever 25.

SMALLPOX AT STRAFFORD, N. H. — Several cases of smallpox have recently been discovered in a French-

Canadian family at Strafford, N. H. It is thought that the disease will not spread, owing to the fact that the affected family lives in an isolated part of the town. The disease will probably be traced to Pittsfield, where there are a number of convalescents from the disease in the contagious hospital.

A CASE OF SMALLPOX IN MALDEN, MASS. — A case of smallpox has been discovered in Malden, in a negro woman recently arrived from Richmond, Va. It will be difficult to make provision for her in the town, since the building formerly used to isolate such cases has been devoted to other purposes.

NEW YORK.

COURSE FOR TRAINED NURSES AT COLUMBIA UNIVERSITY. — At the request of the American Society of Superintendents of Training Schools for Nurses, the authorities of Columbia University are about to establish a special course in "hospital economics," to be given at Teachers' College. The aim of the course is to fit persons who are already trained nurses for the responsible duties of superintendents of hospitals and principals of training schools for nurses. It is intended to present the practical problems of hospital administration and to give students systematic instruction in the organization and management of training schools. The prescribed course of study will include general psychology and its application in teaching; methods, practice, organization and supervision of hospitals and training schools, biology, physiology, hygiene, the production and manufacture of foods, home sanitation and management, bacteriology and household chemistry. A series of special lecture courses has also been arranged.

ELECTRIC AMBULANCES. — The Roosevelt Hospital has been presented with two electric ambulances, costing about \$3,000 each and capable of travelling sixteen miles an hour. It is also stated that the firm which manufactured them is now constructing similar ambulances for the New York and the Presbyterian Hospitals. Up to the present time the only hospital in the city that has had a vehicle of the kind is St. Vincent's.

TWO CENTENARIANS. — Mr. Bernard Aronson, of New York City, reputed to be one hundred and five years old, is dead. He was born in Germany in 1795 and came to New York about forty-eight years ago. Mrs. Anna Baumle, a native of Kurschin, Austria, died in Newark, N. J., on September 15th, at the reputed age of one hundred and three years and seven months.

BEQUESTS TO HOSPITALS. — Among the institutions receiving \$5,000 each under the will of George D. Sweetser are the following: The New York Skin and Cancer Hospital, the New York Infant Asylum, the Society for the Relief of Ruptured and Crippled, the House of Rest for Consumptives, the Woman's Hospital and the Home for Incurables.

Obituary.

LEWIS A. SAYRE, M.D.

DR. LEWIS ALBERT SAYRE, one of the most striking figures in the profession in America, and unquestionably the most widely known orthopedic surgeon in the world, died at his residence in New York, on the 21st of September. For many years he had been a sufferer from rheumatism, and for the last twelve months he had been confined to his room the greater part of the time. His death was due to a gradual failure of vital powers. He was in his eighty-first year.

Dr. Sayre came of old Colonial and Revolutionary stock and was born at Bottle Hill, now Madison, N. J., on February 29, 1820. He was a precocious child, and at the age of four recited verses of welcome in the presence of Lafayette, when the latter was revisiting the Revolutionary scenes of New Jersey. He was graduated from Transylvania University, Lexington, Ky., in 1839, and from the College of Physicians and Surgeons, New York, in 1842. He married, in 1849, Miss Eliza Ann Hall, a daughter of Charles Henry Hall, an influential citizen of Harlem, and had four children, Dr. Charles H. H. Sayre, Dr. Lewis Hall Sayre, Dr. Reginald Hall Sayre and Miss Mary Hall Sayre. Of these, Dr. Charles Sayre died in 1880 and Dr. Lewis H. Sayre in 1890.

Immediately on his graduation he was made prosector to the professor of surgery in the College of Physicians and Surgeons. In 1853 he was appointed surgeon to Bellevue Hospital and in 1859 to the Charity Hospital on Blackwell's Island. In 1873 he became one of the consulting surgeons to the latter institution. He was one of the principal founders of the Bellevue Hospital Medical College, of the New York Academy of Medicine, the New York Pathological Society and the American Medical Association.

In 1860 he was appointed by Mayor Fernando Wood to the position of resident physician of New York, in control of the Health Department of the city, and he continued to fill this office with marked ability and success during the administrations of Mayors Gunther and Hoffman. In this capacity he showed great vigor in combating smallpox, cholera and other infectious diseases, in his efforts in behalf of compulsory vaccination and in dealing with the evils of tenement-house life and other sanitary problems.

When the Bellevue Hospital Medical College was organized in 1861 he became a member of its first faculty, as professor of orthopedic surgery, fractures and luxations, and he continued to fill the chair of orthopedic surgery until 1898, when the college was consolidated with the Medical Department of the University of the City of New York. He was then made professor emeritus, while his son, Dr. Reginald H. Sayre, was appointed clinical professor of orthopedic surgery in the University and Bellevue Hospital Medical College. Dr. Sayre's achievements in the special field which constituted in a large degree his life work are of world-wide renown.

While he has impressed his original genius upon the progress of this entire branch of surgical knowledge, he will no doubt be best known to posterity for his achievements in connection with the exsection of the hip joint and his treatment of Pott's disease and lateral curvature of the spine by means of suspension and the plaster-of-Paris jacket. His first operation for the cure of hip-joint disease was performed as early as 1854, and the gratifying result attracted widespread attention. In 1871 he went abroad and demonstrated his method in a number of the principal European hospitals. During this tour he treated a member of the royal family of Sweden, and King Charles IV created him a Knight of the Order of Vasa. He was also made an honorary member of the British Medical Association, the Medico Chirurgical Society of Edinburgh, the Surgical Society of St. Petersburg, the Medical Society of Norway and other scientific bodies. At the International Medical Congress in Philadelphia in 1876 he performed an

exsection of the hip in the presence of the concretion, and in 1877 he visited England again and demonstrated his new method of treatment for spinal disease before the British Medical Association at Manchester. He also gave clinical lectures on the subject in London, Edinburgh, Liverpool, Dublin and other cities, and in recognition of his flattering reception, published while in England "An Illustrated Treatise on Spinal Disease and Spinal Curvature," which he dedicated to the medical profession of Great Britain.

Dr. Sayre's principal literary work was his "Lectures on Orthopedic Surgery and Diseases of the Joints," which is remarkable for its terseness of style and the great practical utility of its illustrations, nearly all of which are taken from actual photographs. In preparing the revised edition of the work he was assisted by the late Dr. Wesley M. Carpenter, and for several years before his death it was a matter of great regret to Dr. Sayre that the condition of his health and the demands upon his time prevented him from making another revision, embodying the latest fruits of his experience and observation. Dr. Sayre also published "A Practical Manual on the Treatment of Club-Foot," which passed through a number of editions, and a large number of monographs on other special topics.

In 1866 he was elected a vice president of the American Medical Association, and in 1889, when it met in New York, president of that body. He was also at various times president of the New York Pathological Society and other societies. At the time of his death he was consulting surgeon to Bellevue Hospital, St. Elizabeth's Hospital, the Home for Incurables, and other institutions. Among the societies officially represented at his funeral, held September 23d, at Grace Church, were the New York Academy of Medicine, the Pathological Society, the Medical Society of the County of New York, and the New York County Medical Association.

Dr. Sayre was of a most commanding presence. He had a powerful voice, under admirable control, and as the play of emotions upon his strongly marked features was remarkable, he was a most impressive speaker. His language was not always polished, but it was invariably vigorous. In his lectures, and in speaking before societies, he brought out the points which he desired to impress with the utmost clearness and force, and as he had a rich fund of anecdote and an unusual gift of mimicry, he was always sure of carrying his audience with him. Truly a notable person has passed away in Lewis A. Sayre, and the news of his death will be received with sincere sorrow not only throughout this country, but all over the civilized world.

FRANK W. GRAVES, M.D.

RESOLUTIONS OF THE MIDDLESEX EAST DISTRICT MEDICAL SOCIETY.

Whereas, We are called under the dispensation of Providence to mourn the sudden death of our most highly esteemed professional brother, Frank W. Graves, of Woburn, Mass., the Middlesex East District Medical Society, in regular meeting assembled, hereby

Resolve, That we share in the great grief of the many who knew Dr. Graves in his private and business relations, to whom his useful life and manly character were open and familiar, and who loved him for the genial and noble qualities with which his personal friendships were brightened and dignified, and that we join in the regret and conviction of general loss which always follow the death of an honorable and successful man and citizen. But, as fellow members of this society and as his associates in the medical profession, we feel even more deeply the deprivation of his cheering presence, his kind and efficient counsel and assistance, his courtesy, honor and integrity and brotherly relation to each and all of us.

That, as physicians, we testify to the skill, foresight and wisdom with which he won such signal success in the ranks of our profession, and hereby make record and public ex-

pression of our sorrow for his demise and the great bereavement which has fallen upon us as individuals and as a society.

C. C. ODLIN,
S. W. KELLEY,
CHAS. DUTTON, } *Committee.*

ALFRED STILLÉ, M.D.

THE death of Dr. Alfred Stillé is announced, who for nearly twenty years had been associated with the University of Pennsylvania as professor of the theory and practice of medicine. He was born in Philadelphia in 1813, and was graduated from the University of Pennsylvania as A.B. in 1832 and as M.D. in 1836. He was made resident physician at the Philadelphia Hospital in the latter year. He subsequently studied in Europe for two and a half years. He was resident physician at the Pennsylvania Hospital from 1836 to 1841, and lecturer on general pathology and practice of medicine in the Philadelphia Association for Medical Improvement from 1845 until 1859. From 1854 to 1859 he held the chair of theory and practice of medicine in the Pennsylvania Medical College. He was elected to the corresponding chair in the University of Pennsylvania in 1864. In 1849 he was appointed physician to St. Joseph's Hospital, and in 1854 he was elected professor of theory and practice of medicine in the Pennsylvania Medical College. He held that chair until 1859, when he was chosen to occupy a similar chair in the University of Pennsylvania. This position he held until 1884, when he became professor emeritus. He was president of the American Medical Association in 1867, of the Philadelphia College Medical Association in 1862 and of the College of Physicians of Philadelphia in 1885. From 1865 to 1867 he was physician and lecturer on clinical medicine in the Philadelphia Hospital. He received the degree of LL.D. from the Pennsylvania College at Gettysburg in 1876. Among his publications were "Medical Instruction in the United States," "Elements of General Pathology," "Unity of Medicine," "Humboldt's Materia Medica," and a systematic treatment on the action and use of medicinal agents.

HUNTER H. MCGUIRE, M.D.

DR. HUNTER H. MCGUIRE died in Richmond, Va., September 19, 1900, at the age of sixty-five. He had never recovered from a paralytic stroke, which occurred six months ago. During the Civil War, Dr. McGuire was a prominent medical figure in the Confederate Army. He served as the head of the medical department under General Stonewall Jackson, and operated on that officer at the time of his fatal wound. Since the close of the war Dr. McGuire had established an enviable reputation as a surgeon. He was educated at several medical colleges, among them the Jefferson Medical College of Philadelphia. He held the chair of anatomy in the Medical College of Virginia from 1856 to 1853, when he removed to Philadelphia. In 1865 he was called to be professor of surgery in Virginia Medical College, where he remained till 1880. In 1885 he was made professor emeritus in that institution.

Dr. McGuire organized St. Luke's Home for the Sick, with a training school for nurses, in Richmond. He was president of the Association of Confederate Medical Officers in 1869 and of the Virginia Medical Society in 1873, vice president of the International Medical Congress in 1876 and of the American Medical Association in 1881, and president of the American Surgical Association in 1887. The University of North Carolina in 1887 conferred upon him the degree of LL.D. He was a contributor to Ashurst's "International Cyclopaedia of Surgery," Pepper's "System of Medicine" and the American edition of Holmes's "Surgery."

RECENT DEATH.

ROBERT FRANCIS FORREST, M.D., M.M.S.S., of Cambridge, died in Watertown, September 18, 1900.

BOOKS AND PAMPHLETS RECEIVED.

Presentation to Mr. L. M. Griffiths. Reprint. 1900.

Transactions of the Medical Society of the State of New York for the Year 1900. Published by the Society.

The Diagnosis of Hysteria. Two Cases of General Anesthesia. By Charles W. Burr, M.D., Philadelphia. Reprints. 1900.

Special Hospitals for Consumption among the Poor in Our Cities. By Edward O. Otis, M.D., Boston. Reprint. 1900.

Some Cases of Dilatation of the Stomach. By John H. Musser, M.D., and J. Dutton Steele, M.D., Philadelphia. Reprint. 1900.

Submucous Ligature for Rectal Hemorrhoids and Prolapse. By B. Merrill Ricketts, Ph.B., M.D., Cincinnati, O. Reprint. 1900.

Transactions of the American Surgical Association. Volume XVIII. Edited by DeForest Willard, M.D., Ph.D., Recorder of the Association. 1900.

New Therapeutic Reference Book for Physicians and Students. By William R. Warner. Philadelphia, New York, etc.: W. R. Warner & Co. 1900.

A Case of Malta Fever. Hemorrhagic Diathesis in Typhoid Fever. By J. H. Musser, M.D., and Joseph Sailer, M.D., Philadelphia. Reprints. 1898-99.

A Case of Pneumonocystis Due to the Aspergillus Fumigatus. By Leonard Pearson, B.S., V.M.D., and Mazyek P. Ravenel, M.D. Reprint. 1900.

The Use of the Sphygmograph in Clinical Medicine. By Graham Steele, M.D. Manchester: Sherratt & Hughes. Philadelphia: P. Blakiston's Son & Co. 1899.

Practical Gynecology: A Comprehensive Textbook for Students and Physicians. By E. E. Montgomery, M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Transactions of the Ophthalmologic Division of the Western Ophthalmologic and Oto-Laryngologic Association at its Fifth Annual Session, held in St. Louis, Mo., April 5, 6 and 7, 1900.

Total Excision of the Scapula Alone, and with the Arm (Inter-scapulo-Thoracic Amputation); Partial Excision of the Scapula for Tumor. By J. J. Buchanan, M.D., Pittsburg. Reprint. 1900.

The Physical Signs of Pulmonary Disease for Use of Clinical Students. By Graham Steele, M.D. (Edin.). Second edition. Manchester: J. E. Cornish. London: Simpkin, Marshall & Co. Ltd. Philadelphia: P. Blakiston's Son & Co. 1900.

Manual of Pathology, including Bacteriology, the Technic of Postmortems, and Methods of Pathologic Research. By W. M. Late Coplin, M.D. Third edition, revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Public Health Reports. (Formerly Abstract of Sanitary Reports.) Issued by the Supervising Surgeon-General, Marine-Hospital Service, under the National Quarantine of April 29, 1878, etc. Vol. XIV. Nos. 1 to 52. Washington. 1900.

A Treatise on Mental Diseases Based upon the Lecture Course at the Johns Hopkins University, 1899, and Designed for the Use of Practitioners and Students of Medicine. By Henry J. Berkeley, M.D. Illustrated. New York: D. Appleton & Co. 1900.

Manual of the Diseases of the Eye, for Students and General Practitioners. By Charles H. May, M.D., Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, etc. Illustrated. New York: William Wood & Co. 1900.

XIII Congrès International de Médecine. Paris, 2-9 Août, 1900. Résumé du Rapports sur l'Étiologie et la Nature des Infections Puerpérales. Par M. Peralozza, de Florence; Le Diagnostic et le Traitement de la Pyohémie Otitique. Par le Docteur Dundas Grant (Londres).

Would It Not Be a Gain to Both Pathology and Practice if a Direct Interaction between the Morbific Agent (Noxa) and the Reparative Effort were Recognized and the Conception of an Intermediate, So-called Inflammatory Process Abandoned? By Andrew H. Smith, A.M., M.D. Reprint. 1900.

Amyloid Disease of the Liver with an Abnormally Enlarged Left Lobe. Cancer of the Common Bile-Duct. The Indications for the Use of Alcoholic Stimulants in Typhoid Fever. On the Use of Antitoxin in Diphtheria; with Special Reference to Small and Frequently Repeated Doses. By John H. Musser, M.D., Philadelphia. 1899-1900.

The Student's Medical Dictionary: Including all the Words and Phrases generally used in Medicine, with their Proper Pronunciation and Definitions, with Tables of Bacilli, Micrococci, etc., and a New Table of Eponymic Terms and Tests, based on Recent Medical Literature. By Geo. M. Gould, A.M., M.D. Eleventh edition, enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Original Articles.

REMARKS UPON OBSCURE NON-TRAUMATIC TUMORS OF THE LOWER ABDOMEN SUDDENLY APPEARING WHERE NONE HAD PREVIOUSLY BEEN DETECTED.

BY MAURICE D. RICHARDSON, M.D., BOSTON.

THE sudden appearance of abdominal tumors should suggest to the observer a lesion that demands intervention; for nearly, if not all, are curable only by surgical means. Moreover, intervention in most of the tumors under consideration must be prompt to be successful. It is from this point of view that I invite attention to a class of abdominal lesions so hard to understand that they must be called obscure. Indeed they are of such uncertain origin that no man, skilful and experienced though he may be, can more than hazard a guess as to their nature. Fortunately these tumors present symptoms that of themselves demand early operation. A differential diagnosis, interesting as it may be, is impossible from the very nature of things.

A wide experience in abdominal surgery may not afford a single example to illustrate my subject; a narrow one may afford several. Most of the cases upon which I base my remarks have come under observation within the past four months. In every case the patient's life was saved by operation performed as soon as the urgency was clear. In but one was a correct diagnosis made before exploration; that exploration demonstrated in all the lethal nature of the lesion.

By sudden and obscure tumors I mean those which are so small that they escape observation one day, and so large that they cannot be overlooked the next: so small that bimanual examination fails to detect them at one examination, and at the next so large that they may even bulge the abdominal wall.

My attention was particularly attracted to this subject by the detection of a large ovarian cyst with twisted pedicle in a woman whom I had examined a short time before without finding any tumor whatever. My interest in this case was especially acute because my failure to detect the tumor was shared by one experienced in such examinations, who, even under anesthesia, had been unable to discover anything abnormal in the lower abdomen.

CASE I. The patient, a woman of forty, had suffered for some six months with sudden attacks of pain in the left side of the abdomen. The first attack in August, 1895, came on five days after confinement. Between that time and February, 1896, there had been six attacks. It was supposed to be a nephritic colic, and the history in detail certainly justified that diagnosis. The pain was controlled by morphine. The patient was examined under ether. *Nothing could be detected in the pelvis.* The urethra was dilated and the bladder examined. Nothing abnormal could be felt anywhere in the abdomen. Two days later, without any apparent reason, she became suddenly collapsed. There was no sharp pain — only a "sinking feeling." The nurse could feel no pulse. I first saw and examined the patient on the evening of this day, and could detect nothing. The temperature was 99.4°; the pulse 170. No operation was advised.

Three weeks later the patient presented symptoms so strongly suggestive of an acute appendicitis that a medical consultant after careful examination advised that a surgeon be sent for. I was then able to diagnosticate and to re-

move an ovarian tumor with twisted pedicle, the whole filling the abdomen as high as the umbilicus. The patient made a good recovery. The explanation of this case, as demonstrated by the operation, seems satisfactory. There was a flaccid cyst of moderate size, which escaped detection owing to an unusually thick abdominal wall covering it; the collapse was due to hemorrhage into the cyst at the beginning torsion. At the time of operation the tumor had become large and tense enough to be easily detected.¹

The first and most natural criticism in considering this case is that the examination was not thorough; that skilled examiners could not have failed to detect such a tumor. But such a criticism, I maintain, can be founded only upon ignorance or upon inexperience, for there can be no doubt that tumors suddenly appear in regions where the most painstaking and experienced examiners have failed to detect any.

The first and most common of the suddenly appearing tumors, and, I may add, the most likely to be overlooked, is the over-distended bladder. If the whole truth were told, not a few instances would be recorded in which the operator has exposed a normal bladder in a state of extreme distention — some in which he has actually opened it. Such a mistake is common with certain acute lesions, more especially appendicitis with abscess. I recall one case in which the tumor of the appendix was so closely connected with a full bladder that I opened the latter. Fortunately no harm was done. Taught by this experience, I have by catheterization avoided several fluctuating tumors which proved to be the full bladder fastened to the right side of the abdomen by contiguous appendicular inflammation.

In such cases, however, there is no sudden and unexpected development of a tumor; moreover, the causative lesion is always apparent. It is rather the uncomplicated tumor, elastic, fluctuating and symmetrical, that must be carefully scanned. Even with the most painstaking examination such a tumor may deceive us, unless we continually bear in mind the possibility of a full bladder. We shall be especially liable to mistake if we are unaware of the suddenness of development, for the bladder may have been over-distended some time before the first examination. In one instance I was about to open the abdomen for supposed ovarian cyst. I found it filled by a fluctuating, symmetrical tumor. The patient was a woman of twenty-six, who had complained for two months of pain in the right lower abdomen. The attending physician had made a diagnosis of ovarian cyst and had asked me to operate. Vaginal examination confirmed the diagnosis of ovarian cyst. I advised operation. The patient was placed in the Trendelenburg position, and the cut was about to be made, when something, I forget what, suggested bladder. I found that just before operation, she had passed her urine voluntarily and easily and had not been catheterized. The tumor escaped through the catheter.

In pelvic surgery especially it should be an invariable rule to catheterize the patient just before operation. This rule should apply particularly to women. Failure to empty the bladder by the catheter will often cause the annoyance of a partly filled bladder interfering with one's work; sometimes catheterization will prevent the performance of a totally unnecessary abdominal exploration.

I have twice been astonished to find, a few days

¹ The Medical Register, Richmond, Va., October, 1899.

after simple operations upon the lower abdomen, a large fluctuating tumor extending to the umbilicus. The most serious and impossible complications were immediately suspected, particularly hematomata. In each instance the catheter solved the diagnosis and relieved the patient.

On the other hand, the tumor does not always prove so easy of diagnosis.

CASE II. On January 30, 1900, I saw with Dr. George E. Thompson, of Boston, Mary M., a girl of fourteen, who had been taken with pain in the lower abdomen ten days before. The illness began with diarrhea, followed by vomiting, distention and general tenderness. There were some constitutional signs, but of moderate extent. The attack began just at the close of her first menstruation. She had been greatly frightened by the flow, not understanding it, and she had kept about her work, had got wet, and had taken cold. The lower abdomen was dull and apparently fluctuating. Her general condition was good. The whole abdomen was much distended, but soft.

I advised the passage of a catheter, and was greatly surprised that nothing came through it. The lesion was quite obscure, but it seemed probably a subacute peritonitis, probably connected in some way with menstruation. I sent her to the hospital, where she was kept under careful observation. On March 2d I operated upon the tumor in the lower abdomen which had gradually developed, and found what I had never suspected — a pelvic abscess from appendicitis.

The tumor which at first I thought might be a full bladder was a localized peritonitis with gradual thickening walls. The true diagnosis was never even suspected. Though in this case no bladder complications were found, the passage of the catheter as a means of diagnosis was clearly indicated. Attention is at once directed to the bladder whenever there are urinary symptoms, especially dribbling. Fluctuating tumors in men suggest bladder, even when urinary symptoms are not mentioned. No more common condition is overlooked by the general practitioner than the distended male bladder, even when dribbling of urine calls the attention directly to it. The female bladder is even more likely to be overlooked, for it may be enormously distended without giving rise to a single symptom or even to an inconvenience. The obvious lesson is that in all fluctuating tumors of the lower abdomen, before opening the abdomen, the catheter should be passed. Many tumors will by this means of diagnosis disappear.

A second variety of rapidly forming tumor may be the idiopathic dilatation of the colon — the so-called phantom. A suddenly appearing tumor dependent upon this cause possesses characteristics quite different from all other varieties considered in this paper. The ordinary phantom tumor, though it may be called obscure, can hardly be called suddenly appearing; it should rather be called a suddenly disappearing tumor. It is a well-known and persistent tumor, disappearing only under anesthesia. The dilated colon, however, may suddenly become twisted or obstructed and show itself as a well-marked tumor. Such a condition of the colon may have given no signs whatever of its existence. A remarkable case of this kind came under my observation some years ago.²

CASE II. The patient, a man of forty, under the care of Dr. Hardy Phippen, of Salem, became suddenly distended to enormous proportions. The bowels were completely obstructed. Violent peristaltic movements were visible through the abdominal walls. There was no es-

pecial tumor other than that of an enormously distended coil. It was clear that there was a violent effort in the large intestine to empty itself, and this effort showed itself in a tense and dilated coil. I found the abdominal cavity filled with the sigmoid flexure, twisted about its mesentery and completely obstructed. I untwisted and fastened the sigmoid flexure, in normal position, to the abdominal wall. This was on March 22, 1897. On August 9th, the twist having recurred, I resected the whole coil with permanent success.

The diagnosis in this variety of suddenly appearing tumor is limited to those lesions of intestinal obstruction which are attended by the presence of an isolated and distended coil. The disease most commonly found is an intussusception or a volvulus, though I have seen the intestine just above a stricture excessively distended and forming a pear-shaped tumor, sagging with retained liquid feces. The common forms of intussusception, volvulus, and simple obstruction need not be considered in the rapidly appearing intestinal tumors, for they are, as an almost invariable rule, small or hard of detection. In the case just mentioned the coil was so large that it filled the whole of the abdomen.

CASE IV. A recent case of the so-called phantom tumor without obstruction — in some respects more remarkable than the first — was that of Mary K., who entered the Massachusetts General Hospital for a supposed case of chronic appendicitis. The appendix was removed with temporary benefit. When she first came under my observation she presented a rounded, symmetrical, tympanitic tumor filling the lower abdomen. Dr. Fitz made the diagnosis of idiopathic dilatation of the colon. The tumor belonged to the so-called phantom class, for under ether it entirely disappeared. On recovery from anesthesia the tumor immediately reappeared. On May 5th I removed the whole sigmoid flexure — 14 inches of excessively dilated bowel — and joined the descending colon to the rectum in a straight line. On April 19, 1900, she presented the same appearance as before. I have recently explored again and found at the site of the suture an excessive dilatation with thickening of the bowel. A second sigmoid flexure has appeared. The second tumor must be regarded as an idiopathic dilatation of the descending colon and upper rectum, for at my previous operation no sigmoid flexure was left. There was no obstruction to the fecal stream and the recurrence of dilatation to me is inexplicable.

Dr. F. B. Harrington has had a similar case recently reported by Fitz. In a personal communication Dr. Harrington has given me the facts of a third case. A woman of seventy suddenly developed a tumor rather above than below the umbilicus, with complete obstruction. The tumor was tympanitic, resistant and tender. Exploration showed it to be an enormously distended sigmoid flexure.

In some instances in explorations of suddenly appearing tumors comparatively large collections of clear fluid will be found in close connection with such lesions as salpingitis and even with appendicitis. Small cysts are often noted upon the Fallopian tubes or upon fibroids. An extreme development of these collections of fluid explains the large pseudocysts of sudden appearance. I recall one case in which a bulging tumor between the caput coli and the bladder proved to be an encysted collection of serum dependent upon a recurring abscess two years after the removal of a gangrenous appendix. In another instance, to be reported later in this paper, there were several localized collections about a single large cyst filled with blood. In numerous patients I have found, confined behind the uterus, low in the pelvis, very considerable collec-

² Transactions of the American Surgical Association, 1897, p. 585.

tions of clear, sterile fluid. Such collections may form in a short time. When they are high up in the pelvis they may, in a night, cause a bulging of the abdominal wall. On the other hand the collection of fluid about recently inflamed tubes may be of considerable extent and yet be impossible of detection. On March 23d I opened the abdomen in an obscure pelvic case, supposed to be either salpingitis or extrauterine pregnancy, and exposed a flaccid encysted peritonitis which I had been unable to feel under anesthesia by bimanual palpation. Such a cyst tensely filled would have bulged the abdominal wall. Had its thin-walled vessels given way the patient would have presented a suddenly appearing obscure tumor filled with blood where none had previously been detected.

Tumors of this origin must be considered in attempting to make a diagnosis. They do not appear, however, without being preceded or accompanied by physical signs easy of detection. The appendicitis, the salpingitis, the fibroid, the pelvic peritonitis, all present sufficient evidence upon which to base an opinion.

The next lesion is so unusual that little can be said to throw light upon its probable origin or upon its exact nature. I venture to say that few would be able in the illustrative case to hazard a guess as to the lesion. I will give the case in some detail from the records of the Massachusetts General Hospital. It may be interesting for the reader to make his diagnosis before going on to read the description of what was found at the operation.

CASE V. The patient, a girl of nineteen, had been under the care of Dr. Fitz in the medical wards of the Massachusetts General Hospital. The only gastric symptom was discomfort after eating. This had lasted a year and was supposed to have been caused by a "blow upon the stomach" from a fall upon a curbstone. There had been frequent vomiting and much belching, but no hematemesis.

The patient gained under medical treatment which was directed to her general condition — one of neurasthenia with dyspepsia. Repeated examinations of the abdomen were negative. On February 14th at noon she began to vomit. In eighteen hours she began to complain of pain in the left abdomen. She soon became collapsed. On February 15th, at noon, twenty-four hours after the vomiting began, she was seen by Dr. Mixer and myself. The left side of the abdomen was much more prominent than the right, and flat from the pubes to the ribs. The tumor was fluctuating and tender. The patient was collapsed. There was a leucocytosis of 22,300. She was then transferred to the west surgical division.

I found a large, fluctuating, tender tumor filling the whole lower abdomen. Vaginal examination showed that the tumor pressed upon the bladder and filled the upper part of the pelvis. The patient was in extreme collapse. Though it seemed hardly possible that the tumor could be a dilated bladder, I advised first the passage of the catheter. It was not a bladder. The symmetry, tenderness, fluctuation and dulness strongly suggested an ovarian cyst with twisted pedicle. I therefore made careful inquiries as to the previous examinations. I found that repeated examinations by Dr. Fitz had shown the abdomen "negative." I was yet inclined (in the light of Case I) to regard the tumor as an ovarian torsion. The real lesion was not for a moment suspected. Dr. Mixer kindly operated for me and found an excessive dilatation of the stomach. This organ filled the lower abdomen, sagging it in the shape of an enormous pear. There were several gallons of fluid dragging the stomach into the lower abdomen, where it formed, as I have already described, a dull, bulging, symmet-

rical, fluctuating mass. No stricture of the pylorus or other cause was found for this condition. It was impossible to relieve the stomach by way of the esophagus, Dr. Mixer not being able to pass a tube into the stomach in that way. An anastomosis was therefore made between the stomach and the jejunum. The patient gradually failed and died three days later.

The symptoms in this case were largely gastric, but no physical signs of dilatation were detected. No tumor of the lower abdomen or pelvis was ever apparent. The lesion, evidently of the gravest character, showed itself by the sudden appearance of a large, symmetrical, tender, fluctuating tumor of the lower abdomen. The chief constitutional signs were those of collapse. The aggregation of symptoms pointed as much to an ovarian tumor with a twisted pedicle as to anything else, — indeed rather more, — and not at all to the real lesion. Fortunately they indicated the necessity for surgical relief, and the course taken was the only one making recovery possible, for even with the abdomen open it was impossible to drain through the esophagus.

The inference to be drawn from this case is that in the tumors under consideration the stomach is not too remote to be a possible cause of the unexpected tumor. Another case, though not as extraordinary as this, illustrates the subject.

CASE VI. Isabel McL., age twenty-one, single, entered the accident room of the Massachusetts General Hospital on February 10, 1900. There was a past history of indigestion and constipation for three years. During the last days of June, 1899, she had an attack of pain in the right iliac region and pain in the back. She vomited a great deal. She went to bed and stayed four days. Two months ago she had had another attack of pain in the same place, without vomiting. She did not then go to bed. Two weeks before entrance she had an attack of pain in the right iliac fossa. She vomited frequently and the bowels were constipated. There was tenderness in the right iliac region in all of these attacks. The menstruation was slightly irregular. The last period was two weeks ago. She was well developed and well nourished; the heart and lungs were negative. There was tenderness in the right lower abdomen. The rectus was more rigid on the right side. Examination by rectum showed a slight tenderness in the right side of the pelvis. It was impossible to make a vaginal examination. There was a blood count of 6,000. The next day she was more comfortable. She could not pass the urine and she had to be catheterized. She complained of attacks of pain during this day — not very severe — starting in the right hypochondrium, and extending down the median line towards the pubes. There was no vomiting.

On the 16th she was more comfortable. The pain was less severe. The tenderness was more marked in the right iliac fossa and above the pubes. No mass could be felt in the abdomen. The urine in twenty-four hours was 18 ounces. On the 17th her condition was the same. On the 18th white count was 20,000. It was now deemed advisable to open the abdomen. Within the last twenty-four hours a tumor had appeared to the right of the median line, pretty well filling the right lower abdomen. I was extremely surprised to find a large, tender and elastic tumor where none had been felt the day before. The diagnosis seemed very obscure.

On opening the abdomen I found a tumor of the right ovary, about the size of a small cocoon. There was a twist in the pedicle which impeded the venous return, though it did not entirely shut off the circulation. The cyst was tensely distended with the exudation from the obstructed vein. There was in the left ovary a small cyst, about the size of an egg, which I dissected out with the blunt dissector, closing the rent in the ovary by an inter-

rupted fine silk suture. The patient has made a perfect recovery.

The most common tumor, probably, which suddenly attains considerable dimensions is the ovarian tumor with twisted pedicle. The obstruction to venous return, which begins before the arterial supply is closed, causes, first, engorgement of the tumor walls as well as its cavity. In many instances this engorgement results in hemorrhage into the cyst. When the cyst is distensible, the shock and collapse depend chiefly upon the hemorrhage. More infrequently the tumor is due to the rupture of blood vessels, and hemorrhage into the distensible cyst, without any twist in the pedicle whatever. In many cases the symptoms of hemorrhage and collapse are so characteristic that the attention is at once drawn to the examination of the pelvis, and the tumor is found. In many other cases the tumor is already known to exist. In the tumors which suddenly appear without warning, without pain, and without hemorrhage—signs so characteristic of ovarian torsion—the diagnosis and explanation are somewhat more doubtful, as in the following case:

CASE VII. Ada McD., age eighteen, White River Junction, Vt., entered the Massachusetts General Hospital on February 6, 1900. The history was negative up to two years before admission, when she had what was supposed to be a peritonitis. For a year before admission she had been having weekly tampons in the vagina, with no marked improvement. The symptoms were chiefly connected with the menstruation. The flow was painful and rather scanty. The chief complaint was pain in the left side low down in the pelvis—a dragging down sensation, and backache. The chief point in this case was that in my first examination I was unable to find anything whatever in the pelvis. I was not satisfied with this examination, however, and on February 9th I etherized the patient. Under ether I made a most thorough bimanual examination. I found the uterus anteфлекed—in a state of normal anteфлекion—and a mass extending on either side, rather more to the right than to the left. It seemed to be either a small fibroid or an enlargement of the tube. In a word, the girl had a tumor which was somewhat difficult of detection.

On the following Monday morning I found a tumor filling the whole lower abdomen, going as high as the umbilicus. It was fluctuating, not especially tense and not especially tender. I was so surprised to find this tumor that I hesitated a long time before opening the abdomen, thinking that I might possibly have overlooked a pregnant uterus. Finally, under bimanual examination, I felt something rupture, and then I knew at once that it was a cyst or a portion of a cyst which had given way during examination. There was no indication of hemorrhage, and yet the girl was rather pale. I opened the abdomen and found a very thin-walled ovarian cyst of the left side filling a large part of the lower abdomen. The cyst was multilocular, one cyst being much larger than all the rest combined. This one was aspirated and bloody fluid was withdrawn. The right tube and ovary were normal. The patient's condition was very poor at the end of the operation, but she made a good recovery. An immediate cover-glass examination was made, with negative results. The culture from the peritoneal cavity was sterile. Further examination showed that the initial lesion was a "tuberculosis of the Fallopian tubes."

In this case the cyst was distended by a fluid composed mostly of blood. The source of the hemorrhage was undoubtedly the thin-walled vessels of the interior of the cyst, ruptured probably during the manipulation of the bimanual examination. The patient was somewhat pale, but presented no other signs of hemorrhage. With a tender, resistant tumor, and with signs

of hemorrhage, attention would have been immediately drawn to the possibility of an ovarian torsion.

The most frequent cause of unexpected tumors seems to be, as in Case I, the result of sudden enlargement of a flaccid tumor due to a twisting of its pedicle. The common occurrence of this mechanical lesion has for some time attracted my attention. The frequency with which the physician fails to recognize so grave a lesion might seem inexcusable were it not that the mistake is sometimes made by the most experienced diagnosticians. The trouble is that the effects of twisting are often observed in patients who have never known or suspected that they had a tumor. Moreover the lesion may occur in the course of other diseases or conditions which cannot but mislead the observer.

Nothing could be easier than the diagnosis when a well-known and perhaps often-observed tumor becomes suddenly painful, tender and resistant, and especially when accompanied with vomiting and collapse with rapid pulse and subnormal temperature. Such an aggregation of symptoms cannot but suggest a sudden shutting off of the blood supply to the tumor, with distention of the tumor either by blood or by serum, and beginning gangrene of its walls. But suppose that pain, tenderness, vomiting and collapse take place, and that under ether nothing is discovered by the most careful bimanual examination, would not the examiner be surprised to know that these symptoms were due to a twisted pedicle, as proved two or three weeks later by the successful removal of a tumor filled with blood large enough to occupy the whole lower abdomen (see Case I)? Or suppose a mild and frequently recurring appendicitis, so evident that neither physician nor consultant deemed a vaginal examination necessary, would not the operator be surprised to find a small ovarian cyst, strangulated in the pelvis, shut off completely from its pedicle and nourished by adhesions? Or even after repeated observations upon a painful and tender fibroid, would he not be surprised, in beginning a hysterectomy, to find an ovarian pedicle twisted enough to shut off the venous return, while still permitting the arterial supply? He might well be surprised, and I might add that I have been surprised under these very conditions, for all these supposititious cases are taken from my own records. Fortunately, the indications for operation were clear and all the patients were saved.

The chief necessity in connection with the suddenly appearing ovarian torsion is the early recognition that something has occurred within the abdomen which urgently demands exploration. Refinements of diagnosis, however desirable in ordinary cases, must be condemned if they consume precious time. Sudden, sharp and severe pain in the lower abdomen, followed by symptoms of shock, with tenderness and tumor, mean a serious lesion, and demand exploration. The surgeon may find an extra-uterine pregnancy, an ovarian torsion, an acute salpingitis, or even a perforated appendix.

Tumors of hemorrhagic origin, suddenly appearing, are usually coincident with the initial pain, and for this reason are apparent at the first examination. In case the patient is examined before the pain—the initial sign of hemorrhage—appears, it is evident that nothing will be discovered. The sudden development of the hemorrhage is not unlike that of the tense and blood-filled cyst of the ovarian torsion or of

simple hemorrhage. Early examination in suspected pregnancy will show that no considerable tumor is present, even in ectopic gestation; in most cases only an enlarged ovary or tube will be detected. When in a suspected pregnancy a tumor suddenly appears coincidently with sharp abdominal pain, the chances favor the ruptured sac of an extra-uterine pregnancy with confinement of the blood within the layers of the broad ligament. At times the tumor is a hematoma or a hemocele confined in the pelvis. The diagnosis between the tumor of an extra-uterine pregnancy and ovarian tumor with twisted pedicle is often dependent upon the history of a possible pregnancy, for the principal symptoms of onset are identical. When the cyst becomes filled with blood, in both there is a sudden pain with faintness and collapse; in both there is a tender, elastic and suddenly appearing tumor; in both there are symptoms of peritoneal irritation, nausea, vomiting and distention; in both, low temperature and high pulse. When there is a history of irregular menstruation, of tender breasts, and of morning sickness, the chances favor an extra-uterine pregnancy. In the absence of all signs pointing towards pregnancy, the elastic, tender tumor suggests an ovarian tumor with twisted pedicle.

The ovarian tumor with twisted pedicle is usually tense and tender; the hematoma is not. If the hematoma is tense, it is seldom tender. Many examples of suddenly appearing blood tumors of the lower abdomen might be given here to illustrate the foregoing remarks. They differ materially from the encysted hemorrhages of ovarian tumors, whether with twisted pedicle or not. The importance of distinguishing between the hemocele and the ovarian tumor is great, for the former often do well without operation and the latter always demand it. One distinguishing feature not mentioned is the gradual development of the hemocele. Yet I have seen one develop suddenly. I recall the case of a married woman of thirty-four who had gone over her menstrual period one month. There was nausea. Pain in the abdomen came on suddenly, and was accompanied by vomiting. I found a tumor as large as a child's head extending from the pubes nearly to the umbilicus. On exploration this proved to be a thick-walled sac containing clotted blood. The walls of the sac were stitched to the wound and the blood was removed by irrigation. No evidence of fetal structure could be found. Convalescence from this operation was rapid, but a sinus remained for some time. About four weeks after the operation the patient was seized again with pain, the attack being very similar to the first. A tumor then rapidly formed to the left of the uterus, as in the first attack. No intervention was attempted. The swelling subsided gradually, to appear on the right side some weeks later. The appearance of the last tumor was sudden and was accompanied by the same symptoms as the first. The patient was kept quiet in bed for some weeks, and was discharged July 11, 1892.⁴ In another case of suspected extra-uterine pregnancy I found the whole abdomen filled with a tumor evidently containing blood. The patient was improving at the time that I first examined her, and no surgical operation was performed. She made a perfectly good recovery.

Among the remotely possible sources of suddenly appearing pelvic tumors are the distended gall blad-

der and the intermittent hydronephrosis. A consideration of the distended gall bladder seems hardly appropriate, because it is impossible for a gall bladder, from its very nature, to acquire in a few hours such dimensions as to encroach upon the pelvis. In all the tumors of the gall bladder that I have seen the largest has been due to a chronic obstruction of the common duct, from cancer of the pancreas. I have reported one case in which the tumor came down to the brim of the pelvis. This was not, however, a suddenly appearing tumor; on the contrary, it was a tumor of very gradual development. It was recognized at the very beginning. As I have already stated, the gall bladder, from its very situation and structure, is an organ that does not permit of the excessive dilatation necessary to reach the pelvis. It is somewhat different in another class of tumors—the sudden dilatation of the pelvis of the kidney. I have seen and reported a case of intermittent hydronephrosis in which a tumor filled the right hypochondrium. Such a tumor, though impossible of detection one day, and bulging the abdominal wall the next, occupies a place in the abdomen far removed from the pelvis. It is conceivable, however, that the kidney may be displaced, and give rise to a suddenly appearing tumor, either at the brim of the pelvis or in the pelvis itself. The intermittent hydronephrosis is in itself a rare tumor. It would be almost inconceivable to have a tumor displaced in the pelvis, and at the same time the seat of this unusual condition. In a differential diagnosis the dilated gall bladder and the intermittent hydronephrosis may be eliminated from their very rarity. On the other hand, the acute dilatation of the stomach cannot, for this lesion is certainly more common than either acute dilatation of the gall bladder or acute dilatation of the pelvis of the kidney. Moreover, the stomach, being a large and distensible organ, may easily be sagged into the regions of the ovarian tumor and of the extra-uterine pregnancy. Indeed, I have been struck by the frequency with which the stomach appears below the umbilicus in the median incision. It is a very common occurrence. Such a stomach, even with the patient in the Trendelenburg position, appears below the umbilicus. When distended in the horizontal position, or in the erect position, it is easy to see how such a stomach might cause an obscure tumor. I have seen several instances in which the dilated stomach has shown itself low down in the left side of the abdomen. In these cases the stricture of the pylorus and the dilatation or sagging were so gradual that there was no difficulty whatever in the diagnosis. These tumors could hardly be called either suddenly appearing or obscure tumors, for they appeared gradually and were not obscure.

The foregoing consideration, then, applies chiefly to the sudden dilatation of a flaccid ovarian cyst, either by hemorrhage from its walls or by an obstruction to the venous return from a twisting of its pedicle. It applies to the sudden enlargements of the chronic dilatations of the sigmoid flexure; to the sudden appearance of encysted peritonitis, accompanying salpingitis or other inflammatory conditions of the pelvis, and finally to the large collection of blood due usually to the rupture of an extra-uterine pregnancy. In all these lesions the importance of their recognition is obvious. The diagnosis of these suddenly appearing tumors is a matter of great interest and importance, for upon a clear recognition of the necessity of surgi-

⁴ *Annals of Surgery*, December, 1894.

cal intervention depends in many instances the life of the patient. A clear recognition of the nature of the lesion will prevent also the danger of an unnecessary, not to say a meddling, operation.

From the cases already detailed it appears that, in my experience at least, an exact diagnosis is often impossible. It appears clear, however, that a lesion essentially fatal, if unrelieved, presents symptoms so suggestive as to form a conspicuous guide to the surgeon's hand; symptoms that lead him to the sure relief of the tumor with twisted pedicle or the hematomata of ectopic gestation, but which also call him to stay his hand in the sudden and painless tumors of the overdistended bladder.

In most of the tumors under consideration pain is the first, the most important and enduring symptom. Pain alone demands careful examination of the pelvic viscera. Discomfort in the lower abdomen, if not amounting to real pain, may reveal on examination a pelvic tumor the nature of which will become clear only upon the appearance of other symptoms and signs.

The great emergencies of pelvic surgery attended by the sudden appearance of tumors are ovarian torsion and extra-uterine pregnancy. In rare instances, perhaps, the perforation of an appendix may give rise to a tumor of considerable dimension. Appendicitis and salpingitis, too, might be included in the present consideration. Both these diseases, however, present such definite histories and such definite physical signs — physical signs so definitely follow the initial pain — that the tumor so invariably associated with them can hardly be called obscure or unsuspected. A consideration of these common lesions is therefore beyond the scope of this communication. The tumors of an ectopic gestation, on the other hand, may attain in a few hours a size that is extraordinary, so also may the tumor of an ovarian torsion, a dilated and obstructed sigmoid flexure, a suddenly distended ovarian cyst, an acute dilatation of the stomach, and a full bladder.

The mistake of opening a full bladder by laparotomy is so inexcusable that I may be pardoned for saying a few words upon the diagnosis of a full bladder. It cannot do harm to repeat that the full bladder often causes grave mistakes, no matter how experienced the diagnostician. Presenting, as it does, a smooth, symmetrical, fluctuating tumor, who is to be blamed for thinking it a simple ovarian cyst, especially if there have been no urinary symptoms whatever, no pain, no overflow, but on the contrary natural and easy micturition at the usual interval? He would be inexcusable perhaps who should open a bladder when urinary discomfort and dribbling of urine pointed clearly to the bladder in a state of overdistention, though I have been called to operate upon many such tumors, the nature of which was conspicuous. But should he be blamed for exploring such a tumor in the total absence of urinary symptoms? I think he should be, when by the use of the catheter a sure means of diagnosis is at hand. The catheter, therefore, should be used in all fluctuating tumors of the lower abdomen as a means of eliminative diagnosis. As a matter of routine the catheter should be used just before laparotomy.

The diagnosis of an acute dilatation of the stomach may be said to be impossible; a correct one in the case mentioned would have been mere guess work.

Even in the light of exploration it is difficult to see what the symptoms meant. In a second case precisely like the first I should feel quite as much in the dark. Those who were familiar with this case would probably suggest the possibility of a dilated stomach. They would use the stomach tube as a means of diagnosis. As the catheter will solve the question of the full bladder, so will the stomach tube that of a dilated stomach. Yet it would seem absurd to say that the stomach tube should be passed in all fluctuating tumors of the lower abdomen. Indeed it is absurd unless the stomach is in some way suggested as the possible cause of the tumor.

The large bulging tumor of the dilated colon, with or without symptoms of intestinal obstruction, gives signs which I am sure will hereafter suggest to me the true lesion. If the tumor subsides under anesthesia, if it is tympanitic, resistant and tender, if it is rounded and symmetrical, if the obstruction is acute, and if there has been no gradual cachexia, the dilated colon is strongly indicated. The suddenness of the appearance of the tumor and of the symptoms rules out the dilated coils of a chronic obstruction, such, for instance, as are due to cancerous stricture.

The diagnosis of extra-uterine pregnancy is usually easy. Pain in the course of irregular menstruation, with dribbling of blood from the uterus, always suggests it. With the sign of hemorrhage the diagnosis is almost sure. With any other confirmatory signs of pregnancy it is about certain. Most cases of extra-uterine pregnancy are unaccompanied by any tumor of considerable size. The tumor, if any is found, is small. It is often buried up in the free blood of the pelvic cavity. Even if a tumor is felt it may not be that of the fetal sac. Recently a friend and gynecologist sent me at the Massachusetts General Hospital a patient with extra-uterine pregnancy, in whom under ether he found the fetal tumor on the right side, where under ether I also found it. The exploration showed a tubal pregnancy too small for bimanual palpation, on the left side.

There are, however, tumors connected with extra-uterine pregnancy and hemorrhage, and of very considerable size, as I have already stated. Those found in the case of an extra-uterine pregnancy are preceded by pain, and accompanied by the usual signs of pregnancy. They are collections of blood in the layers of the broad ligament, or encapsulated in the pelvis.

The diagnosis of ovarian tumor with twisted pedicle is easy when a tumor is known to exist. Where one has not been found previously it is very difficult. It depends upon sudden pain, with or without signs of hemorrhage. The tumor is elastic and tender. The signs of strangulation, gangrene, peritonitis, are often obvious. The diagnosis of ovarian tumor with twisted pedicle must always be suggested by these symptoms.

In spite of difficulties of diagnosis the signs point the right way — towards surgical intervention. It matters little whether the diagnosis of extra-uterine pregnancy is wrong if the surgeon is guided to the relief of an ovarian torsion, or if, expecting a torsion, he finds an extra-uterine hemorrhage; or if, expecting an ovarian tumor, he finds a dilated stomach; or if, expecting an internal strangulation or an intestinal obstruction, he finds a dilated and twisted sigmoid flexure. It does matter, however, if, expecting to find a serious lesion, he finds a full bladder, or if, ex-

pecting an ovarian torsion, he finds a normal pregnancy.

Fortunately the call for relief is a loud one in the serious lesion; the surgeon makes few mistakes who quickly responds. It is not a loud cry in trivial cases; it is a suggestion for careful study, or even for prolonged observation, under which the true nature of the phenomena can be accurately determined.

In summing up the matter of these acute abdominal emergencies which constitute the greater portion of obscure and suddenly appearing tumors, I am led to remark that here, as in all medical and surgical practice, the chief aim should be to view the whole with common sense; to consider carefully the history, to weigh carefully the symptoms, to apply all reasonable methods of examination, and finally if it is determined that intervention is necessary, to proceed to operation without unnecessary delay.

In all suddenly appearing tumors of the lower abdomen, however obscure they may be, intervention is demanded if the symptoms are the least urgent. A tumor that has attributes of sudden formation, of tenderness, of hemorrhage, of profound constitutional disturbance, demands immediate intervention. Tumors, however, which do not possess the attributes of urgency may be watched, especially if the local symptoms are subsiding, and if the patient's strength is returning. From their very nature, however, they all require surgical intervention sooner or later.

A CASE OF INFLAMED PERITONEAL CYST SIMULATING OVARIAN CYST WITH TWISTED PEDICLE.¹

BY AGNES C. VIETOR, M.D., BOSTON,
Assistant Surgeon, New England Hospital.

Mrs. A., thirty-six years old; mother of two children, youngest seven years old. Family history negative. Personal history negative, except that menstruation has not been perfectly regular as to time; occasionally the intervals between periods would be prolonged, varying from five weeks to six or eight months. Patient, then, was subjectively a well woman till seven years ago, ten weeks after the birth of her last baby, when she had an attack of what was called peritonitis, which attack was ascribed to mental anxiety and catching cold. Ever since this illness she has been compelled to be careful not to get overtired, overdoing being always followed by discomfort in both iliac regions, lasting from a few hours to several days, and relieved by rest. Four months after this initial illness, she miscarried spontaneously at three months, convalescing without complication. About this time she is said to have contracted malaria. Three years later she had an attack, diagnosed as appendicitis, from which she recovered, but which left her with an occasional feeling of discomfort in the right side of the abdomen.

Patient came under my care in January of the present year. She gave a history of overexertion all the month of December, preparing for the holidays. The exertion brought on the usual pain, which increased in severity, as she did not rest. She menstruated the last week in December, the period being unusually painful. When I saw her,

the first week in January, the flow had ceased for several days, but the pain continued in both inguinal regions, in the back and extending down the backs of the thighs; she also complained of headache and great nervousness. She refused to let me make any examination, and insisted that all she needed was rest and a little medicine for "rheumatism in the back." I prescribed for her and directed her to go to bed. She did not go to bed, but rested a little more than usual and felt better. Four days later she saw me again, and reported that she was better except for frontal and occipital headache, that she was very weak and that her "malaria" was troubling her again, as the night before she had an attack of vertigo with palpitation, followed by prolonged chilliness and cold sweat.

Upon my declining to assume further responsibility for her case without a thorough examination, she finally consented to let me examine her, and I found the following condition: Temperature 101.3°, pulse 80, respiration 22. Heart, lungs, liver and spleen negative. Urine contained large amount of albumin. Vaginal examination showed that the uterus was slightly enlarged, anteflexed, tender and rather soft. The right broad ligament was resistant, swollen, and contained irregular masses, but was too sensitive to permit the appendages to be distinctly outlined. The left pelvis was filled with an elastic, tender cystic tumor extending up into the abdomen, midway between the symphysis and umbilicus, and from near the median line to about midway to the anterior superior spine of the ilium. Behind and below this tumor, near the cul-de-sac, was a small, irregular, firm, exceedingly tender mass. A diagnosis of acute exacerbation of a chronic salpingitis, with possible presence of pus, and probable left ovarian cyst, was made.

The patient was warned of the seriousness of her condition, but she still resisted going to bed. During the night she had a repetition of the chill and sweat. The next morning she had a chill lasting two and a half hours; I saw her just as the chill was subsiding and found her face flushed, conjunctivæ injected and an icteric tinge of the skin. Temperature 103.3°, pulse 92, respiration 20. Examination showed no change in the findings of the day before, but the patient looked much more ill. In the evening I was sent for in haste, and found intense abdominal pain over the region of the tumor; the abdomen was tympanitic and markedly sensitive, and there was some rigidity of the walls. The patient had been delirious at times the past few hours, and was vomiting at intervals. Temperature 104.8°, pulse 96, respiration 24. I made a diagnosis then of pyosalpinx with probable twisted pedicle of the cyst (ovarian?), and urged celiotomy.

The next morning I hastily curetted the uterus, hoping to leave that organ, and then performed celiotomy. On opening the abdomen and detaching the adherent omentum, there was escape of a small quantity of bloody serum. After walling back the intestines with gauze, the pelvis was seen as follows: Uterus in position, slightly enlarged, especially longitudinally, fundus forward. To the left of the uterus was a tumor which nearly filled the left pelvis and projected upward, into the abdominal cavity; its walls appeared roughened, dark red in color and had enlarged veins running over the surface. The left tube, slightly enlarged, was seen to be stretched out over

¹ Read before the Surgical Section of the Suffolk District Medical Society, March 7, 1900.

the upper anterior surface of the tumor. This tumor seemed everywhere adherent, except on its upper surface. In separating the adhesions at the bottom of the pelvis, the tumor was ruptured, giving exit to a serous fluid. It then became exceedingly difficult to follow, but finally a pedicle was formed for the removal of the remains of it and the left tube. The left ovary was found below and behind the tumor, as palpated from the vagina, and was largely converted into a series of hematomata. It could not be entirely enucleated from its bed of adhesions without dangerous delay, and a small, apparently healthy portion was left in the stump.

On the right side the appendages were completely hidden in a mass of dense exudate, to which the intestine and the tip of the appendix were closely adherent. The appendix was separated, and being found otherwise normal, the raw surface was closed in by peritoneum with a catgut suture. The intestine was then separated, but in one place the adhesions were so dense that in separating them the wall was damaged. This was repaired by a Lembert suture. At the point of this adhesion was a small cyst, 2 by 3 centimetres, filled with a serous fluid, that at first seemed to be the occluded and dilated extremity of the right tube. Further dissection, however, showed that it was a peritoneal cyst. With great difficulty, the right tube was found buried in the dense exudate, was enucleated and removed. It contained about 2 drachms of pus. The right ovary was buried still deeper in the pelvis and could not be entirely brought up. It was almost impossible to make a pedicle for these appendages, but eventually we succeeded in making rather a broad one. Except for the exudate burying it, the right ovary was apparently healthy and a small portion of it was left in the right stump. The peritoneal cavity was washed out with normal salt solution, a portion of which was allowed to remain, and the abdomen was closed.

While all the acute local symptoms were referred to the region of the tumor on the left side, you will see by the temperature chart that the constitutional reaction was due in large part to the condition on the right side, as the temperature and pulse subsided only gradually, though steadily, seemingly with the absorption of the exudate. The vomiting, delirium, chills, sweats and all abdominal symptoms ceased with the operation. Except for the nephritis which continued for over six weeks to give albumin in the urine, the convalescence was uninterrupted.

The specimens which I show do not convey an adequate impression of the pathological condition, except to one who has seen similar cases. The tumor, as you will see, is represented here only by those shreds of membrane, the greater part of it remaining firmly adherent to the tissues of the left pelvis. Dr. W. F. Whitney kindly examined the specimens for me, and pronounced the tumor a peritoneal cyst. It was the outcome, no doubt, of the repeated attacks of peritonitis from which the patient had suffered during the past seven years. The roughened and congested surface of the cyst where it rose into the abdominal cavity showed an acute inflammation of this portion of the cyst wall. I have mentioned a smaller, similar cyst on the right side, but the characteristic of the right side was the dense exudate which hid and blanketed the appendages. This exudate varied from 1 to 2 centimetres in thick-

ness, it was freely supplied with blood vessels, and made the dissection of the tube and ovary very difficult. The operation was so lengthened by these complications, and the patient's condition was so precarious, that, as the appendix appeared normal, it seemed the less of two evils to free it and leave it rather than risk even the few minutes necessary to remove or invert it.

NOTE. — The post-operative history of this patient is interesting. During convalescence she had several nervous paroxysms of an emotional type, the most marked being during the week when menstruation was due, though it did not appear. After returning to her home she improved for a few weeks and felt at last she was a well woman. Naturally, she was tempted to overdo, and one day after a five-mile walk she began to feel not so well; she had occasional discomfort in the region of the right stump, she grew "nervous," mentally depressed and "tired," suffered from insomnia and began to lose flesh and strength. She did not improve greatly under treatment and I advised change of scene. She returned home in a fortnight much worse, the picture of acute melancholia with suicidal tendencies. I then had her remain in town and gave her positive suggestion every other day, inducing a light hypnosis. She improved steadily under this treatment, the insomnia disappearing after the first séance. After ten days I again sent her out of town, giving her the suggestion in writing, to use as needed. Her improvement was steady and at the present writing she is perfectly well and the picture of health.

SERUM THERAPY IN PNEUMONIA.¹

BY WILLIAM H. SMITH, M.D., BOSTON.

In 1892 Friedländer discovered in a case of croupous pneumonia a capsule bacillus, which he considered to be the etiological factor in the production of this disease. In 1883 Talamon found in a consolidated lung a diplococcus, which he called the pneumococcus; but it was not until 1886 that Fraenkel isolated the pneumococcus from a sufficient number of cases of acute croupous pneumonia to show that it had an etiological bearing in the production of this disease. He was able to cultivate the organism and to study its methods of growth and its characteristics. Since this time numerous investigators have confirmed the observation of Fraenkel — Netter, Weichselbaum, and more recently, Pearce at the Boston City Hospital, and Wright at the Massachusetts General Hospital, and from the data gathered it may be said that the etiological factor in the production of acute lobar pneumonia, in from 90 to 95% of the cases, is the pneumococcus. The organisms which take part in the production of broncho and lobular pneumonia are more varied, and today it is well recognized that any of the following organisms may produce a lobular or broncho pneumonia: the tubercle bacillus, the diphtheria bacillus, the bacillus mucosa capsulatus, the bacillus of bubonic plague, and the influenza bacillus, or the various forms of cocci — streptococcus pyogenes, staphylococcus pyogenes, and the pneumococcus. One case is recorded where sarcinae seemed to be the original invaders.

If, however, we eliminate the lobular or broncho pneumonias occurring in the course of the acute infectious diseases, and those secondary to an inflammatory process elsewhere, in a majority of cases the organism found, either alone or in association with other organisms, is the pneumococcus.

Since, therefore, in 90% to 95% of all cases of acute croupous pneumonia, and in a large number of the uncomplicated broncho or lobular pneumonias, the

¹ Read before the Massachusetts Medical Society, June 12, 1900, and recommended for publication by the society.

etiological factor is the pneumococcus, we shall, in our discussion of the serum therapy in pneumonia, limit ourselves to the antipneumococcus serum. As soon as Fraenkel's work upon the pneumococcus became recognized, and the methods of isolation and cultivation of this organism became known, investigation by means of animal inoculation became rife. As early as 1886 Fraenkel observed that rabbits inoculated with attenuated cultures of the pneumococcus withstood an otherwise fatal dose.

In pursuance of their investigations these observers used practically everything containing pneumococci. Attenuated cultures, glycerin extract of agar cultures heated to 60°, heated bouillon cultures, filtrates and precipitates from cultures, dried organs of animals dying from pneumococcus infection, were used in these investigations, or infusions of the same in sterile water. Sputum, collected at the time of the crisis in cases of pneumonia, either fresh or after heating, was employed in these experiments; while the pleural exudate following croupous pneumonia was also used.

The results obtained from this line of investigation seemed to show that certain animals could, by the injection of pneumococcus cultures or exudates or secretions containing pneumococci, be rendered immune for a longer or a shorter time to an otherwise fatal dose of the pneumococcus. After this artificial immunity had been discovered, the next line of investigation was to determine if the serum of the immune animals was protective when inoculated into another animal, and, according to Mennes, Foa and Carbone were the first to establish the fact that a mouse remained alive after inoculation with 2 to 4 drops of blood from an immune rabbit when this was followed by a fatal dose of pneumococcus culture. This is the first experiment in serum therapy against the pneumococcus.

It remained for Emmerich and Fowitsky to show that the mouse remained alive if the immune serum was injected after the pneumococcus culture—a fact also proved by the Klemperers.

The etiological factor in the production of pneumonia having been found, the fact that animals could be rendered immune for a longer or shorter time having been shown, and the immunizing property of such sera demonstrated when further inoculated into animals, it remained to discover the practical application of these facts.

At varying intervals there have been reported cases of pneumonia treated by the antipneumococcus serum. The Klemperers treated by subcutaneous injection a series of cases with apparent benefit, as shown by fall of temperature, slowing of pulse and respiration.

Lara reported the results in 10 cases of pneumonia, the sera used being obtained from immunized dogs, rabbits, or glycerin extracts of organs of refractory animals. He considered the results encouraging.

In Naples in 1897, Professor Pane reported that he had obtained antipneumococcus serum from a donkey and a cow that he had successfully used in treating a number of cases of pneumonia—23 cases in all, with 2 deaths.

In 1898, before the Italian Medical Congress in Turin, Massalongo and Francheni reported upon Pane's antipneumococcus serum. They had used his serum in 10 cases of the most severe type on alcoholic subjects with weak hearts and nephritis. They con-

cluded that better results in this class of cases were obtained than if treated by the ordinary method.

De Renzi reported on a series of 10 cases in 1898 treated by antipneumococcus serum. Severe cases were selected for the treatment. A cure resulted in every case.

Wiesbecker reported 5 cases treated by serum obtained from human subjects recovering from pneumonia. All 5 recovered, and there seemed to be a diminution of the subjective symptoms. The serum from blisters from pneumonia patients has also been used, but with little effect. Most recently Washbourne has succeeded in producing immunity in a pony after nine months' treatment with living and dead cultures, and has obtained a serum which seems to have powerful immunizing properties. The difficulty which all investigators had experienced up to this time was in their inability to keep the pneumococcus culture which they were using virulent. Washbourne applied the method of Pfeiffer of streaking agar cultures with sterile blood of rabbits and by this means and keeping the blood at a temperature of 37.5° C. it was found possible to maintain the virulence of the pneumococcus at a given level for a period of sixty days. The minimum fatal dose of the culture used by Washbourne was .000001 of a loop which held 5 milligrammes. The serum was mixed in varying amounts with a tenfold fatal dose of the culture and the mixture injected into the peritoneal cavity of rabbits, control experiments always being made with a minimum fatal dose. The smallest quantity of serum which would protect the animal under these conditions he considered equal to a unit. The strongest serum yet obtained from his pony, equal to .03 cubic centimetres, protected against a tenfold fatal dose; a cubic centimetre, therefore, equals 33 units. Sera from normal rabbits and guinea pigs would protect against the minimum fatal dose, but not against a tenfold fatal dose. Washbourne treated 6 cases and had no deaths. He considered that the serum should be inoculated as early as possible and at least 600 units should be injected twice a day.

Spurrel, Hartnett and Cook have reported cases treated by Washbourne's serum. Mennes has recently succeeded in obtaining a powerful immunizing serum from a horse. Neither Mennes nor Washbourne, however, wish to state positively that their serum is of value without further investigation. Certain subjective disturbances have been reported following these injections of the serum, such as excitement following the use of dog serum, agitation following the use of rabbit serum, and urticarial rash.

As the question stands today, it may be stated that, experimentally, animals may be rendered immune, that their sera has protective property, and that continued investigation is doing away with some of the difficulties which previously harassed the early investigators. But the fact still remains that in dealing with the pneumococcus we are dealing with an organism capable of many variations and degrees of virulence, and that the sera obtained under such conditions must of necessity vary both in strength and character. Washbourne's method of cultivation seems to be a distinct advance, inasmuch as he maintains life and virulence in the culture over a longer period than have other observers. His investigations are recent, and it is too early to state what the result will be. Experimentally, antipneumococcus serum seems to be of value. Practically, that it is of any great

value does not at present seem to have been demonstrated, as the reported number of cases are too few; the series of any one observer too small. What the future of the serum therapy in pneumonia will be it is too early to say.

Clinical Department.

CASE OF PATENT FORAMEN OVALE IN ADVANCED LIFE.

BY WILLIAM L. WORCESTER, M.D.,

Assistant Physician and Pathologist, Danvers Insane Hospital.

ABRAHAM H., apparently a full-blooded negro, said to be fifty-seven years of age, was admitted to the hospital, February 25, 1898, suffering from general paralysis. In the notes of the physical examination, made at the time of admission, the following statement is made as to the condition of the heart: "Apex beat in sixth interspace, under nipple; no heart sounds heard; a long, loud murmur, systolic in time, can be distinctly made out at apex." During the patient's stay in the hospital, no indications of embarrassed circulation were noticed. On account of the color of his skin it is perhaps likely that cyanosis, if it had existed, might have passed unobserved. He died May 13, 1900, of exhaustion from a series of convulsions.



a. Foramen ovale. b. Communication between ventricles.

At the autopsy the heart was found to be moderately hypertrophied, weighing 375 grammes; the cavities, especially the right ventricle, were dilated. The valves were healthy. The foramen ovale was present, measuring $2\frac{1}{2}$ by 2 centimetres in diameter. It was divided into two unequal parts by a small tendinous cord. Immediately under the right aortic semilunar valve was an opening forming a communication between the ventricles. On the side of the left ventricle it was about 1 centimetre in its longest diameter; on the side of the right ventricle, not more than 2 millimetres in diameter. So far as could be judged from appearances, this was probably a congenital defect.

The patient was a pensioner on account of disability alleged to have been contracted during the Civil

War. This, as well as his advanced age, seemed of interest in view of the condition of his heart. I accordingly made inquiry at the Pension Office in regard to his military and medical history, and also of his mother, who is still living, as to his health in early life. His mother, in reply, denied that he had ever suffered from shortness of breath in childhood, and said he always had good health until he went into the army. A communication from the Pension Office states that "the records show that the soldier enlisted February 28, 1865, and was discharged on surgeon's certificate of disability March 31, 1866. On muster rolls to August 31, 1865, he is reported present; September and October absent without leave; from October 31, 1865, to February 28, 1866, present. The certificate of disability is not on file, but the records of the regiment show treatment in the regimental hospital for valvular disease of the heart at various dates from November 3, 1865, to April 15, 1866. The first medical examination held in the case was made December 7, 1887, but the condition of the heart was not reported until his second examination, August 6, 1890, when the board described a pronounced and remarkably distinct musical mitral systolic murmur heard over the entire left chest, the location of the organ being normal."

It is hardly probable that the examination at the time of enlistment was very rigorous, but it seems rather singular that such a disability should not have been discovered on the most superficial investigation, and still more so that the patient should have lived to be fifty-nine years of age without any striking cardiac symptoms, dying at last of a disease entirely independent of his malformation.

Both of the abnormal openings can be seen in the above photograph.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND WM. DUDLEY HALL, M.D., BOSTON.

ORBITAL COMPLICATIONS OF EMPYEMA OF THE ETHMOID CELLS.

VIEUSSE,¹ in these numbers, gives a very complete account of the subject. The first article contains a very good description of the anatomy of the ethmoidal labyrinth followed by a clinical history of 14 cases. In the second article the symptoms are taken up in detail. It is more than probable that the starting point lies in the os planum of the ethmoid rather than by infection through the agency of the veins. As the orbit becomes invaded by products of inflammation we notice swelling of the lids, exophthalmus and a tumor at the inner angle of the eye. This latter varies in size from a small pea to even a hazel nut, may be round or diffuse, firm or fluctuating and painless. Pressure may cause a flow from the nostril and there may be a sense of crepitation. Proptosis may be slight, the deviation down and out with but little impairment of motion. The edema may be limited or diffuse, and there may or may not be diplopia. The fundus changes suggest a mild neuritis and the vision may fall to .2 if there is pressure on the nerve. The third article discusses the etiology, and has spe-

¹ *Rec. d'ophtal.*, March, April, May, 1899.

cial bearing upon the various forms of rhinitis, although, of course, it may be the sequel of almost any general infectious disease. At a late period of the disease extension is apt to take place from one to another of the various sinuses, but at the earlier stages a differentiation is easier. To discriminate between frontal and ethmoidal disease is difficult at any stage. Localization of pain and tenderness over the frontal is suggestive. A projection of the bony wall in the orbit suggests disease of the ethmoid rather than frontal. Symptoms due to compression of the eyeball are the same in both cases. Pus in the middle meatus may come from either the maxillary, frontal or anterior ethmoidal cells; pus in the superior meatus from the posterior ethmoidal or sphenoidal sinuses. To diagnose between the former, catheterization of the frontal and puncture of the maxillary may be employed. In each case if pus immediately appears after irrigation it probably comes from the ethmoid. Transillumination may show the ethmoidal cells of one side to be more opaque than those of the other side. By ausculting the frontal sinus, expiratory râles may be determined. Frequently differential diagnosis is merely a matter of conjecture. The early occurrence of compression of the optic nerve would favor disease of the posterior ethmoidal rather than of the sphenoidal. With care there is little danger of mistaking it for dacryocystitis. Malignant growths and osteomata, though rare, must be thought of. Drain through the nose, orbit or both ways. The incision may be along the upper, the internal, or the internal and inferior margins of the orbit. Gruening's operation is as follows: Incision along the internal margin of the orbit to the periosteum. Strip up the periosteum internal to the lachrymal sac. Divide the attachment of Horner's muscle, laying bare the os planum. Press the orbital contents to the outside with spatula. Curette the os planum. Introduce a drainage tube from the orbit into the nose and suture in the incision.

THE ORDER OF DEVELOPMENT OF COLOR PERCEPTION AND OF COLOR DEVELOPMENT IN THE CHILD.

W. A. Holden² believes that the order of development of perception, and the order of attractiveness of colors in the young infant, in whom the order of selection is almost instinctive or physiological rather than the result of training or reflection, support by analogy singularly well the Gladstone theory of the development of color perception in the human race, so that this theory may have a certain value as a general evolutionary theory, although we must go down much lower in the mammalian scale than to primitive man to find the beginning of color perception. What are the functions of the various colors in nature, and why does the child react to colors differently at different ages? The predominating nature colors are the blues and greens and the yellows and reds; the complementary colors to these background colors serve to call attention to particular objects, as, for example, fruits and flowers, and may be called accent colors. The colors of the red end of the spectrum are exciting or irritating when presented in large masses, whereas the greens and blues are more restful. The young infant responds to the exciting colors, choosing instinctively those of the red end instead

of the blue. As the psychological development proceeds, and the child becomes more distinguished from the animal, and mental processes dominate the earlier more physiological reactions, we find, first, an indifference to all colors and a little later a dislike for the more exciting reds and yellows, and a preference for the blue end of the spectrum. This typical change takes place in the order of attractiveness as the child grows older, and occurs without respect to environment or training. In a certain number of children the change from red to blue preference is not so direct, and after a period of greatest indifference to all colors, at the age of two or three, there is for a time a modified indifference in which one or more of the middle and most luminous colors — orange, yellow and green — is preferred. At the age of eight, blue or violet preference is almost universal, but red has begun to advance from the lower end of the scale. Adults prefer end colors, while they dislike the middle colors.

TREATMENT OF DETACHMENT OF THE RETINA.

In 1895 R. Deutschmann³ published the result of his operative method of treatment of 16 cases of detached retina, and since that time he has continued these operations subject to some modifications, and now has completed the treatment of 101 cases. A full account of all these cases, some of which have been under observation for more than five years, is now given, and they form a collection of clinical histories worthy of careful study. He now transfixes the eye far back with a two-edged knife, entering at the outer and lower part of the sclera, passing across to the corresponding point on the inner side the counterpuncture, involving all the coats except the conjunctiva. On withdrawal, the blade makes a slight curve towards the centre of the eye, thus perforating the retina in two places, and allowing two openings for the escape of preretinal and subretinal fluid. He no longer thrusts about in the hope of cutting real or imaginary bands. Rabbits' vitreous is next injected into the vitreous by means of a combination of a knife and canula. Young rabbits' vitreous is stirred up in a neutral salt solution under antiseptic precautions, and allowed to settle; it is then injected and is, Deutschmann believes, a very important addition to his method of treatment. He reserves the injection for those cases not benefited by the double puncture operation. Of the 101 cases he claims to have "cured" 26, and to have more or less benefited 34. Of the remaining 41 he considers that 7 were at first greatly improved but afterwards relapsed, while 34 either showed no improvement, or, for various reasons, were unsuitable for or did not remain long enough under treatment. This percentage is much better, in his opinion, than that obtained by rest or by simple puncture. The best results were in cases of traumatic origin or in young persons.

SUCCESSFUL TRANSPLANTATION OF THE CORNEA AND SCLERA IN AN EYE WHICH WAS BLIND FROM PHTHISIS OF THE CORNEA.⁴

Wolffberg⁴ cites this case: The patient, female, lost the right eye from an injury in childhood, and lately injured the other by a blow causing dislocation of the lens, cataract and iridocyclitis. The cornea

³ Beitr. z. Augenheilk., xl, 1899.

⁴ Woch. f. Ther. u. Hyg. d. Auges, August 24, 1899.

² Archives of Ophthalmology, May, 1900.

became atrophied, and after the extraction only light perception remained. The eye of a sparrow was bisected and the part in front of the iris was used. As it seemed irrational to the operator to bring the anemic sclera in contact with the anemic anterior portion of the blind eye, an artificial hyperemia was induced by undermining the conjunctiva around the cornea, then passing a thread after the manner of a purse string along the border of the opening, and by its closure covering the atropied cornea by some chemotic vascular conjunctiva. On the next day the cornea of the blind eye was trepanned ($3\frac{1}{2}$ millimetres) through its entire thickness without escape of vitreous. The sparrow's cornea, with its scleral border, was then introduced and the border well tucked under the overlapping conjunctiva. Almost no reaction; sutures were removed at the end of five days. The transplanted sclera soon lost its opaqueness, and soon became as transparent as the cornea. The patient can now, at the end of a month, go about a well-lighted room unattended.

IRIDECTOMY IN GLAUCOMA SIMPLEX.

True and Chauvin⁵ give results obtained in 14 cases of simple glaucoma, which have been under observation for from six months to five years and a half after the iridectomy. They consider this operation and anterior sclerotomy only as worthy of retention, giving their preference in favor of iridectomy. They believe in an early operation, although the process may have been without pain and the vision good. Full recognition is given of the difficulty of making a diagnosis between a simple glaucoma and optic atrophy, with excavation when there is no rise in tension. If after use of myotics there is an increase in the vision and an enlargement of the field, benefit by making an iridectomy may be hoped for. Chronic glaucoma is so apt to be bilateral that the field of the apparently sound eye should always be examined, and if there is shown to exist a characteristic loss, an operation should be undertaken, even though the central vision should be perfect. Although this procedure is not infallible, it may be safely said that no other method promises so well.

(To be continued.)

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, March 7, 1900, DR. J. W. ELLIOT in the chair.

DR. J. C. MUNRO presented a

PATIENT AFTER THORACOPLASTY FOR SARCOMA, PROBABLY OF THE DIAPHRAGMATIC PLEURA.

About eight months before operation the patient was on the medical side of the City Hospital; considerable bloody serum was aspirated from his right chest and he was discharged relieved. He re-entered in November, and Dr. F. H. Williams made a definite diagnosis of tumor by x-ray examination. Under ether a large part of the third to the seventh ribs, in-

clusive, was resected, and a mass covering the diaphragm and pushing the lung up to level of second rib was removed. Owing to severe shock a small nodule was left on the diaphragm behind the costal cartilages. A few weeks later a second operation was done, the growth having increased rapidly, pushing up alongside the spine and into the posterior angle of the ribs. All of the growth could be removed except a nodule which lay so far posteriorly that it could not be safely reached without making an opening through the posterior wall. Practically no shock followed this operation. Recurrence has of course taken place, and the patient is practically in the same condition as in November last. He is to start on Coley's treatment at once.

DR. ELLIOT: In this connection I would like to mention a case I had the other day where I removed a large part of the chest wall and a part of the lung on the left side for a sarcoma which extended from the sternum in front round under the scapula in the back. The patient, a man of thirty-three years, had noticed a growing tumor on his left chest for a year. I turned up a large flap of skin and muscle from the front of the chest and removed the tumor with nearly the whole of the second, third and fourth ribs. The tumor was found to have extended through the chest wall and to have invaded the lung, so that it was necessary to remove a large surface from the lung. The lung wound was clamped and stitched. The lung did not collapse owing to adhesions and to traction with my clamps. The patient suffered severe shock from the operation, and in spite of transfusion died on the second day.

DR. MUNRO also presented a

PATIENT AFTER PYLOROPLASTY.

Trouble began about three years ago with tenderness in the epigastrium when the patient twisted his body in certain directions; two and a half years ago he complained of distress without sharp pain or vomiting of blood or anything pointing to ulcer of the stomach. He had a specific history. Vomiting and emaciation increased, and after treatment at various hospitals he finally came to the City Hospital. Was in the hospital on the medical side three months, and while there very careful examinations were made of his stomach contents by Drs. Sears, Smithwick, and others, and finally brought to me for operation. He was then a skeleton. At the time of operation there was a large residue in the stomach with very much lactic acid and no hydrochloric acid. At the operation I found simply a constricted pylorus, the lumen admitting only a director. I performed the ordinary pyloroplastic operation, which was in November. Since then he has gained 80 pounds and is now all right. Dr. Smithwick has examined his stomach within a day or two and reports no residue, no fermentation, and the stomach is practically normal. For a while after operation there was considerable residue with fermentation, and Dr. Sears felt discouraged, fearing that there would have to be another operation. I think it was simply overcoming a habit that had existed for a number of years. The hydrochloric acid has not reappeared, but probably will in time.

DR. RICHARDSON: I have found that after linear pyloroplasty the lumen is not always satisfactory. Some months ago I published in a paper on this sub-

⁵ Arch. d'ophthal., January, 1900.

ject the results in a few cases. If I were going to operate again for stricture with thickening of the whole pylorus, I should make a partial V-shaped resection instead of a linear incision. There is no special advantage in the straight line, and closure is often difficult. The tissues are frequently thickened and lack the pliability necessary for a satisfactory operation; yet, as time goes on, the cicatrix becomes softened and the tissues thinned, so that the new opening is sufficient. In many cases, nevertheless, I feel sure that a more or less complete resection of the cicatrized pylorus will give better results than the conversion by suture of a longitudinal cut into a transverse one.

DR. ELLIOT: What was the narrowing due to?

DR. MUNRO: There was a specific history. There may have been a gumma that ulcerated, leaving a scar. There was no history of acute pyloric ulcer and nothing to be felt in the mucous membrane at operation. I think in another case I should adopt Mayo's suggestion of anchoring the pylorus down so as to bring the drainage of the stomach lower.

DR. MAURICE H. RICHARDSON read a paper entitled

REMARKS UPON OBSCURE NON-TRAUMATIC TUMORS OF THE LOWER ABDOMEN SUDDENLY APPEARING WHERE NONE HAD PREVIOUSLY BEEN DETECTED.¹

DR. MUMFORD: Mr. Chairman, I will not weary you with descriptions of twisted ovarian tumors that I have seen. Dr. Richardson has covered that subject so thoroughly that there is little to be said. Indeed many of his cases came under my own observation at the hospital. But the title of his paper is very interesting and striking. I believe that these suddenly appearing tumors are not so rare as might be supposed. Many of them, most of them indeed, are urgent and require immediate operation, but this is not true of all; and I refer especially to enlargements of the kidney. Within the past year I have seen 2 such cases which might be added to Dr. Richardson's list. Both were kidneys, very movable, engorged, appearing suddenly low in the abdomen, causing great pain and discomfort, puzzling at first to the surgeon, and most alarming to the patients. In both cases nephrorrhaphy gave permanent relief.

DR. MARCY: I have been deeply interested in Dr. Richardson's paper. It opens up a whole subject on which it would be easy to write a book. There are a variety of things that come to us the older we grow in our experiences which make us less sure in diagnosis. I am very certain, in abdominal diagnosis, I know less about making a clear, distinct, positive diagnosis than I thought I did ten years ago, because there are many more things we know may be possible, and many things that in the earlier period we would have ruled out we now consider. Dr. Richardson has hardly given the emphasis some of us would give to extra-uterine fetation, although he has referred to it two or three times in his paper. I remember a case I operated on some time ago which I supposed to be ectopic pregnancy, and it was an extra-peritoneal hematoma, impossible to diagnose before operation.

The only thing, I think, that has not been referred to is the very first case of dropsy, as it was then

called, of the gall bladder, which was opened by an American surgeon in Indiana, with the full belief that he was about to operate on a cystic tumor of the ovary. That goes on record as the first operation in the world upon the gall bladder. In the case of twisted pedicle you know how sometimes a comparatively small tumor rapidly becomes large, and yet it is not the classical case such as we used to know and was described in the earlier days of twisted pedicle. Let me give two or three instances:

A woman, of perhaps sixty, had been under observation a considerable period with a large fluctuating cystoma of the ovary. I advised operation, but she declined it, saying: "No surgeon will ever see the inside of my abdomen." Perhaps a year went by, when I was suddenly summoned to New Hampshire to operate upon this woman. In the meantime she had been congratulating herself that the tumor was going away, the lessening size of the tumor making rotation easier. I found a necrosed cystoma weighing about 30 pounds; the pedicle was twisted twice and all the circulation was cut off.

I remember another case, a comparatively small tumor of about 15 pounds, in a woman in middle life. She went to the Massachusetts Hospital, where she was examined by the physician in attendance, who found a cystoma that seemed so characteristic that, according to her statement, a dozen of his pupils examined her. She went home in much pain. That night her physician was called, and two days later I opened the abdomen. I found a necrosed cystoma with two and a half times twisted pedicle, which it seemed fair to assume had been acquired at the hands of the students.

It is only a little time ago I saw a much more obscure case, where a woman had a pretty evident history of impregnation. It was believed by her physician that she was three months pregnant, which was found to be correct, but there was an x factor in the problem demanding immediate surgical intervention. At the operation I found an ovarian tumor pedicle, twice twisted, the cystoma not larger than a large cocoon.

Such are cases worth reviewing. Some of these curious things, as dilated stomach, won't happen very often, and yet I have lost, I am quite sure, 2 patients on the table by overlooking a dilated stomach in laparotomy. How? On recovery from etherization, with a dilated stomach distended with thin fluid, there came regurgitation of fluid that caused the death of the patient by drowning in his own fluid. Had I washed out the stomach before operation I should have saved this complication.

As to the dilated bladder, I am sure some of our younger friends would rather smile when they look upon the wise Dr. Richardson and say: "Is it possible he makes a mistake?" One of the wisest physicians I know thought he knew the character of the disease, for he had watched it in its development, and seen the patient from day to day and felt sure she had a large cystic ovary. He sent her to me for operation. I drew away 40 to 50 ounces of urine from the bladder, and then it was apparent that there was no tumor for removal.

I am quite certain discussion of this sort is of the largest possible good to us all, and I am sorry Dr. Richardson has not a much larger audience to profit by his paper.

¹ See page 333 of the Journal.

DR. MUNRO: I recall three tumors suddenly appearing: one an aneurism of the thoracic aorta, that appeared in the upper part of the pelvis; another, a tubercular peritonitis, that appeared four weeks after Cesarean section; a third, similar to that which Dr. Richardson speaks of — a sigmoid in a low grade peritonitis due to an appendicitis.

DR. ELLIOT: In these cases of twisted pedicles I have always been impressed with the symptom of pain. I have been called to such patients in great pain, and usually they have taken morphia without relief. I was surprised when I listened to Dr. Richardson's account that, although collapse was noticed, there had been so little pain, especially in the ones described as suddenly gangrenous, especially the last one in which the twist must have occurred within a short time. I have no doubt from the look of these pedicles that the torsion in some of the cases is very gradual. The twists are glued in their position. I have seen twists three and four times round that must have been there months. In the last case the drawing and everything shows it was a very acute case, and I am surprised that it was not associated with greater pain. I happen to have had a case exactly like Dr. Richardson's dilated stomach case two or three years ago. It was a young man, I think about nineteen or twenty, who came to the hospital. I was called at night to see this man with a large tumor. No one present had any idea what it was. At the operation I found the stomach absolutely filled the abdomen, and it hung so heavily on the pylorus that it made an intestinal obstruction. I emptied the stomach and relieved the obstruction, but the man died in two or three days.

DR. AGNES VIETOR: I saw Dr. Boldt operate on a patient in whom no tumor whatever was palpable. He operated because the diagnosis of ovarian cystoma had been made some time before, and he considered the diagnosis reliable, and while a careful examination at the time showed nothing, still celiotomy disclosed an ovarian tumor.

Dr. Vietor then reported

A CASE OF INFLAMED PERITONEAL CYST SIMULATING OVARIAN TUMOR WITH TWISTED PEDICLE.²

DR. MARCY: In this connection I would like to report a case, and its peculiarity, I think, lies in the patient's age, fifty-one, married about twenty-five years, never pregnant, and well until lately. When I saw her in consultation it was thought altogether likely that the case was an acute form of malignant disease of the pelvis. Uterus enlarged, fixed. To the right side of the uterus was a mass pressing the uterus forward and apparently blended with it. According to the description of its development by Dr. Forbush, of Charlestown, it had come on in the last six or eight weeks. I do not believe any one would be warranted in making a diagnosis and I hesitated about making a laparotomy, but quite to my surprise we found a very thick-walled cyst, that is to say, the right Fallopian tube had developed into a pus pocket quite the size of a large cocoon, with a thick wall, and the left tube contained also an ounce or two of pus. The uterus owed its enlargement to small multiple fibroids, and was removed along with the other diseased organs. I think the case is worth putting on record because of the late period of life in

which the disease occurred, fifty-one years, never pregnant, married twenty-five years, and no special reason why she should have had an infection of the tubes. This is the first case of infectious salpingitis which I have ever met after the cessation of menstruation. She had passed the menopause six or seven years in what was believed to be a normal way, and in other respects had been a strong, healthy woman all her life.

DR. RICHARDSON: I have nothing to add, except that the case of Dr. Vietor seems very much like one of the cases that I report — a suddenly appearing, thin-walled cyst with hemorrhage in it. Gall-bladder tumors large enough to be felt in the lower abdomen cannot, from their very nature and origin, belong to the category of suddenly appearing tumors. Examination could not fail to have detected them long before they could reach the pelvis. It must be remembered that this communication deals with tumors which escape skilled examiners one day, and which are conspicuous the next.

DR. ELLIOT: It has been my experience to find that a thin-walled ovarian cyst is very difficult to feel every day — some days you feel it and some days you cannot feel it. I think it is very easy to miss a thin-walled cyst. Cysts go up and down for various reasons; some days you cannot feel a cyst above the pubes, and the next day you can feel it 2 or 3 inches above. I suppose the condition of the bowels, whether empty or full, or the condition of the abdominal wall, may cause this; at any rate, sometimes you can feel them and sometimes you cannot. I do not believe that ovarian cysts appear suddenly. The explanation for their sudden appearance is simply that they have been previously overlooked.

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

FOURTEENTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

(Concluded from No. 13, p. 322.)

SECOND DAY.

THE first part of the session was devoted to the discussion of

THE BEST METHOD FOR OBTAINING URINE DIRECT FROM THE URETERS FOR DIAGNOSTIC PURPOSES.

DR. F. TILDEN BROWN, of New York, stated that the attributes of an ideal instrument were: (1) Its equal applicability to both sexes; (2) no contamination from the other gland or from extraneous materials; (3) a minimum amount of discomfort to the patient and of harm following its use; (4) a simple technique. From these standpoints three types of instruments were discussed: Kelley's, Harris's and the ureter cystoscope. The advantages of Kelly's method are: (1) The instrument is the simplest in construction; (2) the mucous membrane around the orifice of the ureter can be cleansed; (3) it is the only instrument that can be used in some conditions of the bladder. Its disadvantages are: (1) It is essentially limited to the female; (2) the introduction of a flexible catheter is difficult; (3) the urethral tube is large enough to cause a temporary incontinence of urine; (4) displacement of the catheter is liable; (5) more

² See page 359 of the Journal.

assistants are needed; (6) the knee-chest posture is disagreeable to the patient; (7) general anesthesia is more generally indicated. The Harris segregator deserves commendation, but is contraindicated in a number of conditions. Its advantages are: (1) It can be used by any one who is expert in using a catheter; (2) small cost; (3) separate urines can be obtained synchronously; (4) it is easily sterilized; (5) there is not the danger of infecting the kidney. Its disadvantages are: (1) The difficulty of introduction, the discomfort to the patient and the danger of after effects; (2) the advantages of cultures made from the urine obtained is practically *nil*; (3) the uncertainty as to its trustworthiness in separating the urines. The advantages of the ureter cystoscope are: (1) It permits the ascertaining of the condition of the bladder; (2) the operator can satisfy himself that the specimens of urine are from separate kidneys. Its disadvantages are: (1) It is not applicable where the capacity of the bladder is limited or where the fluid is not transparent; (2) it is relatively expensive; (3) its details require more study and experience. Dr. Brown concluded that the ureter cystoscope was the safest and best instrument for obtaining separate urines.

Dr. OTIS, of New York, believes there is a tendency to think that catheterizing the ureters is a simple operation, when the truth is that it is a decidedly difficult procedure. He prefers the direct or convex ureter cystoscope. Dr. Otis exhibited

(a) A NEW ELECTROCYSTOSCOPE.

(b) A CYSTOSCOPE FOR THE CATHETERIZATION OF BOTH URETERS.

Dr. M. L. HARRIS, of Chicago, present by invitation, discussed the various instruments. He stated that catheterization of the ureters is frequently a failure, even in the hands of the most expert operators. Some of the errors from this method are the presence of blood and epithelial cells in the urine due to traumatism of the ureter, and the fact that all the urine does not pass through the catheter in some instances. The chief danger is infection of the kidney and this is a very grave objection. He has demonstrated that his segregator will accurately divide the bladder by cases where only one kidney was present, where blood was coming from one kidney and by autopsy findings. To prevent vesical hemorrhage he uses suprarenal extract, 50 to 60 cubic centimetres of a 5% solution being allowed to remain in the bladder for ten to fifteen minutes. Local anesthesia is secured by placing 15 to 20 cubic centimetres of a 2% solution of cocaine in the bladder for six minutes. Partial anesthesia of the rectum is secured by the use of antipyrin and tincture of opium.

Dr. BRANSFORD LEWIS, of St. Louis, demonstrated

A URETER CYSTOSCOPE (FOR MALE OR FEMALE)
BUILT ON A NEW MODEL.

One of its chief advantages is its simplicity. General anesthesia is seldom necessary. The catheter is introduced while the patient is in the knee-chest position, the cystoscope is withdrawn and the patient then placed in the dorsal position while the urine is collected. A cold lamp is used and complete control is had over the inner end of the flexible catheter.

Dr. BANGS stated that he has found difficulty in

passing a straight instrument even in young men. In others the instrument when introduced cannot be deviated from the middle line sufficiently to find the openings of the ureters. In certain cases he has not been able to see the openings of the ureters. In making investigations regarding this point he has found the same condition in cadavers, not being able to find the openings without a careful search with a fine probe. He has also caused small traumatism near the opening of the ureters in efforts to introduce a catheter. This may explain infection in some cases. He prefers to use the Harris segregator unless in very exceptional instances, and thinks this the best instrument for ordinary surgical diagnosis.

Dr. BRYSON stated that from the practical standpoint of the operating surgeon the Harris segregator was the best instrument. He always precedes its use with cystoscopy, as the knowledge of the interior of the bladder removes the main objection to the instrument. A great advantage of this method is that it can be used frequently over a long period of time — more than a year in 1 of his cases. Patients will object to this use of the other methods under discussion.

Dr. EUGENE FULLER, of New York, read a paper upon

ANTERIOPOSTERIOR SUBDIVISION OF THE BLADDER;
AN IMPORTANT ANOMALY.

Dr. Fuller has met with 2 cases of this anomaly, one specimen of which he secured post mortem. The partition was just in front of the ureteral orifices, an aperture connecting the anterior and posterior chambers of the bladder. The symptoms, which began in early life in both cases, were those of frequent micturition and slowly increasing difficulty in urination. The bladder walls were greatly hypertrophied. The prostate was not hypertrophied in either case and in the specimen secured the gland seemed rather atrophied.

Dr. RAMON GUIERAS stated that he had frequently met with difficulty in cystoscopy by the instrument seemingly entering the bladder and then refusing to enter further. On moving it about an opening was found and the bladder really entered. He had attributed this difficulty to an enlarged condition of the prostatic urethra and suggested that such was the case in this instance.

Dr. FULLER replied that the condition of the prostate in the specimen would not admit of that explanation.

Dr. FULLER then read his paper of Tuesday's programme,

RADICAL TREATMENT FOR CURVATURE OF THE PENIS.

The case was that of curvature following an internal urethrotomy. The fibrous urethra acted as a bowstring to the organ. The urethra and spongiosum were divided obliquely and separated, about three-fourths inch being left between the two portions, and tissues stitched over this gap. The patient is now in good condition, one and one-half years after the operation, and normal intercourse is possible.

THIRD DAY.

Dr. E. L. KEYES, of New York, opened the session with a paper upon

THE THERAPEUTICS OF UROTROPIN.

Several cases were detailed to show the satisfactory effects obtained by the use of this drug. One case of persistent anuria following an external urethrotomy was relieved at once by the exhibition of urotropin, the symptoms again appearing when the drug was discontinued. Dr. Keyes uses urotropin in all cases where urinary chill is present or is threatened. His conclusions are: (1) Urotropin seems to be almost a specific in acute catarrhal pyelitis; (2) large doses may be necessary at first, these being followed by long-continued smaller doses; (3) the centrifuge and the microscope may be necessary to detect the change in the urine following its use; (4) dysuria, etc., may be caused by irritation, and irritation may be caused by small doses in some cases; (5) it is a valuable prophylactic against urethral chill; (6) good results follow its use after operations; (7) urine passed during its administration occasionally has an escharotic effect on wounds with which it comes in contact.

Dr. BRYSON stated that in cases of tuberculous disease which had been operated upon he had seen instances in which urotropin produced changes which retarded the healing of the wound.

Dr. OTIS has used cystogen a great deal because of its cheapness. He always uses urotropin for several days before catheterizing ureters, if this is possible.

Dr. KEYES stated that he had given a patient 67½ grains of urotropin daily for months. In that case an enlarged prostate became lessened in size, the amount of residual urine diminished, and the patient was made thoroughly comfortable. The fact of sloughing from the effects of urotropin having been questioned, he gave 3 instances in which weak solutions of formalin had produced such untoward effects, the wounds becoming healthy when the formalin was stopped.

Dr. RAMON GUIERAS, of New York, reported several cases of

PROSTATIC DEFORMITIES DUE TO LOSS OF TISSUE.

He had often detected deformity of the prostate by rectal examination and found no explanation for it. Attention was finally called to a case where tuberculosis had caused an abscess of the seminal vesicle and eventually an abscess of the prostate. Evacuation of this left a depression. Many chronic cases, where there is a morning drop of discharge and a few shreds, will be found due to the results of abscess in the prostate. In some of these cases rectal examination reveals depressions and cavities in the prostate or bands extending across the gland. In other cases the gland is almost wholly destroyed, the ejaculatory ducts in one instance being felt as cords extending from the vesicles. These conditions usually result from abscesses which have ruptured into the urethra. A pyogenic membrane is left in the prostate and pus forms for a long time afterward. Some cases are no doubt attributed to tuberculosis and gonorrhoea. The remains of these abscess cavities may cause the most intractable cases of chronic discharge. The treatment must consist principally in rectal massage and irrigation and urethral irrigation.

Dr. E. E. KING, of Toronto, read a paper on

PRIMARY CANCER OF THE PROSTATE,

and exhibited specimens. A feature of one case was the discharge of a large quantity of blood, at one time, with great relief of the symptoms. Pain was felt only when the bladder was distended with urine. The

whole gland appeared to be involved in all cases before relief was sought, showing the insidious nature of the affection. Frequent micturition with some dribbling of blood were the common symptoms. Four members of the family of one patient had died of cancer. Especial points noted were: (1) The very advanced state of the disease before found; (2) the relief experienced when the capsule of the gland ruptured; (3) the small amount of metastasis present.

Dr. JOHN P. BRYSON, of St. Louis, considered

THE DIFFERENTIAL DIAGNOSIS OF CIRCUMSCRIBED LESIONS OF THE UPPER, MIDDLE AND LOWER PARTS OF THE URETER.

Cases were detailed to show the symptoms referable to calculi in the parts of the ureter mentioned. In cases of irritation in the pelvis of the kidney or the upper third of the ureter, the subjective symptoms are referred to the kidney, the pain radiating toward the middle of the abdomen. When the irritation is in the middle third of the ureter the genitocrural nerve is involved. In the lower third of the ureter there is increased frequency of micturition, but no vesical tenesmus.

Dr. CABOT stated that he had seen involvement of the kidney produce symptoms referable to the neck of the bladder. He depends more upon local tenderness found upon thorough examination of the ureter than upon subjective symptoms for localizing the trouble, as subjective symptoms are often misleading.

Dr. KEYES stated that he had seen a case of retention from vesical spasm due to stone in the kidney, no other condition to account for the spasm being present, as the bladder was perfectly normal.

Dr. BRYSON stated that it was very common to find a lesion at the lower end of the ureter along with kidney involvement. In cases like the one just referred to this lesion if present would be sufficient to cause the bladder symptoms. When this lesion was not present he believed no bladder symptoms would be found in connection with kidney involvement.

Dr. CHAS. L. SCUDDER, of Boston, reported a case of

ACUTE ABDOMINAL SYMPTOMS ASSOCIATED WITH A CONGENITAL MALFORMATION OF A URETER IN A CHILD.

The symptoms resembled those of intestinal obstruction. Enemata, however, secured fecal evacuations. A tumor was felt in the right iliac fossa. Operation showed the tumor to be retroperitoneal. The condition of the child prevented further operation and the patient died soon after. Autopsy showed a normal right ureter and also an abnormal one, the latter being greatly dilated and sacculated.

Dr. GEO. K. SWINBURNE, of New York, read a paper upon

BACTERIA ASSOCIATED WITH A DIVERTICULUM OF THE BLADDER.

A number of calculi have been obtained from the bladder. A catheter can be introduced a short distance, one-quarter of an inch, into the diverticulum, the mouth of which can be seen, photographs having been made of it. The diverticulum is supposed to contain a calculus.

The following papers were read by title: "Prosta-

tectomy for the Relief of Enlargement of the Prostate," Dr. Samuel Alexander, of New York; "Rupture of the Urethra," Dr. J. R. Hayden, of New York.

The association elected the following officers for the ensuing year: President, Dr. Samuel Alexander, of New York; Vice President, Dr. W. T. Belfield, of Chicago; Secretary, Dr. J. R. Hayden, of New York.

The association then adjourned to meet at Old Point Comfort, April 30, 1901.

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

(Concluded from No. 13, p. 326.)

THIRD GENERAL MEETING.

THE third general meeting, which took place on August 9th, was also the closing ceremonial of the Thirteenth International Medical Congress. The large amphitheatre of the Sorbonne, containing Puvion de Chavannes's masterpiece, a large allegorical painting representing "The Sacred Grove," was well filled, when, soon after two o'clock, the band of the 115th Regiment of the Line began the stirring strains of the *Marseillaise*. The audience instantly stood up and cheered when the band stopped playing.

The president of the congress, Professor Lannelongue, who had at his right hand Professor Julian Calleja, the Dean of the Faculty of Madrid, and at his left Professor Virchow, then rose, and having declared the meeting open, introduced PROFESSOR ALBERT, of Vienna, who now read his paper on

THE ARCHITECTURE OF BONES IN MAN AND ANIMALS.

The extemporized pulpit from which the professor delivered his address was placed at the end of the platform, close to the gallery in which the regimental band was seated, the seats reserved for the press being near the far end of the platform. The members of the band were doubtless highly edified at the words of the learned scientist; the medical men in the body of the hall moved along opposite the speaker; the press, unfortunately, could not do likewise, and consequently heard not a word.

AWARD OF THE CITY OF MOSCOW PRIZE.

After the address of Professor Albert, the PRESIDENT rose and called to the minds of his audience that at the last International Congress the city of Moscow had offered a prize of £200, to be given at the Paris Congress, to the author of the best work in recent years in the domain of medicine and hygiene. After a careful consideration of the merits of the various candidates, the committee had decided that it would be preferable to award the prize to one of the younger generation, and thus stimulate the work of those who had not yet reached the highest position. The committee had finally unanimously selected M. Ramon y Cajal, professor of histology and pathological anatomy in Madrid, for his magnificent work on the nervous system.

THE NEXT CONGRESS.

When the applause had subsided, the president announced that the committee of the honorary presi-

dents had accepted the invitation of the Spanish Government, and that the Fourteenth International Congress would be held in Madrid. Owing to climatic reasons the congress will meet about Easter, 1903, and will be under the presidency of M. Calleja, Dean of the Faculty of Medicine, with M. Fernández Caro, Inspector-General of the Spanish Navy, as general secretary. The regimental band at once played the Spanish National Hymn, which was listened to by the entire audience standing, and was greeted with great applause.

PRESIDENT'S FAREWELL ADDRESS.

M. LANDELONGUE then rose and delivered a somewhat lengthy speech of farewell. He thanked his collaborators who had helped to bring the work to such a successful conclusion, naming especially M. Chauffard (the general secretary) and M. Dufloey (the treasurer), and MM. Weber and de Massary (the secretaries), adding the name of the regretted editor, M. Georges Masson, who had always considered the publication of the congress as an honor for his house. After thanking the French committee and the foreign national committees, the president emphasized the fact that during the last century the idea of nationality had been growing in importance. The result has been a certain isolation of the different states, each with its own distinct life. The rôle of the International Congresses is counter to those isolating tendencies; they throw into relief the simple truth that science should have no territorial limits, and also another important fact that there are a certain number of productive forces that one can only study by seeing them at their seat of origin. But in addition to the scientific work and communications which appear to be the basis of these meetings, there is also the need for the workers in different countries to know each other. Contact alone enables us to see that after all there is everywhere less coldness and egotism than one believes, that the notion of ingratitude does not exist between us, and that there is an absolute equality in our mutual intercourse. One might perhaps discuss the advisability of continuing this enormous collection of medical sciences as a composite whole, or whether it would not be preferable to hold a certain number of congresses of specialists. A certain number of sections have such an independent existence, and were with difficulty persuaded to form part of the general scheme. Specialization is certainly a narrowed domain, but it is none the less certain that the era of specialization has produced a much more rapid advance in the number and precision of the results obtained, especially in the matter of technique. One might in fact say that specialists contribute the most to the advance of science. But this is not a sufficient motive for the specialists to remain isolated. As it is the sections retain their autonomy. Many of them, even of their own initiative, meet in subsections. We must not forget that all specialities have a common origin, and the field would soon be exhausted did they not from time to time receive general ideas, doctrines coming from a wider and different source, without whose influence false doctrine might creep in. Special sections, such as physiology, chemistry, comparative anatomy, which seem so far away from us in their origin and methods, have none the less the most useful rôle in our knowledge, just as we, too, place at their disposal a field of application which contributes

largely to their development. Electricity, which began so modestly, is now called upon to take an important part in the rôle of nervous transmissions, and perhaps in the cure of many diseases, even those of an infectious nature. The separation of the so-called specialities would quickly create an isolation, which would ere long be harmful to their progress, and unfavorable to the genesis of new ideas in them all. "In a few moments this congress will have concluded its task. Whatever may be the opinion or feelings you carry away of France and of us, whether for political or national reasons you judge us with generosity and cordiality, or rather with strict equity, be certain that, faithful to our historical traditions, we keep a lasting souvenir of your visit. We shall never forget that in spite of the difficult times in which we live, with war and massacres in China, and war in South Africa, that more than 6,000 of you have come and brought your work, which will be the honor of the congress. If in the future circumstances lead us in our turn to visit you, we shall be happy to renew again old friendships, and we shall go as one goes to visit those who are bound and united to us by a common bond. This bond is the love of science, for itself first, and then for its higher and nobler application to the common weal—I mean the material and moral amelioration of the lot of the people, to whom we wish to devote ourselves without reserve. Gentlemen, I only bid you *adieu*, the better to say to you *au revoir*."

CLOSE OF THE CONGRESS.

When the applause had ceased, PROF. JULIAN CALLEJA, the president of the next congress, rose amid great cheering. In the sonorous Spanish tongue and with the deepest emotion, he thanked the president and the members of the committee for the honor conferred on him, saying also how greatly he had been touched by the compliment of the playing of the Spanish National Anthem when Madrid was announced as the next place of meeting. He assured everybody a hearty welcome.

M. CORTÉJAVENA, the National Director of Health, and member of the Royal Academy of Medicine in Madrid, reading in French, then briefly thanked France, the president and organizers of the congress, in the name of the foreign nations, and congratulated them on the great success they had achieved.

THE PRESIDENT then declared the meeting closed, and everybody went away with regret to the strains of the military band.

GREAT FÊTE GIVEN BY THE PRESIDENT OF THE FRENCH REPUBLIC AT THE PALACE OF THE ELYSÉE.

On Friday afternoon, August 10th, at 4.30 P. M., the President of the Republic and Madame Loubet received the members of the International Medical Congress in the salons and gardens of the Elysée. Invitations were also issued to members of the Congress of Hygiene and Demography, to members of the International Congress of the Medical Press, and of the Congress of Medical Ethics and Deontology. The members of the Congress of Students were also invited, and it is estimated that ten thousand invitations had been sent out. Before 4 P. M. the guests began to arrive, and soon a long single file

of carriages and cabs lined the Faubourg St. Honoré. As progress was slow by this means, many got out and walked to the gate of the Elysée, where they found the street filled with guests awaiting admission. Batches of about fifty were allowed in at a time, and after passing through one of the two cloak rooms, they entered the salons of the palace, where, after being greeted by the President, they passed out into the large garden. The guests, however, arrived more quickly than early arrivals could gain admittance, and soon the street was filled with guests on foot. This was the state of affairs when, just before five o'clock, the Shah of Persia arrived with his suite and the escort of cuirassiers which always accompanies him since the attempt on His Majesty's life. The guests before the palace gateway had to make room, and there was much crushing and expression of feeling, mingled with the screams of the ladies. Some of the horses were frightened, and for a few minutes the position of affairs was distinctly dangerous. The afternoon was fine on the whole, though two little showers caused some temporary anxiety, without, however, having the effect of driving the guests indoors.

The stage was set up under the stately trees at the far end of the lawn, which, being concave in shape, allowed the guests to get a splendid view of the stage. The arrangements were in exquisite taste, and the stage, flanked with porticos of green trelliswork, bearing large ornamental vases filled with flowering plants, had a most harmonious and pleasing effect. At the foot of the stage, behind a bank of shrubs and flowers, was seated the entire orchestra from the Grand Opera House. The lawn was covered with carpet, and in the front row of the seats sat the Shah of Persia on the right hand of the President, Madame Loubet being next His Majesty, while behind the crimson and gold chair stood one of the Persian officials in his high astrakhan cap, holding an umbrella; his only duty during the afternoon was to hand his master a glass of iced orangeade.

The performance had been arranged by M. Gailard, the director of the National Academy of Music. The programme, which was illustrated by Jules Chevet, consisted of four acts, representing barbarian, Greek, French and modern dances, executed by members of the *corps de ballet* from the Grand Opera. Before each act one of the actors or actresses of the Comédie Française, dressed in appropriate costume, recited verses describing the dance that was to follow. M. Leitner described the barbaric dance; Madame Bartet in Greek costume followed, the scene represented being Athens, with the Acropolis and the blue Mediterranean in the distance. This was certainly the most beautiful and effective act. M. Bouchier, with powdered wig and in the dress of a "*petit marquis*," introduced the minuet and French dances of the seventeenth and eighteenth centuries. The last scene represented the views in the Champ de Mars portion of the exhibition looking from the Eiffel Tower to the Château d'Eau. Madame Brandes recited the verses introducing modern ballet dancing, which terminated the performance. Everybody, including the Shah, who often led the applause, was delighted with the performance, which was beautifully conceived and carried out.

The Shah, with the President and Madame Loubet,

walked slowly back to the palace, and it was 6.30 p. m. before the band in the courtyard, playing the Persian National Anthem, announced the departure of His Majesty. The numerous guests, however, lingered much longer in the beautiful gardens, or wandered through the salons, admiring the carved wood and gilded panelling, the fine bronzes, and the priceless tapestries. A picturesque note in the crowd was provided by the variety of the costumes of the guests: at night evening dress is obligatory, but during the afternoon some were in evening dress, many in frock coats, others in the military uniforms of different nations, with numerous orders and decorations. The members of the Students' Congress wore every variety of national dress, Hungarians in velvet coats, etc., and each nation seemed to have a different head-gear, including the mortar board, velvet students' caps with colored ribbons of different faculties, the Turkish fez and the peaked cap of the Scandinavian, with white linen crown, being among them. The Cambodian princes wore white pith helmets, coats of cloth of gold, and black silk stockings. In fact, every nation on earth seemed to be represented except the Chinese.

RECEPTION BY THE MUNICIPAL COUNCIL AT THE HÔTEL DE VILLE.

On Saturday afternoon, August 11th, the members of the International Medical Congress were received in the Hôtel de Ville by the Municipal Council of the City of Paris. The salon on the first floor had been reserved for the members of the congress and their wives. Two orchestras played and numerous buffets were provided. M. Gribaudo, the President of the City Council, received the guests, who had a delightful afternoon looking at the numerous pictures by modern French artists and listening to the music.

STATE BANQUET AT THE ELYSÉE.

The President of the Republic invited the presidents of the sections and the foreign official delegates to the International Congress to a state banquet at the Elysée on Wednesday, August 8th. The President and Madame Loubet received the guests, who numbered 250. The dinner was served in the large dining room, hung with beautiful Gobelin tapestry, the table being beautifully decorated with flowers. There were no speeches, and the band of the 29th Regiment of the Line performed a selection of music during the evening. The dinner was followed by a reception.

Recent Literature.

Embryology of Invertebrates. Textbook of the Embryology of Invertebrates. By DR. E. KORSCHULT and DR. K. HEIDER. Translated from the German by MATILDA BERNARD. Revised and edited by MARTIN F. WOODWARD. Vol. II, pp. ix, 375; Vol. III, pp. xii, 441. New York: McMillan & Co. 1899.

These two volumes bring measurably near completion the English edition of Korschelt and Heider's "Embryology of Invertebrates." It is a publication deserving the most cordial recognition from the scientific world on account of its great merit. The origi-

nal German edition was in all respects a manual of the first importance and value, not only because it is the only comprehensive summary of the immense discoveries of recent years in the domain of invertebrate development, but also because the summary has been made after thorough and laborious study both of the literature and of the actual material. It is almost a revelation to see the enormous extent of embryological knowledge, but the authors have kept their subject matter under control with master hands, and have displayed most sound judgment in estimating investigations and in the formulation of the general results, the presentation of which is one of the most valuable and original features of the work.

The English edition was begun by Professors Mark and Woodworth, of Harvard, who prepared Vol. I. The present volumes fully equal their predecessor in the accuracy and smoothness of the English rendering, and Miss Bernard is to be complimented upon her share of the work. Mr. Woodward, as editor, has added greatly to the value of the manual by his notes, which are always distinctively indicated and which direct attention to important discoveries made since the issue of the German edition. He has also made extensive additions to the bibliographies, which are thus rendered more helpful.

That there should be mistakes in a book of this kind is inevitable, but such errors may be well passed by in a brief notice, in order to better emphasize the fact that we have to do with a treatise planned and carried out according to very high scientific standards. Two general defects may however be noticed, first, the disgraceful printing of the illustrations in the English edition, second, the vexatious crudity of the bibliographical references—we have hunted in vain for a single one properly completed. May we not hope that in the concluding volume these inexcusable blemishes may be corrected? Surely it is time for English publishers to rise above their very low standard of book illustration, for as regards scientific books, at least, it is the lowest in the world, and surely, too, it is time for English scientific men to learn the rudiments of bibliography, of which most of them are ignorant.

Martin and Rockwell's Chemistry and Physics. A Pocket Textbook of Chemistry and Physics. By WALTER MARTIN, M.D., and WILLIAM H. ROCKWELL, JR., A.B., M.D., of the College of Physicians and Surgeons, New York. 12mo. Pp. 366, with 137 illustrations. Philadelphia and New York: Lea Brothers & Co. 1900.

This work is divided into two parts. The first part, comprising 182 pages, takes up the subject of chemistry, both inorganic and organic. The second part is devoted to the subject of physics, and occupies 177 pages of the text. It is needless to state that in a volume of this size two important subjects have been very briefly and incompletely considered. The book is intended for the use of medical students and graduates of medicine, but, to quote from the preface, "The general plan of the book is, one may say, purely 'chemical and physical,' as may be instanced by the introduction of 'wireless telegraphy' in the section on physics." It is evident, therefore, that the work would best meet the needs of those preparing for a medical course rather than of those already engaged in medical studies or of graduates of medicine.

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THE OPENING OF THE MEDICAL SCHOOLS.

EACH new year in all of our institutions of learning shows certain marked improvements over the methods of instruction heretofore practised, and certainly this is nowhere more true than in medical education. The last few years have seen a growth in the conception of the true meaning of medical teaching which is quite out of proportion to anything that has gone before. The realization has gradually impressed itself upon the profession that teaching in medicine, as in other fields of knowledge, is not only a means to an end, but an end in itself; that a man may well devote his most serious attention to the art of teaching, quite regardless of the secondary benefits likely to accrue to himself from association with men who are soon to be his fellow practitioners. The eagerness of young men, fresh from their own studies, to teach, and the opportunities which are now being given to such promising men, is one of the most hopeful signs of the times as regards the general elevation of the standard of medical instruction. It is a foregone conclusion that many of these young men will never rise beyond the most subordinate positions, but in the meantime a healthy rivalry is being established between various departments and within the same department, and those few men who show a special aptitude for teaching are sure to emerge from the throng, well equipped for higher positions of greater responsibility. This increase in the number of subordinate teachers is fostered and in fact rendered absolutely necessary by the tendency now everywhere observable to minimize didactic and increase personal teaching. Small sections demand many teachers. A glance at the recently issued Harvard Medical School Catalogue shows upwards of sixty assistants in the various departments for the ensuing year. Many of these men are very recent graduates in medicine, whose reputations are still to be made, and who, no doubt, will put a degree of enthusiasm into their work which will react most favorably upon the student body.

Another tendency which we think is observable is a general effort to bring into closer relationship the so-called scientific and practical sides of medicine. The first step toward the newer education was the recognition of the essentially independent character of the fundamental branches of medical science, and the establishment of appropriate professorships, entailing adequate salaries in those departments, thereby permitting and encouraging the incumbents to devote their whole time to the development of their individual branches. The result of this, as every one knows, has been most beneficent; it has dignified medicine as a science, and, if properly understood, in no way belittled it as an art. The side of medicine popularly known as "scientific" has established a definite place for itself in all our better medical schools, and has in the minds of some usurped a somewhat more important position than the needs of a practical medical education demand. However this may be, the fact remains that the scientific side, as represented by the laboratory, has come to stay. The need of the future clearly will be, so far as the individual average medical student is concerned, to adjust the theories of the laboratory to the requirements of the future practitioner. We are under the impression that this has not been adequately done in the past; that far too great a gap has existed in the student's conception between the scientific and practical physician. The teaching of the subjects which deal with the theory of medicine has been too distinct from those which deal with the immediate problem of the care of the sick; he has had no broad point of view regarding the interrelation of the branches of medical knowledge as seen in the laboratory and at the bedside. All this is an entirely natural consequence of the artificial separation which has been going on within the last few years between the science and the practice of medicine. Growth in such matters takes place for a time only through apparent divergence, and the accompanying insistence upon the significance of the separate fields of work. Hence has arisen the extraordinary spectacle of men, confessedly striving toward the same general end, arrayed against each other, as if they represented two opposite tendencies, which they have been pleased to call on the one hand "scientific" and on the other "practical." Such an anomalous and unnatural state of affairs is impossible of continuance, and has ceased to be a factor in the older seats of learning in Europe. We may see the dawning of a more rational feeling here; if we look with care through the lists of courses now being offered, for example, at the Harvard Medical School, we find a growing tendency to bring into closer union the fundamental theoretical branches of medicine and the immediate problems offered by the sick. The laboratory is now an essential adjunct to the wards of a properly equipped hospital, and the time is rapidly coming when the converse will likewise be true. It is absurd to suppose that such a union will inter-

ferre with the prosecution of original scientific research; it will, on the contrary, supply the very problems which it is in the province of the scientist to investigate.

The beginning of another year of medical study is sure to see a very decided improvement in the methods and the efficiency of teaching, and, we are equally sure, a growing appreciation of the fact that accuracy of observation, wherever applied, represents the true scientific side of medicine. We are confident that we shall see a more complete co-operation than ever before between the various departments of medical knowledge, and as a natural consequence, a more rational instruction of the medical student, for whom after all, the medical school essentially exists.

THE NEW YORK STATE HOSPITAL FOR CONSUMPTIVES.

THE trustees of the proposed State Hospital for Consumptives in New York State have selected a site at Big Clear Lake, in the Adirondaeks, for the institution. In what seems to be a very well-considered editorial the *New York Tribune* takes exception to this selection. It points out, in the first place, that the average taxpayer will be inclined to protest at the lack of business sagacity displayed, since it will cost at least \$20,000 to purchase or condemn the necessary land here, when the State already owns thousands of acres of Adirondack lands, as beautiful, as healthful and as convenient to a railroad. He will be even more astonished, the article goes on to say, to learn that the chance of saving from 25 to 40 per cent. on the cost of construction is being deliberately thrown away, almost if not entirely for sentiment. The prison commission, as recently mentioned in the *JOURNAL*, wished the trustees to select a site near Clinton Prison at Dannemora. There the State owns a large tract of land, admirably situated, with gravelly soil, sloping to the south, with picturesque views and excellent and plentiful water. The hospital could be built out of sight of the prison, far enough from it to have a separate railroad station and a name of its own, which would avoid confusion and unpleasant suggestion to the patients and their friends. At the same time it would be near enough to utilize the labor of the convicts, saving the State a large sum, and furnishing a much needed outlet for their energies, dangerously restricted by the present prison labor laws. The convicts have just been building near Dannemora a hospital calculated to cost \$26,000, which, owing to their work, cost only \$19,000. The relative superiority of this region is then pointed out. There is 15 per cent. more rainfall at Big Clear Lake than at Dannemora, and the average winter temperature is 10° lower. The air at Dannemora is dry and clear, and the experience with consumptive prisoners who are regularly sent there has been entirely satisfactory, while Big Clear Lake, though doubtless reasonably suited by climate for consumptives, is subject to mists

over the water. There may very likely be other locations equally well suited for such an institution, but the Dannemora district has been shown to be specially adapted to this specific purpose. The plans of the hospital trustees are subject to the revision and veto of the Forest Preserve Board and the State Board of Health, and it is urged that these bodies should be very cautious about giving assent to a scheme unnecessarily elaborate and expensive and one which is likely to subject the State's new charitable work to criticism, and prejudice taxpayers against the further development of the consumptive hospital system.

MEDICAL NOTES.

AN AMERICAN COLONY QUARANTINED. — It is reported that many members of the American summer colony at Murray Bay, in the Lower St. Lawrence, have been quarantined because of the appearance of scarlatina. It has been suggested that the infection came through rugs and homespun cloth, manufactured by French Canadians, and sold to the summer residents. The cases are not serious.

AVOIDANCE OF YELLOW FEVER IN SANTIAGO. — Through the strenuous efforts of Colonel Samuel M. Whiteside, commander of the Department of Santiago and Puerto Principe, no yellow fever has occurred since December. The greatest possible precautions have been taken by cleanliness and disinfection to prevent the disease, which the result has amply justified.

PLAGUE AT GLASGOW. — On September 29th 2 additional deaths from plague were reported from Glasgow. One of the victims is said to have been a child born of a woman who was suffering from the disease.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, October 3, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 144, scarlatina 25, measles 17, typhoid fever 38.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending September 29th was 190, as against 203 the corresponding week last year, showing a decrease of 13 deaths, and making the death rate for the week 17.67. Of this number 84 were males and 106 were females; 167 were white and 3 colored; 133 were born in the United States, 55 in foreign countries and 2 unknown; 41 were of American parentage, 127 of foreign parentage and 22 unknown. The deaths from consumption were 17, pneumonia 8, whooping cough 2, heart disease 14, bronchitis 5 and marasmus 10. There were 7 deaths from violent causes. The number of children who died under one year was 60, the number under five years 73. The number of persons who died over sixty years of age was 39. The deaths in public institutions were 56.

OPENING OF WILLARD HOSPITAL.—The Willard Hospital, at Bedford, Mass., for the treatment of dipsomania and narcomania, was formally opened last week. The house contains thirty rooms and is situated in extensive grounds (175 acres), with every opportunity for outdoor amusements. The question of inebriety is always an important one. Last year Mayor Quincy appointed a special committee to investigate the subject. One of the recommendations of this committee was that cities should have institutions like the Forel institution in Switzerland. To this end the Willard Hospital has been established. Dr. Edward Everett Hale is president and Dr. S. B. Elliot medical director.

THE SHARON SANITARIUM.—We are requested to inform our readers that members of the medical profession with friends are cordially invited to inspect the new buildings of the Sharon Sanitarium, on Thursday, October 11, from 11 A. M. to 1 P. M., and from 3 to 5 P. M. Trains leave the Back Bay Station for Sharon at 10.19 A. M. and 2.19 P. M.

DIPHTHERIA AT NEWTON, MASS.—It is reported that about a dozen cases of diphtheria have been reported to the Board of Health of Newton since the opening of the public schools. Most of the cases are in West Newton near the Waltham line.

DEATHS IN WORCESTER, MASS.—According to the mortality report of the Worcester, Mass., Board of Health, the number of deaths in August, 1900, was 244, as against 171 for August, 1899.

NEW YORK.

CLOSING OF STRAUSS MILK DEPOTS.—Mr. Nathan Strauss has closed for the season his twelve depots for the distribution of pasteurized and sterilized milk in the parks and on the recreation piers, and there now remain open only the three permanent depots. Since the beginning of this charitable work in 1893 the infant mortality of the city, in the reduction of which this is, no doubt, an important factor, has steadily diminished. In Manhattan and the Bronx (the former New York) during the months of June, July and August of 1892 there were 6,612 deaths in children under five years of age and the death rate was 136.1, while in the same period of 1900, notwithstanding the great increase in population, there were only 4,562 deaths in this class, and the death rate was 78.1. The nearest approach to this was in the cool summer of last year, when the death rate was 81.8.

IMPROVEMENTS IN CARNEGIE LABORATORY.—At the first meeting this season of the Executive Committee of the Council of the University of the City of New York, which was held on September 24th, it was announced that through the generosity of Mr. Carnegie, extensive improvements had been made in the Carnegie Laboratory during the summer. Under the supervision of Dr. Wm. H. Park, associate professor of bacteriology, the upper stories have been re-

fitted for elaborate bacteriological research, while all the remainder of the building is to be devoted to histology. It was in this laboratory that Drs. Dunham and McAlpin prepared their pathological exhibit for the recent meeting of the American Medical Association at Atlantic City, which proved so acceptable that such an exhibit was made a permanent feature.

FRAUDULENT USE OF SOFT COAL.—Since the rise in the price of anthracite coal incident to the strike numerous manufacturers in the city have resorted to the use of soft coal. On September 25th the president of the Board of Health ordered the sanitary superintendent to have a special inspection made for the purpose of finding out who the offenders were, and on the 28th seven persons were arrested and arraigned in the police courts. The statement was also made that warrants had been issued for nearly a hundred other violators of the law.

MEETING OF AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—The tenth annual meeting of the American Electro-Therapeutic Association was held at the New York Academy of Medicine on September 25th, 26th and 27th, with Dr. Walter H. White, of Boston, the president, in the chair. At the opening session the members of the association were welcomed to the city by the president of the Municipal Council, and responses were made by Drs. Charles Dickson, of Toronto, and Louis F. Bishop, Secretary of the Academy of Medicine.

AN EXCURSION FOR NURSES.—Mr. Elbridge T. Gerry recently took a party of seventy nurses from the New York Hospital School on an excursion up the Hudson on his steam yacht *Electra*.

PURCHASE BY STATE FOREST PRESERVE BOARD.—The State Forest Preserve Board has just purchased 16,000 additional acres in the Adirondaeks, at prices ranging from \$1.50 to \$6.50 an acre.

Obituary.

SAMUEL SMITH PURPLE, M.D.

DR. SAMUEL SMITH PURPLE, a former president of the Academy of Medicine and one of the most venerated members of the profession in New York, died at his home in that city at midnight on September 29th. He was born at Lebanon, Madison County, N. Y., on June 24, 1822, and was graduated from the Medical Department of the University of the City of New York in 1844. From 1846 to 1848 he was physician at the New York City Dispensary. During the epidemic of cholera in 1849, he did excellent service as ward physician under the Board of Health. He was an original member of the New York Academy of Medicine. From 1870 to 1875 he was a vice president of that body, and from 1876 to 1880, its president. Dr. Purple was the founder of the great library of the Academy, which was started by a gift of four thousand volumes from him. He was also one of the founders of the New York State and County Medical Associations. He was formerly a prolific writer for the medical press, and at the time of his death he owned one of the finest private libraries in New York. Dr. Purple was unmarried.

Correspondence.

SOME REASONS FOR THE HIGH DEATH RATE OF PUERTO RICO.

SAN JUAN, PUERTO RICO, September 25, 1900.

MR. EDITOR:—The high death rate of Puerto Rico is now attracting the attention of the public press. The causes for this have been engaging the thoughts of Americans since the invasion. When chief surgeon of the District of Ponce, the late General Henry at my request convened a board of survey, October 12, 1898, consisting of an engineer officer, Captain Elliot, and a medical officer, Assistant Surgeon Proben, to report upon the water supply of Ponce and its possible contamination by typhoid germs.

The prevalence of typhoid fever in the city of Ponce and the suspicious character of its water supply came under my observation on assuming charge of the office, September 30, 1898. The board was called to see what measures, if any, could be taken for prevention and improvement.

The members of the board deserve great credit for the interest they took in the subject and the thoroughness of their investigation in the limited time at their disposal.

The reservoir for the supply of Ponce was reported open to various sources of contamination, and the aqueduct was sagged at various points, admitting water from the outside. The unsavory condition of the river above the intake is best given in the words of the report: "All told there are 143 huts along the stream; of these, 20 are along the branches and 123 along the main stream. All are within 300 feet of the river; there are 49 within 50 feet; some directly within 20 feet. Where the roads cross the river habitation is always marked and here the greatest source of pollution occurs, especially within 3, 5, and 7 miles above the dam. Forty-seven such huts were counted, which were situated almost directly on the stream, and these form a very prolific source of contagious elements of pollution. These small huts are entirely devoid of sanitary arrangements; they contain on an average four to five persons each, who dispose of their excreta directly into the river. They use the water for washing their clothes, etc., and for watering their cattle. All refuse of any character is thrown directly into the stream. We have been unable to find any water closet, except one . . . that is extremely filthy. . . . Along the watershed we have been able to count forty pigs and a number of dogs. Four or five places had pigpens directly near the river edge."

This lengthy extract will serve to show the terrible contamination to which the water supply of Ponce is exposed. Yet it must be remembered that only the larger towns have any attempt at a water system. The other towns dip the water in gallons or barrels from the river in which hundreds of women are washing clothes, entrails of animals, etc., and which receives the excreta of hundreds, nay thousands, of people living along its banks, for we must not forget that Puerto Rico is about the most thickly populated country in the world, and that a privy of any kind is practically unknown in the country districts.

Since this report was made the ancylostoma has been found in a large percentage of the inhabitants, which has been stated to be the cause of the anemia to which the majority of the deaths are due in the tropics. These parasites' eggs are discharged with the excreta, find their way into the water, which is drunk by the inhabitants, so that few escape it.

The proceedings of the board were endorsed by me, recommending a system of sand filtration that had been considered some years previous as the only reliable means of purification. This suggestion, because of its cost, was not adopted, but since my departure from that city I learned that a system of filtration was built across the river. This, as was natural to suppose, was carried away by the first heavy rainfall, so that today there is no system of filtration worthy of the name in the whole island, and the water supply is drawn from rivers of which the board describes one of the purest.

Add to this that no city except San Juan, and that so im-

perfect as to be unworthy of the name, contains a system of sewerage; that in towns where any kind of water closet exists it is only partitioned off from the kitchen, or next door to it, and that, finally, poor families in towns live nearly always in single rooms, without ventilation and as crowded as sardines in a box. In towns as large as Cayey many of the houses have no kind of closet and the people have to attend to the wants of nature the best way they can.

While in Ponce I went to investigate an epidemic of smallpox in the neighboring town of Penuelas. There were 30 cases, with several deaths. Similar epidemics were prevalent all over the island. I was one of the directors of the five districts into which the island was divided for vaccination purposes. I accounted for 160,000 people in the District of Guayaman and the other directors did better in their districts. Since then, according to returns, there has not been a death from smallpox on the island.

Now if the *Alcaldes* will only spend the money of the towns for a pure sand-filtered water supply instead of for the miserable politics of Puerto Rico; if they will provide sufficient closets for their districts and some adequate system of excreta removal; if sufficient habitations will be provided for the poor, then we can expect to hear as little about high death rate as we now hear about smallpox.

Many and many a time since my arrival in Puerto Rico I have concluded that were it not naturally one of the most healthy sites on the globe, all the people would long since have been dead from some epidemic or other.

Very truly yours,
P. R. EGAN, M.D.,
Surgeon U. S. Army.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, SEPTEMBER 15, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1319	607	27.72	6.79	13.65	1.96	1.47
Chicago . . .	1,698,575	—	—	—	—	—	—	—
Philadelphia . . .	1,293,697	—	—	—	—	—	—	—
St. Louis . . .	575,238	—	—	—	—	—	—	—
Baltimore . . .	508,957	195	—	38.76	4.59	29.93	2.55	1.02
Cleveland . . .	381,768	—	85	—	—	—	—	—
Cincinnati . . .	325,902	—	—	—	—	—	—	—
Pittsburg . . .	321,616	133	—	31.50	—	9.40	9.40	1.50
Washington . . .	277,000	88	63	45.10	3.42	20.52	6.84	4.56
Milwaukee . . .	275,000	—	34	—	—	—	—	—
Providence . . .	150,000	49	—	32.64	4.08	16.32	—	2.04
Nashville . . .	87,754	—	18	—	—	—	—	—
Boston . . .	560,892	204	93	42.14	3.92	24.01	2.45	4.32
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	115,231	30	14	50.00	—	23.33	3.33	—
Fall River . . .	106,954	37	22	48.60	2.70	43.20	—	—
Cambridge . . .	95,185	26	12	50.00	—	23.10	3.85	11.55
Lowell . . .	91,611	34	20	29.40	—	14.70	2.94	—
New Bedford . . .	74,943	20	14	50.00	5.00	40.00	10.00	—
Lynn . . .	69,769	19	8	15.78	15.78	15.78	—	—
Somerville . . .	67,863	20	11	15.00	20.00	10.00	—	—
Lawrence . . .	60,937	22	10	29.05	4.15	8.30	—	8.30
Springfield . . .	60,085	15	9	59.94	—	46.66	—	—
Holyoke . . .	45,623	19	8	36.82	—	26.80	—	—
Brockton . . .	40,299	13	5	30.76	7.69	23.07	7.69	—
Haverhill . . .	38,714	11	12	9.09	9.09	—	—	—
Salem . . .	38,583	10	8	30.00	—	30.00	—	—
Malden . . .	38,321	8	4	12.50	25.00	—	—	—
Chelsea . . .	35,022	18	12	33.33	—	—	—	—
Gloucester . . .	32,285	3	12	33.33	—	—	—	—
Fitchburg . . .	31,648	12	6	50.00	—	50.00	—	—
Newton . . .	31,224	12	9	58.31	—	58.31	—	—
Everett . . .	31,167	7	3	14.28	—	—	—	—
Taunton . . .	28,891	14	9	42.84	—	35.70	—	—
Quincy . . .	25,653	8	12	25.00	12.50	12.50	—	—
Pittsfield . . .	24,226	—	—	—	—	—	—	—
Waltham . . .	23,296	6	—	16.66	16.66	16.66	—	—
North Adams . . .	22,196	3	—	33.33	—	33.33	—	—
Chicopee . . .	18,790	4	4	—	—	—	—	—
Medford . . .	17,869	12	12	50.00	50.00	50.00	—	—
Melrose . . .	15,411	7	12	28.56	—	28.56	—	—
Newburyport . . .	15,157	—	—	—	—	—	—	—

Deaths reported 2,382; under five years of age 1,111; principal infectious diseases (smallpox, measles, diphtheria and croup,

cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 800, diarrheal diseases 419, consumption 223, acute lung diseases 136, typhoid fever 67, diphtheria and croup 45, whooping cough 19, cerebrospinal meningitis 12, scarlet fever 8, measles 5, erysipelas 2.

From whooping cough New York 9, Boston and Pittsburg 3 each, Baltimore, Worcester, Springfield and Gloucester 1 each. From cerebrospinal meningitis New York 6, Boston, Worcester, Lowell and Marlboro 1 each. From scarlet fever New York and Boston 3 each, Baltimore and Lynn 1 each. From erysipelas New York and Worcester 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending September 1st, the death rate was 21.7. Deaths reported 4,824; acute diseases of the respiratory organs (London) 138, diarrheal 1,156, whooping cough 97, diphtheria 49, fever 48, measles 45, scarlet fever 24, smallpox (Liverpool) 3.

The death rates ranged from 11.9 in Halifax to 33.6 in Sheffield: Birmingham 27.9, Bradford 14.1, Cardiff 14.2, Derby 19.3, Gateshead 21.0, Hull 30.6, Leeds 21.4, Liverpool 25.4, London 20.2, Manchester 25.7, Newcastle-on-Tyne 19.1, Nottingham 19.6, Portsmouth 22.5, Sunderland 17.7, Swansea 20.3, West Ham 21.1.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 22, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup
New York . . .	3,651,594	1141	499	24.24	8.80	10.56	1.76	1.84
Chicago . . .	1,698,575	—	—	—	—	—	—	—
Philadelphia . . .	1,293,697	—	—	—	—	—	—	—
St. Louis . . .	575,238	—	—	—	—	—	—	—
Baltimore . . .	508,957	177	75	33.60	3.56	14.00	2.81	3.36
Cleveland . . .	381,768	—	—	—	—	—	—	—
Cincinnati . . .	325,902	—	—	—	—	—	—	—
Pittsburg . . .	321,616	—	—	—	—	—	—	—
Washington . . .	277,000	84	27	44.22	5.95	14.74	5.36	4.02
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	52	18	12.10	3.84	—	—	—
Nashville . . .	87,754	—	—	—	—	—	—	—
Boston . . .	560,892	227	85	35.20	51.20	14.08	1.32	5.28
Charleston . . .	65,165	—	—	—	—	—	—	—
Worcester . . .	115,231	39	26	38.40	12.80	30.72	—	2.56
Fall River . . .	106,594	33	20	64.00	2.56	51.20	5.12	—
Cambridge . . .	95,185	34	16	29.40	5.88	11.76	—	—
Lowell . . .	98,611	32	21	25.04	12.52	18.78	—	—
New Bedford . . .	74,943	33	16	36.36	3.03	30.30	3.03	—
Lynn . . .	69,769	22	11	41.50	—	12.45	—	—
Somerville . . .	67,863	15	11	33.33	—	20.00	—	—
Lawrence . . .	60,937	20	9	25.00	—	20.00	—	—
Springfield . . .	60,085	20	9	20.00	—	15.00	—	—
Holyoke . . .	45,623	23	15	52.20	8.70	8.70	—	30.45
Brookton . . .	40,299	6	1	33.33	16.66	16.66	—	—
Haverhill . . .	38,714	12	2	8.33	8.33	—	—	—
Salem . . .	38,583	11	7	45.45	—	36.36	9.09	—
Malden . . .	38,321	11	6	18.18	36.36	9.09	—	—
Chelsea . . .	35,022	11	4	—	—	—	—	—
Gloucester . . .	32,285	10	5	10.00	—	—	—	—
Fitchburg . . .	31,648	9	4	—	—	—	—	—
Newton . . .	31,224	7	4	42.84	—	28.56	—	—
Everett . . .	31,167	7	3	—	—	—	—	—
Taunton . . .	28,891	14	8	21.42	14.28	14.28	—	—
Quincy . . .	25,653	5	—	20.00	—	—	—	—
Pittsfield . . .	24,226	—	—	—	—	—	—	—
Waltham . . .	23,285	8	2	12.50	12.50	—	—	—
North Adams . . .	22,196	5	2	20.00	—	—	—	—
Chilcopee . . .	18,790	2	2	—	—	—	—	—
Medford . . .	17,869	5	1	—	—	—	—	—
Melrose . . .	15,411	—	—	—	—	—	—	—
Newburyport . . .	15,157	1	—	—	—	—	—	—

Deaths reported 2,096; under five years of age 916; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 636, diarrheal diseases 301, consumption 210, acute lung diseases 164, diphtheria and croup 55, typhoid fever 38, measles 8, whooping cough 7, cerebrospinal meningitis 7.

From measles New York 4, Boston 3, Washington 1. From whooping cough New York 5, Washington 3. From cerebrospinal meningitis New York and Baltimore 3 each, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending September 15th, the death rate was 18.2. Deaths reported 4,046; acute diseases of the respiratory organs (London) 162, diarrheal 575, whooping cough 111, fever 73, diphtheria 57, measles 40, scarlet fever 22, smallpox (Liverpool) 2.

The death rates ranged from 9.1 in Norwich to 26.8 in Sheffield: Birmingham 19.8, Bradford 11.1, Cardiff 10.7, Gateshead

18.1, Hull 19.4, Leeds 19.2, Liverpool 23.2, London 16.7, Manchester 25.4, Newcastle-on-Tyne 19.6, Nottingham 19.3, Portsmouth 20.9, Sunderland 21.6.

METEOROLOGICAL RECORD

For the week ending September 15th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r. *		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S. . . . 9	30.06	72	80	64	76	66	71	W.	S.	6	3	F.	F.	
M. . . 10	30.18	65	68	62	57	68	62	N.E.	S.	8	5	C.	O.	
T. . . 11	29.96	70	78	62	87	83	85	S.E.	N.W.	12	4	O.	O.	
W. . . 12	29.53	76	89	64	72	66	64	S.W.	W.	18	13	C.	C.	
T. . . 13	29.95	60	64	56	75	75	72	N.	S.E.	8	5	C.	C.	
F. . . 14	30.00	68	81	55	75	45	60	W.	W.	7	5	F.	F.	
S. . . 15	30.16	58	62	54	72	77	74	N.E.	S.E.	9	9	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☁ Mean for week.

METEOROLOGICAL RECORD

For the week ending September 22d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r. *		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S. . . 16	29.79	56	58	53	100	88	94	N.E.	E.	27	5	R.	O.	1.38
M. . 17	29.69	60	68	52	94	91	92	W.	W.	4	12	O.	R.	.22
T. . 18	29.84	58	67	49	100	64	82	N.W.	N.W.	15	10	R.	C.	2.18
W. . 19	30.35	60	66	44	66	66	65	N.	S.	10	9	O.	C.	
T. . 20	30.26	56	65	47	74	86	81	S.W.	S.	9	11	F.	O.	
F. . 21	30.00	66	74	59	90	90	90	S.	S.W.	12	9	O.	F.	
S. . 22	29.93	63	70	56	84	74	79	N.W.	W.	9	8	C.	C.	.46

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☁ Mean for week.

SOCIETY NOTICES.

VERMONT STATE MEDICAL SOCIETY. — The eighty-seventh annual meeting of the society will be held at Rutland, October 11 and 12, 1900.

THE TRI-STATE MEDICAL SOCIETY OF ALABAMA, GEORGIA AND TENNESSEE. — The twelfth annual meeting of this society will be held in Chattanooga, Thursday, Friday and Saturday, October 11, 12 and 13, 1900, following the meeting of the Mississippi Valley Association at Asheville.

Those desiring to read papers should send titles to the secretary, Dr. Frank Trester Smith, Chattanooga.

THE MEDICAL SOCIETY OF THE MISSOURI VALLEY. — At the annual meeting of the society at Council Bluffs, September 20th, the following officers were elected: President, Dr. V. L. Treyner, Council Bluffs; First Vice-President, Dr. B. B. Davis, Omaha; Second Vice-President, Dr. F. E. Sampson, Creston; Treasurer, Dr. T. B. Lacey, Council Bluffs; Secretary, Dr. Chas. Wood Fassett, St. Joseph.

RECENT DEATH.

JAMES HART CURRY, M.D., a well-known physician in Westchester and Putnam Counties, New York, died on September 24th. He was born in New York and was a graduate of the Medical Department of Yale University. During the Civil War he served as surgeon of the 18th Regiment, New York Volunteers. He was an ex-president of the Westchester County Medical Society and also of the Yale Medical Alumni Association. He had practised for nearly fifty years in the town of Shrub Oak and is survived by five children, one of whom is Dr. Stanton Curry, of Peekskill.

Original Articles.

THE MODIFICATION OF MILK IN MILK LABORATORIES.¹

BY T. M. ROTCH, M.D., BOSTON.

In considering the question of the different methods of milk modification each one of us must definitely formulate in his own mind what degree of modification as to exactness is needed, and how important we may deem the dangers which surround the handling of milk for any purpose and in any way according to the individual case which we are dealing with. Thus for those who hold that exact modification, small changes in the percentages of the milk, and the administration of fractional percentages of the fat, sugar and proteids, are always unnecessary, it is useless to be burdened with a discussion as to how these conditions are to be accomplished, for it is not the method of obtaining the finished product which is of interest to them, but the question of whether such production when obtained is desirable. To many of us who have been engaged in the endeavor to advance practically and scientifically the use of milk as a food, has come the opinion that the most intelligent manner of approaching the subject is to think and work in percentages. It would certainly seem that, with our knowledge of how greatly different creams and milks vary, the only satisfactory and intelligent way of dealing with the solids in milk is not by giving for certain ages so many tablespoons or teaspoons of this varied product, but to think of what percentages we wish to give, and then to give them as exactly as possible.

In a somewhat extended experience in the modification of milk both in the homes and in the laboratories, no doubt has been left in my mind that even when perfectly fresh, clean, and bacteriologically pure milk is used, there are many cases where the modification of the percentages and special combinations of these percentages are often necessary for a successful treatment, and this in no way argues that modification is all that is needed, for in many cases I have often found that modification entirely failed when applied to old milk, dirty milk, and milk bacteriologically impure.

The modification of milk for all ages, but especially in the early months of life, is extremely important, and too much attention cannot be given to it by those whose practice makes it necessary for them to deal with the difficult problem of infant feeding. This modification, however, has many different phases and possibilities, and there is no doubt that improper and inexact modifications may do great harm. In quite a number of cases a somewhat macroscopic rather than microscopic modification of the elements of the milk may be sufficient for the range of the individual digestion, and for the nutrition of the especial case, but it has been my experience with a very large number of infants, whose vitality was low and whose malnutrition was excessive, to find that the lives of these infants could only be preserved by gradual and minute changes in the percentages of the different elements of the milk and their combinations. We, therefore, in a certain number of cases cannot be too particular in assuring ourselves that we are using a milk modification which

is as precise as our knowledge up to the present time has made it possible to be.

As to which form of modification, home or laboratory, should be employed, it has always seemed to me a matter to be determined by the conditions surrounding the especial case, and in using both forms, as I am continually doing, I decide as to which I shall use by the same general rules, determining in which form in the especial case there may be the majority of the factors which are favorable for a successful modification product. If the patient cannot afford, or is too far away from the laboratory, then the same rules and precautions which are used at the laboratory should as nearly as possible be carried out in the home. The same method should be followed in each case. It is the details which usually differ, simply because it is often impossible to get what is best and most exact. The word *possible*, therefore, is a very significant one in the modification of milk. Milk for modification should be as fresh as possible, as free from dirt as possible, from a herd of as well cared for cows as possible, the Jerseys and Guernseys perhaps not being so fitted for infant feeding as those grades which correspond to the Holstein, Devon, Durham, Swiss and Bretonne. As to the especial method of getting the percentages, it is essentially mathematical, and in my experience, while there are certain individuals who have mathematical minds and like to calculate, the average busy physician has neither the ability, time nor inclination to work out the complex problem involved in a milk modification where a low proteid is needed with milkman's milk and a gravity cream. There is no reason, however, why this should not be done, provided the prescriber has a mathematical mind and knows exactly what the percentages of the milk and cream used each day in his especial families are. Even for such a physician, however, this is not an easy task, and requires constant vigilance and much care. He must thoroughly appreciate the dangers and difficulties he is encountering, for in spite of these he may think in percentages and think he is dealing in them, but in fact is working empirically. It is important, therefore, for the physician to appreciate the danger of working with uncertain materials. He must know in making his calculations that he can with certain percentages in the cream he is using only obtain a limited number of percentages of the proteids, and perhaps with the cream he is using to obtain a certain percentage of proteids it would not be possible to obtain the decided change of proteids which he might wish to give to the infant on successive days. He must therefore remember that to change his formula he must avail himself of a number of different creams in cases where, as I have so often found, frequent and even great changes are needed.

It should be clearly understood what a milk laboratory ought to mean. It should be a place where clean, fresh milk, handled by men trained to do so in the best way, is modified in any way that the physician demands. In our Boston Laboratory the physician's patient can receive on his order a mixture with the percentages called for made up of either separated cream, or gravity cream, separated milk or whole milk. The separated cream and the whole milk are taken from a rather late morning milking, and are modified in time to be delivered on the same afternoon within reasonable limits, and early the next morning (6 to 8 A. M.) in the suburbs and at greater distances.

¹ Read before the Obstetrical Society of Boston, April 16, 1900.

There are arguments for and against both the separated and the gravity creams. In my experience up to the present time I prefer to use a separated cream as being a number of hours fresher, but I am aware that a number of others prefer the gravity cream, and it is possible, so far as the percentages are concerned, for the physician, by giving a few hours' notice to the laboratories, to have used in making up his prescription a gravity cream of a specified fat percentage, and tested each day before it is used. I will presently refer to the disadvantages and difficulties arising from the use of gravity cream in home modification. In my laboratory modifications I use separated cream and whole milk. This milk, which is handled with unusual care and intelligence on the farms connected with the various laboratories, presents a remarkable freedom from large numbers of bacteria. Especial experiments have lately been made with the bacteriology of these milks at the Pepper Laboratory in Philadelphia, with the milk coming from the Chestnut Hill Farm. The experiments covered a period of three hundred and fifty-four days from September, 1898, to September, 1899. An average of 354 examinations for the year was 1,550 bacteria per cubic centimetre. In only twenty days was the average over 10,000, and the average of the remaining three hundred and thirty-four days was 1,530 bacteria per cubic centimetre, and in the autumn and winter was from 1,150 to 1,195. When we take into consideration that 10,000 bacteria per cubic centimetre is the maximum for good milk, it is clearly shown what an advance has been made in providing a pure milk supply.

The number of colonies of bacteria in the cubic centimetre of city milk commonly used often amounts to a million or more. In this connection it may be said that while the milk laboratories may be trusted to practically preserve the original purity of their milk supply during the process of its modification, yet it is especially in home modification where originally clean milk may be rendered unsafe by careless work in the kitchen or nursery. Thus the handling of good milk may make it unsafe and bad.

In regard to the question of heating milk, sterilizing and pasteurizing, with such milk as we may hope to obtain from the care which is bestowed upon it in the laboratories, there will usually be no need of prescribing any heating in our modifications, and I personally am in the habit of prescribing it unheated, excepting in very warm weather or where it has to be transported a long distance. Where, however, milk is used in our home modifications, where pathogenic organisms have already developed their toxins, sterilizing by heat does not destroy the chemical effect of these poisons. Milk which has been full of bacteria and then has been sterilized may be dangerous, because toxins of a poisonous nature may remain in it and act as poisons. This is my chief protest against the use of unknown milks and creams, and the careless handling of good milk. The physician should, therefore, whenever possible, know how good or how bad a milk he is obliged to use if he expects to judge correctly of the success of his modifying prescription. A milk, however, is not only unsafe in a bacteriological sense, for I have seen many instances where serious symptoms arose when a pure milk became dangerous from some unusual modification arising from a lack of knowledge of the modifying materials used.

In fact, unless the physician knows not only the percentage of fat in the cream which he uses each day, but also within what limits he can obtain, when using such cream, the other percentages, such as that of the proteids, he is forced to prescribe inexactly. He must also run the risk arising from not knowing whether he is dealing with an infant who may or may not be one especially susceptible to variations in the percentages and combinations of the elements of milk in its food. An improper modification of milk may be very unsafe for the patient, and in fact may lead to something worse than indigestion, namely, infantile atrophy, rhachitis or scorbutus. For instance, if we examine the food which was given in the earlier modifications of milk by simply diluting with water, we shall see why such dilutions failed to produce good results, simply because the nutritive quality of the milk was in large measure taken away from it by reducing the fat and sugar to such an extent that nutrition was impaired and rhachitis easily induced. After these simple dilutions with water came the many so-called "cream mixtures," which failed to produce the results expected from them, because the prescribers seldom knew what percentages or what combinations they were giving, having entirely overlooked the fact that there is no stable milk or cream, and that while they supposed they were using the same materials every day, they were in fact using many different materials, which combined in the same proportions every day necessarily resulted in many different foods. For this reason what might agree with the infant one day would disagree with it, unless by some peculiar good fortune, on many of the following days. My experience with these indefinite cream mixtures led me to investigate what the cause of their failure was and forced upon me the conclusion that it was to a great degree the lack of determining for the special infant the percentages and combinations which that infant needed, and my conclusion was that every infant must have its food adapted to its especial digestion and power of absorption, with resulting nutriment. This again led me to endeavor to perfect a means by which we could vary the percentages and combinations of the elements of milk to the greatest degree. Here I would state, as my experience may be of some possible value to other investigators on this subject, that in dealing with the proteids of cow's milk, I have found that where the proteid digestion is weak, and in those cases where we ordinarily would have supposed that it would be well to predigest the proteids, I had greater success in adapting the proteids to the especial infant by starting with a very low percentage and gradually increasing the percentage up to a point which would be of the proper nutritive value to that especial digestion than by attempting to predigest a high proteid.

By studying the following tables it will of course be seen that if a modification is indifferently done with reference to the quantity of the cream or milk employed, there will be serious differences in the percentages of all the constituents in the mixture, but if the same quantity of such a cream is employed without reference to its percentage of fat, there may be produced a radical difference in the food. It is therefore necessary not alone that the original formula shall affirm the exact cream to be used, but also that all changes be made by an experienced hand. Most persons, and among these qualified chemists, may easily

forget the great difference in the results of a mixture, even when its ingredients do not differ very markedly. It is not strange, therefore, that the modifier should not know that the extra teaspoonful of cream or milk added to a formula mixture may change its whole character as to percentages, and of course as to its feeding value. Thus suppose that we have had made a mixture of 20 ounces, with the percentages and changes as shown by the following:

Twenty-ounce mixture.— (1) Fat 3%, sugar 6%, proteids 1%. Adding 5 tablespoonfuls of milk, becomes (2) fat 3.50%, sugar 6.50%, proteids 1.50%.

Here it is seen what changes 5 tablespoonfuls of milk may produce when added to a 20-ounce mixture of a formula representing fat 3%, sugar 6%, and proteids 1%; namely, that the proteids have been raised from 1% to 1.50%; the fat to 3.50% and the sugar to 6.50%. Also to substitute in modification a heavy cream for a light one, the difference not being discernible to the eye but only to the fat tester, may change in a 20-ounce mixture a prescription for 4% fat to 10% fat. For instance, if a formula is made up for the employment of 10% cream (top milk), and 20 ounces is prescribed for the percentages of fat 4%, sugar 7%, proteids 1.50%; and in another day's mixture be put the same number of ounces of a similarly appearing cream, but containing 24% of fat, the change will be made from 4% fat in the mixture to 10% fat in the same mixture. In like manner when cane sugar is added, as is so often carelessly done to formula mixtures, the percentage of sugar may be doubled, and in some cases has been known to have been raised to even 30 in a home-made mixture. In short, great accuracy is needed in employing the ingredients so as to produce the proper constituents, and we can formulate our ideas on this subject by saying that slight changes make great errors. Although in a large proportion of cases the inaccuracy of milk modification results from the physician's lack of appreciation of exactly what material he is using, yet in many cases these inaccuracies are vastly increased by an insufficient oversight on his part when he orders the food to be mixed at home.

The dangers and difficulties of modifying milk both at home and at the laboratory although of the same nature are much greater at home. Constant vigilance, much time, and honest, exact work are equally necessary in both. It is merely a question, in which case all the factors of the problem can best be solved and all the dangers avoided, or rather the greatest number of the factors and dangers. I will now state a few of the dangers and difficulties which arise in prescribing specified and exact percentages and combinations at the home. Suppose that the percentage of fat in the milk used is 5 (in this case the milk is supposed to be from a Jersey cow), and that in the mixture made from this material we make our calculations in such a way as to obtain a 2% fat, the resulting proteids will be 1.60%. On the other hand, if we use the milk from a Holstein cow, the milk of which contains only 3% of fat, and if the same proportion of materials is used as in the first case, the resulting proteids will be 2.66%; hence, unless an ascertained and accurately defined milk is used, the proteids may vary, even when the same quantities of materials are used, from 2.66% to 1.60%, the variations depending upon whether the milk contains a 5%

or a 3% fat. These results are shown in the following table:

Milk containing fat.	Fat prescribed.	Resulting proteids.
5%	2%	1.60%
3%	2%	2.66%

As still further illustrating what different results regarding the percentage of the proteids may arise from using the various creams, I have had calculated and arranged the following table:

Cream to work with.	Fat in mixture.	Lowest possible proteid.
10%	2%	.75%
10%	3%	1.13%
10%	4%	1.50%
24%	2%	.31%
24%	3%	.47%
24%	4%	.63%

Here it is shown that unless the cream used is of known definite percentage, the mixture may show proteids varying from .31% to 1.50% as the lowest possible, even where the right quantity of cream is employed.

There are certain difficulties which arise in using creams in which the percentage is known, such as one which can be obtained with the greatest exactness by the separator, and also by setting a milk with a certain known percentage of fat for six or eight hours. I give a 10% cream as an example, because where milk is set for cream over a more prolonged period in order to get a heavier cream, it is manifestly not so fit for use as when it is fresher. It is impossible in using a 10% cream to obtain certain percentages of the proteids. The variation of limitations of the percentages of the proteids with a 10% cream are as follows:

With a 2% fat we obtain	.75% as the lowest possible proteids.
3%	1.13%
4%	1.50%
4.5%	1.82%

Therefore, as is often the case, where we wish to use a 3% or 4% fat, and yet a fractional percentage of the proteids, or, at least, as low as 1%, it will not be possible to make this modification with a 10% cream. Even if the cream is 12% the following variations will emphasize the same principle. Thus

With a 2% fat the lowest proteid is	.63%
3%	.94%
4%	1.25%
4.5%	1.41%

It is thus seen that if a low percentage of proteids is needed, a higher percentage cream is necessary than can usually be obtained by setting milk for six or eight hours. Still greater difficulties arise when we are dealing with a gravity cream in our home modification, for gravity cream depends as to its percentage very widely on the quality of the milk used, as well as the number of hours of setting and the other conditions, such as temperature and handling. Suppose we wish to prescribe a milk modification demanding 3% fat, 6% sugar, and 2% proteids, and that we used a cream with a supposed 10% of fat. If this cream should vary so that its fat was 8%, we should have a mixture with only 2.4% of fat instead of 3%. On the other hand, supposing the per cent. of fat in the cream was 12 instead of 10, using the same formula we should obtain a mixture with 3.6% fat in place of 3%. If, however, the physician had tested the fat in the cream, and found it contained but 8% instead of 10% fat, and had used a sufficiently larger quantity of this cream to produce 3% of fat in the mixture, he would find the proteids had been increased to 2.50% instead of 2%. On the other hand, if the

cream, after having been tested, had been found to contain 12% of fat, and the physician had put in a less quantity to get a 3% fat in the mixture, he would have proteids 1.66% instead of the 2% desired.

This at once brings up the question of the variations which take place in gravity creams not only from the milk of one herd but of many herds, for it will, of course, be necessary for the physician who is modifying at home to see whether his patients are all being fed from the same herd, or if from different herds what the percentage of fat is in the milks of the different herds, and what the percentage of cream from the same herd is on different days. I have just had some experiments made where the milk was bought at different places, and therefore probably came from different herds. After setting under the same conditions for eight hours at about 38° F. the top quarter was carefully poured off, giving the following results :

A gave a cream with a percentage of	6.2
B " " " "	7
C " " " "	10
D " " " "	11

E on two successive days gave a cream with a percentage of 12. It is thus seen that the milks of different herds vary decidedly in the creams which they produce under the same conditions.

I have also had some experiments made with the milk from the same milk company on a number of successive days under the same conditions :

A on the first day gave a cream with a percentage of	6.2
" " second " " "	8
" " third " " "	7.50
B " first " " "	7
" " second " " "	7
" " third " " "	7
C " first " " "	10
" " second " " "	9
" " third " " "	11
D " first " " "	11
" " second " " "	13
" " third " " "	12
E " first " " "	12
" " second " " "	12
" " third " " "	12

In all these experiments the temperature of the milk was kept at 36° to 38° F., and the time of the setting was eight hours.

A few facts in regard to milk taken from herds under different conditions will be of interest in this connection.

In cases where milk can be obtained at once upon milking, the per cent. of fat in the top quarter of milk which has been setting for eight hours will vary according to the per cent. of fat in the milk, as the following experiment will prove. One quart of milk from one cow testing 3.30% fat after setting eight hours at about 36° showed that the upper quarter contained 8% fat. One quart of milk from another cow testing 5.4% fat after setting eight hours at about 36° showed in the upper quarter 14.2% fat, making a difference in the per cent. of fat in the two upper quarters of something over 6%. Cows which give these extremes are not unusual in a mixed herd, in fact in almost any large, well-mixed herd it is likely that this difference could be found. In the same way the mixed milk of different herds varies between very nearly the same limits, as is shown by the records of the Experiment Station at Durham, N. H., which shows that in about 100 herds in the country around Durham the per cent. of fat in the mixed milk varied from 3 to 6, which would make a variation of the per cent. of fat in the top quarter of milk from the

various herds after it had set eight hours at about 36° F. of about 6%.

The following table shows the variation in the per cent. fat of the milk of six miscellaneous herds in the country around Durham, N. H., containing from 8 to 20 cows in each herd, and the college herd, containing about 30 cows. These were not picked herds, but taken indiscriminately. All were well cared for and there were few or no changes of cows in each herd.

TAKEN FROM THE RECORDS FOR THE YEAR 1899 OF NEW HAMPSHIRE AGRICULTURAL COLLEGE, DURHAM, N. H., TESTS MADE EVERY TWO WEEKS FOR NINE MONTHS OF THE MIXED MILK OF EACH HERD. PERCENTAGES OF FAT :

Herds.	July.	August.	September.	October.	November.	December.	January.	February.	March.
L. Thompson.	4.4	4.3	4.3	4.2	3.8	4.2	3.8	4	4.5
Deacon Meserve.	4.4	4.2	4	3.8	4	4	4	4.6	4.4
	4.8	4.2	4.4	4	4.6	4.4	4	4.7	4.9
	4.8	4.6	3.8	4.6	5	4.3	4.4	4.6	4.5
Chesley Bros.	4.2	3.8	3.2	4	4.2	4.3	4.2	3.8	4.2
	4.2	4	4	4.3	4.3	4	3.8	4.2	4.2
G. Demerritt.	4.4	4.4	4.2	5.2	5.6	4.5	4.2	4.7	5.2
	4.2	4.2	4.8	5.2	5.6	4.8	5.2	5	4.6
A. M. Dalton.	4	4	4	4.4	4	4.8	4.4	3.8	4.6
	4	4.2	4.2	5	5.2	4.8	4.7	4.4	4.2
H. H. Dame.	3.8	3.4	3.2	3.3	3.7	4	3.4	3.8	3.9
	3	3.2	3.2	3.8	3.2	3.3	3.8	3.6	3.8
College Herd.	4.4	3.7	4.6	4.5	5	5.5	5.8	5.1	4.6
	4.6	4.3	4.6	5	5.5	5	6	5.1	4.7

In all the herds the lowest fat test was 3% ; the highest fat test was 6% ; the variation was 3%. In one herd during the nine months (college herd of 30 cows) the lowest fat was 3.7%, the highest fat was 6%, the variation was 2.3%.

The variation in the herds is apt to be considerable, as the owner very often has a preference for one or another kind of stock, and often has a larger portion of that particular kind in his herd. This makes it evident that while in one herd, or even in several herds, very nearly the same result might be obtained, it is necessary, in order to be sure of getting even approximate results as to percentages, to make careful tests of the quality of the milk in each herd from which the milk is supplied. In testing the milk, if the sample obtained is not obtained from a careful mixing of the whole of the milk of the herd, it is likely to be misleading, containing too little or too much per cent. of fat, according as it may have been produced by the richer or the poorer cows of the herd. The same mixing of the whole herd milk is also necessary before the delivery of the milk to the consumer. Besides the variation in different herds, and from not being thoroughly mixed, it is well known that the per cent. of fat from the same herd will vary in the course of a year often as much as 2%, as will be seen from the above records from the New Hampshire Agricultural College. This is due to the different conditions of the cows and of the feeding during the year, and to the fact that the fresh cows which are giving the large quantities of milk will at times happen to be cows giving a low per cent. of fat, while at other times the large milkers will be cows which give a high per cent. of fat, so that the per cent. of fat of any herd which is not cared for with special attention to producing a certain per cent. of fat in the milk is constantly varying. If it is necessary for the physician to use different herds in prescribing for different children, in order to give the same percentages it would be neces-

sary to use a *different formula* for each herd, or if he should use the same herd in order to get the same percentages, it would be necessary to use a *different formula at different periods*. These are under the most favorable conditions and where the milk can be obtained at once after milking. If the milk is set after it is delivered by the milkman, the same rule for obtaining 10% cream will not apply, as the cream will have partly risen when the milk is delivered, and if it has set for eight hours after that, a twenty or twenty-four-hour cream may be the result. It is objectionable to set a milk for eight hours if it may be twenty-four hours or more old when it is received. It is well known that where the milk is obtained from large herds it is difficult to mix all the milk each day, and for this reason a variation will appear in the percentages of fat in the milk of one herd.

Therefore, there is no one formula which, by using ordinary gravity cream, can enable the physician to prescribe all the modifications which are necessary when certain variations in such percentages are needed.

It is important in prescribing to have the assurance that the patient receives what is prescribed. It has happened that innumerable instances have come under my observation where physicians have prescribed what was best, and yet where there was no doubt that a very different combination of percentages was actually given to the patient. In this way not only unlooked-for results would be obtained, but a very serious obstacle arises as to our judging from experience whether the proper combination has been given for the especial case. If a physician has decided that an infant is to be fed on some modification of milk, and believes that from time to time changes in the percentages of the mixture will be of value, he should recognize the danger which might arise from an unsafe milk, and the difficulties in making proper calculations unless his materials are known each day. Unless this is done he cannot know, when the patient is doing well, what it is that is causing the improvement, and if doing badly he will not know the reason, and thus will not be able to make the proper changes.

The difficulties and dangers which I have enumerated are practically dealt with and obviated when we simply ask the laboratory to give us the percentages and the materials which we deem necessary for the especial case, and thus all these different phases of a correct milk modification are much simplified when our modifications are made at the laboratory, where all these questions are practically solved for us, and the technique of modification is carried out by clerks trained for this purpose.

BREAST FEEDING.¹

BY A. WORCESTER, M.D., WALTHAM, MASS.

OUR most commonplace possessions sometimes get lost. Individually and collectively we occasionally lose sight of truths and facts which were dearly bought in the hard school of human experience. And perhaps the medical profession, in its enthusiasm over new discoveries, is especially liable to forget inherited knowledge. In matters purely medical this tendency to forget is not very dangerous; the new-fangled

drugs, after all, may not be much worse than the old standbys. But in the larger responsibilities of medical practice, as, for instance, in the direction of the nursery hygiene, the physician must be very wary of fads.

There never can be any doubt that breast milk is far and away the best possible food for infants. Other foods are valuable in the degree that they resemble this ideal food, and methods of artificial feeding are valuable only in so far as they closely imitate the natural method. So trite are these self-evident truths that it would seem superfluous even to mention them. And yet in practice no other foundation principles need more emphatic reiteration. For among the many retrograde tendencies of advancing civilization, there is none more dangerous than this tendency to shirk the various obligations of motherhood; and during later years there has developed the pernicious custom of cheating helpless babies out of their birthrights, by giving them, through false nipples, ingenious imitations of their rightful food.

The causes of this physiological crime are not obscure. The social demands upon modern mothers conflict with their babies' rights. In the log cabin the mother, though slaving single handed for a large family, was not too busy to nurse her children as they came. But the modern mother, with a house full of servants to help her, has not the time to nurse her babies or to take the ordinary care of them. In olden times mothers expected to stay with their babies; nowadays too many mothers expect to be free for outside duties and pleasures, and even for occasional vacations from family cares. Is it any wonder that the gynecologist is employed to treat the subinvolved uterus, and the neurologist to ward off neurasthenia, while the pediatricist struggles with the hopeless complexity of cow's milk modifications? Indeed, is it not possible that the medical profession is somewhat to blame for the present alarming fashion of the artificial feeding of infants? In this age of specialists, when young physicians are so completely equipped with methods for relieving both mother and child of the pathological consequences of this violation of nature, I, for one, cannot help thinking that the medical profession, instead of stemming the tide, is in reality largely responsible for this wrong drifting.

It is sad indeed if the result of splendid efforts to mitigate the evil effects of the occasional necessary loss of natural nursing is the increase of the evil itself. When the young mother whom Dr. James Jackson had counselled against weaning her baby triumphantly displayed her bottle-fed prodigy, the good old physician wisely said, "Ah, yes! But your success will lead other babies to their graves."

Among the regrettable evidences of pernicious medical leadership are the prevailing ideas that modern mothers are becoming physiologically unfit to nurse their babies, and that chemists by analyzing pumped-out samples of breast milk can expose its unsuitableness as a food for infants. It is hard to be patient with such presumptuous pseudoscience! How can it be supposed that the chemical analysis of chance samples of a living fluid, which we know undergoes subtle natural changes according to the mother's varying conditions and even emotions, should warrant such a defiance of nature as is involved in substituting for it any howsoever skilfully sterilized artificial food? Of course it is easy to fatten a baby

¹ Read before the Obstetrical Society of Boston, April 16, 1900.

by giving it food richer in fat than was its natural food. But who can estimate by scales and balances the most desirable growth of the child? Or who can supply by artificial incubation the natural human warmth and comfort that a breast-fed baby receives? Doubtless it is possible to train the newly-born to an immediate independence of motherly lovingness, and we will not dispute the skill of modern nurses in making babies behave themselves; but are mothers so relieved any the more willing to bear more children? Certainly not. Nor is it strange that modern women thus defrauded of the loveliest compensations of motherhood, which would have come to them in the natural satisfying of their deepest cravings, are so anxious to escape all maternal responsibility.

Both for the mothers' sakes and the babies' sakes, physicians are in duty bound to urge the vital importance and the otherwise unattainable advantages of breast feeding. My purpose this evening is to point out how these obligations can be met by calling attention to some of the steps that must be taken.

And first let us consider the question of wet nurses; a most unpopular subject, as we all know. The underlying objections to this time-honored method of feeding infants deprived of their own mothers' breasts ought not to be stronger today than they were in days gone by when wet nursing was not so unfashionable, and indeed some of the objections now have distinctly less foundation. For instance, it is possible nowadays with scientific precision to eliminate the danger of latent infectious diseases in the wet nurse that in former times could be eliminated only partially by unscientific opinion. And surely the question of the expense of the best possible nourishment of the infrequent and occasional baby is not a more pressing question than it used to be in the days of normally sized families.

The supply of wet nurses herabouts is very limited, it is true, but that is mainly because the demand is small. Where working women, in spite of their bounteous breasts, lose their babies, and where it is known that breast milk is in more or less constant demand, it is not so very difficult to arrange their employment as wet nurses. Several shifts about may be necessary, but whatever trouble is thus occasioned is small in comparison with the benefits likely to accrue to all concerned. The main supply of wet nurses, however, is from the class of illegitimate mothers. Were there less falsely virtuous scorn for such unfortunates it would be far easier than it now is to secure good wet nurses and at the same time to save these girls from future ruin. The common prejudice against letting legitimate babies thrive on the breasts of illegitimate mothers is unworthy of civilized people. Cows are not such moral animals as to warrant their preference over human mothers, whose misfortune is generally due to a combination of their ignorance and over-developed motherliness. Of course if the alternative to wet nursing were for the poor illegitimate mother to stay in some proper home nursing her own child, then there would be no propriety in persuading her to serve as a wet nurse. But that is not the alternative for nine out of ten. Unless persuaded otherwise, these girls will sacrifice their breast milk and for a time they will strive to support their babies in some wretched baby farm, whereas if employed as wet nurses they might earn better support for them-

selves and their babies, to say nothing of the gratitude and kindly interest which better than anything else will help them to rise above their misfortunes. A larger employment of illegitimate mothers as wet nurses would thus be a great moral as well as a great physiological gain to the human race. And physicians alone have the opportunity to bring about this improvement.

Let us turn now to the physician's opportunities and duties in inducing mothers to nurse their own babies. Much to this end can be done during pregnancy in teaching women what to expect. In this way the prevailing false notions can be offset by explaining the great advantages of nursing and by exploding groundless fears. But before pregnancy and even before marriage women ought to be taught to admire this really most beautiful function of womanhood. Girls should be taught to guard their breasts and nipples from the injury false fashions of dress impose. Better far the present grotesque fashions in dress, which make young girls look like wet nurses, than the opposite extreme of straight dress fronts we used to see and probably shall see again in vogue, which doubtless in past years caused many of the cases of inverted nipples we now have to deal with. Let us be thankful that girls today do not suffer mortification because bountifully endowed. Girls should also be taught that the sebaceous film is the natural and proper protection of the nipple's tip. Pregnant women should be taught to reinforce this coating with cerates, and not to damage the tender skin with alcohol and tannin. There will then be a fairer chance of a painless and naturally easy establishment of lactation.

It is, however, just at this point, when the baby is first put to the breast, that the physician's largest chance of service comes in. His unstinted time and patience are then needed. Many a mother loses her breast milk because the baby is allowed to chew off the ends of the nipples before the breasts begin to fill. Nursing then becomes an agony instead of the pleasure it is when properly begun. From the facts that the milk does not usually come until the third day, and that about that time is needed for the baby to get rid of its meconium, it might reasonably be supposed that nature does not intend nursing to be begun much earlier. And it is as mistaken kindness to prevent the baby from the exhilaration of crying by stuffing it with food as it is to upset its digestion with cathartics the day afterwards. If the baby is put to the breast for a few minutes only, and only a few times during the second twenty-four hours of its existence, then on the third day the baby will be hungry enough to ease the aching breasts. Were mother and child alone in the woods during these days, the natural process of nursing would undoubtedly stand a good chance of favorable establishment. And in practice it is plainly our duty to follow as faithfully as we can natural methods.

After turning the mother well on one side, and placing under her body some support so that she will not lie on lower level than her baby, then it is well to leave them alone together. If the baby will not take hold, it may be well to start the milk running by gentle coaxing manipulations. This is the physician's business unless he is perfectly sure of his nurse's knowledge and ability. Breast pumps, it must be remembered, are dangerous things, and in-

terfering husbands and ignorant friends are worse. One of the greatest helps when the breasts fill to uncomfortable heaviness is the "double Y" bandage invented in the Boston Lying-In Hospital. It is right in principle and serves beautifully in practice, but great skill is needed in applying it, and so the abominable straight-jacket bandage still is too often used.

In caring for the nipples of the nursing mother great harm is often done by mistaken methods of cleansing. Nasty-tasting lotions are often applied by stupid nurses, who then wonder why the babies hate to take hold. No washes are allowable. Olive oil or lanoline should be used instead. And then for a protecting dressing tallow and beeswax or the raw white of egg should be freely employed. Cracks and excoriations will then be astonishingly infrequent, but if either torturing accident occurs immediate attention is demanded. After thoroughly disinfecting with boracic-acid lotion (5%), and anesthetizing with cocaine, the crack and raw surface should be treated with a 10% solution of silver nitrate, then dried by pressure of absorbent cotton and painted over with egg albumin. For the next few nursings a glass-bell nipple shield should be used. Thus by scrupulous care mothers can be saved from tortures that they too often suffer, and then it becomes far easier to persuade them to continue nursing their babies in accordance with the design of the Creator.

If the baby does not thrive, and some modification of its food seems desirable, before weaning and attempting with the chemist's help to improve upon nature, it is certainly incumbent upon the physician to try in every way to better the mother's milk by building up the mother. This often can be done by bettering her conditions, by not keeping her in bed so ridiculously long as too frequently is done, by getting her out into the open air, by allowing a more generous diet, by saving her from every other fatigue than the natural and milk-inspiring company of her baby. And let us never forget to fight with all our might the falsely alluring patent baby food commercial corporations, whose impudent advertisements ought rightly to be decorated with tiny coffins rather than with portraits of fat-misshapen babies.

HOME MODIFICATION OF MILK.¹

BY CHARLES W. TOWNSEND, M.D., BOSTON.

A KNOWLEDGE of the percentages of the food components is very desirable in infant feeding, enabling the physician to intelligently modify the food to the individual case. On this account milk laboratories would at first sight seem to be the ideal way of feeding infants, and their establishment has indeed constituted a great step in advance, but however useful this method may be in some cases, it is more or less limited in its usefulness. Thus the expense and the fact that the laboratories are confined to a few large cities necessarily limit their sphere. Even where these limitations do not exist, however, it is still preferable to use in some cases food for the infant prepared at home, for it is certainly a fact that laboratory modified milk will not agree with all, even with skilled adaptation of the formula, and it is not an uncommon experience for infants to thrive vigorously on a home modification ar-

ranged to duplicate the formula it was previously taking from a laboratory on which it had not thrived. Just what the proportion of babies is who do not thrive on laboratory modifications I cannot say, but it does not seem to me as large as stated by Starr² in a recent article. The reason that laboratory modified milk does not agree in some cases I have always believed to be due to the fact that this milk is in the majority of cases first divided into two parts by the centrifugal process, one containing practically all the fat, the other part nearly free from it. These two portions are then recombined together with water, sugar of milk and lime water in proportions to meet the formula required, and the mixture is churned up in transport.³ The breaking up of the natural emulsion by this process, although not to be detected at first even by the microscope, is shown by the large oil globule generally found floating on the top of the bottles when delivered at the house of the infant.

In milk modified at home the cream should be obtained by natural separation by standing — the gravity process — and the mixture is not churned up by carting about, and no oil globule is to be found on top, even where the milk is pasteurized. I have been unable to produce the globule in this milk, even by churning it up by transportation.

Another objection to laboratory milk, which may prove serious unless the greatest care is used, is the danger of contamination from the more extended handling and transportation to which the milk is necessarily subjected. On this account pasteurization at 157° to 167° F., or sterilization at 212° F., is more frequently needed, especially in hot weather, and when the distance of transportation is great, or the express service requires long waits, or a double amount is to be sent on Saturdays to last till Monday.

If the milk is fresh from cows proved free from tuberculosis, and in the absence of danger of contamination by typhoid or other infectious diseases, it is, I believe, much better not to either sterilize or pasteurize it. Besides the danger of scurvy, which is slight, there is great danger of loss of appetite, interference with digestion and consequent lack of gain in weight in infants fed for a long time on milk heated to 212°. Such infants are apt to be very pale and sometimes show slight tenderness on handling, both early symptoms of scurvy. On the other hand, some infants will thrive for months on carefully sterilized food, showing how difficult it is to lay down one rule for all infants. Pasteurization at 157° is far less objectionable, but a change from even pasteurized to fresh milk often shows the great advantage of the latter.

I have described in a former article, published over a year ago,⁴ a simple method of home modification of milk by which it is possible to easily calculate the percentage of fat, sugar and albuminoids in the food. This method has continued to prove very satisfactory and has the great advantage of simplicity, which I believe is essential if it is to be commonly used by physicians. The complicated methods so often recommended demand too much mathematics for most men. My experience also leads me to believe that the nurse or mother prepares the food at home with such con-

² Archives of Pediatrics, January, 1900, p. 1.

³ Remarks on Infant Feeding, with Special Reference to the Home Modification of Milk, by Charles W. Townsend, M.D., in Boston Medical and Surgical Journal, March 23, 1899.

⁴ Loc. cit.

¹ Read before the Obstetrical Society of Boston, April 16, 1900.

scientific care that the product is uniform and fairly accurate, probably much more uniform than breast milk, and accurate enough for satisfactory results.

The analyses of top milk made for me by Dr. Charles Harrington on four successive days showed an extreme variation of only .68%, or only .27% omitting the one where the milk stood an hour longer. We also found that the top milk obtained by pouring off the upper quarter from a quart contained practically the same amount of fat as that by siphoning off the lower three-quarters, the difference being less than $\frac{1}{10}$ of 1%. The simpler method of pouring off the upper quarter is therefore to be preferred. This top milk contains about 10% of fat if it is poured off after the milk has stood six to eight hours. With this 10% top milk it is evident that 1 ounce in a 20-ounce mixture would give a percentage of $\frac{1}{20}$ of 10, or $\frac{1}{2}$ of 1 of fat. In the same way the percentage of albuminoids would be $\frac{1}{20}$ of 4, or .2, and the percentage of sugar would be the same as that of albuminoids. I have found that an even tablespoonful of sugar of milk weighs $3\frac{1}{2}$ drachms, and that each tablespoonful added to a 20-ounce mixture raises the percentage of sugar 2.

With this preliminary explanation, this simple rule may be formulated: *Each ounce of 10% cream in a 20-ounce mixture represents .50% of fat, .20% of albuminoids and .20% of sugar; and each even tablespoonful of sugar of milk added to this mixture raises the percentage of sugar 2.*

Thus, if we order top milk 3 ounces, water 16 ounces, lime water 1 ounce, sugar of milk 2 tablespoonfuls, we are making a formula of fat 1.50%, sugar 4.60% and albuminoids .60%. If we order 8 ounces of top milk, 11 of water, 1 of lime water (always making a total of 20 ounces), and $2\frac{1}{2}$ tablespoonfuls of sugar of milk, we are making a formula of fat 4%, sugar 6.60%, albuminoids 1.60%, or about the average composition of woman's milk. Of course this extremely simple method gives a fixed relation between the fat and albuminoids, the fat being two and a half times as much as the albuminoids, the normal relation in human milk.

In cases of difficult digestion it is almost always desirable to reduce both fats and albuminoids, so that this method is generally satisfactory in practice, and a resort to the addition of the lower milk or of richer cream is rarely necessary. In these cases where the constituents are all reduced the nutritive value of the mixture can be greatly increased without taxing the digestion by adding raw white of egg. Thus, 1 ounce of top milk, 18 ounces of water, 1 ounce of lime water and $1\frac{1}{2}$ tablespoonfuls of sugar of milk, giving the formula of fat .50%, sugar 3.20%, albuminoids .20%, can be made much more nourishing by the addition of the whites of one or two eggs, and will be retained where an increase of the milk would not be. A case from private and one from hospital practice will perhaps best illustrate this method.

A. O., six months old, weighed 5 pounds and 12 ounces at birth; now weighs 9 pounds and 12 ounces and has gained nothing for the last month. The infant had been fed on various cream and milk mixtures, generally sterilized, and patent foods, but no milk had been used with the patent food for the last six weeks, as the child seemed unable to digest any. This is, of course, a common and typical story. The infant was pale and emaciated, and was put on the following pre-

scription: Top milk 3 ounces, water 16 ounces, lime water 1 ounce, sugar of milk $2\frac{1}{2}$ tablespoonfuls.

This gives a formula of fat 1.50%, sugar 5.60%, albuminoids .60%. Six feedings were given daily of 6 ounces each at 6, 9 and 12 A. M., and 3, 6 and 10 P. M. As this needed 36 ounces, double the quantity of the above prescription was put up, or top milk 6 ounces, water 32 ounces, lime water 2 ounces, and sugar of milk 5 tablespoonfuls. The strength of this was increased every day by adding $\frac{1}{2}$ ounce more top milk and decreasing the water correspondingly. One-half ounce in the double mixture would be equal to only $\frac{1}{4}$ ounce in the 20-ounce mixture, so that it will be seen that the increase in fat daily was $\frac{1}{4}$ of .50%, or .12%, and the increase in albuminoids was $\frac{1}{4}$ of .20%, or only .05%. This change was so slight and so gradual that the infant was able to manage the food perfectly. At the end of sixteen days the strength of the food had reached: fat 3.50%, sugar 6.40%, albuminoids 1.40%. In the first week the infant lost a few ounces, in the second week gained 6 ounces, in the third week and for several weeks after she gained 12 ounces a week. At the end of a month the strength of the food reached: fat 4%, sugar 6.60%, albuminoids 1.60%, and it was kept at this point for several weeks, the amount in each feeding being gradually increased so that the infant took about 1 ounce for each month of age. A little later, as her appetite was not so good, barley water was put in three of the bottles in place of some of the water, leaving out the lime water and sugar, the prescription reading as follows: Top milk 8 ounces, water 3 ounces, barley water 8 ounces. She liked this so well, she was given barley water in all her feedings when she was eight months old, and the proportion of milk was increased to two-thirds of the upper half of the quart and one-third barley water.

An analysis kindly made for me by Dr. Harrington, of top milk consisting of the upper half, after standing eight hours, showed 7.18% fat. Therefore, a mixture of two-thirds of this upper half and one-third water gives an analysis of fat 4.80%, albuminoids 2.66%. At a year the child weighed $20\frac{1}{4}$ pounds, and was strong and vigorous, with a good color.

The following case was treated in the Out-Patient Department of the Children's Hospital during my last service:

R., two months old, said to have weighed 10 pounds at birth. He had never been breast fed, but had been plied with condensed milk, various patent infant foods, crudely modified cows' milk, fresh and pasteurized, and milk and barley water. He vomited frequently, and the movements were hard and undigested. The child lost weight steadily, weighing when first seen 6 pounds, and presenting a marked atrophied appearance. The face was wrinkled and senile, the skin was dry and hung in folds, and the extremities were mere pipe stems. The child was put on a fat 1%, sugar 4.40%, and albuminoids .40%, by ordering 2 ounces of top milk, 17 ounces of water, 1 ounce of lime water, and 2 tablespoonfuls of sugar of milk. Two ounces were given every two hours, and 10 drops of brandy four times daily. As the child was too feeble to suck well, a Breck premature feeder was used. The vomiting ceased and the stools began at once to improve. The strength of the food was cautiously increased, being guided by the character of the

stools and the general condition of the child, so that in two weeks he was taking fat 4%, sugar 6.60%, and albuminoids 1.60%. The wrinkles on the face filled out and the child appeared bright and vigorous. The gain in weight was regular and a little over 4 ounces a week. Thus, on November 13, 1899, he weighed 6 pounds; November 23d, 6 pounds, 8 ounces; December 11th, 7 pounds; January 2, 1900, 7 pounds, 8 ounces; January 18th, 8 pounds, 4 ounces; After this he ceased coming, but we heard he continued to do well. For a baby so feeble as to need the protection of an incubator, yet brought in winter to an out-patient department, this record is certainly satisfactory.

The criticism can of course be made that, unless the top milk is analyzed, it is impossible to say exactly what the per cent. is in a given case, and may have been quite different in these 2 cases. In the first case it was analyzed and found to average 11.40% of fat, being particularly good and uniform milk. In the latter case it was probably more nearly 10%. It seems fair to take 10% as the average, and it is to be noted that a difference of even 1.40% either way would make a difference of only .07% of fat with each ounce of the top milk in the 20-ounce mixture.

The variation in gravity cream obtained at home is much less than in centrifugal cream obtained from unreliable dealers. It is the physician's duty to investigate the milk supply and refer his patients to reliable dealers. The firm that advertises its ideal milk farm and then makes up deficiencies by buying indiscriminately outside is of course to be rigidly avoided, if disastrous consequences are to be escaped.

The use of cereals as diluents in the first case brings up an important question. The argument that no starch should be put in the infant's food because the mother's milk contains no starch seems at first logical and conclusive. It is to be remembered, however, that the albuminoids of cows' milk are quite different from those of woman's milk and the same argument would lead to their exclusion.

Test-tube experiments have been made over and over again to explain the frequently observed clinical fact that cows' milk modified with barley or oatmeal water will often be digested where the same formula without the cereal will give trouble. The curd formed where the cereal is used is finer and more easily broken up. On the other hand, those who deny the clinical fact say that there is no difference shown in the test-tube experiments between cereal solution and water, and they also add that barley water is little more than water.

The evidence of the advantage of barley or oatmeal water in certain cases, explain it how we may, seems so convincing that it must be considered, and outweighs any theoretical conclusions. This opinion is a very old one, and is, it seems to me, sound in its conclusions. At the last meeting of the American Pediatric Society, in 1899, in the discussion of a paper by Dr. H. D. Chapin on this subject, there was but one dissenting voice to the opinion that barley water and oatmeal water were sometimes of advantage, and it has certainly been my experience. I have fed infants most carefully and systematically on laboratory modified milk and on home modified milk, who have failed to thrive until cereals were added. Why this should be so in some cases and not in all it is hard to say, but it goes to show that babies

are not mathematical machines and that they cannot always be treated as such. Clinical experience as well as theory are both useful. I believe that most infants do better by the addition of barley or oatmeal water as a modifier when they reach the age of six to eight months, but that although the majority do not need the cereal before this age, there are some cases that do better with it.

The conclusions may be summed up as follows:

(1) The modification of cows' milk, with a knowledge of the percentages, is preferable to guesswork feeding of infants.

(2) Percentage feeding can be carried out by a milk laboratory or by home modifications.

(3) Milk laboratories are unavailable to many by reason of their absence or an account of the expense.

(4) Laboratory modifications do not, in the experience of the writer, agree with infants as often as home modifications.

(5) Laboratory modifications are necessarily subjected to more handling and transportations than home modifications.

(6) Milk that is fresh, clean, and from cows free from tuberculosis is preferable uncooked, or, in other words, pasteurization and sterilization, although sometimes essential, are to be avoided if possible.

(7) The method of home modification and of calculating percentages should and can be made extremely simple, and such modifications are sufficiently accurate and uniform.

(8) The addition of cereals to the milk in the form of barley or oatmeal water is generally advisable after the seventh month, and is desirable before that age in some cases as an aid to the digestibility of the milk.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

III. LESION OF CHIASM; TEMPORAL HEMIOPIA, OPTIC ATROPHY; PROBABLE PITUITARY TUMOR, WITH GIGANTISM AND DEFECTIVE DEVELOPMENT (PRELIMINARY REPORT).

BY S. A. LORD, M.D., BOSTON,
Assistant Physician, Department for Diseases of the Nervous System,
Massachusetts General Hospital.

PATRICK M., age thirty-two, laborer, came to the clinic on December 20, 1899, during the service of Dr. Putnam, referred from the Eye and Ear Infirmary with the diagnosis of double optic atrophy, not consecutive. His chief complaint was of blindness in the left eye.

Family history.—Great stature, amounting to gigantism in the medical sense, is the rule in the family. The parents were nearly related, and though themselves rugged, all the children were pale and "ailing" in one way or another. An aunt died in an asylum. A sister was melancholy for a year. A brother was likewise "nervous and melancholy" for a year, and had fits of crying. All the brothers and sisters were subject to headache. Otherwise the family history is good. The wife is well and has had six children, of which four died almost immediately after birth (protracted labors, no reason to suspect

syphilis). Two are living and well, the youngest being two years old.

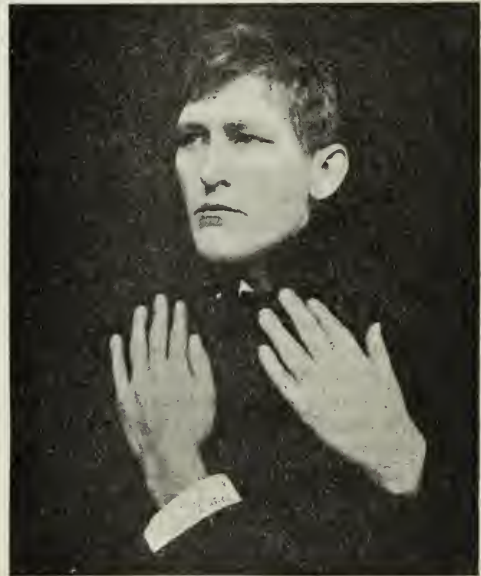
Personal history is unimportant up to a period of three years before the patient came to the hospital. Since that time he has been growing nervous, has been easily frightened, and on that account is thought "childish-like" by his wife. He has not been wholly temperate; he began to smoke at ten, and has used tobacco excessively since he was fifteen. He drank hard for several years when a young man. There is no history of venereal disease.

Closely following the onset of symptoms of emotionality just mentioned there was an attack, neuralgic in character, of severe pain in the legs and knees, lasting several days, intermittent, and unattended by swelling. Failure of sexual power and appetite then began; this has been progressive. Coincidentally appeared two additional sets of symptoms; the one digestive, including abdominal pain part of the time, but without vomiting, and the other referable to catarrh of the nasopharynx. These nasal and pharyngeal symptoms persist but do not increase.

A year later there was a return of pain in all the limbs, described as severe and shooting in character, and there was "stiffness" of the ankles and knees. There has been until this winter tenderness of the calves. (Doubtful history of slight swelling.) At this period it was difficult to open the hands in the mornings. No paresthesia. After persisting a year these symptoms grew less and have been insignificant of late.

About a year after the beginning of the illness, before the second attack of pain, left amblyopia ensued; it is not now remembered whether hemiopia was perceived. The onset of amblyopia was accompanied by tinnitus and vertigo, with sensations of blue and yellow in the field. The tinnitus was a "drumming noise," perceived only at night and only on the left side. This winter there have been signs of optic nerve irritation on the left, of added interest on account of their rarity. They are in the form of bright flashes, and have grown much "smaller" recently. Perhaps the color sensations belong in this category. Seven months before coming to the hospital there ensued dryness of the skin, sensitiveness to cold, thirst, and severe headache, the latter of sudden onset, localized chiefly behind the left eye but felt also in the left temporoparietal region. It was continuous, lasting through the night. No vomiting, nor any cerebral symptoms besides those mentioned. According to the patient the tinnitus and vertigo disappeared with the onset of headache, while the previously merely amblyopic right eye became forthwith blind (the explanation of this in view of the lack of evidence of glaucoma ophthalmoscopically, must be that of vascular lesion). It is stated further that the vision of the right eye improved gradually for a while, and eventually with suddenness and to marked degree on the subsidence of headache, which occurred after a persistence of ten weeks, when a leech was applied. At about this period strabismus was first noticed; it has not increased. Three weeks after the pain stopped there occurred brief epistaxis and the discharge successively of several lumps, partly of very firm consistency, each of considerable size, from the nasopharynx, apparently. Preceding each discharge was mild discomfort in the left side of the head, relieved promptly by the discharge. There has been occasional

slight hemoptysis without cough; this probably originated from the mouth itself. Two months before coming to the hospital the left ear began to "stick out," with no apparent cause, and has since remained much more prominent than the right. In cold weather the ear droops especially. There has been some recent tendency to sleepiness in the daytime, and there was loss of speech of a few minutes' duration, with no loss of consciousness or other cerebral symptoms. In the last year or two the patient has lost strength, has now a "weak back" and has become very pale. He has lost 30 pounds in four years, 20 in the last six months, the maximum weight having been 215 pounds. He is now nervous, easily worried and frightened, particularly at night. Apart from this undue emotional mobility and the attacks of causeless fear there has been apparently no mental failure. There have been no paresthesia, no numbness, no spasm or paralysis (excepting the strabismus), no diplopia, no bladder symptoms. The hands and feet



Normal hand shown for comparison.

have always been large and have not increased in size, nor has there been any alteration of the features, except that of the left ear, the significance of which remains wholly in doubt (possibly beginning acromegalic enlargement).

Status.—The man is just under 6 feet in height, weighing about 186 pounds, heavily framed and large featured, with marked pallor of skin and mucous membranes; his appearance is peculiar and striking. The gait and station are normal, but there is an air of uncertainty explained by his blindness. Memory excellent, mind intact. Subcutaneous fat of face and neck small in amount, normal skin wrinkles well indicated. Speech normal. Expression depressed, somewhat apathetic and unintelligent—it calls to mind suffering and blindness. The beetling brows and projecting supra-orbital ridges, the retreating forehead, the prominent malar bones, long nose, and especially the long, powerful chin, contribute to the remarkable physiognomy. No prognathism. The ears are rather poorly mod-

elled. The left is unusually prominent, projecting 4.1 centimetres, while the right projects but 2.3 centimetres; the left is 7.4 centimetres long, the right 7 (the change in position of the ear it will be remembered is recent). The hair is thin and dry. The occipital protuberance is very large and the ridge extends far around on each side. In the skiagraph it strikes one as immense (there was nothing else unusual). The teeth are normal in arrangement. Palate narrow. Tongue rather small. Lips and nose not thickened; they are well cut. The breadth of the head at the malar bone level is remarkable; rapidly narrowing above this the head assumes a marked cone shape, which is obscured in the photograph, however, by hair. Over the limbs and body panniculus well developed; the skin everywhere dry and pale, nowhere abnormally thickened. There is noticeable absence of hair—it is very scant on the face and pubes. The penis and testicles are extremely small, the scrotum only partially developed. The

hemipic pupillary reaction. The vision on the left is almost *nil*; there is slight light perception. The acuity on the right reduced in remaining half field. Temporal hemiopia, as in Diagram No. 1. No central color scotoma. Both the superficial and deep reflexes are normal, except that there is excessive general response, of neurotic character. Wrist and triceps jerks well marked.

Urine contains no albumin nor sugar; sexual power said to be entirely absent. A cover slip of the blood showed moderately decreased hemoglobin.

The diagnosis of lesion of the chiasm, from a probable tumor of the pituitary body, was made at the first visit; there seemed to be no doubt that a general disorder of nutrition—speaking broadly—had begun and both acromegaly and myxedema were considered. Nux and thyroid tablets were given, but were soon changed for iodide of potassium, in the hope that the lesion might possibly be specific. Slight improvement in general condition followed, the pallor grew

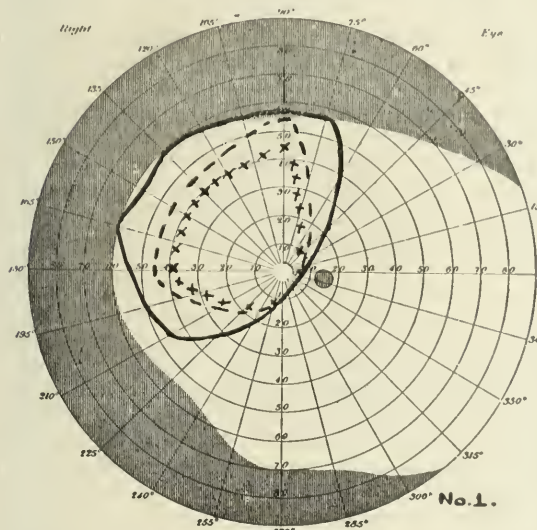


DIAGRAM NO. 1. Showing temporal hemiopia, right eye. Dividing line unusually oblique.
 ——— Field for white.
 - - - - - Field for blue.
 x x x x x Field for red.

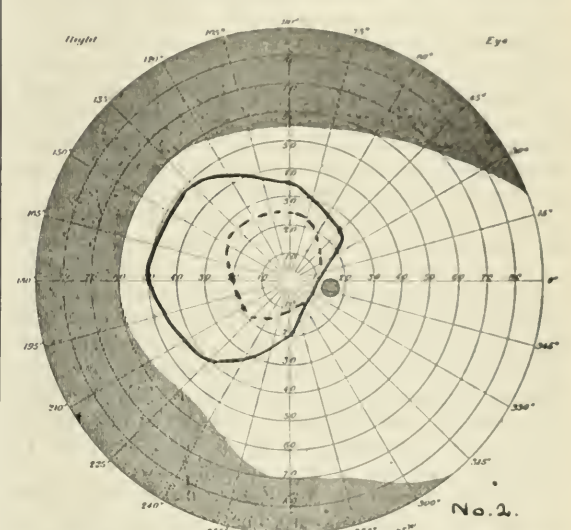


DIAGRAM NO. 2. Temporal hemiopia, right eye. Progressive concentric loss in the remaining half field, greater for colors than for white; perception for red wholly lost.
 ——— Field for white.
 - - - - - Field for blue.
 x x x x x Field for red.

hands are very large and thick, but are not "over outlined" as in acromegaly. The fingers are wide, thick and square tipped. The feet are also very large, not so much in length as in circumference; the big toes are disproportionately large, are in fact immense, extending unusually far forwards, with squared ends. No rheumatoid joint changes. Though the size of the extremities cannot be said to be beyond the limits of an individual of this stature, the type evidently is that of gigantism.

The thyroid could not be palpated. No thymus dulness. No lymphatic enlargement. The breath is foul. All movements, including those of the eyes, made normally. The grasp is of fair strength, but leg movements are weak. Sensation is everywhere perfect, including sense of position; no Romberg symptom. Pupils regular, left larger than right. Reaction to light extremely sluggish on left. On the right, the pupil reacts a little less slowly, when light is thrown on the temporal half of the retina. No reaction when light is thrown on the nasal half—

less extreme, and the patient thought the eyesight had improved. In February, 1900, he had a chill, and felt very hot afterwards. He was troubled for a while with intense general itching, which disappeared. All pain disappeared from the head. He spat a little blood. He lost flesh, and more recently gained six pounds. Had considerable nasal discharge and persisting gastric catarrhal symptoms. Frightened and crying sometimes at night.

In February a small degree of divergent strabismus was noted. Examination of the nasopharynx at this time by Dr. Coolidge was practically negative in result and did nothing to explain the previous pharyngeal symptoms. In March there was no essential change for the better. Examination of the visual fields and acuity showed distinct progression of the disease—despite the patient's statements as to improvement in sight—in the form of concentric limitation of the remaining half field of the right eye for white and color. It is to be noted that the loss of color vision was much more rapid than that for white,

perception of red being totally abolished. Diagram No. 2 shows these changes. There was no perception of light by the left eye. At the time of writing, April, 1900, there is no conspicuous alteration of condition; pupils almost equal in size; to light right reacts sluggishly, left does not react. Sense of smell present. Palms slightly moist. Temperature 99.6°. Given strychnia and thyroid. Examination of the ears brought out nothing new.

The interest of the present case lies in the occurrence of optic chiasm disease, of a type referable to a tumor in the sella turcica, in an individual born of consanguineous parents, with family history of gigantism and neuropsychopathic tendencies, this individual himself presenting evidence of gigantism and signs of degeneracy and of defective development. The individual is, moreover, the evident subject of profound vital disturbances, the manifestations of which — though here of obscure origin — resemble in suggestive manner some of those seen in acromegaly and myxedema: pains in the limbs, weakness, pallor, sensitiveness to cold, loss of sexual power and desire, somnolence, mental deterioration; the polyuria and thirst being more significant of possible pituitary (acromegalic) disorder, and the dry skin of myxedematous change. Further, there have been symptoms strongly suggestive of brain tumor, the whole picture being complicated, indeed somewhat obscured, by gastric and peculiar nasopharyngeal symptoms.

There can be no doubt of the existence of a chiasm lesion in the present case, the trouble having first involved the fasciculi of the left optic nerve and subsequently, in succession, the fasciculus cruciatus and fasciculus lateralis of the right. From the concentric limitation that is now affecting the remaining half field it would seem that the peripheral fibres in front of the chiasm are being first involved. Though there are no certain evidences of tumor, the presence of new growth is rendered very probable indeed, for the following reasons:

(1) The important conditions, other than tumor, causing these visual symptoms, namely, tabes and strictly local changes — exostosis, meningitis, primary interstitial inflammation of rheumatic (?) origin — can be eliminated, the former with reasonable certainty on account of the very great rarity of such special involvement of the chiasm in the tabetic process, and because of the presence of the knee jerk; the latter — primary circumscribed pathological process — with probability, on account also of rarity and the lack of definite history of rheumatism, and because there have been symptoms which could not be the results of a lesion so essentially local, which symptoms began in fact before the visual phenomena made their appearance at all (I mean particularly the change in character and the sexual failure).

(2) The headache — protracted and severe — the vertigo, tinnitus and momentary loss of speech, and the irritative optic nerve symptoms can be better explained as tumor symptoms than otherwise, although they have largely abated. Such abatement of pain is known to occur in the course of tumor, particularly on the appearance of focal signs, and it will be remembered that in this case strabismus appeared more or less coincidentally with the subsidence of the pain.

(3) There is at least one focal sign, slight in itself but extremely suggestive of tumor — the strabismus. The remarkable alteration of the left ear may also be

interpreted as the result of pressure in some obscure, indirect way.

What is the nature of the probable tumor? Nothing points to syphilitic growth or meningitis, or to tuberculosis; nerve and bone tumors and other recorded lesions are rare. There remains the possibility of a tumor of the hypophysis; such tumors are comparatively frequent.

Other arguments than that by exclusion favor the presence of such growth, to wit: gigantic persons are peculiarly liable to pituitary enlargement; the symptoms of progression of the growth are characteristically vague (as in this case), outside of the visual signs, and finally, certain prominent and early symptoms presented by this individual can be better explained by the supposition of glandular intoxication or disorder — of the hypophysis, for example — than in any other way.

It is true that the patient, a degenerate and partially ill-developed being with hereditary tendencies still further modified by former excesses, might well show, as has been already hinted, mental and sexual failure at an early age, and that he might become amblyopic and amaurotic through an optic atrophy secondary to a primary circumscribed process, of the kind already mentioned, at the chiasm (a well-recognized though rare type), and further that the remaining symptoms could be explained on neuropathic and catarrhal bases. The possibility of this course of things must certainly be borne in mind in attempting to understand the rather baffling history, for there is no proof of tumor.

A more attractive and equally admissible idea, as it seems to me, is that we are dealing with a disturbed chemico-physiologic equilibrium, resulting from modified function of the thyroid gland and the prehypophysis, a condition at present obscure and atypical but one which may pass on into definite acromegaly or myxedema. It would be obviously logical to think first of the hypophysis in this connection, since we suppose on other grounds that it is diseased. But it is hard to see why a lesion of this hypophysis, if it has existed long enough to have caused the initial deterioration and has grown large enough to cause a severe grade of optic symptoms, has not brought about a single definite sign of acromegaly. The principal grounds for supposing a change in thyroid secretion have been the conspicuously dry skin — an opposite condition to the sweating seen in acromegaly — and the fact that the gland was not discoverable on palpation. It is perhaps permissible to speculate to the effect that there occurred originally (in an individual whose characteristics imply a well-known liability to disturbances and arrest of vital function) a change in amount or quality of thyroid secretion which resulted in stimulating the pituitary gland to growth for the purpose of supplying some element lacking thenceforth in the economy. The slight fever, apparently chronic, to judge from two observations, is against the typical manifestations of thyroidism, but is doubtless a result of disturbed metabolism. I think it impossible to ascertain the influences — as to cause and effect — of the gastric symptoms, polyuria and thirst in this case. It is to be noted that they have all decreased, and that the skin is less dry. It must be said that there are other points in the case also which have not been cleared up, notably the pharyngeal symptoms and the change in the left pinna.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND WM. DUDLEY HALL, M.D., BOSTON.

(Concluded from No. 11, p. 344.)

THE SIGNIFICANCE OF INTRA-OCULAR HEMORRHAGES AS TO PROGNOSIS OF LIFE.

C. S. Bull⁶ claims the fundus should be examined in all diseased conditions of the blood and circulatory apparatus, as it may afford definite information regarding the blood current and vessels throughout the body. He draws the following conclusions: Subconjunctival hemorrhages are of little importance in the young, being usually the result of muscular effort. In the aged, when they occur spontaneously, they suggest a weakened condition of the vascular walls. Intra-ocular hemorrhages in old people are significant, and suggest the probable occurrence of cerebral apoplexy. Recurrent retinal and subhyaloid hemorrhages in the young are of slight significance, especially if due to syphilis whether inherited or acquired. Hemorrhages into the vitreous of the young are of grave prognostic importance, and point to the existence of general vascular degeneration. In chronic interstitial nephritis and diabetes retinal hemorrhages, irrespective of the existence of exudative retinitis, indicate a fatal termination of the disease. The mere presence of a thrombus of the central vein suggests albuminuria when associated with retinal hemorrhages, and renders the prognosis very grave.

INJECTION OF STERILE SALT SOLUTION IN COLLAPSED EYES.

H. Knapp⁷ states that the following deductions are drawn from cases treated by this method. When from lack of vitality in old age or any other cause the cornea sinks in so that the eye collapses in such a way as to prevent the wound from closing exactly, a liquid should be injected until the globe has resumed its shape and the lips of the wound apply correctly. Not only remnants of cataract but also cholesterol and other heterogeneous substances, including perhaps movable foreign bodies, may be syringed out of the eye with success. When during the extraction of cataract the fluid vitreous escapes in such quantity that the eyeball collapses, either totally or to such a degree as to prevent the closure of the wound, liquid should be injected so as to fill the globe and make the wound close. When from an operation or an injury the eye collapses, injection of a sterilized indifferent liquid may restore the shape of the globe, facilitate the closure of the wound, and ward off infection from the entrance of conjunctival secretion into the eye.

TUMOR OF THE PITUITARY BODY.

Walton, Cheney and Mallory⁸ report the case of a man, aged twenty-five, who for a long time had attacks of migraine accompanied by hemianopsia. Later there was persistent deficiency of vision, involving primarily the temporal field of one eye only, subsequently extending to the nasal field of the other eye, giving rise to homonymous hemianopsia. Still later there was loss of color field on the otherwise unaffected side of

one eye (hemiachromatopia). A time went on there was loss of sexual power, diminution of vision and optic atrophy, which with the severe headache pointed strongly to tumor. Towards the end there appeared vasomotor symptoms, somnolence, physical weakness, and apathy and lack of mental grasp. From a study of this and other recorded cases the conclusion is reached that congenital peculiarities in growth resembling those of acromegaly, but occurring in otherwise healthy individuals, may point to structural defect of the pituitary gland, a defect sometimes furnishing the starting point for new growth later in life. The occurrence of pituitary tumor without definite symptoms of acromegaly does not necessarily disprove a connection between this organ and the disease, for the persistence of even a small amount of healthy gland tissue suffices to carry on the function of the gland. The combination of general symptoms of new growth with optic atrophy and loss of temporal field makes diagnosis almost certain. Hemiachromatopia is not necessarily of central origin.

SUPRARENAL EXTRACT IN OPHTHALMOLOGY.

H. Landolt⁹ says the vessel-constricting action is confined to the superficial vessels, which may prove of use in differentiating between this and deeply-seated injections. This action suggests an application for cosmetic purposes in removing the so-called "red eye." The first sensation after an instillation is a sense of warmth, which soon gives place to a feeling of coolness. It has no effect on the accommodation or tension, or upon the vessels in the interior of the eye. In rabbits, when injected under the conjunctiva, mydriasis has been noted. The danger of causing local necrosis or actual death naturally would restrict its use in this manner until more is known regarding the dosage. It certainly is of use in rendering the field of operation bloodless, and thereby promoting the action of atropine, cocaine or eserine, and thus make it possible to dispense with ether in the acute form of inflammatory glaucoma.

ACOIN — A NEW LOCAL ANESTHETIC.

Randolph¹⁰ reports that Trolldenier, of Dresden, announced in the January number of the *Therapeutischer Monatshefte* the discovery of a new local anesthetic. By experimenting on dogs it was shown to be less toxic than cocaine, and upon rabbits, by using the powder or strong solutions, an anesthesia lasting several days could be obtained. Solutions remained sterile for eleven days. It is a white powder, quite soluble in water, is derived from guanin, which is found in almost all animal and vegetable cellular tissue, and is related to caffeine and theobromin. He concludes that in solutions of from 1-100 to 1-300 in a quiet eye the time to obtain satisfactory anesthesia is about the same as cocaine. There seemed to be no epithelial defect after its use. There was no change in the size of the pupil or the accommodation or the tension. Presence of acoin in agar prevents the growth of staphylococcus albus and kills it if already grown. The iodides and corrosive sublimate precipitate it, but it is compatible with cyanide of potash. Among the chemists acoin is recognized by the more pretentious title, namely, diparaanisylmonophenethylguanidinchlor hydrate, and should be respected accordingly.

⁶ Medical Record, February 3, 1900.

⁷ Arch. ves. of Ophthalmology, xxviii, p. 308.

⁸ Boston Medical and Surgical Journal, December 7, 1899.

⁹ Centrbl. f. Augenheilk., November, 1899.

¹⁰ The Ophthalmic Record, August, 1899.

LARGIN IN DISEASES OF THE EYE.

Largin is one of the more recent synthetic substitutes for nitrate of silver, occurs in the form of a stone-colored granular powder, and contains 11.10% of silver combined with protalbin, thereby being richer than any of the similar compounds. Its watery solution is brown in color, alkaline in reaction and fairly stable. It is not precipitated by either albumin or the chlorides. It is a somewhat astringent, non-irritating bactericide. Stephenson¹¹ found it inferior to protargol and silver nitrate in gonorrhoeal ophthalmia. In acute contagious conjunctivitis of the Koch-Weeks bacillus a rapid cure followed the use of a 10% solution daily. The results were good in acute trachoma and after trachoma operation. In chronic conjunctivitis, due to the Morax diplobacillus, although useful, it is inferior to a solution of zinc sulphate. It was satisfactory in acute blepharitis and lachrymal cases. It is little likely to cause pain, but will certainly stain the conjunctiva if used too long a time.

DIONIN IN OPHTHALMOLOGY.

This new remedy recently introduced by Wolffberg¹² and Nicolaier is the hydrochlorate of ethyl morphine, and appears as a crystalline powder, very soluble in water, and seems to act as a powerful stimulant to the lymph circulation in the conjunctiva and cornea. When applied locally there is, in addition to the anesthesia of the cornea and conjunctiva, a well-marked chemosis. Its use seems to be indicated in ulcers of the cornea of low vitality with impending perforation. It is claimed that in collapse of the cornea, as sometimes happens after the cataract operation, the folded cornea has been made to assume the desired curve with the flap in good position. It is also thought to promote the healing process, and to accomplish this end should be instilled several times daily before the operation. This use, locally, of the powder is apt to cause violent sneezing, and is therefore dangerous where there is a large wound in the globe, but the promoter thinks that if properly introduced on a vulcanite spoon and not insufflated, this *contretemps* may easily be avoided. He does not think that it favors hemorrhage or is a painful remedy. Where less rapid action is desired, as in reducing the tension, clearing the cornea and relieving pain in glaucoma, it may take the form of a 25% ointment of cacao butter.

PERONIN — A NEW LOCAL ANESTHETIC.

Bufalini and Guaita¹³ states that in the form of the hydrochlorate it is a white salt of slightly bitter taste but of no odor. It is slightly soluble in cold, up to 2% in hot, and insoluble in alcohol, ether and chloroform. Internally it has been used for the cough of phthisis and whooping cough, and as a hypnotic in the insomnia from alcohol. Instillation of a tepid 2% solution gives an instantaneous and profound anesthesia of the cornea of rabbits, which seems to last for several hours, and is unaccompanied by hyperemia or epithelial defects. Guaita, who has used a ½% solution in the human eye, finds that there is a slight sensation of smarting which almost immediately passes away, followed by a hyperemia which reaches

its maximum in four minutes, and lasts about a couple of hours or more. There is a smart lachrymation and even running at the nose and a slight watering of the other eye. The anesthesia of 1% peronin corresponds to 3% cocaine, and is attended with no loss of corneal epithelium. It has no effect upon the pupil, accommodation, visual acuteness, field of vision or tension. He suggests that it may be of use in enucleation or evisceration, as the conjunctival hyperemia matters little, and the penetration and anesthetic action is much greater than cocaine.

IODIC ACID, GALLICAN AND INDOGALLICAN IN THE TREATMENT OF TRACHOMA.

A. Schiele¹⁴ has lived where 30% of eye cases are affected with trachoma, and among 1,500 school children 53% were affected. He had been in the habit of using iodine and vaseline, but lately changed to iodic acid, which he uses in the form of crayons of different consistency, the softer being pure iodic acid, and a harder composed of gum arabic in proportion of 15 to 1. The application is painful even under cocaine, but does not last long. The mucous membrane becomes dry and brownish in color. He uses 5% solutions applied with a brush, and 3% solutions as collyria, which are sufficiently strong enough for home use. For the pannus he uses an ointment made up of iodic acid 1½% with lanoline, olive oil and cocaine. Iodide of potash may be given internally during the treatment, which usually lasts two months. He also uses gallican, which is a white powder, very soluble in hot water, by dusting it upon the affected areas once or twice daily during both the early and late stages of the disease. Indogallican is a dark-gray powder, insoluble in water, containing about 38% of bismuth and 23% of iodine, which can be dusted on with slight cauterizing effect. It is especially useful in superficial and deep corneal processes, healing the ulcers in a very short time by both a drying and an antiseptic effect. It is not indicated if there is much irritation.

THE INFLUENCE OF POISONS ON THE MOTOR APPARATUS OF THE EYES.

Guillery¹⁵ has studied the effect of different poisons upon the various movements of his own eyes. His method of measuring the rapidity of ocular movements depends on the principle that a line of certain length, illuminated from one end to the other during a short interval of time, creates an after image on the retina in the same direction when at rest. If the eye moves to the side the after image of a vertical line will be inclined, and from the angle of inclination the rapidity of motion can be calculated. If this is calculated for the most energetic effort of a person, any pathological diminution of function may be noted, and this method serves as a sort of a dynamometer. After alcohol the abduction is at first diminished without especial weakening of the power of adduction. Morphine weakens the external muscles, most of all the interni. It causes myosis without affecting the accommodation or convergence especially. Chloral, even in small doses, causes mydriasis and weakens the adduction and abduction. Only large doses of paraldehyde diminish the rapidity of contractions of the ocular muscles. Sulphonal and trional paralyze the in-

¹¹ British Medical Journal, March 17, 1900.

¹² Woch. f. Ther. u. Hyg. des Auges, April 5, 1900.

¹³ Annali di Ottalmologia, vi, 1899.

¹⁴ Centrbl. f. prakt. Augenheilk., April, May, 1900.

¹⁵ Pflüger's Arch. f. die ges. Phys., 1899, p. 321.

term. Cocaine causes mydriasis. Ether and chloroform diminish the associated movements and power of fusion.

EYE AFFECTIONS IN PERSONS WHO WORK WITH
HYACINTH BULBS.

Zeper¹⁶ claims a form of irritation of the skin and eyes seems to attack those who are engaged in separating the young bulb from the parent. It consists in a severe itching of the hands and face, with an irritation of the conjunctiva, amounting even to a conjunctivitis, and August and September seem to be the months during which the condition is most prevalent. Sometimes groups of minute worms are noticed on the bulbs and at other times are noticed masses of hard brittle crystals. In August and September when the dried bulbs are being separated much dust is scattered about, and in this dust are found eggs, larvæ and a full-grown mite about the size of a cheese mite. Although they have never been actually found, there is a strong suspicion that the parasite works its way under the skin and dies there.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of April 16th, 1900, DR. J. G. BLAKE in the chair.

DR. ALFRED WORCESTER read a paper entitled

BREAST FEEDING.¹

DR. T. M. ROTCH: I have always been a strong supporter of breast feeding when possible. My experience as to the willingness of mothers to nurse has not been quite that of Dr. Worcester; in fact it is rather that they beg to be allowed to feed their infants. I have for many years spent much time in studying the question of modifying mother's milk as we would an artificial food. A great deal can be done to help the mother to nurse, undoubtedly, but it may happen that while attention to her general hygiene may make her milk suitable for the baby, yet that in many cases the milk cannot be adapted to the infant's digestion.

The milk of the modern mother is not always of the best. It may happen that in spite of this the mother wants to go on although the baby is not thriving and is in continual pain. In such cases it is generally best for the child's sake to resort to the bottle. There is, however, no question but that babies will thrive on human milks that we would reject if they were artificial mixtures. I think mothers should be encouraged to nurse if possible.

DR. C. W. TOWNSEND: In spite of many notable exceptions I think most women desire to nurse their children. Much can be done to encourage them in this feeling. I remember many cases in which mothers who failed to nurse their first child succeeded later. It is well to encourage such cases — even if they fail two times they may succeed the third time. This is a point in which much good can be done by the doctor. I think there are many cases in

which the breast milk is apparently disappearing about the fourth or fifth week and the parents are discouraged, but if they can be encouraged to persevere and if the mother is got out of doors and into a better condition of life it will be found that after a time the baby will thrive. Yet in spite of this poor breast milk is sometimes much worse than good modified milk.

DR. J. B. SWIFT: I find more mothers who are averse to nursing than the last two speakers apparently have. Babies certainly do much better on breast milk and I encourage nursing as much as I can.

DR. H. E. MARION: I feel the improper care of the nipple at the beginning of lactation is the great cause for the aversion that women have for nursing. Mothers are generally ready enough to nurse the first baby, but after an experience with a sore nipple they rebel.

DR. EDWARD REYNOLDS: While I now seldom see babies after the first few weeks of life the position that commends itself to me is a middle one. The enormous advances in the scientific modification of milk made in the last fifteen years make me think that artificial milk is better than anything but the best breast milk, but, on the other hand, the best breast milk is far better than any artificial milk. We should be guided as much as possible by the interests of the baby. In the class of breasts that are manifestly poor from the start we do best to dry up the milk at once and put the child on the bottle. On the other hand, the best breasts should never be given up for the bottle. In the great middle class I think it is well from the point of view of both the mother and the baby to allow nursing for some six weeks or for three months if the baby continues to thrive. When the breasts begin to fail it is well to resort to artificial milk at once. As regards the nipple and its care I have changed my views very materially in the last few years. In any nipple but a thoroughly bad one a great deal of harm is done by astringents. Most of the trouble comes from hard nipples. It is well to leave such nipples alone until three weeks before labor and then begin to soften them. The women can hardly be expected to keep on unguents during the night, but they can during the day. It is also well not to be too energetic about developing short nipples. I agree in what has been said about encouraging women to nurse in succeeding pregnancies. I have seen several women who could nurse only a few weeks with the first baby, a month or two with the second, and finally developed good breasts.

DR. GEORGE HAVEN: I have now under my care a woman who is nursing her sixth child very well, but who heretofore has met little success.

DR. REYNOLDS: I should like to ask Dr. Rotch how long a baby should be kept on the breast if the mother has perfect breasts and the child continues to thrive.

DR. ROTCH: They should not nurse exclusively after the eleventh to twelfth month, as by that time the amylolytic function is developed, showing that the child is ready to digest starch. It is not well to use starch previous to that time excepting in special cases, as it is not wise to tax a growing function. But a function may be weakened quite as much by not being used after it is once developed as if used too soon during the stage of its development, so I think some

¹ See page 361 of the Journal.

¹⁶ *Klin. Monats. f. Augenheilk.*, December, 1899.

starch should be given when the child is a year old. Of course the perfection of the artificial modification of food has made the question of the influence of teething, season of the year, etc., as bearing upon a change of diet, of much less importance than was formerly the case.

DR. J. P. REYNOLDS: I should like to ask the experience of the members of the society as regards teaching children from a very early age to go all night without disturbing the mother. There is nothing that makes women more ready to nurse than the certainty of an unbroken night's sleep.

DR. ROTCH: It seems to me that a baby requires to be fed pretty often during the earlier months in order to keep up its animal heat.

DR. TOWNSEND: I have had a number of very vigorous babies go from 10 P. M. to 6 A. M., from the very beginning. In the first six weeks I let them have one nursing at 2 A. M., if they insist, but I try to persuade them to sleep all night if possible.

DR. WORCESTER: I have always made this a practice and I think it was taught me by Dr. Reynolds. It is my ideal and in nine times out of ten I attain it. I find if the baby is waked up every two hours during the day and then nursed at 10 P. M., it will often go even later than 6 A. M. I have always looked on eight hours' rest as quite as necessary for the baby as for the mother.

DR. J. P. REYNOLDS: If sleep be the cornerstone of health there is no way to build up an inexperienced mother that is better than to give her rest. The root of the matter is having a good monthly nurse.

DR. E. REYNOLDS: I confess that in the earliest period this method does not seem quite ideal for the baby. On the other hand it probably is in the end, as it is the best way to make the mother a good wet nurse.

DR. SWIFT: I try to make my babies go all night without nursing.

DR. HAVEN: So do I, but I seldom succeed at first.

DR. ROTCH: I think it is a mistake to try to train young babies too precisely, and I think that is the chief direction in which the modern nurse is apt to err. As regards a point mentioned earlier in the evening—that of the modification of breast milk by various means—Dr. Swift has asked what is generally the cause of dyspepsia in breast-fed children. The general rule is that the fat is low and the proteids too high. If now in such cases, the mother being strong and healthy, with plenty of milk, we give the mother a stronger diet, the baby will have still more colic.

In such cases I find exercise—two hours walking daily, or riding—will bring down the proteids without bringing down the fats. As for breast pumps, I must say I have used them for years without trouble, but they should always be used gently and with antiseptic precautions. They are especially valuable when it is wanted to empty the breast for only a few days.

DR. BLAKE: To me the question of frequency of nursing is determined very much by the circumstances of the case. I have never advocated saying strictly that the baby *must* sleep all night. If it will sleep all night so much the better—if not, the intervals between nursing can gradually be lengthened. I cannot see how it can be right to feed a child every two hours during the day and make it go eight hours without

food at night. The child wakes up hungry and really needs food.

DR. C. W. TOWNSEND read a paper entitled

HOME MODIFICATION OF MILK.²

DR. ROTCH: The expense of laboratory milk will as time goes on become in the estimation of the public of very much less importance than it is now. New laboratories are being started all over the country, and, after all, it is not a question of what is cheapest but what is best. The laboratory, it should be remembered, merely corresponds to an apothecary shop where the directions the physician gives will be carried out. If he orders the milk sterilized he will get it sterilized, and if he orders it not sterilized it will not be sterilized. If he orders whole milk it will be whole milk that is given him, though for my part I have yet to see trouble from the milk being separated milk. The fat globule spoken of may come in one set of bottles and not in a single one of the hundreds of other bottles made up from the same separation, and there is no proof of its being due to the milk being separated. In cow's milk that has never been separated the lumps sometimes occur. As to scurvy, it has never been proved that it is due to the milk being heated to 212°. It probably is from some improper modification. Scurvy comes from bad milk, not from the fact that such milk has been cooked. As to Dr. Townsend's method, where it is not necessary to figure exactly it is a most excellent method, but as the top milk is not by any means always 10% cream it cannot be regarded as exact, and even if we are sure of obtaining a 10% cream there are certain per cents. of the proteids which cannot be obtained with this 10% cream. I cannot agree that most cases of indigestion are due to the fats and proteids together, as in my experience it is the case that the trouble is caused by any one of the various elements of the milk.

DR. WORCESTER: One of the superiorities of the old-fashioned method of breast feeding is that it requires no such knowledge of the higher mathematics as does even home modification. In many of my cases I am driven by mere force of circumstances to depend upon the simplest methods. I compliment Dr. Townsend upon his use of egg albumin. For five or six years I have followed the Dresden method of home modification. In these cases I pasteurize the milk, as I cannot be sure of the supply. It is with me a cardinal principle never to believe a milkman and in summer I never dare to give unpasteurized milk. Children often do not thrive on it and need something else, and I have been fully satisfied by compensation for the pasteurization by adding the white of an egg.

DR. T. M. ROTCH read a paper entitled

THE MODIFICATION OF MILK IN MILK LABORATORIES.³

Owing to the lateness of the hour it was voted that discussion of this paper be deferred until the next meeting.

ONE HUNDRED AND ONE YEARS OLD.—Mrs. Hulda Miner, who was a native of Oswego County, died at Fredonia, N. Y., on September 29th, in her one hundred and first year.

² See page 353 of the Journal.

³ See page 357 of the Journal.

AMERICAN GYNECOLOGICAL SOCIETY.

ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY
1, 2 AND 3, 1900.

FIRST DAY.

THE meeting was called to order by the president, DR. GEO. J. ENGLEMAN, of Boston, Mass., and the address of welcome was delivered by DR. JOSEPH TABER JOHNSON, of Washington, D. C.

DR. WILLIAM P. PRYOR, of New York, read a paper entitled

AN OPERATION FOR PRIMARY VAGINAL CARCINOMA,
APPLICABLE ALSO TO CANCER OF THE RECTUM IN
WOMEN.

Primary cancer of the vagina is a rare form of malignant disease. It is usually situated on the posterior vaginal wall and extends rapidly toward the rectum and perivaginal tissues. The cancer is prone to spread by invasion of the tissues having common sources of blood and any successful operation must seek the removal of all the organs belonging to the vascular group in which the affected organ is placed. It also recurs locally. In Lowenstein's case recurrence took place after three and a half years. In both of Pryor's cases it occurred within one year. The operation of Olshausen consisted in a blunt dissection of the vagina from the rectum, which usually resulted in failure and early recurrence. He reports 2 cases, the first cancer of the rectum and vagina ulcerated and infiltrated, involving the posterior vaginal wall $1\frac{1}{2}$ inches. The second — cancer of the vagina — occurred 1 inch below the cervix on the posterior vaginal wall. The operation employed by Dr. Pryor has the distinct advantage of removing as thoroughly as possible all the diseased area. After the usual preparation of the patient, an incision from the pubes to the umbilicus is made and the internal iliac arteries and the obturator vessels are ligated with kangaroo tendon; the bladder is dissected from the anterior uterine wall and the vagina opened anteriorly; the uterus and appendages with the entire rectum are later removed after the actual cautery has been used to char the cancerous mass. After the excision of the rectum and periproctal tissue an artificial anus is formed near the normal site. This radical operation has a surgical basis in the following principles: (1) The preliminary and preventive hemostasis renders the field of operation comparatively dry, and there is less danger of transplantation of cancer cells during the subsequent manipulation; (2) avoidance of injury to the cancerous field until hemostasis is secured and the cancer charred; (3) there is removal of all organs in which recurrence is apt to take place from above downward; (4) establishment of an artificial anus near the normal site.

DR. MUNDÉ has seen only 2 cases of primary cancer of the vagina in his long experience. These cases were practically inoperable — only curettement and cauterization were done, which relieved the symptoms temporarily. He does not consider that such a bloody and radical operation pays, as the benefit to the patient is slight and the recurrence inevitable.

DR. SUTTON, of Pittsburg, has seen but 1 case in thirty-four years' experience. He has little faith in the radical operations for malignant disease of the genitalia. He considers that the causation and pathology rather than new methods of operating should engage

our attention, as we need to find the factor producing cancer in order to combat it successfully.

DR. VAN DE WARKER, of Syracuse, feels that nothing is gained by operating for cancer. If his cases recover and the disease does not recur he concludes that the condition was not cancerous.

DR. MONTGOMERY, of Philadelphia, says that in no class of cases is the relapse so likely to recur as in cases of cancer of the vagina; the thin vaginal wall and the abundant lymphatic circulation is responsible for this rapid return of the disease. In 1892 he had operated on a case of cancer of the rectum and posterior vaginal wall by the Kraske method, after a preliminary Maydl operation, and had removed the uterus and appendages, with the posterior vaginal wall and 5 inches of the rectum. The disease soon recurred. He does not believe that operative treatment has much value in these instances. There is no method of treatment by which you can insure your patient against a recurrence, and no way of determining how extensively the glands and perimetritic structures are involved. Our present position in regard to these cases is one of experimentation.

DR. A. L. SMITH thinks that often unsuccessful operations on the cases deter other patients from being operated upon that might be relieved.

DR. BURNS has felt for years that radical hysterectomy was a useless operation in those cases and prefers high amputation of the cervix with galvano-cautery as the preferable procedure.

DR. REAMY has had more satisfactory experience, and has had his patients live many years after high amputation of the cervix for undoubted malignant disease. The prognosis depends upon the position of cancer and extent of invasion.

DR. DUDLEY, of New York, confined his remarks to primary vaginal cancer. He had operated on 2 cases, and considers the disease returns here more quickly than elsewhere in the body. He believes that Pryor's operation does the best that can be done for these deplorable cases and is heartily in favor of the method.

DR. PRYOR, in conclusion, said that very probably we would soon have positive evidence that the cancer bacillus had been demonstrated, and that he would not be deterred from operating on a given case, if he thought relief could be afforded, by the consideration of remote cases that might be prevented from subjecting themselves to necessary surgical procedure, because of the ill results ensuing.

DR. I. S. STONE, of Washington, read a paper on

FECAL FISTULÆ.

Small fistulæ in healthy bowels heal spontaneously. If persistent, are usually due to disease of the bowel or obstruction. The various operative procedures for the relief of the annoying condition were considered. Lateral anastomosis is applicable in some cases. The sigmoid flexure and rectum are frequently injured in the enucleation of tubo-ovarian abscesses, etc. Dr. Stone reported 2 cases successfully operated upon and detailed method used.

DR. CURRIER had seen but 1 case of fistulæ of small intestine. This was cured by resection of a portion of the bowel. If fistula is high up in the intestinal tract early operation is advisable. If low down it is wise to wait, as nature will frequently institute a spontaneous cure. The consensus of opinion in the diseas-

sion was that there is a constant tendency in the fistula to heal spontaneously in cases where there is no tubercular trouble and the opening is in the large bowel.

DR. MUNDÉ observed that fecal fistula may occur in cases where the surgery was clean and carefully performed. He cited 3 cases of intestinal fistula where the intestine had been opened to save life, by relieving the great distention. He employs the Murphy button in his intestinal work. It is important to differentiate between large and small intestinal fistula, as those of the large bowel usually result in a spontaneous cure.

DR. W. L. BURRAGE, of Boston, read a paper on

THE REMOTE RESULTS OF CONSERVATIVE OPERATIONS ON THE OVARIES AND TUBES.

The writer had had 137 operations which were performed on diseased uterine appendages with the object of preserving one or both ovaries with their tubes, or as much of the tubes as were reasonably normal in appearance. In 85 of these reliable information as to the present condition could be obtained at least a year after operation, and the results were included in the tables accompanying the paper, the cases being divided into the more severe and the less severe. In comparing the two it was found that gonorrhoea and syphilis were more prevalent and that the symptoms had resulted more frequently from difficult labors or abortions among the more severe and that the tubes were closed in a majority of the more severe, whereas they were open in all but 4 of the less severe. Pregnancy followed operation in 4 of the more severe and in 11 of the less severe. In none of the cases when the closed tubes had been opened and new ostia formed did pregnancy follow operation. All of the cases of subsequent pregnancy in both classes, except 2 of the less severe, had had previous pregnancies. Anatomical cure was recorded in 33 out of 57 cases who came under observation, and symptomatic cure in 60 out of 85.

The writer's conclusions were that it is advisable to do conservative operations in all cases where the ovaries and tubes are not hopelessly diseased in all parts of their structure, except on patients who are near the menopause, on patients who have pronounced gonorrhoea of long standing, and on cases of malignant disease. With the present methods of performing resection of the tubes, if both tubes are found closed subsequent pregnancy is not to be expected.

In severe grades of inflammation of the appendages, irrespective of causation, if the ostium abdominale of one tube is patent, the prospect of subsequent pregnancy after the preservation of a portion of ovary is about one in four and a quarter, or 23½%. In the less severe grades of inflammation under similar conditions of tube and ovary, the prospect of subsequent pregnancy is about one in two and a quarter, or 44%. In women who have borne children in both classes, subsequent pregnancy may be expected in 35%, whereas in previously sterile women it may be looked for in only 5%.

DR. EMMET, of New York, advocates strongly conservatism in surgery of the uterine appendages and cited an illustrative case in which pregnancy occurred when only a small fragment of ovarian tissue had been left. He urged that as much as possible of the tube be permitted to remain.

DR. DUDLEY, of New York, had performed 138 conservative operations on the appendages without a death, and reported a case of double pyosalpinx in which he had successfully transplanted a part of the ovary in the interior of the uterine wall after exsecting the tubes. He was certain that grafting had occurred, as the patient was menstruating regularly and had had a possible abortion since operation. Pregnancies had occurred in many of his patients after the conservative operations. He tries to save both the menstrual and procreative functions.

DR. HARRIS, of Paterson, N. J., thinks that in those instances where the tubes are exsected the ovary many times is not sufficiently diseased to warrant its removal. For the past two years he has scarcely removed an ovary except in cases of ovarian abscess. He tries to avoid the personal inferiority which a woman feels who has lost both ovaries and to prevent the occurrence of the premature menopause.

DR. VINEBERG has had poor results in those cases where there has been a pelvic peritonitis, even with slight lesions, as the patients suffer after the operation.

DR. GOFFE considers that conservative surgery on the appendages is one of the most important subjects the gynecologist has to consider. Most of his work has been done by the vaginal route; he uses the thermocautery to resect the ovary and burn out the cysts, preferring the equipuncture method.

DR. ROBB gave an instance where adhesions and an ovarian blood cyst followed conservative ovarian surgery.

SECOND DAY.

A paper on

A COMPARISON OF VAGINAL AND ABDOMINAL OPERATIONS.

by DR. G. RICHELOT, of Paris, was read by title.

DR. J. CLARENCE WEBSTER, of Chicago, presented a series of casts illustrating the

ANATOMY OF PREGNANCY AND LABOR; ALSO, MODELS USED IN GYNECOLOGIC TEACHING.

The older textbooks on obstetrics are full of fallacies and errors on this subject and these casts are prepared in exact reproduction of nature, made directly from frozen sections of the cadaver. The method of their preparation was described and attention called to their value scientifically and as teaching adjuncts.

DR. BUCKMASTER has employed paraffine to secure representations of the pelvic organs, and has illustrated the steps of perineal laceration operation by this method.

A paper by DR. E. E. MONTGOMERY, of Philadelphia, on

COMBINED NEPHRECTOMY AND URETEROTOMY,

was read by title.

DR. REUBEN PETERSON, of Chicago, presented a paper on

ANASTOMOSIS OF THE URETERS WITH THE INTESTINES: AN HISTORICAL AND EXPERIMENTAL RESEARCH.

The paper was illustrated by numerous drawings and microphotographs. The first part was devoted to a review of the literature on the subject; the second,

a detailed account of his experiments upon dogs; the changes in the ureter and kidney had been thoroughly studied and causes of death in many instances determined. In many cases Maydl's method of ureterotrigono-intestinal anastomosis was employed. The writer's general conclusions were as follows:

(1) The primary mortality of uretero-intestinal anastomosis, both in experimental work on animals and in man, is exceedingly high.

(2) The best technique is that requiring the least amount of suturing of the ureters themselves.

(3) All efforts to prevent ascending renal infection in animals, as in man, when the ureter has been implanted without the vesical orifice, have proved futile.

(4) It is impossible to determine in advance the extent of the infection which will result from uretero-intestinal anastomosis. The patient may die in a few days of a pyemia, or in a short time of pyelonephritis, or in rare cases may recover from the infection with resulting contracted kidneys.

(5) Hence the operation is unjustifiable, either for the purpose of making the patient more comfortable, as in exstrophy of the bladder, vesicovaginal or ureterovaginal fistula, or for malignant disease of the bladder.

(6) The results of uretero-intestinal anastomosis through the formation of vesicorectal fistulae have not been favorable up to the present time.

(7) The success of Frank's experimental work in vesicorectal anastomosis justifies the expectation that the future results of this operation will be more satisfactory.

(8) The primary mortality of ureterotrigono-intestinal anastomosis is low for an operation of this magnitude.

(9) While it cannot be denied that ascending renal infection may occur after this operation, the infection as a rule is of such a type that the chances of the individual's overcoming it are good.

(10) Hence the operation of implanting the vesical flap with its ureteral orifice into the intestine is a justifiable surgical procedure.

(11) There is no valve guarding the vesico-ureteral orifice, nor does the circular muscular layer of the ureter or the bladder muscles themselves act as a sphincter.

(12) It has been abundantly demonstrated by experimental and clinical work that the rectum tolerates the presence of urine and acts as a good substitute for the bladder, and that good control over the anal sphincter will be maintained.

A paper by DR. J. W. BOVEE, of Washington, on A CRITICAL SURVEY OF URETERAL IMPLANTATION, was read by title.

DR. HOWARD A. KELLY, of Baltimore, read a paper entitled

THE EVOLUTION OF MY TECHNIQUE IN THE TREATMENT OF FIBROID UTERINE GROWTHS.

DR. KELLY, with the aid of drawings and photographs, detailed his method, particularly in dealing with very difficult cases, such as large adherent tumors or intraligamentous fibroids. There are three ways of dealing with these tumors and meeting the complications: (1) By a median sagittal bisection of the uterus with the tumor; (2) by a coronal bisection of the uterus in its cervical portion; (3) by a bisection

of the tumor alone. The situation and anatomic relation of the tumor should be thoroughly studied after the abdomen is opened, before beginning operation. The dangers to be avoided are brought about by atypical cases. The hemorrhage may be excessive and uncontrollable, prolonged operation and injuries to the intestines and ureters may jeopardize the patient. In all these cases the principle of the operation is the same, and the best method of enucleation is to seek out first, isolate and ligate the ovarian vessels of *one* side; then to expose and tie the uterine vessels of the *same* side; then to cut across the cervix and clamp the opposite uterine artery, then the round ligament, and lastly the ovarian vessels.

DR. GEORGE J. ENGLEMAN, of Boston, read the

PRESIDENT'S ANNUAL ADDRESS.

DR. A. L. SMITH, of Montreal, read a paper entitled

AN APPRECIATION OF KELLY'S METHOD OF REMOVING FIBROIDS OF THE UTERUS.

He had formerly been strongly opposed to operative treatment for fibroids, because of the high mortality then prevailing among the best operators, but the ideal method perfected by Kelly had led him to adopt this as the method of preference. He detailed the salient features of this procedure and considers that the great advantage is that there is much less danger of injuring the ureters. He laid great stress upon the importance of feeling for each individual artery and tying it before cutting it, and then putting a second ligature on it, as the first may be loosened after the tension of the tumor has been removed. Chromicized catgut is employed. He opposes leaving the tubes and ovaries remaining after hysterectomy, as he believes that sooner or later they will cause trouble. Hysterectomy is far more preferable than myomectomy except in case of a single polypus. All fibroid uteri should be removed as soon as discovered because the woman with a fibroid is liable not only to hemorrhage, but to suffer from reflex disturbance of digestion and circulation. Besides, every day its removal is becoming more dangerous and the chances of its becoming malignant greater. The writer strongly condemned the vaginal morcellation, as the operation is carried on in the dark and the ureters frequently wounded, while complications such as adhesions of the vermiform appendix and tears of the intestine, which are easily dealt with by the abdomen and with the patient in the Trendelenburg position, are almost impossible to manage when working from the vagina.

DR. F. H. DAVENPORT, of Boston, described an

INTRA-ABDOMINAL AMPUTATION OF THE UTERUS; A MODIFICATION OF HYSTERECTOMY.

In cases of cancer of the cervix or body of the uterus he employs the vaginal hysterectomy, but in non-malignant conditions even in small growths, particularly in young married women, he prefers supravaginal hysterectomy, permitting the cervix to remain. After careful study of the technique he thinks that not only the cervix, but even part of the lower uterine segment may be left without ligating or disturbing the uterine artery, by doing a high amputation of the uterus. He first clamps the broad ligaments and divides them, then divides uterus high up, having a curved needle armed with silk introducing a

continuous suture, controlling the bleeding as he cuts; later the clamps are removed and the ovarian vessels are ligated. The organ being removed above the vesico-uterine peritoneal fold there is practically no danger of injury to the ureters or bladder.

In the discussion on methods of treating fibroid growths Dr. PLYOR described his method of treating intraligamentous fibroids by bisecting the uterus and enucleation of the intraligamentous nodules. After their removal the then symmetrical uterus can be safely removed by the ordinary method.

Dr. GORDON has for a long time employed the continuous suture in hysterectomy and is then certain that all the vessels are secured. He condemns strongly the use of chromicized catgut in abdominal surgery, as he believes it is not easily absorbed, and universally employs the ordinary catgut. Does not use silk because non-absorbable. He thinks the sutures should be permitted to remain in abdominal incision for at least two weeks, until complete union has occurred.

Dr. MANN, of Buffalo, thinks that cutting the upper part of both broad ligaments after ligation often will permit the elevation of the uterus and facilitate extirpation of growth. By Kelly's method one may get the growth out very quickly, but it will require much time to complete the operation. He leaves a part of the cervix in place and drains through the dilated cervical canal.

Dr. BALDY has had 2 cases recently in which the tumor extended over the bladder and he made the posterior incision through uterus to safely remove. He thinks that Kelly's method is of much value in the difficult and unusual cases, but is not valuable as the routine method, and is a dangerous operation for a general surgeon or untrained gynecologist. He cited 2 cases where the ureter had been injured in following the plan.

THIRD DAY.

Dr. THADDEUS A. REAMY, of Cincinnati, O., contributed a paper on

BRONCHIAL DISEASES NOT INVARIABLY A CONTRA-INDICATION FOR ETHER ANESTHESIA IN ABDOMINAL SURGERY.

His personal experience with surgical anesthesia covers 8,000 cases. For surgical work he considers ether in every way preferable as an anesthetic. He has, however, never lost a patient under either ether or chloroform. The prejudice against the use of ether in the presence of acute, subacute, or even chronic bronchitis, is largely unfounded, provided proper conditions are observed in its administration. These conditions include proper preparation of the patient, that the anesthetic be administered in the operating room, the temperature of which must be from 98° to 100°F, the chest and trunk of patient lower than the pelvis and lower extremities and the ether of pure quality. He exhibited the inhaler which he employs. He has never witnessed a case in which pneumonia was probably produced by ether inhalation. He has seen bronchitis, both acute and chronic, at once cured as a result of ether anesthesia, these results probably being due largely to its action upon the respiratory mucous membrane. In some instances he does not hesitate to administer it to patients suffering from severe bronchorrhoea, but would not employ ether in

the presence of emphysema. He would, of course, not employ ether when the patient is suffering from Bright's disease, but he has rarely seen damage to the kidney follow its administration in properly selected subjects. It is his custom in subjects for abdominal or vaginal section, to administer 4 or 5 grains of calomel four hours before the operation, and he orders that they have hypodermatically $\frac{1}{4}$ grain of morphine and $\frac{1}{120}$ grain of atropia twenty minutes before the section. The calomel he has found a good foundation for securing purgation by salines within twenty-four hours after the operation. He orders such patients to drink freely of water, and believes that all these means protect the kidneys and respiratory organs from damage from anesthesia.

Dr. McLEAN advises a warm, quiet room and believes that if no confusion or conversation is permitted one-third the quantity of ether will be required.

Dr. HARRIS prohibits conversation in the anesthetizing room and permits nothing to divert the attention of the patient from the anesthesia.

Dr. ARCHIBALD McLAREN, of St. Paul, read a paper on

THE RELATIONSHIP BETWEEN DYSMENORRHEA AND APPENDICITIS.

He spoke of the unsatisfactory results usually obtained in the treatment of dysmenorrhoea and the necessity for prolonged general treatment. Pelvic inflammation is frequently the cause of dysmenorrhoea and appendicitis causes disease of the appendages, and the appendix is frequently found adherent to the right appendage. In many cases appendiceal colic is caused by the pelvic congestion at the menstrual period—the pain is principally on the right side and the symptoms are relieved by removal of the appendix. He detailed several illustrative cases where the entire menstrual pain was relieved by removal of the appendix. In 40% of cases of inflammatory disease of the appendages he removes the appendix.

Dr. SKENE has noted many cases when the ovarian pain has disappeared after a removal of the appendix. He uses the hemostatic forceps as the best method, diminishing danger from hemorrhage and infection.

Dr. SMITH has frequently found the appendix firmly adherent to the sac of a tubal pregnancy or tubo-ovarian abscess. The combination of appendicitis and salpingitis is present in many cases. He thinks this fact an argument against the vaginal methods of dealing with intrapelvic lesions.

Dr. PHILANDER A. HARRIS, of Paterson, N. J., demonstrated the utility of a certain chart for the determination of pelvic asymmetry from a very simple method of external pelvimetry. He exhibited the instrument employed and urged the more frequent use of the pelvimeter. The best interest of the patient and physician demands this study of pelvic measurements. Dr. Harris also exhibited photographs illustrating the advantages of employing a certain background in the photography of pathologic specimens.

Dr. MALCOLM McLEAN, of New York, read a CONTRIBUTION TO THE MANAGEMENT OF FACE PRESENTATIONS, WITH REPORT OF TWO CASES.

He reviewed the methods of dealing with the head thus faultily placed. Dr. Schatz had advised the converting the face presentation into a vertex while the

head is free above the superior strait and the membranes are unruptured, but there are usually two difficulties to contend with: (1) The diagnosis of the malposition is not so easy as the textbooks indicate, and if descent is far advanced it is too late to employ Schatz's method; (2) it is difficult to secure the normal position, and relapse to the abnormal is apt to occur. Dr. McLean's method is practically a version by the vertex within the pelvis, and is performed as follows: The patient being under full anesthesia, the hand is passed carefully within the vulva, with the outside hand seizing the body of the child. In the entire absence of uterine contractions, the chest is pushed as much away from the pelvic brim as possible from the point toward which the chin is pointing in the direction of the occiput, that is, pushing obliquely from behind forward; at the same time the fingers of the vaginal hand are pushed up alongside of the head in one or other of the oblique diameters of the pelvis so that they can reach the suboccipital portion of the head. The thumb at the moment steadies the brow and with a slight lifting motion imparted to the whole of the head it is caused to rotate on its axis as described, the chin passing upwards above the sacro-sciatic notch as the occiput is drawn down below the pubes. Flexion may be considerably hastened by pressing down the occiput by the outside hand as soon as the face is dislodged from its wrong position.

Dr. A. J. JOHNSTONE read a paper on

THE INTERNAL SECRETION OF THE OVARY.

There is no proof that the ovary has any function other than the manufacture of eggs. It is in no sense a gland. It is incorrect to compare it any way with the thymus, thyroid or other glands. He considers that if the cause of nervous phenomena in a woman was the lack of an internal secretion, the girl prior to puberty or the woman with delayed menstruation would have similar phenomena. He thinks that the results produced by the administration of ovarian extract could be produced equally well by salt and soda, as hysterical patients are very easily influenced. Gouty cases have greatest trouble at the menopause. He thinks there is not an iota of proof that the disorders of the menopause are produced by the absence of an internal secretion, but they are due to faulty oxidation and deficient elimination. As a proof that the ovary has little influence on the development of the woman, he cites a case in which he removed both ovaries for cystic disease in a girl of eleven who, notwithstanding, went on to perfect physical development. He condemns the practice of preserving a part of the tubes and ovaries as simply a postponement of trouble.

Dr. HIRAM N. VINEBERG, of New York, read a paper on the

TECHNIQUE, INDICATIONS AND ULTIMATE RESULTS OF SUTURING THE ROUND LIGAMENTS TO THE VAGINAL WALL FOR RETROVERSIONS AND FLEXIONS OF THE UTERUS.

Dr. VINEBERG by an incision through anterior vaginal fornix sutures the round ligaments of the uterus to vaginal wall. He has operated on 53 cases in four years and detailed the results in these cases. The operation is indicated in the following conditions: (1) In all cases of mobile retroversions and flexions of the uterus in which a surgical procedure for one rea-

son or another may be deemed necessary; (2) in the same conditions when they are associated with prolapsus uteri of the first or second degree; (3) in all cases of adherent retroversions and flexions in which the uterus only is adherent; (4) in cases of retroversions and flexions associated with moderate disease of the adnexa, such as cystic ovaries, catarrhal salpingitis, hydrosalpinx and hematosalpinx and pyosalpinx, when the latter is of moderate size and not too firmly and extensively adherent; (5) it is the operation of choice in women with thin, lax abdominal walls, which would offer a poor support for the uterus. The same applies to the extreme opposite condition, in women with very fat abdominal walls in whom a suprapubic operation constitutes a very serious affair.

Recent Literature.

Operative Surgery. By JOSEPH D. BRYANT, M.D., Professor of Principles and Practice of Surgery, Operative and Clinical Surgery, in the University and Bellevue Hospital Medical College, etc. Third edition. Vol. I, with 587 illustrations, 50 of which are colored. New York: D. Appleton & Co. 1899.

Dr. Bryant has written an extremely satisfactory book, which treats, as its title indicates, of operative surgery. The general arrangement of the former edition has been maintained, and is an excellent one. The classification is anatomical. The first three chapters are devoted to general considerations, including anesthesia, operative, aseptic and antiseptic technique, the control of hemorrhage and the treatment of operative wounds. The remainder of the book has special subjects: The ligation of arteries, operations on veins and capillaries, the nervous system, tendons, ligaments, fascia, muscles, bursa, bone, amputations, deformities, and finally plastic surgery.

As one studies this volume the more one is impressed by its excellence. It is terse, and at the same time complete. The data are accurately presented. Few operative procedures are omitted from the list. The student sees as well as reads, so many are the graphic aids to his understanding. Many practical points relating to the detail of operative work, learned usually only by long personal experience, mark this book as unusual, and distinguish it from the routine publication on operative surgery. The plan of describing and enumerating the instruments required for special operations by means of an excellent cut, showing them in detail as arranged for an operation, is novel and time saving. The character of the illustrations in general is very satisfactory and the plan of arrangement of their descriptive references is highly to be commended. The cuts illustrating the operations on nerves are similar to those usually employed to demonstrate the anatomy required for the ligation of arteries and are one of the many features of the book which attract attention. The entire chapter, indeed, of the surgery of the nervous system is one deserving of special study.

This book will not only be popular with the student, but will also be found in the working library of many a surgeon in active practice, and its appearance will be that of a much used volume. It is of conven-

ient size, while the work of the publisher arouses only commendation and admiration.

Heissler's Embryology. A Textbook of Embryology for Students of Medicine. By JOHN CLEMENT HEISSLER, M.D., Professor of Anatomy in the Medico-Chirurgical College, Philadelphia. Pp. 405. Philadelphia: W. B. Saunders & Co. 1899.

This work is a conventional compilation not without merit, being an abbreviation of the substance of the larger standard authorities. It is clearly written and shows on the part of the author a respectable mastery of the authorities, and offers few indications of a first-hand acquaintance with embryological material. As is natural with an author whose facts and nearly all of whose illustrations are taken from other handbooks, the more important topics are fairly well dealt with, while there remain numerous minor errors. These minor errors are indeed numerous: for example, page 82, the zona pellucida is called the prochorion and is said to unite with the false amnion to form the true chorion! Page 88, the placenta is said to be formed in the third month; Fig. 55, the oral plate, *rh*, is made to include mesoderm; page 134, no mention is made of the membrane separating the nasal and oral fossæ in the embryo; page 155, Hertwig's erroneous diagram of the development of the veins is reproduced; page 189, the development of the intestinal villi is incorrectly stated, since they arise from ridges and not separately. This list of errors could be almost indefinitely extended, so that the treatise is without authoritative value, since its statements often need rectification. Nevertheless the clearness of the author, his well-proportioned text and the judicious selection of illustrations will doubtless render the compendium convenient and useful. There are 26 colored illustrations and a good index.

Colpoperineorrhaphy, and the Structures Involved.

The Vagina and Perineum and How to Mend Them. By BYRON ROBINSON, B.S., M.D., Chicago, Ill., author of "Practical Intestinal Surgery," "Landmarks in Gynecology," "Life-size Chart of the Sympathetic Nerve," "The Peritoneum, its Histology and Physiology," "The Abdominal Brain and Automatic Visceral Ganglia," etc.; Professor in Chicago Post-Graduate School of Gynecology and Abdominal Surgery; Professor of Gynecology and Abdominal Surgery in the Harvey Medical College and in the Illinois Medical College; Gynecologist to St. Anthony's Hospital; Consulting Surgeon to the Mary Thompson Hospital for Women and Children. Chicago: The Clinic Publishing Co. 1899.

This most excellent monograph belongs to a class of publications of which we could wish that more were put forth. It consists of two parts. The first section consists of an extensive, exact and scholarly study of the very difficult subject of the structures which surround and support the lower end of the rectum and vagina. This is the best description of that subject which we have seen. The second portion of the book is made up of the author's conclusions from his extensive anatomical studies and an experience of about a hundred cases as to the best way of repairing the rent. The conclusion consists briefly of an enthusiastic treatment of the adaptability of Tait's flapsplitting operations, as modified by the author, to all conditions of loss of perineal support, to which is

added an acknowledgment that Emmet's latest operation is also thoroughly efficient and rational, with which conclusions one may or may not agree. But few gynecologists can help learning much from the admirable way in which the author explains the anatomical reasons for the success of both these operations, which he concedes act in much the same way. The cuts are crude, but illustrate the text satisfactorily.

Histology and Pathology. A Manual for Students and Practitioners. By JOHN BENJAMIN NICHOLS, M.D., and FRANK PALMER VALE, M.D. Lea's Series of Pocket Textbooks. Pp. 458, with 213 illustrations. Philadelphia: Lea Brothers & Co. 1899.

This work is one of intelligent and competent compilation, which has put together in clear and succinct form the main facts of the two sciences of histology and pathology. The authors have not collaborated, for Dr. Nichols claims sole responsibility for the histology, Dr. Vale for the pathology. They have, however, kept well the same scale of treatment, and have produced a volume which only a publisher could call of pocket size, for it weighs about two pounds (972 grammes). The absence of originality is the most striking characteristic of the volume, the facts being with few exceptions such only as are found in all the better textbooks, but these are accurately presented, though some mistakes could of course be pointed out. The illustrations are taken almost exclusively from other textbooks, and are all so coarsely printed that whatever delicacy or softness the originals may have had is utterly lost. It seems to us that the profession gains very little from the publication of such works as the present one, which is distinctly of the second class, and merely establishes a fresh rivalry with its superiors. Were there no good books already in the field for students of the two sciences concerned, Nichols and Vale would deserve a welcome, which under the actual circumstances is not due to their book.

Duane's Medical Dictionary. A Dictionary of Medicine and the Allied Sciences. Comprising the Pronunciation, Derivation and Full Explanation of Medical, Pharmaceutical, Dental and Veterinary Terms; together with much collateral descriptive matter, numerous tables, etc. By ALEXANDER DUANE, M.D., Assistant Surgeon to the New York Ophthalmic and Aural Institute; Reviser of Medical Terms for Webster's International Dictionary. New (third) edition. Pp. 656, with 8 full-page colored plates. Philadelphia and New York: Lea Brothers & Co. 1900.

The third edition of this dictionary will be welcomed by those who desire a combination of much information compressed into a comparatively small volume. The author has aimed to accomplish this end by omitting obsolete words, and utilizing the space thus gained by a considerable amount of descriptive matter, supplementary to the mere definitions. Another excellent feature of the book is the care bestowed on derivation of words, those from the Greek being given in ordinary type. We have found occasion to make practical use of the dictionary on several occasions and have not as yet found it wanting. The addition of a few colored plates no doubt increases the expense of the book, without proportionally adding to its value. The type is small but clear, and the binding good.

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SPECIALISM IN MEDICINE.

THIS is the subject of an address recently delivered at Ottawa, by Dr. F. C. Shattuck, of Boston, on the occasion of a meeting of the Canadian Medical Association. The subject is certainly not a new one, nevertheless its importance and interest are perennial, and demand from time to time a reconsideration at the hands of those whose experience renders them competent to speak. Dr. Shattuck has certainly brought a judicial spirit to bear upon his not too easy task, which must appeal both to those who call themselves specialists and to those whose practice leads them into broader fields. The threadbare assertions of certain writers on the subject are conspicuous by their absence. We are not told, for example, that a man must have had a term of so-called general practice before he can hope to be a success as a specialist, an assertion which our every-day experience at once controverts, nor is the narrowness of the specialist held up as a warning. There is a tacit if not a definitely expressed recognition of the fact that narrowness is due to a frame of mind and not to a variety of practice; that the man who accepts every one who comes to him for medical aid may be as narrow in his interpretation of any given case as the man who confines his attention to the disorders of any special organ or set of organs. There is also in this address a welcome and refreshing acceptance of things as they are, with no attempt at an adjustment of facts to suit some theoretical assumption. The fact seems to be that specialism has come gradually and as a perfectly inevitable consequence of the growth of knowledge. This may be good or bad, but there is not the slightest prospect that any human argument will check a tendency which is absolutely bound up with progress. The attitude of the critic of the details of this, to our mind, wholly beneficent movement may be analytical to the last degree, but it cannot be iconoclastic. The growth of specialism is coincident with the growth of education, and in medicine, as in any other field of knowledge, progress is dependent upon the degree to which

special investigation is carried. As we understand Dr. Shattuck's point of view it is essentially this: Specialism in medicine we must accept as a fact; on the whole we should be sufficiently optimistic to see in this a good rather than an evil; in the meantime we should critically analyze the details and vagaries into which an acceptance of this fact may lead us.

We are inclined to think that the reason for the discussion we are constantly hearing between the claims of the so-called general practitioners and specialists lies in the failure to distinguish the theoretical from the practical side of the question. Theoretically no one can now consistently question the utility of specialism; practically, in the every-day treatment of this or that individual patient, abuses are possible and no doubt of frequent occurrence. This is a difficulty and misconception under which medicine must always labor, inasmuch as it is on the one hand an abstract science, and on the other an applied art of the most practical sort. Much of the foregoing we have read between the lines of Dr. Shattuck's address; he is dealing rather with the practical aspect of the matter, as it applies to the rank and file of practising physicians. The first line of cleavage in the treatment of the sick appeared between medicine and surgery. Obstetrics was also early separated off as a specialty, and rightly so, whereas gynecology, as a special field of practice, is a much later growth, and one of rather unique interest. At first received with undue enthusiasm, it has gradually ceased to exist as what we may term an exclusive specialty. "If I read the signs of the times aright, what may be called pelvic tinkering, which has been so much practised in the last decades, is suffering from a rapid decline. What is really necessary can safely and best be left in the hands of the obstetrician alone or aided by the general physician; and major gynecology, the great bulk of which involves laparotomy, seems to be going where it belongs — into the hands of the general surgeon. It may all have been a necessary sequence in the evolution of knowledge, or I may be ignorant or prejudiced, but I cannot look at the groping course of gynecology as a triumph of human intelligence."

Dr. Shattuck recognized the broad bearings of neurology, and finds in the nervous system a field worthy of and demanding special study. "Neurology," he says, "deals with a system rather than with an organ; has length and breadth, touches medicine at very many points, and thus involves less risk of narrowness of view to its devotees than do some specialties." We are disposed to think that neurology is not properly termed a specialty in the usual practical acceptance of the term, because of its intimate relation with every organ of the body. Dr. Shattuck does not, however, look with unfeigned delight at the minute subdivisions of practical medicine; he doubts whether gastro-enterology should be dignified into a true specialty; he suggests that y- and z-rays may ultimately be discovered to broaden what seems to be the inevitable specialty of the x-rays; he finds also that the diseases of

childhood constitute a doubtful field for the establishment of a specialty. "Specialism divides up the organs and systems of the body, separates the sexes in a measure, and still insatiate, steps in between children and parents. Shall we see parents and grandparents similarly set apart? Why not a chair in medical schools for the diseases of old age as well as for the diseases of children? It is a conservative statement that the pathology of old age is at least as peculiar as that of childhood. Infant feeding alone affords scant material for a specialty, particularly if the profession as a whole would insist more on the use of nature's provision for young mammals, apparently sufficient for all of this class, save man. The number of women who can nurse their children is much larger than is that of those who do."

Dr. Shattuck is of the opinion that it is both more economical and more conducive to the ultimate progress of medicine to encourage subdivision of the medical branches in one large hospital, rather than add to the number of institutions by supporting minor hospitals for the sole treatment of some special form of disease. With this view we are in entire agreement. The function of a great hospital should be to give opportunity for the completest development of legitimate specialism, in conjunction with what are still recognized as the more general fields of medicine. This is the surest means of preventing what all alike fear, the unsymmetrical development of medical knowledge as a whole. The situation and our proper attitude toward it are well summarized in the closing sentences of this excellent address.

"It is all very well to say, 'Take no thought for the morrow'; if our predecessors had acted literally on this precept we should be in a bad way. Progress will march and evolution go on in spite of us, doubtless. But we can have some influence over the rapidity of evolution, and it is our business to do what we can to foster right and to discourage wrong tendencies. One fact stands out clearly—that specialism in medicine has come to stay. Its advantages infinitely outweigh its disadvantages, and we have faith that all things work for good in the long run.

"We study the past, and speculate as to the future. We all sometimes feel as did the late Dr. Hagen, the great entomologist—'I should like to be my own great-grandson.' We cannot greatly influence the amount of pity which our great-grandsons may feel for our attainment, but we can force their respect for our honest and unremitting effort."

MEDICAL NOTES.

THE "AMERICAN JOURNAL OF NURSING."—The first number of this new journal has appeared, published by Lippincott for the Associated Alumnae of Trained Nurses of the United States, under the editorship of nurses. The objects of the journal are first to provide an official organ for nurses throughout the

country, and also to bring into convenient and accessible form various matters relating to the progress of the act of nursing. The contributions in this first number are chiefly from the pens of nurses, but not wholly. We note for example, a brief paper on the "Relation of Bacteriology to Preventive Medicine," by Dr. John H. McCollom. The appearance of the journal is attractive and its contained matter for the most part excellent. We wish for it every success.

A MEMORIAL TO THE LATE J. M. DA COSTA.—The Board of Trustees of Jefferson Medical College, Philadelphia, has decided to establish a laboratory of clinical medicine, as a memorial to the late J. M. Da Costa. Dr. Da Costa had been a teacher in the college for more than thirty years. Contributions to a fund for this purpose are solicited.

A SOMEWHAT EXTREME POINT OF VIEW.—It is reported in the *Philadelphia Medical Journal* that the School Board of El Paso, Texas, requires the teachers to wear short skirts, since the long ones sweep along the walks and gather germs that may injure the health of the children.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, October 10, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 133, scarlatina 9, measles 9, typhoid fever 21.

NEW SITE FOR THE HARVARD MEDICAL SCHOOL.—The old Francis estate in Brookline has been purchased, and is now held in trust as the proposed future site of the Harvard Medical School, and the allied departments of veterinary medicine and dentistry will also be located on the recently acquired land. The school, during the comparatively short period of its residence in the present building, has outgrown its accommodation, and the land furthermore is desirable for the future uses of the Boston Public Library, which is already feeling the need for more space. An appropriation for the School of Comparative Medicine has already been made from the H. L. Pierce bequest to Harvard University. Space is furthermore provided for a possible University Hospital.

A VIGOROUS LEGAL DECISION.—The following important decision has recently been rendered by Judge Grime, of Fall River, in the case of Dr. Ezra R. Wilbur, clairvoyant physician, against a police officer, to recover for professional services. Judge Grime ruled in these words: "I am satisfied in my own mind that the services rendered were worse than valueless, and that had they been continued without change the defendant would have reaped his reward in death. Still, he employed the plaintiff and must pay the bill."

DR. J. F. LEWIS ELECTED SUPERINTENDENT OF THE DEPARTMENT OF ADULT POOR.—The State Board of Charity has unanimously elected Dr. J. F. Lewis, of Malden, Mass., to the position of superin-

tendent of the Department of Adult Poor, to succeed the late Stephen C. Wrightington. The appointment requires the approval of the governor, which, it is supposed, will certainly be forthcoming.

DR. A. J. RANNEY APPOINTED SUPERINTENDENT OF LONG ISLAND INSTITUTIONS, BOSTON.—Dr. A. J. Ranney, assistant superintendent of the State Almshouse at Tewksbury, has been appointed superintendent of the Long Island Almshouse and Hospital, Boston Harbor, in place of Mr. A. T. Hopkins, who has resigned his position to enter professional life.

NEW YORK.

FORGOTTEN IDENTITY.—There is at present under treatment at the White Plains Hospital, Westchester County, a case of unusual interest, that of a man who has forgotten his identity as the result of a stroke of lightning. Dr. H. Ernst Schmid, the head of the visiting staff of the hospital, and who is an alienist of high repute and one of the consulting physicians to the Department for the Insane of the New York Hospital, pronounces it one without a parallel. The patient was found one night in July, after a severe electrical storm, near the tracks of the Harlem Railroad, with the entire left side paralyzed. When questioned as to his identity he appeared much annoyed that he could not give an intelligible reply. During the night there was twitching of the various muscles of the body, and on the following day if any part of the body was touched the patient would, after a delay of from five to ten seconds, put his hand to that part of the body and touch it in the same manner; if stroked, would do the same; if slapped, would slap himself. If roused and questioned sharply, he would say simply, "I—I—I." After three months he was very much improved. Asked if he remembered when he became ill, he said a flash seemed to strike him in the face. From that time on he gradually gained in health and strength. The paralysis disappeared and his muscular system was built up by a course of calisthenics.

RICHES RESIGN TO THE INEVITABLE.—Charles Broadway Rouse, the millionaire merchant and philanthropist, who is suffering from blindness due to optic nerve atrophy, and who some time since announced that he would give \$1,000,000 to any one who would restore his sight, has now withdrawn that offer and resigned himself to the inevitable. Ever since the announcement was made he has been besieged by all sorts of quacks and "healers," and during the greater portion of the time he has paid a substitute who was affected in the same manner a regular salary for submitting to experiments and various forms of treatment.

DR. JACOBI ON ARTIFICIAL INFANT FEEDING.—At the first meeting of the New York Academy of Medicine after the summer recess, a resolution was passed establishing a separate section on otology, this branch having hitherto been included in the Sec-

tion on Ophthalmology. On this occasion Dr. A. Jacobi read a paper on "Artificial Infant Feeding," which was the complete report he prepared for the Pediatric Section of the Thirteenth International Medical Congress, and at the suggestion of the president, Dr. Thomson, it was decided that a special evening should be set apart for a symposium on this subject.

MEDICAL DEPARTMENT OF COLUMBIA UNIVERSITY.—At the first regular meeting for the college year of the Trustees of Columbia University, held October 1st, the annual report of the Vanderbilt Clinic was presented, showing that 49,173 patients were treated during the year. The following appointments in the Medical Department were announced: Drs. Charles H. Peck, Warren S. Bickham and Alfred S. Taylor, assistants in operative surgery. Among the gifts received during the year was \$100,000, from John D. Rockefeller, for the endowment of a chair in psychology.

GOLDEN WEDDING.—On October 1st the venerable but genial Prof. R. Ogden Doremus and his wife celebrated their golden wedding. Dr. Doremus, who equipped the first laboratory in the United States for instructing medical students in analytical chemistry, was professor of chemistry in Bellevue Hospital Medical College for thirty-seven years, and still holds that office in the College of the City of New York.

A HOME FOR CONVALESCENTS.—Mr. Adrian Iselin, a wealthy resident of Westchester County, has purchased the old Hartley mansion in the outskirts of Yonkers, for a hospital for the convalescent poor of New York and its vicinity. The house is surrounded by extensive grounds, on which there are many fine trees, and from \$50,000 to \$75,000 will be spent in enlarging and equipping it.

ONE HUNDRED AND SIX YEARS OLD.—Benjamin Prine, probably New York's oldest citizen, died at Port Richmond, Staten Island, on October 4th, at the age of one hundred and six years. He was a negro and born a slave not far from the place of his death. He is noted as having driven the first stage coach on Staten Island, and he was freed by the Northern Slave Act in 1822.

INCREASED INSANITY AT ELMIRA REFORMATORY.—The past six months there has been an increase in insanity, no special reason for which has been assigned, among convicts at Elmira Reformatory. Since March sixty-five inmates have been transferred.

Correspondence.

TENDON SUTURE.

COLUMBUS BARRACKS, O., September 19, 1900.

MR. EDITOR:—The article on "Tendon Suture" in the *JOURNAL* of September 13, 1900, by Dr. Hatch, recalls a case which I treated many years ago, and which may be of interest to your readers.

In 1866 the steward of the steamer *Saratoga*, plying between New York and Richmond, Va., was brought to me with a divided tendo Achillis. He had received his injury while standing on the washstand of his stateroom, a lurch of the ship throwing his foot into the washbowl, breaking the bowl, and in withdrawing his foot the tendon was severed obliquely. The wound was carefully cleansed and the severed tendon united by silk sutures, the external wound closed with sutures and dressed dry with lint and bandages. A slipper was obtained, and a piece of flat iron, 1 x $\frac{3}{4}$ inch, riveted to the sole. The iron projected for about 4 inches beyond the heel of the slipper, and had an eye at its extremity for insertion of a bandage, which was attached to a band above the knee, thus keeping the foot fully extended and leg flexed. There was no suppuration; the wound healed by first intention, and the patient recovered in little more than a month. This seems worthy of note in that the case occurred in pre-antiseptic days and before dry dressings were in vogue. The experience of the war and the closing days of the Rebellion had convinced me that wet dressings were not free from danger, and I had removed them from a case of gunshot wound of the knee at Farmville, Va., with a most satisfactory result.

Very respectfully,
TIMOTHY E. WILCOX,

Major and Surgeon, U. S. Army; Late Lieutenant
Colonel and Chief Surgeon, U. S. Volunteers.

LETTER ABOUT PARIS AND LONDON.

REMINISCENCES OF THIS SUMMER'S TRANS-ATLANTIC TRIP.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND;
THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

MR. EDITOR:—It has occurred to us that your readers may like to have a few words about the recent celebration of the One Hundredth Anniversary of the Royal College of Surgeons of England and a few about the Thirteenth International Congress, with one or two incidents that occurred en route to and from the Continent. To relieve the *ennui* of our voyage home, we therefore undertake the recital of our adventures, at the risk of adding to the *ennui* of your readers.

Separated at the first moment of our intended voyage on the *Oceanic*, we were united again at that typical English hotel "The Burlington." The voyage of the *Oceanic* was without incident. We were not so lucky on the *Campania*, for after a remarkably favorable crossing to Queens-town we struck a thick fog in the Irish Sea. Off Holy-head at 8.30 A. M., while running at half speed, we struck and cut in two a twelve-hundred-ton steel barque, just beginning her voyage to New Zealand. Nothing was seen or heard of this vessel until it was too late to avoid her. The sharp bows of the *Campania* cut slowly through her just behind the foremast. The bow half (she was headed to the southeast with a southwestward breeze) grazed along our starboard side, but sank before it came as far aft as our foremast! The bowsprit, as the fore part sank with bursting decks, pointed straight up in the air and nothing was left but white, bubbling water. Then suddenly the foremast, detached in some way from the wreck, leaped high in the air and fell back into the sea. Later two men came up, and as they passed astern into the fog were seen clinging to the wreckage from which they were rescued by the life-boat crew. The stern half we did not see, but it sank quickly leaving a half dozen of the crew struggling in the water. The life boats were lowered and put back into the fog astern. Seven men of the crew of eighteen were saved.

It was amazing how slight the shock was. It seemed trivial. We were dressing when the blow came. From the cries of the women and the immediate launching of

the life boats it was natural to suppose that the steamer was going down at once. Had she suddenly foundered, the loss of life must have been great, though the sea was calm and we were but forty miles from land, for there were not enough boats to take the 1,700 human beings, more or less. Our escape seemed providential when we learned by talking with the saved that the barque carried 30 tons of dynamite, 600 barrels of gunpowder, and 1,000 cases of cartridges! The *Campania's* bows were stove in, and there was considerable water in the forward hold.

The meeting of the Royal College of Surgeons was interesting and impressive. The chief event was the conferring of honorary degrees. Besides the Prince of Wales, the Marquis of Salisbury, the Earl of Rosebery, and possibly other titled dignitaries, prominent surgeons from many countries were thus honored; of these there were from France, Ollier, Lannelongue, Tillaux and Pozzi; from Germany, von Bergmann; from Italy, Bassini; from Switzerland, Kocher; from the United States, Halsted, Keen, Weir and Warren; from Canada, Roddick, Cameron and Kingston.

The attendance at the celebration was large. All candidates and guests were in cap and gown of their college or university. But few foreigners were present besides those who were candidates for the honorary degree.

The dinner at Lincoln's Inn Fields was extremely interesting. In the first place the dinner itself was good—and that is saying much for a dinner for 400 men. The hall made us think of Memorial Hall on Commencement Day. Could we have had the brilliant speakers of that day, the resemblance would have been even more striking. After dinner, the president, Sir William MacCormac, introduced the chief guest of the evening, H. R. H. the Prince of Wales, who spoke well. Before the dinner we had been all delighted by his charming manner. We were reminded of a medical friend who visited London a few years ago with the Ancient and Honorable Artillery Company. He met the prince on that occasion and shook hands with him. Asked his impressions of the prince, he said very naïvely, "Well, now, you may not think it, but he's a real good fellow,—not a bit of d—d nonsense about him." This always seemed to us one of the greatest compliments he could have received, for it showed the tact which at once had put our friend at ease.

After the speech from this distinguished guest, came others by Salisbury, Rosebery, the Lord High Chancellor and other laymen. Besides the president, Sir William MacCormac, but one surgeon spoke, Mr. Bryant, who introduced one of the lay speakers. Salisbury got pretty well mixed up before he finished, but he managed to extricate himself. Though on the whole the speaking was good we all sighed, "Oh, for a word from President Eliot now!" Yet it was all admirable and interesting.

The most charming entertainments were the private dinners, of which there were many each night. We were greatly delighted with our experiences in London. We were, however, much disappointed that we were offered no opportunity to see English surgery, although most ready to avail ourselves of such courtesy.

The International Congress opened on the following week. We were not there, however, for the congress or the exposition; we may as well admit it; we were there in search of amusement—theatres, concerts, museums and good dinners! We nevertheless had our names enrolled, went to the opening session of the congress, and left cards upon our friends. To at least one of our party the congress was dull and uninteresting. The meetings in General Surgery were not attractive. The chief aim seemed to be to get through one paper and to the next. Murphy made a very favorable impression with his paper on lung surgery, which he had condensed into a few words.

The general entertainments were tremendously overcrowded. A reception was given at the Palace of the Luxembourg. We succeeded in getting within sight of the door, before which a crowd was struggling. We had the good sense to retire before we got hopelessly caught in the jam. It was like a school of fish trying to get out of a

seine. We finally got out; and as we went we met lines of carriages which extended back to the Seine. At the reception of the President of the Republic there was the same enormous crowd. One of us who had succeeded in penetrating the halls of the Luxembourg tried the President's Palace. He was discouraged and about to give up when by announcing himself to the guard at a private entrance as "délégué spécial des États Unis," he was admitted with much saluting!

We had the pleasure of meeting Tuffier and seeing his spinal cocainization. This demonstration was really remarkable. The first patient was a woman of, say, forty with a large abdominal tumor. She was seated upon the table bending forwards. After brief scrubbing of the skin over the ilio-lumbar region a needle was introduced at the right of the spinous process of the last lumbar vertebra just above the crest of the ilium. By feeling his way the operator deftly introduced the needle into the spinal canal. As soon as the canal was reached a few drops of cerebro-spinal fluid escaped. The cocaine was injected very slowly through the needle. The patient was then placed on her back. The skin of the abdomen was prepared while the surgeon was sterilizing his hands. While two large ovarian tumors were being removed the patient made no sign of pain or even of discomfort. She was very pale and her pulse was with difficulty felt. Though the pulse was so feeble, it was slow, between 60 and 70.

The next patient, after cocainization of the cord, had an enormous kidney removed. During the operation she lay perfectly quiet and without pain. She had cried out shortly after the injection of the cocaine that she was paralyzed. She talked and answered questions. She said that she had no pain whatever. Her pulse was very weak but slow. M. Tuffier said that he had had no bad effects from cocaine; that there were at times vomiting — simply *mal de mer* he called it — and invariably an increased temperature for a day or two.

Our impressions of this method of producing anesthesia were that it was a matter of scientific interest rather than of routine practicality; that from the nature of things it could not be used with safety — with the safety of ether or even of chloroform; that even if the general effect should prove not dangerous or disadvantageous, the possibilities of local damage could not but prove prohibitive. Granted that puncture of one of the nerves of the cauda equina may not always do harm, it cannot be looked upon — certainly not as yet — as a procedure of demonstrated safety. That a needle can be introduced into the spinal canal at the level of the sacrolumbar articulation without danger of wounding the cauda equina we do not believe, though we admit that such an accident may be uncommon. One of our friends who has tried the method told us that his patient had paralysis of the bladder lasting six months.

We predict that spinal anesthesia will not prove of wide general acceptance and utility, though we confess that we should like to try it. When we proposed to make use of the method on our return, however, we were solemnly warned that Boston would not be — at least at present — a good place to try any experiments in anesthetics, especially spinal, even if the crowning glory of surgery had resulted years ago from experiments there in general anesthesia. We nevertheless feel obliged to say that we shall advise spinal anesthesia the very next time we operate for lesions associated with abdominal distention and vomiting. In a recent case of amputation of the leg, a feeble patient with distended abdomen and full stomach vomited under ether and was drowned in his own vomit — spinal cocainization would have been admirable. So would it probably be in general peritonitis, in urgent operations upon patients just after a full meal, in all conditions in which it is essential that the patient retain consciousness and the power of keeping his throat clear. Under certain circumstances, therefore, spinal cocainization seems of definite and conspicuous advantage. It is quite possible that beginning with this limited field its use may with increased knowledge and experience become of wide and beneficial application.

From Tuffier's interesting work we went to Doyen's private clinic. There we saw a man of great ingenuity and dexterity. While the patient was being prepared for operation the assistant showed us several cinematographic reproductions of operations. One was an amputation of the thigh, another a thyroidectomy, a third a hysterectomy. These illustrations were extremely interesting. Of their value we would say that we have already adopted two things which these pictures alone demonstrated. How much a beginner would learn from them unexplained is doubtful, but an experienced operator would see every detail. By stopping the machine at a given period every step of the operation could be explained at leisure. We believe that the cinematograph has a great teaching value.

Doyen's first operation was a craniotomy. He had operated some time before and the wound had healed beautifully. Thinking it best to remove a little more bone, he reopened the wound and took a half-inch rim of bone about the edge of his previous bone cut. He used his electric circular saw, which made so violent a buzz and whirr that we could not but recall our terror and flight from the classroom when our colleague, Dr. M., first used years ago his electric saw and burrs. After the operation M. Doyen demonstrated his instruments on dry bone. We were very much impressed by his instruments and by his skill. The next day we went again and saw a hysterectomy which was a very brilliant and successful piece of work, our only criticism being that brilliancy and speed are incompatible with absolute safety of the ureters. In his hysterectomies, and some other operations, M. Doyen uses the angiotribe, but with this sensible admission, that the instrument is not safe when used alone. He compresses the tissues with the angiotribe and then through the compressed tissues ties his ligature. Doyen's audience was a brilliant one. Crowded together upon a raised platform and standing upon stools were many of the most eminent surgeons of the world.

Opinions as to the clinic varied between wide limits. We thought it the most brilliant thing and the best in Paris.

Pozzi's clinic drew a large and illustrious audience. There we saw asepsis carried on more thoroughly than anywhere else — in a manner possibly suggesting the thoroughness of American methods. The operation performed by Pozzi was an extremely difficult one, in which the ovaries, tubes, uterus and other structures were removed.

On Friday, the day that the congress closed, we were invited to subscribe to a dinner given by Americans to a Parisian physician. This began and ended the hospitalities we received.

On leaving Paris our party separated, some going to the Alps, some to the "Passion Play," some to England. We ourselves went to the Alps, where we caught the Alpine fever and had it so severely that we cannot but congratulate ourselves that the blisters of the first day prevented further attempts at climbing. Had our feet been able to follow our inclinations we should doubtless be now reposing at the bottom of a crevasse.

On arriving home our first visit was to the Massachusetts General Hospital, where we were profoundly impressed by way of contrast with the excessive care of American surgeons in everything relating to asepsis: the twenty-four to forty-eight hours' preparation of the patient; the efficient sterilization of the sheets, towels, gauze and instruments; the long-sleeved operating gown, rubber gloves covering hands, wrists and sleeve ends; the protection of head and beard; the general air of neatness, cleanliness; and finally the man-of-war discipline by which the chain of asepsis remains unbroken from the beginning of sterilization twenty-four hours before operation to the close of the operation itself.

We have much in surgical technique to teach and little to learn this side of the Atlantic.

Very respectfully yours.

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METEOROLOGICAL RECORD

For the week ending September 29th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		We'thr.		Rainfall in inches.
	Daily mean.	Daily mean.	Daily mean.	Daily mean.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	
S..23	29.88	61	69	53	80	79	80	W.	N.W.	9	6	C.	F.
M..24	30.04	64	74	53	78	71	74	N.W.	N.W.	12	8	C.	C.
T..25	30.29	60	66	55	64	86	75	N.	E.	5	4	F.	C.
W..26	30.21	58	64	53	82	89	86	N.W.	S.E.	5	8	C.	C.
T..27	30.09	66	75	57	85	87	86	S.	S.W.	6	6	C.	C.
F..28	30.22	60	64	55	97	88	82	N.E.	N.E.	15	6	R.	C.
S..29	30.13	56	61	50	82	97	90	N.	S.E.	5	4	O.	R.

* O, cloudy; C, clear; F, fair; G, fog; H, haze; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☁ Men for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 29, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup	
New York	3,654,594	1158	413	23.44	8.72	8.16	1.60	2.00	
Chicago	1,688,575	—	—	—	—	—	—	—	
Philadelphia	1,293,497	347	95	20.94	5.48	5.77	2.03	5.48	
St. Louis	575,238	—	—	—	—	—	—	—	
Baltimore	508,957	185	64	33.48	4.32	14.58	1.62	2.16	
Cleveland	381,768	—	—	—	—	—	—	—	
Cincinnati	325,902	—	—	—	—	—	—	—	
Pittsburg	321,616	90	39	38.85	6.66	24.42	4.44	3.33	
Washington	277,000	—	—	—	—	—	—	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	65	24	32.34	4.62	12.32	—	1.54	
Nashville	87,754	—	—	—	—	—	—	—	
Boston	500,824	190	73	31.27	6.89	13.78	1.06	5.30	
Charleston	65,163	—	—	—	—	—	—	—	
Worcester	115,231	42	16	26.18	4.76	14.28	2.38	4.76	
Fall River	106,591	51	22	25.48	5.88	19.60	—	—	
Cambridge	95,185	24	14	33.33	—	16.66	—	—	
Lowell	98,611	28	12	21.42	10.71	10.71	—	—	
New Bedford	74,943	27	20	7.40	3.70	—	3.70	—	
Lynn	69,769	15	7	33.33	13.33	13.33	6.66	—	
Somerville	67,863	25	10	56.00	8.00	12.00	4.00	12.00	
Lawrence	60,597	25	15	36.00	—	20.00	8.00	—	
Springfield	60,085	17	5	29.40	—	23.52	5.88	—	
Holyoke	45,623	14	8	35.70	7.14	21.42	—	7.14	
Brockton	40,299	12	3	25.00	—	—	—	—	
Haverhill	38,714	12	3	25.00	8.33	—	16.66	—	
Salem	38,583	10	5	—	—	—	—	—	
Malden	38,321	10	4	50.00	—	—	—	—	
Chelsea	37,022	10	5	20.00	—	—	—	—	
Gloucester	32,285	5	3	—	—	—	—	—	
Fitchburg	31,648	12	4	58.31	—	33.33	8.33	8.33	
Newton	31,224	14	3	28.56	14.28	14.28	—	—	
Everett	31,167	3	2	66.66	—	33.33	—	33.33	
Taunton	28,891	10	6	60.00	10.00	40.00	—	—	
Quincy	25,653	4	2	25.00	—	—	—	—	
Pittsfield	24,226	—	—	—	—	—	—	—	
Waltham	23,283	3	—	—	33.33	—	—	—	
North Adams	22,196	4	1	—	—	—	—	—	
Chicopee	18,790	6	4	16.66	—	16.66	—	—	
Medford	17,869	3	—	33.33	—	—	—	—	
Melrose	15,411	1	—	—	—	—	—	—	
Newburyport	15,157	5	2	—	20.00	—	—	—	

Deaths reported 2,437; under five years of age 906; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 2,437, diarrheal diseases 252, acute lung diseases 170, consumption 164, diphtheria and croup 67, typhoid fever 46, whooping cough 23, cerebrospinal meningitis 8, scarlet fever 6, erysipelas 3, measles 8.

From whooping cough New York 7, Baltimore 4, Pittsburg 3, Boston 2, Providence, Cambridge, New Bedford, Lawrence and Fitchburg 1 each. From cerebrospinal meningitis New York 5, Providence, Worcester and Somerville 1 each. From scarlet fever New York and Baltimore 2 each, Boston and Philadelphia 1 each.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1901, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the secretary of the college on or before May 1, 1901.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1900 has been awarded to Dr. David De Beck, of Cincinnati, O., for his essay entitled "Malarial Diseases of the Eye."

THOMAS R. NEILSON, M.D., Secretary.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its next regular meeting at 19 Boylston Place, Wednesday, October 17, 1900, at 8 P. M.

At 8 o'clock: Dr. R. C. Larrabee will report "A Case of Dextrocardia."

At 8.15 o'clock: Dr. C. J. Enebuske will read a paper entitled "Chronic Diffuse Interstitial Nephritis."

Business: The election of a chairman for the ensuing two years.

J. BERGEN OGDEN, M.D., Secretary, Harvard Medical School, Boston.

MEDICAL SOCIETY OF VIRGINIA. — The thirty-first annual session of the society will be held in the Auditorium, Charlottesville, Va., October 23, 24 and 25, 1900.

RECENT DEATHS.

LAWRENCE MERVIN GOULD, M.D., M.M.S.S., of Hyde Park, died in Portland, Me., October 7, 1900.

WILLIAM MUNN, M.D., fifty-three years old, of the Borough of the Bronx, New York, died in Bellevue Hospital, on September 24th. He was a graduate of the Medical Department of the University of the City of New York in the year 1868.

WILLIAM WEBB BROWNING, M.D., of Brooklyn, N. Y., died on October 4th, from cerebral apoplexy. He was born in Methuen, N. J., in 1852, and was graduated from Yale College in 1873. In 1875 he was graduated from the Columbia Law School, and, after practising law for several years, entered Bellevue Hospital Medical College, from which he was graduated in 1884. In 1895 he received the honorary degree of A.M. Dr. Browning held two professorships in the Long Island College Hospital, the chair of anatomy and the chair of clinical orthopedics.

STEPHEN E. D. HORNBECK, M.D., Secretary and Treasurer of the Building Commission of the Eastern New York Reformatory at Napanoch, Ulster County, died suddenly at his home in Ellenville, N. Y., on October 3d. He was born at Wawarsing Corners in 1844, and was graduated from the College of Physicians and Surgeons, New York, in 1865.

BOOKS AND PAMPHLETS RECEIVED.

Studies in Pancreatic Digestion made with Pancreatic Juice. By B. K. Raebford, M.D. Reprint. 1900.

A Case of Ligature of the Innominate Artery for Aneurism. By George W. Gay, A.M., M.D., Boston. Reprint. 1897.

Excision of High Rectal Carcinoma without Sacral Resection. By N. Sean, M.D., Ph.D., LL.D., Chicago. Reprint. 1899.

A Treatise on Diseases of the Nose and Throat. By Ernest L. Shurly, M.D. Illustrated. New York: D. Appleton & Co. 1900.

Transactions of the Louisiana State Medical Society at its Twenty-first Annual Session, held at New Orleans, La., April 19, 20, 21, 1900.

I. Successful Treatment of Variola, and II. Improved Method of Vaccination: Vaccinoid. By V. Lehmann, M.D., Hahnville P. O., La. Reprint. 1900.

Flashes of Wit and Humor, or a Brief Study of the Best Things of the Brightest Minds. By Robert Waters. New York: Edgar S. Werner Publishing and Supply Co. (Incorporated). 1900.

Ulceration of the Bladder, Simple, Tuberculous and Malignant. By E. Hurry Fenwick, F.R.C.S., Surgeon to the London Hospital, etc. London: J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1900.

Original Articles.

SUPPURATIVE PERICARDITIS AND ITS SURGICAL TREATMENT.¹

BY CHARLES B. PORTER, M.D., BOSTON.

Your committee invited me to present the subject of suppurative pericarditis because they knew that in 1895 I had had a successful case of pericardotomy in a patient of Dr. F. C. Shattuck, who asked my surgical aid in its treatment. The case in full was reported to the American Surgical Association in 1897, together with a study of the literature of the subject up to 1895 and 1896. As all here may not be familiar with that report, I should like to read two short extracts from it, and then present the literature of the subsequent years with additional cases and some new ideas.

In my previous study of the subject I collected 24 published cases, beginning with the first case of recovery, the case of Rosenstein, operated upon in 1881. Of this number 8 recovered and 16 died, and in 1 the result was unknown.

In 1 case pericarditis developed one month after a wound. Many of the cases were complicated with left empyema, and twice the pericarditis was discovered at operation while draining the empyema. Of the fatal cases, 2 died at operation; 1 lived two days; 1 (Delorme's case) lived eight weeks after the operation.

The organisms found in the exudate were the staphylococcus aureus and streptococcus pyogenes, pneumococcus, and colon bacillus (in case of stab wound).

The amount of pus evacuated varied from 10 ounces to 2 quarts. In 1 (Dickinson's case) it was brownish and thin with arterial blood; in 2 (Korte's and Eiselberg's cases) foul and thick; in 2 (Newman's and Delorme's) thin. In the majority it was thick, creamy, without odor. In a number of cases large fibrinous masses were found, the pericardium being covered with thick layers of lymph. At autopsy in 1 fatal case (Pepper's), the whole sac was full of a thick mass of fibrin as large as the fist; the drainage had been good, and the heart probably failed from pressure of these fibrinous clots. The shortest case of healing of the sinus after drainage was nineteen days, the longest two months.

Preliminary aspiration was done in all these cases before opening the pericardium. In a number of cases paracentesis was done more than once, with and without injection of carbolic acid; and incision was finally resorted to owing to the rapidity of the reaccumulation. The immediate relief to pulse and respiration was almost always striking.

THE SURGICAL ANATOMY OF THE PERICARDIUM.

All authorities agree as to the great variations in the line of reflection of the pleura and pericardium.

Sick found that in the adult, out of 23 cases, the pleural reflection at the level of the fifth rib cartilage lay either at or within the left border of the sternum in 17; at the level of the sixth cartilage the pleural border had not gone beyond the sternal border in 10; at the level of the sternal articulation of the seventh cartilage it was in 9 cases at the sternal border, or

this cartilage was below its lower border. Twice it was less than 1 centimetre from the sternal border.

In 12 children Sick found at the level of the fifth rib cartilage the pleura was either within or just at the sternal border in 11. At the level of the sixth cartilage the pleural had not left the sternal border 8 times.

It will thus be seen that, according to Sick's careful observations, even at the fifth space the reflection of the pleura will often be behind the sternal border. Brooks (quoted by Quain) in 4 of 7 quite healthy cases found the left pleural reflection entirely behind the sternum, and in 1 at the sternal border.

According to Luschka (quoted by Quain), the pleura normally diverges from the median line at the upper border of the fifth costal cartilage, so that at the level of the fifth cartilage it is $\frac{1}{2}$ centimetre, at the sixth 2 centimetres, and at the seventh 3.5 centimetres, external to the left border of the sternum.

Delorme and Mignon found in 32 adults that in the fourth interspace the left pleural border was within the border of the sternum in 17. At the level of the fifth cartilage it lay 15 times internal to the sternal border, and 17 times outside. In 12 cases at the fifth interspace the pleural border was at, or inside, the sternal; and in the sixth space the pleural border was outside the sternum in 26 cases, and at or within it in 8.

Dr. Thomas Dwight, professor of anatomy at Harvard University, agrees in the main with Sick's observations, but states that there are many variations, and that frequently it is possible to reach the pericardium through the fifth intercostal space and frequently not. Owing to the fact that the sixth intercostal space is small and narrow, and that even here the pleural often reaches the sternal border, he concurs with the writer in advising resection of the fifth costal cartilage, and if necessary the excision of a piece of the sternum opposite this cartilage.

The internal mammary artery, according to Quain, runs parallel to the sternum at a distance from it of 1 centimetre. Delorme and Mignon, in 30 cases, found it a distance from the sternum of from $\frac{1}{2}$ to 2 centimetres, the distance averaging about the same in the first six interspaces.

In looking over the arrangement of the left pleura by Dwight, Delorme, Sick, Quain and Testut, all agree that there is a varied arrangement. Below the fourth intercostal space in the majority there is a slight interspace close to the border of the sternum which is free from pleura. In 22 operations on the cadaver by myself it was found that the removal of the fifth intercostal cartilage, and the removal of $\frac{1}{2}$ inch of the sternum opposite the sternocostal joint, gave free access to the normal pericardium near its lowest level.

Three of the methods of operation which have been proposed and practised, namely, trephining the sternum (Riolan), approach through an intercostal space, and epigastric incision (Larrey), should all be discarded, as it will be evident from the above account of the anatomy that in all of them there is danger of wounding the pleura or diaphragm.

In this earlier work I decided that operation was indicated in all cases of purulent pericarditis and perhaps in serous pericarditis in cases where aspiration once or twice repeated is followed by reaccumulation of the fluid; and the following "ideal operation" was planned after careful consideration and experiment on

¹ Read before the Massachusetts Medical Society, June 12, 1900, and recommended for publication by the society. Abstract.

the cadaver in order so far as possible to meet the following indications: (1) To avoid opening the pleural cavity. This may be made more easy by adhesions as a result of tapping or inflammation; (2) to open the pericardium opposite the point where drainage will remain good after the sac has contracted; (3) to secure permanent and free drainage.

The steps of the operation are:

An incision from the middle of the sternum outward over the fifth costal cartilage to its junction with the rib.

The soft parts are cleaned from the cartilage with periosteum elevator, care being taken not to wound the pleura on the under surface. The cartilage is divided with bone forceps from the rib and the sternum. The internal mammary artery and vein are thus exposed, ligated in two places and divided between. The triangularis sterni is separated from the sternum and pushed to the left.

A little careful dissection with the director in case fat is encountered exposes the pericardium, which is normally much thicker than the pleura. An aspirating needle should now be introduced, if this has not been previously done, in order to corroborate the diagnosis. If confirmed, the knife should follow the needle. The incision in the pericardium is best made obliquely downward and outward, beginning close to the excised border of the sternum. The edges of the pericardium should be stitched to the soft parts.

Irrigation should always be employed, with the object of removing any masses of fibrin which may lie at the bottom of the cavity; and if there are many such masses, it should be continued until the fluid returns clear. The fluid may be weak sublimate or carbolic solution, or salt solution, according to the preference of the operator. The fluid must be warm and must have free exit. With this exception no harm has resulted from irrigation, which has been practised in more than half the cases.

Drainage is best provided by two rubber tubes, one long and reaching to the bottom of the sac for the inflow, and a short tube just entering the sac for the outflow. As the discharge diminishes one tube may be removed and finally gauze drainage inserted. Gauze drainage has proved adequate from the first, but where the fluid is thick or flocculent, tubes give the only adequate facilities for the subsequent daily irrigation.

The after-treatment must, of course, be directed to two ends: (1) Systematic treatment, consisting of forced feeding and free stimulation, and (2) the care of the wound and the maintenance of drainage. The wound should be irrigated daily and the patient, if his strength is sufficient to allow it, turned on his stomach to facilitate drainage.

Roberts, of Philadelphia, also, before the meeting of the American Surgical Association in 1897, presented an elaborate and exhaustive review of this subject. In this report he advocates the method of turning up a flap consisting of portions of the fourth and fifth left costal cartilages with the attached soft parts, thus exposing the field of operation. This method he had never followed on the living subject. Roberts collected 35 cases from all literature up to June, 1897, including my own case.

The previous work of the writer and the careful paper by Roberts brought the collected knowledge of this subject up to the summer of 1897, and leaves us nothing further to do than search the work of the last

three years, and make our final conclusions and analyses.

Voinitch-Sianojensky, of St. Petersburg, in 1897, a Russian writer,² contributed a long study on the anatomical questions in pericardotomy, but added nothing new to the conclusions of Delorme and Mignon, or to the anatomical studies of the writer given above. He refers to a case of incision in the second intercostal space for suppuration in the pericardium done by Bexman, of Russia, in 1891, with recovery. This case is not mentioned, so far as known, elsewhere. He refers to a number of different methods of incision and the advocates of each as known to him:

Through the third intercostal space, Sievens; through the cartilage of the fourth rib, Eiselberg; through the fourth space, Rosenstein, Orlov, Minnie, Bronner, Parker, Klefberg; through fifth rib cartilage, Ollier, Gussenbauer and Körte; through fifth space, West and Davidson. Desault and Robinson, as well as himself, advise operation through the sixth rib and sixth space. Del Vecchio resects fourth and fifth ribs and cartilage, also Roberts. Delorme and Mignon the fifth and sixth; Riolan, Laennec, Skielderup and P. Malle propose to trephine the sternum in the median line. Velpeau, Pirogoff, Baizeau, Delorme and Mignon think it unnecessary to keep to left side of the sternum, while Desault, Romero, Karanaff, Trousseau and Tillaux advise it. Rotch, Wilson and Dickinson choose fifth space on right side for tapping.

He claims to have had the opportunity of studying post mortem 20 cases of pericardial effusion and to have done 100 pericardial operations on the dead, and on this experience he declares that incision through the sixth costal cartilage will *always* avoid the pleura (which is not an accurate statement), and his proposed method of operation is to go through the sixth cartilage, and, if necessary, cut away some of the seventh cartilage also.

He states that open incision in all cases of pericardial effusion (not only in purulent cases) should be much preferred to puncture, because of the danger of wounding the heart and pleura by any method of using a needle.

Eichel, in 1899³ gives a fairly complete résumé of the anatomy of the pericardium and pleura with several diagrams. This article is chiefly valuable as showing that the most modern anatomical work does not change the accepted views of 1897 as given by me. In his paper he makes reference to all the latest foreign anatomies.⁴

He recommends pericardotomy for all effusions as well as for all wounds. He gives several interesting cases of operation for wounds and resulting hemorrhages into the pericardium.

The use of tubes for drainage after hemo- or pyopericardium operations Eichel opposes, stating that he had a case in which he could not keep the ends of the tubes from impinging on the heart wall and causing stormy and irregular action. He says that Riedel had a case that taught him the same thing.⁵

A point which is of great importance and which

² *Annales de Chirurg., Russe*, 1897, xiii, ii, f 3; also *Rev. de chir.*, 1898, vol. xviii, p. 993.

³ *Die Schussverletzungen des Herzbentels*, Arch. f. klin. Chir., Bd. lxxix, H. 1, 1899; also *Annals of Surgery*, vol. xxx, p. 658, 1899.

⁴ *Lehrbuch der topographische Chir.*, Anat. von Joessel und Waldeyer, Bonn, 1899; also Terrier et Raymond: *Surgery of Heart and Pericardium*, Paris, 1898.

⁵ *Ref. to Riedel, Verhandl. d. deutsch. Gesellsch. f. Chir.*, 26 Cong., 1897, S. 72; also *Centrbl. f. Chir.*, 1897, p. 56.

Brentano and Schaposchnikoff lay great stress upon, namely, the anterior situation of the heart in all effusions into the pericardium, is denied by Eichel. In his case, he says, there was plenty of fluid between the heart wall and the anterior wall of the pericardium.

Brentano⁶ reports 5 cases of operation for pericarditis, and discusses this question as to the situation of the heart when the pericardium is more or less full of fluid, whether it is nearer to the posterior than the anterior wall. From his clinical experience Brentano decides that in all pericardial effusions the heart is situated down and forward and most often lies right against the anterior wall of the sac even when no adhesions exist, and that in many cases there will be adhesions between the pericardium and the anterior wall of the heart. In all cases most of the pericardial fluid is behind. If this anterior situation of the heart is a fact, the danger of wounding the heart wall in all cases of paracentesis is great.

Brentano advises open incision in any effusion, with resection of the fifth costal cartilage. In fact, this seems to be the growing thought in the last few years, that incision through resection of the fifth left costal cartilage is a far safer operation than paracentesis.

Schaposchnikoff, in 1898,⁷ agrees entirely with Brentano on this question. He states that he has studied the point for twenty-seven years clinically, post mortem and experimentally, and has proved that the heart is in all cases forward against the sac wall.

Brentano recommends almost the identical procedures of my own technique, namely, stitching of the sac to the skin, and irrigation; for drainage, however, he always used iodoform gauze, not tubes.

He decides that opening the pericardium through a resection of fifth rib cartilage is very simple, and advises against puncture in any case. Local anesthesia with cocaine is all that is needed in most cases. In regard to this question Körte — speaking at the Freie Vereinigung der Chirurg. at Berlin, December 13, 1897⁸ — favored the use of cocaine in many cases, but stated that in certain cases of thick chest walls ether or chloroform must be used. Brentano mentions as one of his chief arguments against puncture in cases of serous effusion that it is impossible to remove all of the fluid by aspiration alone. Of 80 cases of paracentesis tabulated by West, in 23 the puncture had to be repeated.

Brentano reports 5 cases which are as follows: All 5 were done by resecting the fifth rib cartilage. Two were for purulent pericarditis, both of these cases following acute osteomyelitis in children seven years old. Operation was followed by temporary and marked improvement, but death occurred in twelve days from pyemia, as shown by autopsy. In both cases there were found multiple abscesses in the heart muscle itself, and in one the direct cause of death was from rupture of one of these abscesses into the left ventricle.

Two cases were for subacute serofibrinous pericarditis after rheumatic attacks and rheumatic endocarditis. Both died in three days.

The fifth case was a brilliant case of open incision for simple serous pericarditis, without preliminary puncture.

Delorme, in 1897,⁹ the same surgeon who collaborated with Mignon in 1895 in an article on the technique of pericardotomy,¹⁰ recommends resection of the fifth rib cartilage to relieve mediastinal and pericardial adhesions whether or not due to tuberculosis, and also as the route to the pericardium in all cases.

H. Allingham¹¹ brings forward an entirely new method of operation for draining the pericardium in suppurative cases, and also, with Ogle, of London, reports a case of purulent pericarditis operated on, though not by his suggested method. The case was one of purulent pericarditis originating from a chronic abscess in the pleural cavity near the pericardium. Incision after resecting the fifth cartilage was followed by death in fourteen hours.

Allingham's suggested method which he tried on 12 cadavers, but never on the living, is as follows. It is designed to give best access to the sac and best dependent drainage by opening the sac from below through the diaphragm:

(1) An incision about 3 inches long with its upper end at the costoxiphoid angle is made along the lower edge of the seventh costal cartilage; the latter is then exposed by separating the abdominal muscles from it; the cartilage can then be pulled up and back, exposing the fibres of the diaphragm together with the cellular interval between its attachments to the cartilage and to the xiphoid appendix.

(2) This cellular space is enlarged by cutting or tearing through the muscle of the diaphragm as far as necessary, when a mass of fat is usually seen just above the diaphragm in the space between the diaphragm below, the sternum in front, the pericardium above and behind. This fat, together with the diaphragm, is then pulled down when the pericardium presents, and can be opened up at its lowest point.

During the operation the peritoneum may be exposed to a slight extent as it sweeps downward from the under surface of the diaphragm. It is, of course, not injured, being pushed away as in a suprapubic cystotomy.

The advantages claimed for this method are as follows:

(1) The pleural cavity cannot be injured, as it is far away in the normal arrangement of the organs and further off in pericardial distention. It is claimed that this is the only sure method of avoiding the pleura.

(2) Drainage is through the most dependent part of the sac, through a large opening not limited by bone or cartilage.

(3) Great ease of exploration and cleaning of the sac is afforded.

In certain fat subjects it may be necessary to cut away some of the seventh cartilage to get room in the xiphoid space. (It is to be noted that Roberts has recommended this area as the point of election for puncture, though not for incision.)

Ljunggren¹² reports a case of suppurative pericarditis successfully treated by incision and drainage.

He objects to puncture as a dangerous procedure in any case, recommending incision and drainage as the rational thing in all cases. He added 6 cases to Roberts's 35, making 41 in all, but 4 cases are inaccessible

⁶ Deutsch. med. Woch., 1898, xxxii, S. 506.

⁷ Russisch. Arch. f. Path., klin. Med. und Bact. von Padw., July, 1896; also Deutsch. med. Woch., 1898, No. 38, S. 611.

⁸ Deutsch. med. Woch., 1898, S. 170.

⁹ Gaz. des hôp., 1898, p. 1,150.

¹⁰ Rev. de chir., September and October, 1895.

¹¹ Lancet, March 10, 1900.

¹² Nord. Med. Ark., new series, 1899, vol. ix, No. 28, excerpted briefly in Annals of Surgery, 1899, vol. xxx, p. 659.

to us and doubtful. Of these, 16 recovered and 25 died. Of the 16 recoveries, 8 were complicated by other diseases; in 7 of the fatal cases death was due either to faulty methods or slowness in operating.

His eight rules for the technique of the operation do not differ from my published method. He uses rubber drainage tubes, double.

The pleura should be bluntly loosened and sutured laterally to prevent infection of the pleural cavity. He mentions the occasional necessity of cutting away some of the sixth cartilage after resecting the fifth, in order to get more room, but does not mention removing any of the sternum. General anesthesia is not necessary and in weak cases is contraindicated.

Lilienthal, of New York, in 1889,¹³ reports a case of recovery from operation in a boy convalescing from lobar pneumonia; operation under eucaïne, local anesthesia, 40 ounces pus evacuated, giving cultures of pneumococci; this organism and streptococci were also in the sputum.

C. Mansell-Moulin, in 1897,¹⁴ reports an operation for "hemopericardium" as he calls it. The case was successfully operated on about one month after a blow on the chest at foot ball, and six pints of thin, dark, bloody fluid removed, from which no cultures were made. It seems reasonable to class this with purulent cases like certain other cases of suppurative effusion after injury (note the case of Riedel, also case of West). The case is not very dissimilar from Eiselberg's at the first aspiration.

Sevestre, in 1898,¹⁵ reports a case of purulent pericarditis in the course of acute pneumonia. Cultures, pure pneumococcus. Operated on under cocaine anesthesia. Double empyema afterward with resection of ribs on each side. Death.

In Sevestre's case two aspirations were attempted before the incision was finally resorted to. At the second aspiration only bright blood was obtained (the query arises as to whether the heart itself was wounded); the operation through the fourth space seems to have been careless, and the empyema following may have been caused by the pericardial operation.

H. Bethan Robinson, who reported his first case,¹⁶ has reported a second case, in 1898.¹⁷ A case following bronchopneumonia in a child four years old. Death in three days.

Several recent elaborate papers given in my bibliography deal with the surgery of the heart itself or with the surgery of wounds of pericardium.

Loison, on wounds of the heart and pericardium, in an exhaustive paper¹⁸ gives in his table 4 cases of pericardotomy for wounds of pericardium, namely, cases of Cappelen, Eiselberg, Garber and Riedel. Two of these, Eiselberg's and Garber's cases, are cases of operation for suppuration following wounds.

A new method of opening the chest in surgery of the heart and pericardium is advanced by Wehr.¹⁹ He recommends it especially where large exposure is necessary in wounds of the heart itself. It consists of making an elliptical flap of skin, bone and cartilage, cutting across sternum at the base of fourth cartilage

and again at the xiphoid joint, and by a curving sweep taking in fourth, fifth, sixth and seventh costal cartilage, turning this flap back with the right edge of the sternum as a hinge. He does not say he has done this on the living. His method can best be shown by reproducing his cuts, two in number.

Manges, of New York, in 1900, reported on cases of pericarditis following pneumonia at the Mt. Sinai Hospital.²⁰ Of 500 cases of pneumonia, pericarditis developed in only 11, and of the 11 5 died. He thinks all cases of pericarditis as a complication of pneumonia are due to the pneumococcus, and further states that infection with this organism is probable in many cases of so-called idiopathic pericarditis. This same organism finds its way from the pulmonary passages. In the pericardium, as in the meninges, the pneumococcus is always a pus-producing organism. It is probable, he says, that many cases of pericarditis in pneumonia are overlooked because the conditions around the heart when the left lung is affected are such as to obscure the most important sign, namely, increase of heart dulness; the to-and-fro murmur of the pericardial friction may last but a few hours.

Connor and Stimson, of New York, in 1900²¹ report a case of purulent pericarditis after a severe pneumonia. Operation under local anesthesia by Dr. Stimson. The right pleura was cut accidentally; death in a few days from purulent pneumonia.

Ljunggren in his paper,²² after reporting his case, the history of which has been translated and put in my list of cases, goes on to say that he has found some new cases which are not in previous lists. Three of these cases are inaccessible, however, and are given thus by him with no details; he merely gives the references: Hirschsprung, cited by Heyde; Heyde in a Dissertation, Kiel, 1896; Perls in a Dissertation, Strassburg, 1896. The other cases are those of Brentano, which I have given.

It has been possible for the writer to add 14 cases to the former collections of my own and Roberts, without counting the 3 cases cited above by Ljunggren, the details of which are not to be had. These make a total of 51 cases. (Of this series of cases the annexed tabular view has been made.)

An analysis of the 51 cases gives the following facts: 46 were for purulent pericarditis, septic; 2 were for serofibrinous pericarditis, rheumatic; 1 was for hemorrhagic pericarditis, traumatic; 2 were for serous pericarditis.

The etiology is as follows: Pneumonia, with and without empyema, 14; bronchopneumonia (in a child), 1; osteomyelitis, 5; wounds, gunshot or stab, 4; blow on chest, 1; periostitis, 1; necrosis of nasal bones, 1; septic throat, 1; septic arthritis of knee, 1; abscess of buttock, 1; empyema without pneumonia, 5; pleurisy of doubtful origin, 2; pleurisy with typhoid fever, 1; pleurisy with bronchitis, 1; influenza, 1; tuberculosis (?), 2; unknown origin, 7; rheumatic fever and endocarditis more or less acute, 3.

Of the total 51 cases of incision for pericarditis, 20 recovered and 31 died, a mortality for all cases of 60.5%.

Of the 2 operations for simple serous pericarditis both recovered.

Of the 14 cases in which acute pneumonia, either

¹³ Journal American Medical Association, 1889, vol. xxxiii, p. 1,422, also Medical News, Nov. 25, 1899.

¹⁴ Transactions Clinical Society, 1897, vol. xxx, p. 217.

¹⁵ Lancet, April 23, 1898.

¹⁶ Transactions Clinical Society, vol. xxx.

¹⁷ British Medical Journal, November 26, 1898, vol. ii, p. 1,605.

¹⁸ Rev. de chir., 1899, vol. xix.

¹⁹ Arch. f. klin. Chir., Bd. lxx, S. 949.

²⁰ Medical News, January 20, 1900.

²¹ Loc. cit.

²² Nord. Med. Ark., new series, 1899, vol. ix, No. 28, extracted briefly in Annals of Surgery, 1899, vol. xxx, p. 659.

lobar, bronchial or septic, was the cause of the purulent pericarditis, only 4 recovered (cases of Bohm, Lilienthal, Porter and Bjorkman); in 2 of these the pneumococcus was grown from the pus. The other 2 do not report bacteriological studies.

Twenty cases were not tapped previous to operation. Local anesthesia with cocaine or eucaine was used in 6 cases.

CONCLUSIONS.

(1) Pericardotomy is indicated in all cases of suppurative pericarditis.

(2) Because of the uncertain and varying relations of the pleura and because of the anterior position of the heart, whenever the pericardial sac is distended by fluid, aspiration of the pericardium is a more dangerous procedure than open incision, when done by skilled hands.

(3) Incisions of the pericardium can be done quickly and safely by resection of the fifth costal cartilage and in many cases under local anesthesia.

(4) In many cases of serous effusion open incision without puncture will offer less risk and speedier cure than aspiration.

(5) The method and detailed technique of the writer proposed in 1897 have been followed out by the majority of recent operators.

HYDROTHERAPY IN PNEUMONIA.¹

BY SIMON BARUCH, M.D., NEW YORK.

A RETROSPECTIVE glance at the treatment of acute diseases during the past half century reveals the fact that a revolution has taken place which has culminated in the practical abolition of the treatment of these diseases. In our own country the revolution was initiated by Jacob Bigelow, a former member of this society, by his work on the "Self Limitation of Diseases," published in 1835, and by his later book on "Nature in Disease." Reinforced by the good sense and captivating eloquence of your Oliver Wendell Holmes, American medical men have slowly, too slowly, alas, changed from destructive to constructive therapy.

We realize today that, with few exceptions, the manifestations of disease are but the expression of pathological conditions which no remedial agent is capable of removing. This proposition will not be construed by any fair mind as an abandonment of the patient to his fate, but simply to emphasize the fact that we no longer attack the disease by violent medication, as was formerly done by blood letting and mercury and blisters, later by *veratrum viride*, and more recently by antipyretics. If the symptoms of disease were really the essence of disease, our complete control of the pulse by *veratrum*, of temperature by antipyrin, of sleep by chloral, of pain by morphia, of feebleness by the modern foods and stimulants, would today ensure our triumph over disease. The fact that despite the response of the most significant symptoms to these powerful agents, patients continued to succumb, has awakened the medical conscience to a realization of the truth of the doctrines taught by Bigelow, Holmes and Hooker, sixty or more years

ago — that the patient rather than the disease must be treated.

In a malady like pneumonia, blood letting and other spoliative agents relieved pain, softened the pulse, and lulled the doctor into a false security, from which he was too often rudely awakened when heart failure presaged the approach of the end. So it is now with antipyretics, the chief value of which consists in enabling the patient to die with a more nearly normal temperature.

The old spoliative practice was abandoned when practical men discovered that it robbed them of the chief ally in the campaign against disease — the *vis medicatrix nature*.

If you reflect that for two thousand years the medical profession labored under the fatal error of fighting disease while the patient, being the battleground, suffered from friend and foe alike, you will bear with me in paying a tribute of gratitude to the man who courageously blazed a pathway through the confusing mazes of spoliative medication to "nature in disease." I esteem it a high privilege to announce here, amid the very scenes of his professional activity, that like Jacob Bigelow I trust to nature in pneumonia, as in every other acute disease. Not blind as that of the Christian Scientist in prayer and faith is my reliance on nature, but ready in armed expectancy to intercede in her behalf when peculiarities of the patient or of the disease or conditions of environment point to a deviation from normal processes of restitution.

Isolation, rest, cleanliness, ventilation, food, drink, and if need be medication, should be so directed as to enhance the resisting powers of the patient — to so fortify him that his inherent powers have free play in eliminating the noxious products which threaten to overwhelm him.

Among these agencies I esteem hydrotherapy as one of the most valuable. Water is not a curative agent for pneumonia, but its judicious use has afforded me much comfort and has doubtless contributed greatly to the diminution of mortality.

A somewhat active professional life of nearly forty years, spent in country, village, city, army, family and hospital practice, has brought me to the conviction that pneumonia is an infectious disease, which tends to destroy life by enfeebling the nervous and circulatory system, and that the indications for overcoming this lethal tendency are: (1) To fortify the nervous system; (2) to sustain the heart, whose integrity is of vital import in overcoming the local lesion and in removing inflammatory products by a vigorous circulation; (3) to strive for elimination of noxious products arising from the life and death of the diplococcus; (4) to render the patient comfortable by reducing high temperature, deepening inspiration and producing sleep.

Flexibility is a notable quality of hydrotherapy. By various procedures, changing of temperature and duration, we may adapt the application of water to the most opposite conditions for the fulfilment of these indications.

In no disease is this better exemplified than in pneumonia. Although its general manifestations resemble in many respects typhoid fever, its local manifestations differ from the latter as the Eberth bacillus differs from the diplococcus of Fraenkel. While in typhoid fever the cold bath, preferably as suggested by Brand, has proved of surpassing value, such a bath is not adapted

¹ Read before the Massachusetts Medical Society, June 12, 1900, and recommended for publication by the society.

to patients suffering from pneumonia. The reason is clear at the bedside. The typhoid patient resists temperature abstraction with much tenacity; the pneumonia patient, as a rule, quickly responds to heat abstraction. This clinical fact has often enabled me to confirm a tentative diagnosis, especially in children between eight and sixteen years of age.

While the typhoid patient, as a rule, bears the disturbance involved in tub bathing fairly well, such a procedure is extremely distressing in pneumonia by reason of dyspnea, cough and pain. Although Vogl, of Munich, Folsom, of Boston, and others, have reported good results from the cold full bath, I have abandoned them in adults for these reasons. In the pneumonia of young children, who are easily lifted, I still use full baths of moderate temperature (95° to 80°), or affusions of water of lower temperature (70° to 60°) in the bronchopneumonias with obstruction, because pleurisy is usually absent, and the shallow breathing and deficient oxygenation due to bronchial obstruction are greatly relieved by the agitation, crying and coughing incident to the full bath, with friction. It is my rule in all cases to be present during the first bath, in order to note the reaction and obtain other information for future guidance, because individuals differ materially in their response to bathing.

While each case demands special study with regard to baths, I usually begin with a tub bath (given alongside of the bed) of 5° below the patient's temperature, and diminish the bath 2° or 3° at each repetition in four hours until 80° are reached. The child's head and face are bathed in water at 65° before entering the bath, and gentle friction is made over the body during the entire bath. During the interval between the baths the method pursued in adults is adopted. In the latter, I have for the reasons stated substituted the wet thoracic compress for the full bath. It is my custom to have the rectal temperature taken every hour when the patient is not asleep. So long as the thermometer registers over 100°, a compress made of three folds of old coarse linen wrung out of water at 60° F. is wrapped around the chest from the clavicle to the umbilicus. It should be long enough to lap over one inch in front, and so slit in its axillary portion that it may rise easily up to the clavicle without leaving rough folds in the axilla. This compress is smoothly wrapped around the chest and covered by one larger of thin flannel, an inch wider and longer.

The effect of such an application of cold is so readily observed that it would seem needless to dwell upon it, did not so much misapprehension exist in the average medical mind on the object of cold applications in febrile disorders that it is necessary to again and again define it, to remove these erroneous impressions. Pardon me if I advert to some familiar physiological data. We know cold and heat are thermic irritants which stimulate when mild, depress when more severe, and destroy vitality when sufficiently intense. Applied through the medium of water, and regulated with regard to temperature, duration and mechanical impact, we may so modify these thermic impressions as to produce therapeutic results for which we look in vain in other remedies.

The primary effect of cold is that of irritant to the sensory network of the skin. This has been called shock, an error which is made evident by the definition of shock. In Gould's Dictionary shock is defined as

"depression, a grave effect produced by severe injuries, operation and strong emotion." To produce a shock with cold water, it would be necessary to put the individual into a tub of water very much below the body temperature and sufficiently long to prevent reaction. If the water were near the freezing point and he could not escape, shock would ensue. The individual would become unconscious, and the vitality of the skin would be destroyed if he survived long enough to suffer from frostbite. Bear in mind that the same effect would be produced by hot water under similar conditions, and yet no one ever speaks of the shock of hot water. The truth of the matter is — and I trust you will pardon my offering so simple a proposition — that cold stimulates when mild, and shocks when it is intense. Upon this principle we stimulate the nerve centres in pneumonia. A compress containing water at 60° F. when applied around the chest of a patient having a temperature 40° higher, produces an irritation of the sensory terminals in the skin, which convey it to the central nervous system and thence reflect it upon the organs receiving impulses from the latter. This is plainly evidenced by the patient's momentary gasp, the heightened pulse tension, the deepened and prolonged inspiration and the lowering of temperature.

By changes in the preparation of the compress we may modify positively the effects aimed at. If, for instance, the body temperature is not very high, say from 100° to 102°, the compress may be more thoroughly wrung out, so as to make the impression of cold more brief, reaction more rapid and less enduring. If the temperature be high, 103° or above, the water temperature may be raised to 65°, more water may be allowed to remain in the compress, thus rendering the reaction more slow and enduring and abstracting more heat. In the first instance the application will be more stimulating, in the latter more soothing and antipyretic. If the patient is easily chilled or does not react readily, whether the body temperature be moderate or very high, the compress may be allowed to remain longer without change; its repetition may vary from half an hour to an hour, or even longer, according to the patient's condition, his reaction and other effects produced and aimed at. Such cautious adaptation will gradually improve or regulate the reactive capacity of the patient, and sooner or later will enable him to bear more frequent repetition. It must always be borne in mind in all applications of cold water that shock is to be avoided; there should be no prolonged chilliness, no chattering of teeth, no cyanosis of lips, nails or face; in fine, every manifestation which indicates a depressing effect demands a modification of the procedure or its abandonment if need be. And right here let me emphasize a much neglected point. We do not abandon quinine in malarial fever when it produces distressing effects. On the contrary, bearing in mind the importance of the remedy, we circumvent its distressing effects by changing the method or time of administration, etc. Cold water is often entirely abandoned when it produces unfavorable manifestations, which is a serious error. Treat it as you would any other remedial agent; change the method, the temperature, the duration, and you will be gratified by the result, for it is a most flexible agent, as I have shown.

Besides the general effect referred to, we observe a local stimulating effect upon the cutaneous circulation.

The arterioles contract under the cold compress, but they quickly dilate again, as is evident from absence or disappearance of chilliness and the gradual warming up of the part, so that when the compress is removed in an hour, it is quite warm. This dilatation, be it remembered, however, is not a passive one like that under a warm poultice. The skin does not wrinkle and become cyanotic, but remains smooth and becomes ruddy. Moreover, repetition again stimulates the walls of the arterioles to contraction and dilatation, propelling the blood flow through them, and thus relieving the overburdened heart of much labor. Romberg and Paessler have recently confirmed by laboratory experiments what I have several years ago and repeatedly since that time insisted upon, that in acute infectious diseases we encounter disturbances of the circulation which manifest themselves clinically as reduced tension and diminished filling of arteries and which are commonly described as heart failure. Undoubtedly this condition of the peripheral vessels bears a very large share in the production of cardiac inadequacy, as I have sought to impress when explaining the rationale of cold application in typhoid fever. Romberg has shown by experiments with injections into rabbits of Fraenkel's diplococci that the circulation is damaged by a paralysis of the vasomotors, while the heart itself remains unaffected. By restoring the lost resiliency of the cutaneous vessels, the compresses tend to relieve the heart of much labor—a labor, too, which it vainly endeavors to compensate by increased pulsations—the sum of which too often leads to heart failure.

Upon this principle we endeavor to meet the second indication in pneumonia.

The third indication—the elimination of noxious products—is signally met by the improved condition of the central nervous system and of the heart, these presiding over all the functions of the body. The urine shows by its increase in quantity and toxicity that the most important noxæ are eliminated with great activity under the external application of cold. In addition to the latter the systematic administration of ice water (45° F.), 4 ounces every two hours, acts as a cold douche to the stomach and by increasing arterial tension increases urinary excretion. Allow me here to controvert an erroneous idea, which is almost universal, namely, that it is the increased quantity of water imbibed which increases the urine. (I have observed an increase of 100 to 400%.) Glatz has shown and I have confirmed his finding, that the imbibition of very hot or very cold water acts upon the arterial tension precisely as its external application and not by reason of the quantity drunk. This is readily demonstrated by the fact that only a slight increase of urine is produced by drinking tepid water, and the quantity is always increased with decided differences between the body temperature and that of the water drunk. It is my custom therefore to alternate 4 ounces of milk or other liquid food with 4 to 6 ounces of very cold water (45°) each and every hour when the patient is awake. The result is systematic and moderate feeding and renal stimulation.

The fourth therapeutic indication is certainly fulfilled by the mild application of cold in pneumonia. The comfort of the patient is greatly enhanced by the reduction of temperature, deepening of the inspiration and general *bien aise* which are renewed at each

application. The cold compress when its temperature is equalized to that of the patient's body really becomes a poultice, soothing in its effect, relieving pain, dyspnea, shallow and rapid breathing, but not relaxing the cutaneous vessels nor increasing body temperature like the poultice. It also increases leucocytosis, as has been established by Thayer, Winternitz and Rovighi.

To sum up briefly the effect of hydrotherapy in pneumonia, I would say that its judicious application fulfils all the therapeutic indications in this disease by meeting all the depreciating conditions which lead to a fatal termination. Only one condition is unaffected by this treatment, namely, resolution. I have observed crisis only in about 25% of cases. The local course of the disease appears to be unchanged. Resolution proceeds slowly, but surely. The patient has a normal temperature, pulse and almost normal respiration from five to twenty days before all signs of consolidation have disappeared. In the meantime I permit him to go out in mild weather and endeavor to hasten convalescence by the usual measures, good food, gentle outdoor exercise, ventilation, etc. I am still unable to explain theoretically this retardation of resolution in 50% of the cases, except on the same principle as the relapses in typhoid fever after the Brand treatment may be explained, namely, there are more cases escaping death and therefore more cases to relapse. The cases which do not have crisis under hydrotherapy would probably be added to the great silent majority or pursue the same chronic course toward convalescence.

TO WHAT EXTENT DOES "RHEUMATIC AND GOUTY DIATHESIS" ENTER INTO TRAUMATIC JOINTS (SPRAINS AND BRUISES), SEPTIC AND GONORRHEAL JOINTS, ACUTE ARTICULAR RHEUMATISM, NEUROPATHIC JOINTS, ARTHRITIS DEFORMANS (OSTEOID, RHEUMATOID), AS AN ETIOLOGICAL FACTOR? WHAT IS THE SCIENTIFIC BASIS FOR SUCH A TERM?*

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OF the six subdivisions propounded for discussion under the common subject, "Diseases of the Joints often Diagnosed as Rheumatic or Complicated with Rheumatism," the one given above was assigned to me by your committee.

The question is composed of two distinct parts, the last of which calls for elucidation before the first can be logically considered.

Taking up first the question as to the scientific basis of the two terms "rheumatic" and "gouty diathesis," before we can decide their true position in connection with scientific medicine, we are at once forced to analyze the origin and literal meaning of these terms in the light of our present chemico-physiological and pathological knowledge.

Take, for instance, the term "diathesis." What is its true significance in relation to the chemistry of the human economy? For years the term "diathesis" has been used to indicate that something has been handed down from generation to generation, but what that something is has never been made clear to the science of medicine. Taking the literal meaning of

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the word, from its Greek origin, *diathesis*, and applying it to the chemistry of the body, it must indicate simply and only that there is a tendency on the part of the animal economy to arrange the chemical phenomena of the system in certain and definite directions. This, however, does not justify the supposition that the individual is of necessity born to finally develop those symptoms recognized as constituting the conditions so long known under the term "gout" and "rheumatism." Therefore, the term "diathesis" as it is commonly applied, has neither fact nor foundation to rest upon; for all the evidence at our disposal tends to prove that all diseased conditions, with the possible exception of syphilis, are acquired after birth. All are abnormal chemical states of the system which can be either fed into or fed out of the human race, so to speak. This, however, is assuming a very high and almost theoretically ideal position; nevertheless, it is one that can be practically accomplished, provided we can succeed in attaining the highest perfection in the hygienic and dietetic conditions influencing animal life.

Thus, we find, without going further into exhaustive details, that there is no real scientific basis for the term "diathesis" as it has been commonly used in the past. In fact, it would be better if this term were dropped entirely from medical literature.

In like manner the terms "gout" and "rheumatism," when viewed from a purely scientific basis, are almost as meaningless as is "diathesis." Naturally, with this statement before us, the first question that arises is, what is this so-called "gout" and "rheumatism" that we hear and talk so much about? Turning back to the derivation of the word "gout" we find that it comes from the Latin word *gutta*, meaning a drop. According to Dunglison's Medical Dictionary, "gout received its name from the French *goutte*, drop, because believed to be produced by a liquid which is distilled drop by drop on the diseased part. The name was first used about 1270." Hence, gout is the drop disease. This, however, gives no insight into the etiological factors entering into the production of the pathological conditions so long honored by this name. Nor does it give any suggestion as to the disturbances of the chemistry of the body, which will ultimately bring about the pathological changes and symptoms so well recognized under the name "gout." We might possibly strain a point and say, in a similar manner to what has been said in the past, that the term "gout" was coined to indicate the dropping of the uric acid radical into the protoplasmic structures of the various tissues of the body, as the result of the final and vicarious oxidation of the proteid molecule in the tissues already made pathological by the prolonged disturbances in the chemical activities of the animal economy.

Vicarious oxidation being synonymous with the term "distillation" of the ancient writers, referred to in Dunglison's definition of the disease, accepting this more modern interpretation, there might be some justification for considering the term "gout" as a word based upon our present scientific data. On the other hand, as this vicarious oxidation of the proteid molecule in the already pathological structure of the body is but a little factor in the great and complex chemical problem constituting the condition so long known by the name "gout," there is no logical reason for regarding the term as one resting upon a clearly elucidated and per-

fectly scientific basis. Furthermore, the condition known as gout, as commonly defined, is said to be one in which there is a production of uric acid in the blood; a condition, however, that never occurs, because chemistry forbids the separate presence of an active acid in a strongly alkaline solution without the formation of a salt of that acid; at least it cannot occur unless all chemical laws are suspended in connection with the blood. So far as my observation and researches have carried me, there is nothing to warrant the assumption that the well-known laws of chemistry have been suspended, so that uric acid exists as such in the blood and does not result in the formation of a salt. Furthermore, it can be asserted that uric acid does not exist in the blood, for the reason that the salts of uric acid have never been found there, as must have been the case had uric acid entered the blood stream.

The definition above mentioned further affirms that the phenomena recognized under the term "gout" are due to the non-elimination of the uric acid from the blood stream, and its subsequent discharge from the blood as uric acid into the protoplasm of the various structures of the body, by preference into the cartilage cells of certain joints. But this explanation does not tell why the acid refuses to attack the sodium and calcium compounds in the blood stream, but seizes upon them with intense activity as soon as it is discharged into the semi-solid protoplasmic structures. Thus we find that the whole theory of gout is developed largely without any reliable scientific foundation, at least so far as the name is concerned, and it also disregards, almost from beginning to end, the well-known and inflexible laws of chemistry, as we understand them today. The only indisputable fact in connection with the whole theory of "gout," as it is commonly given, is the final deposition of the insoluble salts of calcium, together with some urate of soda crystals, in the various structures of the body. Therefore, it can very justly be stated that there is no well grounded scientific basis for the term "gouty diathesis."

When we come to the term "rheumatism" or "rheumatic diathesis," the mystery, so far as the derivation of the name is concerned, is greater even than is the case with gout. There is absolutely no scientific basis for the term. Yet under the term "rheumatism" is included a very great complexity of disturbed physiological phenomena.

If we attempt to secure any information through the derivation of the word we are led still further away from any scientific basis for it. Taking its Greek origin, *rheumatismos*, from *rheum* or *rheo*, and translating it literally "rheumatism," would mean a fluxion or flow, but of what or in what direction we are in total ignorance.

The more modern definitions are almost as vague and uncertain as those based upon the old and long since discarded humoral theory of rheumatism.

If there is no scientific basis for these terms, it is difficult to see how their relation to the topics under discussion can be elucidated or explained from a scientific standpoint. On the other hand, the natural inference is that both "rheumatism" and "gout" are, in a measure at least, connected with some of these joint affections under discussion.

Before we can discuss any etiological relationship between "rheumatic" and "gouty" conditions and the joint affections enumerated, we must first have

some fixed and definite conception of the chemico-pathological phenomena that are to be included under these terms. The weight of evidence, however, both chemico-physiological and clinical, points to defective oxidation on the part of the system as the chief predisposing factor in bringing about these two dissimilar conditions.

In the majority of instances the chief cause for a suboxidation state of the system is the ingestion of more oxidizable food than there is oxygen absorbed through the lungs to completely reduce the proteid constituents to the normal end products. In other instances diminution in the food supply, together with that of a poor quality, may so deteriorate the nutritive activity of the system that a pronounced anemia is produced, thus cutting down the intaking capacity of the animal economy for oxygen to such an extent that there is not sufficient oxygen absorbed through the lungs to perfectly oxidize the little proteid that is taken in the limited supply of food. Hence, too little or too much food may act as determining factors in producing an imperfect oxidation of the proteid constituents. It matters little whether the proteid be derived from the vegetable or the animal kingdom. Its imperfect oxidation and the toxic products developed in consequence of incomplete oxidation transmutation are *the* factors which excite the symptoms.

Attributing these pathological conditions to a suboxidation state of the system does not fully explain why in the one instance the result is "rheumatism" and in the other "gout." This was at one time attempted by assuming from the general clinical history that those individuals who partook freely of starches and saccharine substances developed "rheumatism," while those who lived largely upon an animal class of foods and used alcoholic beverages freely as a rule developed the condition called "gout." This was during the period in which lactic acid was supposed to be developed from the incomplete oxidation reduction of the saccharine elements and when uric acid was supposed to be the product of an animal diet only. That both uric acid and lactic acid do result from the imperfect utilization of the proteid constituents derived from the vegetable as well as from the animal kingdom is a well established fact. With this conception of the oxidation problem it is easy to understand how both "rheumatism" and "gout" can be developed from an excessive diet of either vegetable or animal food. It does not explain fully, however, why a liberal vegetable diet is more likely to produce the condition called "rheumatism," and the liberal animal diet is more likely to produce the condition called "gout." At the same time it must be clear to every one who has observed many cases clinically that certain kinds of diet have a decided influence in determining the nature of the suboxidation processes. It should further be remembered that none of these incomplete end products found in the excreta is to be considered as constituting the disease any more than urea constitutes normal nutrition. They should be regarded only in the light of results or indicators by which the different types of suboxidation can be recognized and differentiated.

The development of the so-called rheumatic condition cannot be explained as it was at that time, by assuming that lactic acid is the chief etiological factor in producing the disease, and that this so-called

lactic acid or rheumatic condition is due to the imperfect oxidation of the starches and sugar alone, while the gouty condition is due to imperfect oxidation of the proteid constituents. Assuming that such a condition is true from a chemical standpoint, it does not explain the development of the rheumatic condition, so called, in those who live almost exclusively upon an animal diet, in which there is no excess of the starch and sugar to undergo imperfect oxidation reduction. Therefore, such a theory is absolutely untenable both from the chemico-physiological and clinical data at our command. Hence, we are forced to the assumption that in the so-called lactic or rheumatic condition, as in the so-called uric-acid or gouty state of the system, all the toxic products found within the system, and all the abnormal products found in the excreta, are due to the imperfect oxidation reduction, or faulty isomeric transformation of the proteid constituents contained in the animal economy. This fact accepted, our theories can easily be made to fit all the clinical facts met with. Now, we can readily understand how it is that overindulgence in the starches and sugars is so prone to excite imperfect oxidation of the proteid constituents. The starches, sugars and fats, all being easily and quickly oxidized into their complete end products, if taken in inordinate quantities will overtax the oxygenating capacity of the system and there will not be left sufficient oxygen to complete the more difficult task of perfectly oxidizing the proteid constituents. In this manner they act as very potent factors in bringing about the imperfect oxidation of the proteid elements. Further than this, their oxidation being differently effected than the proteid, it is easy to understand how their excessive utilization may have a different result upon the system than an excessive use of the proteid constituents; thus, in a measure, explaining why, in the one instance, we are more likely to have "rheumatism," and in the other the "gouty" condition.

As there seems to be so much confusion in the minds of many in regard to the true position and meaning of these imperfect products of proteid oxidation, and especially so in reference to the most common of all, namely, uric acid, it may not be unprofitable to enter a little more into the detail of the formation of uric acid and its significance in connection with health and diseased conditions.

Uric acid is one of the substances by which nitrogen is eliminated normally from the system. It is an almost insoluble and very stable substance. It was first separated from human urine by Scheele, in 1776. It is a dibasic acid, having two replaceable hydrogen atoms, one of which is easily substituted by sodium, forming an acid urate, or biurate, of sodium. Both of the replaceable hydrogen atoms can be substituted by sodium, but, so far as is known, only the acid salt is a product of the animal economy. This urate is relatively soluble. Uric acid is formed by the oxidation of the proteid molecule or its derivatives, and is a lower oxidation product than urea, in the same manner that urea is a lower oxidation product than ammonia and carbon dioxide and water, which are the final products of proteid oxidation, chemically speaking. Why urea is the final oxidation product in man instead of ammonia, carbon dioxide and water has never been explained, further than to state that it is according to the original plan of nature.

It has been claimed by some that uric acid is not

an oxidation product, and they base their claim on the fact that this acid and its salts are the normal and complete excrementitious products in birds, reptiles, etc., in which animals the oxidation powers are said to be exceedingly high. However, there is nothing to prove the capacity of birds, reptiles, etc., to take in oxygen, or of the blood to distribute this oxygen, and of their system to utilize it, and that is sufficient to oxidize all the assimilated hydrocarbons and proteid compounds into their final and complete products. At any rate, to draw such an inference is begging the question. The chemical fact remains that their excreta, as compared with those of the higher order of animals, are products of a lower proteid oxidation; the same as urea is lower than the final product ammonia. Why in the one species the chemiophysiological apparatus of the animal economy is so constructed that uric acid and its urates are the final excretory product, while in another it is urea, is just as mysterious and absolutely unfathomable as the phenomena of life and death. In what follows we shall endeavor to show that in man the production of uric acid in quantities above the normal is due to a condition of suboxidation.

The two most prominent theories advanced to explain the genesis of uric acid in the system are :

(1) That it is an oxidation product manufactured in the renal cells; (2) that it is made in some manner in the liver, spleen, etc., but chiefly in the liver.

Minkowski,¹ Schroder,² Horbaczewski,³ are among the more recent defenders of the latter theory, while Garrod⁴ is generally credited with the former. The latter view is the one that has been accepted generally and on the following grounds: (1) That uric acid is found in the blood; (2) that in gout it is found in the tissues; (3) that after extirpation of the kidneys uric acid continues to be formed, and (4) that at the height of digestion, when the liver and spleen are most active, uric acid is most abundant in the urine.

In this connection it may be remarked that in all the experiments which have been brought forward to sustain the theory that uric acid is formed outside the kidneys, or in the liver, there have been produced profound abnormal or pathological states of the system. Therefore they should be completely discarded from a physiological standard, as all deductions founded thereon are upon a purely pathological basis, and not normal.

The claim that is so commonly made that free uric acid is found in the blood is not tenable, as we have already seen; for, on coming into close relation with the alkali metals, salts of the same are immediately formed. Therefore, if this nitrogenous organic acid were in the blood, it would be in the form of a urate only, and, as already stated, such a salt has never been found in the blood.

The statement that uric acid does not exist in the blood is based upon Hayercraft's⁵ method for detecting uric acid, or upon others of a similar nature. As they all admit of a possibility of oxidizing the proteid elements, and thus producing uric acid in the process for detecting this compound, they cannot be relied upon as proving the existence of uric acid in the blood. Some have claimed to obtain good results from this method. On the other hand, Salkowski⁶ regards the process as of little value even in solutions known to contain uric acid, as the composi-

tion of the silver urate formed is not constant; this opinion is further supported by Gossage.⁷

On the other hand, it has been, and is still, distinctly affirmed that free uric acid and its biurate salts do exist in the blood, and the method called upon to explain the possible presence, in some form, of uric acid in the blood is by the so-called quadriurate (quadriurate) theory. The following statement made by Roberts,⁸ the author of this theory, in his description of his method for obtaining the quadriurate, tends to prove that the quadriurate—if it really has a chemical existence—is an accident rather than a constant product, for he says: "To obtain a product of uniform composition by this process requires a somewhat nice adjustment of the reaction. If the quantity of alkaline carbonate added be faint, the precipitate, on cooling, is apt to be contaminated with free uric acid. On the other hand, if the alkaline carbonate be added too freely, and the resulting alkaliescence be excessive, the precipitate is apt to be contaminated with biurate. These risks are greatly minimized by using the alkaline acetates instead of the alkaline carbonates." From this it appears that Roberts failed to obtain the quadriurate with the regular uniformity necessary to establish his theory; in fact, the nice adjustment of the reagents required for the precipitation of the quadriurate might lead one to believe that, with this test, the precipitate was a mixture of biurate and uric acid in quantities to satisfy the theoretic demands for the quadriurate.

In Watt's Dictionary of Chemistry (Vol. IV, p. 835, edition 1894) is the following: "Naha. $\frac{1}{2}$ aq. (dried at 100) crystalline powder. Occurs as an amorphous urinary deposit."⁹ This statement, together with the fact that the alleged quadriurate is an amorphous deposit and very unstable, makes it appear highly probable that the biurate is still the form of urate most commonly found in the urine. It is not necessary to find a more soluble form of urate than the acid urate, for it is well known that the disodic monohydrogen phosphate,¹⁰ which is often present in the urine in abundance, will hold large quantities of uric acid in solution. It is also known that the uric acid in the urine, and in the absence of any newly added chemical agent, steadily attacks the disodic monohydrogen phosphate, so that when the acid phosphate which will not hold the uric acid in solution has replaced the neutral phosphate, the uric acid is precipitated; all of which occurs naturally, and without adding anything to the urine as is required for the demonstration of the presence of the quadriurate according to Roberts's theory. The one occurs naturally, and the other requires very nicely adjusted reagents for its demonstration. This method, which may be called the natural one of precipitating uric acid in urine which apparently contains no excess of the acid, can be artificially quickened by a very simple procedure. This is best done by filling a test tube with urine and bringing the upper stratum to the boiling point, then add a drop or two of a 4% solution of acetic acid and set the tube aside in a cool place. At the end of a few hours, if there is an abnormal amount of uric acid contained in the sample and held in solution, as already described, the heat and the acetic acid will excite chemical action between the uric acid and the disodic monohydrogen phosphate, thus destroying the solvent power of the

urine for the uric acid. Now the uric acid will rapidly be crystallized out, and the amount so formed, when collected on a filter and weighed, will give the exact percentage of uric acid in excess of the normal amount. In this manner and in a few hours the exact quantity of uric acid can be estimated. When the amount of uric acid is normal in the urine, no precipitation of the acid can be effected by this method. It then requires the use of a considerable quantity of one of the stronger mineral acids, sufficient to decompose the normal urates, and thus set free the uric acid otherwise held in combination with the sodium, before its presence is demonstrated.

The quadriurate, as has been said, is a very unstable compound and one that is easily broken up by washing with water. This being the case, its decomposition and the subsequent demonstration of the uric acid and the biurate in the blood should be easily accomplished. No mention is made, however, of finding the so-called quadriurate in the blood, but it is introduced artificially into the blood serum and synovia, and from this it has been claimed that it can exist in the blood; but failure to demonstrate its presence directly in the normal blood stream is negative proof that it does not exist in that medium. The production of the quadriurate in the system necessitates first the production of uric acid. So far, in connection with the quadriurate theory, we are in total ignorance as to the point where the uric acid is manufactured, also as to where it attacks the sodium compounds to form the theoretical salt, and where the latter finally gains access to the blood. Until these doubtful points have been cleared up satisfactorily, the quadriurate theory is one grand speculative problem which does not explain the facts as developed by clinical observation. Unless our theories can be made of practical value in the study and management of the case at the bedside, they are of no real value.

From all the preceding, it can be justly deduced that uric acid and its urates have not yet been clearly demonstrated in the normal blood stream. That uric acid and its urates are found in the tissues in pathological conditions is true. This, however, does not necessitate the assumption that uric acid or its urates existed in the blood stream in defiance of all the known laws of chemistry. But it does demand the hypothesis that, as a result of a faulty nutrition, there is developed an imperfect oxidation, or an abnormal isomeric transmutation of the proteid compounds; that as a result, these substances are oxidized at an abnormal position, instead of in the renal cells, as normally occurs; that when this is the case there is a sudden production of uric acid and the formation of urates in the protoplasmic masses, and that when this happens all the symptoms are those which indicate a profound irritation and an increased chemical activity. Thus, by assuming a vicarious production of uric acid, a theory which holds true in many other abnormal and pathological conditions in the body, the presence of uric acid, or rather the urates, in the tissues is explained by simple chemical phenomena, and without deviating from any well-defined law of chemistry. All this can be done without predicated that uric acid or its urates are present in the blood.

The pathological condition which is produced by extirpation of the kidneys will admit of the formation of uric acid by the vicarious oxidation of the proteid substances in the protoplasm of cells other than those

of the renal gland, upon the same principle as given in the foregoing example.

Upon the theory that uric acid is due to a deficiency in the quantity of oxygen reaching the body as a whole, and the renal cells in particular, the manufacture of uric acid by the kidneys should normally be greatest during digestion and least during the interval; for during digestion the carbohydrates, fats and proteids are being introduced into the circulation in large quantities. The two former are rapidly oxidized, the one in the liver and the other in the lungs, tending to use up the oxygen supply, so that a deficient amount of oxygen reaches the kidneys and a less perfect oxidation transmutation of the proteid in the renal cells is the result, while the output of uric acid is augmented. Thus a normal physiological phenomenon, which is called upon to explain the production of uric acid in the liver instead of the renal glands, when viewed in this light makes it appear quite plain that no such deduction is justified. It rather strengthens the theory which points to the renal cells as the true source of the uric-acid production, except in pathological states of the system, when it can be made at abnormal points by the vicarious action of the protoplasmic masses.

This theory of uric-acid production by the oxidation of the proteid substances in the protoplasm of the renal cells is by far more logical, is best sustained by all the points in evidence, and fits most accurately all the known facts and conditions. This formation of uric acid is one method for the elimination of nitrogen from the system.

It is absolutely necessary to have this acid produced at this particular point, and poured into the uriniferous tubules; for by this action upon the disodic monohydrogen phosphate in the uriniferous tubules the monosodic dihydrogen phosphate is produced, and the production of this acid phosphate of sodium is absolutely necessary to hold in solution the otherwise insoluble phosphate of calcium, thus preventing the formation of this form of calculi in the urinary passages.

The theory that the uric acid is produced in the renal cells in the manner described above is further substantiated by the steady presence of this acid or the urates in urine, and by their absence from the blood.

When uric acid is herein contrasted with urea as a suboxidation product, it is not meant to intimate that uric acid is the direct antecedent of urea. On the contrary, it is one of the complete end products of proteid oxidation, so far as the animal economy is concerned, just as much as urea, carbon dioxide and water are final products. Chemically, less oxygen has been utilized to produce this particular form of compound than is required to produce urea and the other higher oxidation products. Physiologically, when produced in excess, it is a suboxidation product, for it is found that the output of uric acid is always augmented by anything that interferes with the utilization of the full amount of oxygen by the system, as compared with the quantity of food stuffs absorbed. A prolonged high tension of the arterial system under the influence of digitalis, for instance, causes the blood to be driven through the capillary blood vessels so rapidly that sufficient oxygen cannot be taken up from the blood and utilized for the complete transmutation of the proteid elements of the food. As a result, suboxidation occurs, and the manufacture and output of uric

acid by the renal cells are increased. The same is true with every condition of the system which produces a prolonged high tension of the vascular system and a rapid pulse rate. When the intaking capacity of the lungs for oxygen is diminished by mechanical defects in the heart or by pneumonia, pleurisy, emphysema, etc., the oxidation of the proteid substances falls to an abnormally low degree, the excretion of urea decreases, and that of uric acid increases, the latter often to a marked degree. When the carbohydrates or fats are taken in excessive quantities, and especially the former, the oxygenating capacity of the system is exceeded, the more difficult task of oxidizing the proteid elements is imperfectly performed, suboxidation ensues, and as a result, uric acid increases in the urine, while the urea output decreases. When an excessive amount of the proteid substance is taken either alone or in combination with the carbohydrates and fats, the oxygenating capacity of the system is exceeded in a similar manner, and the proteids are imperfectly oxidized as before.

When the uric acid rises above the normal, it is simply a symptom found in the urine, which indicates an imperfect state of proteid oxidation and a general condition of malnutrition. This suboxidation may be, in a measure, caused by many different conditions acting singly or in combination—causes which may arise either in the nervous, digestive, circulatory or in the respiratory system. In every instance there is more or less profound impairment in the glandular activity and nutritive tone throughout the whole system. In some instances one organ or tissue will suffer more than another, and thus the symptomatic manifestations are varied and irregular in their development. When the renal cells temporarily cease to act, thus failing to produce uric acid, the associated defective state of nutrition results in many instances in the various masses of protoplasm throughout the body, which are in an abnormal physiological state, assuming an abnormal or vicarious action. In this manner the proteid substances are oxidized into uric acid in the cells of the tissues with the immediate production of the urate of sodium. This abnormal oxidation may occur in any protoplasmic mass which is in this state of malnutrition, but it is most commonly met with in the cartilage cells of the metatarsophalangeal articulation of the great toe. It does, however, occur in other parts of the body and in other tissues than the cartilaginous structures. This development of uric acid in the cartilage cells, or at other points of the body, results in its immediate precipitation at such points as a urate of sodium. This abnormal deposit acts as an intense chemical irritant, and excites a local inflammatory process by which a fibroplastic exudate is thrown around this foreign body until the urates are finally incapsulated, and gradually all the local symptoms subside.

The problem has further been very much simplified by the fact, now generally recognized, that all the non-nitrogenous food products, such as starch, sugar and fats, are directly oxidized into their end products, carbon dioxide and water, and that they do not yield any toxic by products to the system. Therefore, we are left to deal chiefly with proteid constituents as the etiological factors in the production of these toxic and suboxidation conditions of the system. This much established, we still have no clear and complete explanation for the different degrees and forms of suboxida-

tion processes which constitute the various diseases, such as so-called "rheumatism," so-called "gout," etc.

Strenuous attempts have been made in this bacteriological age to associate a specific germ with all pathological problems, and in many instances this has apparently been successfully accomplished. Still, the declaration of the presence of a specific germ as the causative factor in the production of disease does not explain in full the special and characteristic features of the pathological lesions found, or the symptoms by which the different diseases are characterized. Working along these lines, a considerable number of observers profess to have found a specific germ as the causative factor in the production of so-called "rheumatic conditions" of the system. Among this number may be mentioned von Schueller,¹¹ Buss,¹² Brunner,¹³ Buday,¹⁴ Petrone,¹⁵ Hlava,¹⁶ Tizzoni,¹⁷ Goldscheider,¹⁸ Löffler,¹⁹ Bouloche,²⁰ Mantle,²¹ Guttman,²² Fleischhauer,²³ Waibel,²⁴ Bonchard,²⁵ Sahli,²⁶ Lucatells,²⁷ Leyden,²⁸ Singer,²⁹ Chvostek,³⁰ and Humphrey.³¹ All of these observers have given more or less attention to this subject. Buss states that he considers it highly probable that acute articular rheumatism, so-called, is in many, perhaps in the majority of cases caused by attenuated pyogenic micro-organisms, among which he includes the Friedländer pneumobacillus and the diplococcus of Fraenkel-Wechselbaum. Sahli cultivated streptococci from the blood and contents of affected joints in cases of so-called acute articular rheumatism. Singer made bacteriological examinations in 17 cases of so-called articular rheumatism and secured positive results in 16 instances. In 10 cases he found staphylococcus albus; in 1, staphylococcus aureus; in 3, streptococci; in 2, staphylococcus albus and streptococci. He further argued from his observations that the constancy of the occurrence of the micro-organisms in the urine, and the fact that the number of the colonies obtained diminished in number as the symptoms improved, were sufficient evidence for considering a coccus infection as the exciting cause of the disease. Chvostek, on the other hand, made repeated observations in 12 cases of so-called rheumatic affections of the joints. In 1 of these cases he found the diplococcus ureæ; in another, in which the urine was not drawn with a catheter, staphylococcus albus; and in a third, large cocci, which have not yet been described, but which, probably, according to Chvostek, are derived from the urethra. In this connection it should be remembered that Krause³² has shown that bacteria are often excreted in the urine during infectious disease, which have no connection whatever with the particular infection from which the patient is suffering, and which must not therefore be regarded as the exciting cause of the disease. Among these bacteria the staphylococcus albus plays an important part. And this is the form of micro-organism that has most frequently been described in connection with these rheumatic conditions. Krause further says that these bacteria are no longer found in the urine when all the signs of disease have vanished, simply, as he argues, because the conditions of the system necessary for their growth have been removed.

Chvostek extended his examinations and made examinations of the blood, urine and articular fluid in cases of so-called acute and chronic articular rheumatism, as well as in cases of other infectious diseases, in which an acute swelling of the joint takes place. The results which he obtained from his examination of the

articular fluids were negative in all his cases, except in the changes in the joints that arose directly in the course of a sepsis or a gonorrhoea. Chvostek sought further to discover whether the bacteria which are present in the blood entered the joints during the life of the patient; and if so, the conditions necessary for their transit through the wall of the blood vessels. In this connection it may be mentioned that his experiments on animals showed that certain alterations in the nutritive composition of the vascular wall must be produced before the passage of the micro-organism could be effected. He also demonstrated, to his own satisfaction, that the construction of the synovial membranes and that of their contained blood vessels resisted to a high degree this nutritive change that makes possible the passage of the germs, thus rendering it very difficult for the micro-organisms to pass through the walls of the blood vessels and gain access to the joints. This is not the case, however, with the vascular walls of the kidneys; hence, the bacteria, if they appear at all in the joints, will do so at a much later period than they are excreted by the kidneys.

That micro-organisms have been found in the urine, and in some instances in the blood, and in the fluid accumulations in the joints, and in various structures of the body, in connection with the varying conditions which have been described under the common term "rheumatism," cannot be denied. We may even go further and state that the prevailing organism when described at all is most frequently of the coccus type.

From the great diversity of results obtained, and from the fact that no one form of micro-organism is found with any degree of regularity in connection with these so-called "rheumatic" conditions, the consensus of opinion is that the pathological conditions and symptoms classed as rheumatic are not to be attributed to the direct and intrinsic bacterial invasion of the structures of the body, as is the case in connection with some of the well-known and undisputed microbial diseases. Nevertheless, it is reasonable to suppose that in conjunction with overfeeding, and with under-feeding, and the consequent suboxidation state of the system, the action of the micro-organism and the toxic products that are developed as a direct result of their presence in the alimentary canal are largely responsible for the different forms and degrees of suboxidation included under the terms "gout," "rheumatism," etc. The micro-organism in all these instances acts by its presence in the alimentary canal, and by its disturbing influence upon the digestive process, and not by its inherent presence within the intrinsic structures of the system.

To understand this proposition thoroughly, it must be remembered that the presence of certain kinds of bacterial life are, in all probability, absolutely essential to a perfect performance of the digestive function. In this connection it must also be remembered that only a few years ago Nuttall and Thierfelder,⁸³ in a series of experiments in which they used young guinea pigs, apparently proved that the alimentary canal could be kept free from all bacterial influences, and a perfect nutrition at the same time be maintained. In opposition to this is the fact that in almost all instances the alimentary tract at all times contains various micro-organisms. Added to this are the more recent experiments of Dr. M. Schottelius.⁸⁴ Dr. Schottelius's series of experiments was carried out in a manner similar to those of Nuttall and Thierfelder,

but instead of selecting the guinea pig, hens and their eggs were utilized for the experimental work. Two sets of eggs were taken, one in which the surface of the eggs was made absolutely free from bacteria by washing with a strong solution of bichloride of mercury, the remaining set remaining contaminated by micro-organisms. The first, so far as their exterior is concerned, will be called for convenience sterilized eggs, while the other batch will be designated as non-sterile eggs. The former were introduced into a sterile incubator, while the others were not. When the chickens were hatched, those from the sterilized incubator were carefully fed upon sterilized food, while those of the control experiment were given ordinary food. The feces were carefully examined in both instances. In the first set, or the so-called sterile chickens, the feces were found to be absolutely free from all forms of bacterial life, while the reverse was found to be the case in the control experiment. At the end of a certain period of time the non-sterile batch of chickens were found to have gained in weight much more rapidly than the sterile batch. The gain was 250% greater in those in which the bacteria gained access to the alimentary tract. Further than this, all of the so-called sterile chickens died within three weeks after they were hatched, while the control chickens lived on as usual. Thus it would seem to be clearly proved that for the most perfect working of the digestive function in the alimentary tract, and also for assimilation, the presence of certain kinds and amounts of bacterial life and their chemical products in the alimentary canal are absolutely essential.

To determine which form of bacterial life is essential for the maintenance of a perfect physiologic state will require a long series of experiments, in which the composition of the food is accurately determined before being ingested. At the same time the excreta, representing the utilization of the food stuffs and tissue waste, must be accurately studied. Then the various kinds of micro-organisms at work in the contents of the alimentary tract must be determined through a study of the bacterial life found in the feces. With this there must also be associated an isolation of the various kinds of bacteria found in the contents of the alimentary canal in connection with the condition recognized ordinarily as the normal state. Then the action of the bacteria should be carefully studied on the normal sterilized and non-sterilized food stuffs outside the body; and this must be done with the bacteria, singly and in combination. Their action should also be studied upon the food in the presence of the various digestive ferments. When all this has been accomplished, a very fair knowledge of the action of germs in the digestive process in the normal state will be secured. Then, in a similar manner, their action upon the digestive process could be studied in connection with the conditions designated as intestinal indigestion, and also in connection with all the pathological processes which appear, in a large measure at least, to take their origin in an imperfect digestion and assimilation, and in which an incomplete oxidation is a leading feature of the disease, as occurs in the so-called "gout," "rheumatism," "Bright's disease," "diabetes," etc.

While all this desirable information is not as yet at our command, there is sufficient evidence at hand to warrant the assertion that the varying degrees and

kinds of suboxidation met with, such, for instance, as the so-called gout and rheumatism and a host of other conditions, are the result of some special kind of micro-organism acting in the alimentary canal; or they may be the result of two or more varieties acting together; or may it not be that the absence of certain kinds of bacterial life is the determining factor in the production of the diseased process? In either instance it may be assumed that abnormal or toxic products are produced in the alimentary canal, which when introduced into the circulation with the food stuffs, act as the direct and determining factor in establishing the special degree or form of suboxidation that we know by these time-honored names "gout," "rheumatism," etc. By assuming the development of a variety of toxic products it easily explains the great variety in the clinical picture as witnessed under the so-called rheumatic condition.

This line of argument is sustained, so far as the symptoms are concerned, by the fact that with the introduction of certain chemical compounds into the system definite symptoms follow, as when morphine, strychnine, atropine, pilocarpine, etc., are introduced. Why morphine, strychnine, atropine, pilocarpine, etc., are always followed by a pretty uniform train of symptoms depending upon the special one used has never been absolutely explained. Yet no one attempts to deny the fact. In a similar manner it is reasonable to suppose that the symptoms of disease are the result of the introduction into or development within the system of definite chemical compounds; that these chemical products either emanate directly from the micro-organism or are produced from the proteid constituents, in which the bacteria grow, by the action of the bacteria upon the proteid molecule. This latter view appears to be the more probable, taking all things into consideration. The modification of the physiological phenomena by the introduction of the varying pathological conditions met with, just the same as the introduction of chemical compounds, can be made to modify pathological phenomena, and thereby enable the system to be brought back into a more nearly physiological condition. In all these suboxidation diseases the action of the bacteria is on the proteid constituents as they exist in the chyme rather than upon those which exist as intrinsic parts of the body.

Thus we find that the two great predisposing factors in the development of so called gout and rheumatism are the prolonged intake of a larger amount of nutritive pabulum than the system can perfectly oxidize, or conditions that so reduce the oxygenating capacity of the animal economy that the small amount of food taken cannot be perfectly oxidized. Added to this, as the exciting and determining factors in the production of the special type encountered, are the action of the bacteria on the proteid in the alimentary canal and the formation and absorption into the system of toxic products in conjunction with the food products absorbed. These two factors acting together determine the form of the suboxidation, the nature of the pathological lesions, the character of the symptoms, and the abnormal and by products that are found in the excreta. It is largely by the latter that we are enabled to accurately differentiate between the different forms of these suboxidation conditions that afflict humanity. In conjunction with the two predisposing factors and the exciting factor in the

production of these suboxidation conditions there are a few other things that must not be overlooked, as they often exert a decided influence in determining the final result. They are the varying changes in the temperature, hygienic surroundings, nervous disturbances, etc., for they are all very important factors and help to disturb the perfect working of the glandular system. Just how the *modus operandi* of this bacterial factor working in the alimentary canal can best be absolutely determined is the question that is still pressing for an answer from the physiological chemists. Until it has been fully solved, the absolute etiology of these suboxidation processes under discussion, so-called gout and rheumatism, cannot be absolutely elucidated except in theory. But even in the absence of this much desired complete verification, this explanation, as here given, adheres more closely to all the facts thus far known to modern science than any explanation previously advanced.

With this conception of the chemical conditions that are at work with the system, when affected with so-called gout and rheumatism, the etiological relation of these conditions, if any exists, can be applied to the various diseases that are under discussion. It is, nevertheless, difficult to comprehend how false feeding, the action of the micro-organism in the alimentary canal, and a toxic infection of the system therefrom, can in any manner be looked upon as a primary etiological factor in the production of a traumatism to a joint, a sprain, or a bruise. Therefore, it must be asserted in the very beginning that there is no direct primary etiological relationship between the so-called rheumatic condition of the system and traumatic lesion of the joints. On the other hand, it is equally true that the abnormal chemical condition of the system which produces that state of the animal economy classed as "rheumatism" and "gout" will assert itself, and modify the whole course of the pathological problem in connection with a traumatism. This does not warrant the supposition, however, that the so-called rheumatic state of the system in any manner acts as a primary etiological factor in producing the traumatism of the joint structures. Penetrating a little more deeply into this intricate problem, we find that the products absorbed from the alimentary canal, and which, if retained in the system, are the determining factors in producing the special type of suboxidation that excites the lesions and symptoms classed as rheumatic, will influence the pathological changes following a traumatic injury to the joint. This is assuming, however, that there have been false habits of feeding, micro-organisms at work in the alimentary canal, absorption of toxic products into the system, and that, in consequence thereof, the animal economy has been or is on the verge of the suboxidation state called rheumatism, prior to the receipt of the injury. In other words, after a mechanical or macroscopic traumatism to the joint structures, the nutrition in the injured parts, in one who is suffering from this characteristic chemical state of suboxidation of the system, which just precedes and makes possible the so-called rheumatic condition, will undergo changes different from those occurring in a more normal state of the system. When this term "toxic product" is used in connection with the diseases under discussion, it is understood that one of two conditions exists; either the system contains one or more by products which have resulted from an incomplete oxidation reduction of

the proteid elements, or the system contains proteid molecules which, instead of pursuing their normal isomeric transformation course, have been deflected therefrom. When this latter occurs, the proteid molecule is so changed, isomerically, that it becomes toxic in its character, yet it still remains an unoxidized proteid body. This irregular isomeric transformation of the proteid bodies, and their change into a toxic form, easily explain the toxicity of the system. It further shows the difficulty, if not the absolute impossibility, of detecting the presence of these toxic proteid bodies as they circulate in the blood and lymph stream. In whatever manner produced, the toxic product which, prior to the injury, was eliminated from the system without exciting any active symptoms, will often aid in intensifying the pathological changes and symptoms resulting directly from the traumatism. Lesions and symptoms which would not have developed in the absence of the traumatism are produced by virtue of the presence of the suboxidation and toxic condition of the system called "rheumatic." On the other hand, they would not have occurred in the presence of the traumatism in a system perfectly free from so-called gouty and rheumatic conditions. In instances of this character the so-called gouty and rheumatic states of the system can be looked upon as etiological factors in the production of some of the pathological changes and symptoms which follow direct traumatisms to the joint structures. They are, however, always secondary and never primary.

This relationship of the so-called gouty and rheumatic condition of the system should always be taken into consideration in connection with every traumatism that implicates the joints. If such a state of the system is found to be present, it must be given due consideration in the general management of the case; otherwise recovery will be greatly retarded.

In one instance that came under my observation a severe wrench to one of the great toes had occurred in a gentleman in his early fifties. This injury was followed by all the characteristic symptoms common to an ordinary attack of so-called subacute or chronic gout. So long as the case was treated as one of simple traumatism, which was the method pursued before he came under my care, there was no pronounced or permanent improvement. From the moment the condition was regarded as being primarily traumatic in its origin, and, in a large measure, secondarily kept in motion by the gouty suboxidation condition of the system which preceded the traumatism, and the treatment modified in accordance with this latter view, improvement was steady, and a permanent cure was speedily effected. Here the traumatism precipitated the so-called gouty attack, if I may so state it, and the only line of treatment that could be effectual was one directed toward removing the suboxidation state of the system. This is only one of many cases that could be cited in illustration of this principle. The same holds true in connection with the so-called rheumatic conditions. On the other hand, we frequently meet with instances in which slight fractures running into the joints and dislocations of the carpal and tarsal bones are diagnosed as so-called rheumatic affections. Thus we find that there may be a commingling of the two conditions, both acting as etiological factors, even in connection with simple traumatic injuries of the joints. Therefore, each and every case examined must be carefully

analyzed by itself, and due consideration given to the traumatism and to the possible influence that a previously existing suboxidation state of the system may at the time exert in the production of the lesions and symptoms. When this is systematically done, treatment will be more scientifically applied and the restoration of the involved joint to its normal functional activity more speedily effected.

With the septic and gonorrhoeal affections of the joints, all that has been said as to the relation of so-called gouty and rheumatic conditions of the system to a traumatism can similarly be applied to these two diseases. The so-called gouty and rheumatic states of the system are in no sense primary etiological factors in the production of a septic or so-called gonorrhoeal joint. Both, however, may play a secondary part in determining the nature of the lesions and the character of the symptoms as in the simple traumatic affections of the joints. But their influence will not be as well marked as it is in the former instance. This is especially true in connection with a septic joint, where the intensity of suppurative process and its symptoms mask all those of a minor character, and also because death usually occurs early in the disease. The same may be said in connection with so-called gonorrhoeal infections of the joints; for it is still an open question whether the acute joint symptoms developed during the course of the gonorrhoeal, or following as sequelae, are not due to a direct septic infection instead of a gonococcus invasion⁸⁵ of the joint. With so-called gonorrhoeal rheumatism which develops many months after the acute gonorrhoeal attack, the suboxidation state and the toxic involvement of the system through the alimentary canal are in all probability more largely responsible for the pathological changes and symptoms than is the gonorrhoeal infection. Thus the so-called rheumatic condition may play a large part in the development of the lesions and symptoms in so-called gonorrhoeal affections of the joints; but it is always a secondary and never a primary cause. Still, in the management of all these cases it must be carefully considered and the treatment directed accordingly if the best results are to be attained.

When we come to the consideration of those conditions commonly classed as acute articular rheumatism, we for the first time reach a point in which the errors in diet, the action of bacteria in the alimentary canal, and the absorption or the development of the toxic products directly traceable to their presence, act when they are introduced into the system as the direct etiological factors in determining the special type of suboxidation. In this manner we can further look upon the suboxidation and toxic invasion of the system from the alimentary canal as the direct and exciting cause of the so-called gouty and rheumatic affections. The great variety of toxic products which can be produced in this manner in the alimentary canal, and that can be developed within the system, as well as those absorbed from the alimentary tract, can be made to explain the varying degrees and types of suboxidation encountered. They can also be made to explain all the different forms and types of so-called rheumatic affections that are encountered clinically. This theory of the production of these lesions is well supported by that of Weigert⁸⁶ in his explanation of the various kinds and types of renal lesions that are known to exist. As yet, how-

ever, we are not sufficiently familiar with the micro-organisms and the toxic products to fully trace the *modus operandi* from the point of origin of the etiological factor to the final result. If, as seems quite probable, many of the toxic products are simply isomeric forms of the normal proteid molecule, it will be, as before stated, a very difficult matter to trace, isolate and identify them. At the same time, from the data at our command, it seems reasonable to assume that continued errors in diet, the action of various kinds of micro-organisms in the alimentary canal, and the production of an almost endless variety of these toxic products, can easily be made to explain the many forms and types of the so-called rheumatism, even from the slightest myalgia to the most extensive destruction of the joint structures. Even the so-called neuropathic joint affections can be elucidated upon this theory of a disturbance of the nutritive functions of the animal economy, as they can in no other way. When one kind of toxic product affects the system, it, like some of the well-known drugs already mentioned, will influence the chemistry of the body in its special manner, and a certain definite train of lesions and symptoms will follow. The introduction of still other kinds will produce their special results, and an almost endless variety of examples might be mentioned. In the one instance the abnormal and toxic condition may result in a simple congestion only of the intermuscular planes, with an undue pressure upon the nerve endings distributed to that particular part. Then we have the condition called "muscular rheumatism." In another instance the abnormal and toxic condition, by virtue of a difference in the toxic product, will implicate the central or the peripheral nervous system and give rise to that class of cases which are known as neurotic and in which there are no very pronounced joint lesions. In still others the toxic elements will cause a more profound disturbance of the peripheral nervous mechanism, and thereby the action of the so-called trophic centres will be so profoundly disturbed that actual and pronounced destructive changes in the joint structures are produced, such as are found in Charcot's disease. The most common lesion, however, that occurs as the result of this special type of suboxidation and toxic infection of the system classed as rheumatism, is one in which the vascular areas in and around the joints become congested and is followed by a pronounced edematous swelling of the soft structures in and around the joints affected. In all these cases it is the lowered nutritive activities and the action of the toxic products within the system, acting either upon the central or the peripheral nervous system, that cause the disturbance in the vascular and nutritive supply to the parts affected and thus give rise to the anatomical changes and symptoms. In the vast majority of instances the injury to the structures involved in the so-called rheumatism is not sufficiently great to excite the phenomena characteristic of a true inflammatory process. Hence, with the removal of the cause and an improvement in the general, as well as in the local, nutrition, there is a perfect restoration of the implicated joints to their normal state. In a few instances the primary injury from the toxic infection may be sufficiently great to excite a truly inflammatory process with all the changes characteristic of inflammation. In all these cases there is a tendency to more or less permanent damage to the structures in

and around the joints involved. The amount and permanency of the damage to the joint will depend entirely upon the intensity of the primary injury and the duration of the actual inflammatory process.

The most extensive damage to the joints, however, is met with in those cases which are not inflammatory, but in which there is a long-continued general suboxidation state of the system, together with its peculiar type of toxic infection. In these instances the continual augmented vascular supply to one area, with a defective supply to another adjacent zone, but in both instances of material poor in quality and also toxic in its nature, causes a very irregular distribution of the nutritive pabulum with which to carry on the functions in and around the joints. So great and varied is this abnormal distribution of the nutritive pabulum that almost all grades of new formations are met with in and around the joints. These vary from simple swellings consisting of atrophied fibrillated connective tissue infiltrated with a watery exudate into its meshes to well-defined enlargements composed of dense fibrillated connective tissue almost as firm and well developed as the normal tendon tissue. These new formations are located chiefly in the ligamentous structures and around the end of the bones at the point of the attachment of the ligaments and tendons.

This newly formed tissue in some cases is infiltrated with the insoluble salts of calcium and the urates, but it differs from the so-called gouty depositions in position rather than in kind. In the latter the salts are deposited by preference in the cells of the cartilage structures, while in the condition under consideration it is outside the joints and in the newly formed tissue.

In some rare instances there may be developed both a carious condition and new bone in and around the joint. The two latter conditions are very rare and always suggest the possibility of a syphilitic infection as an accessory etiological factor.

In all but this latter class this complex chemical suboxidation problem, with its associated toxic condition of the system which has for many years been included under the so-called rheumatic condition, can be looked upon as the direct etiological factor in producing the lesion and symptoms of so-called acute articular rheumatism in all its varied forms, also the neuropathic joints and some of the forms of arthritis deformans. This is especially so in all cases in which the joints become enlarged and distorted by an undue and irregular deposition of newly formed connective tissue.

In the osteoid types and in those cases in which a certain amount of caries occurs it is highly probable that other etiological factors must be taken into consideration in explaining the loss of bone and the development of new bone. As already mentioned, it is highly probable that syphilis plays a decided part in producing these grave changes, as it is well known that syphilis causes a decided tendency on the part of the system to bring about a carious state of the bones and a tendency to the formation of new bone.

This method of explaining the phenomena that occur in connection with conditions of the system so long known under the names "gout" and "rheumatism" places us in a much better position to prevent their development and to displace them from the system when they have developed. It further shows in which of the diseases under discussion the "gouty" and

"rheumatic" condition of the system acts as a direct etiological factor, and also where its influence is only of a secondary nature.

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SEPTIC AND GONORRHEA JOINTS.¹

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THERE is probably no medical term which is made to cover so many sins and errors in diagnosis as the oft-used words "joint rheumatism." By dint of careful clinical study, and especially through the aid of bacteriology, certain types of joint disease have been gradually differentiated from this ancient chaos. Last to endure—it is to be hoped soon to go—is the rather indefinite phrase "gonorrhœal rheumatism." This paper deals with joint infections, septic and gonorrhœal, which may be confused with articular rheumatism. As this disease is probably also an infection manifesting itself chiefly in the joints, it is evident that we are dealing with more or less similar processes, which, though varying in etiology, must still have many symptoms in common.

No mention will be made of the septic infections which follow immediately upon operations or open wounds of joints, or of joint tuberculosis. There remain the infections which occur secondary to a suppurative process in other parts of the body, or following general infection through undiscoverable local lesions. The more carefully this question is investigated the more we recognize that pathogenic organisms may enter the circulation even in conditions of apparent health. These organisms either die in the blood, are eliminated by the kidneys, etc., or localize

themselves in various organs or tissues where they may be destroyed by the phagocytic cells or germicidal body fluids. If, through a general or local diminished resistance, the germs continue to grow, there results a general or local infection of varying intensity. A favorite site for such manifestations is the joints or the adjacent epiphyseal ends of bones. Where a suppurative or septic process is known to coexist, errors of diagnosis are infrequent. In the infective diseases like scarlet fever, dysentery, pneumonia, meningitis, the attendant joint complications are usually recognized. Most difficulties occur in the cases of so-called idiopathic arthritis, where the mode of entrance of the organisms is undiscoverable, through the tonsils, pharynx, intestinal tract, a boil or pustule, a small healed wound. The germs which most commonly are found in such joints are the ordinary pyogenic staphylococcus, the streptococcus, the pneumococcus. Unusual infections occur from the typhoid bacillus, glanders bacillus, etc. Cases of gonorrhœal infection and the arthritis accompanying osteomyelitis or epiphysitis, are most frequently mistaken for rheumatism. In infants or young children often no existing cause can be found. In older children or young adults exposure to wet or cold not infrequently precedes the joint inflammation, or so-called "rheumatism" sets in after an injury. There may have been a sore throat. The constitutional symptoms are in general more severe, the fever higher and less irregular, with a more rapid pulse. Sweats are uncommon, chills relatively frequent, the leucocytosis more marked. The pain is extreme and boring, limited in the earlier stages to the epiphyseal end of the adjacent bone; this sign soon giving place to general tenderness about the joint as it becomes involved. Of value for diagnosis is the definite interval by which the general symptoms and great pain precede the signs of local infection, thus differing from rheumatism. In superficial joints edema soon appears and rapidly extends; redness appears later than in acute rheumatism; the joint capsule or periosteum may be perforated, when fluctuation becomes evident. Though more than one joint may be involved, such septic processes are usually monarticular. Salicylates have little effect on the pain. As early diagnosis is all important to save the joint from disorganization, puncture, in doubtful cases, should be resorted to without hesitation. Not all septic joints have such an acute onset. For example, a boy eight years of age entered the Massachusetts General Hospital with the diagnosis of articular rheumatism of the right knee, duration five days. Salicylates had caused no improvement. Temperature 100°, pulse 80; only moderate pain and tenderness. The effusion was slight; leucocytosis 11,000. The condition remained relatively the same for days, when it was learned that he had fallen on a needle which had entered to one side of the patella. The joint was opened and found much disorganized. Cultures showed pure streptococcus infection.

Another boy of ten, without preceding illness, fell and struck his left knee. He was brought into the hospital three days afterwards with the diagnosis of acute rheumatism. There were high temperature and rapid pulse and several general symptoms. The joint was very tense and held immovably fixed. The skin was much reddened; pain and tenderness extreme. Under ether, 3 ounces of creamy, yellow pus were evacuated, which showed a pure culture of the pneu-

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nococcus. The subsequent course of this case illustrates the frequent burrowing of pus even after apparently thorough drainage. Several successive abscesses formed which extended between the muscle planes and fasciæ, and up and down the leg. From all of these pure cultures of the original organisms were obtained. Although in both of these cases at the time of operation it appeared as if permanent ankylosis would follow, at the end of three months the knees could be flexed to a right angle. With early operation in such cases the prognosis is probably not as bad as would be expected, especially in children and young adults. As gauze stimulates the formation of granulation tissue, protective seems to be the ideal drainage material. Under it the synovial membrane is more quickly restored, adhesions are prevented rather than excited, irrigation and changing of dressings is almost painless, and the danger of pus backing up behind gauze wicks is not present.

To illustrate a joint infection with one of the rarer organisms, a case of Dr. C. B. Porter is of interest. A man of thirty-five entered the hospital with severe general symptoms and an arthritis of the great toe and knee. Cultures from the pus were sterile on ordinary media. Inoculation into guinea pigs, however, proved that the infecting organism was the glanders bacillus. There was nothing characteristic in the joint lesions.

When once the diagnosis of a septic joint has been made, the surgical indications for drainage and disinfection are so clear that there is no need to speak of their treatment.

The pathological processes in these septic joints are well recognized and need not be alluded to.

Of late several cases of joint infection with the typhoid bacillus in pure culture have been reported, and attention has been called to these typhoid joints, especially by Keen in his monograph.

Owing to the general condition of the patient the joint lesions are often overlooked. It appears to be characteristic that an insidious disorganization occurs in the articular structures which relatively early leads to dislocation. Indeed, it is this dislocation which in several cases has first attracted attention. Later, joint lesions may occur in typhoid fever, after apparent recovery, due either to the typhoid bacillus itself, or mixed infection with the ordinary pathogenic organisms which have entered through the healing ulcers. In such cases a subacute rheumatism may be simulated.

Though any of the above septic joints may occasionally be mistaken for rheumatism, gonorrhœal arthritis is a disease which has hitherto not been sufficiently recognized as quite different from ordinary rheumatism. Although continual advance has been made of late, particularly by the Germans, I do not believe that the majority of the profession yet realize how often a careful analysis of so-called "rheumatic cases" will lead to the discovery that the real nature of the arthritis is gonorrhœal. For many reasons the relative frequency of joint complications is hard to determine. Statistics from in- or out-patient departments of hospitals and from private practice vary much, according to their source. The well-known unreliability of venereal statistics, the great difficulty in diagnosing chronic or latent gonorrhœa in men, and especially in women; the comparative rareness of thorough bacteriological examination, with the fre-

quent negative findings, even in undoubted cases,—all combine to make accurate statistics hard to obtain. One is often struck on carefully questioning gonorrhœal patients with the frequency with which mild or severe rheumatic symptoms have coexisted, and the more the physician's attention is directed to this subject, the more cases of gonorrhœal arthritis does he find. If, as seems probable, between 2 and 5% of the cases of gonorrhœa are complicated by arthritis, it is certainly not a rare disease. From another standpoint, although arthritis in connection with a gonorrhœal infection has been recognized for a long time, the causative relation of the gonococcus to it has only recently been demonstrated. The old idea, that the patient, run down by the disease, developed articular rheumatism, has been and is still advocated by some. While articular rheumatism may occur in such a patient, the nature of the arthritis, unless absolutely typical of rheumatism, should be regarded with much suspicion.

It has been demonstrated, also, that certain joint lesions occurring in connection with gonorrhœa have been due to the ordinary pyogenic organisms, though classed under the general heading "gonorrhœal rheumatism." In such cases, where the bacteria have entered the blood from the urethra or elsewhere, the pyogenic organisms dominate the symptoms, and it is essentially a septic joint disease and not gonorrhœal arthritis. The gonococcus undoubtedly forms a powerful toxin, and certain writers have put forward the view that the joint manifestations may be due to this toxin, without actual localization of the organisms. Careful examination of the contents of undoubted gonorrhœal joints have so frequently proved sterile by smear and culture that there is some plausibility in favor of this toxic origin of the milder forms of arthritis. This subject will be spoken of later under bacteriology. Until recently, gonorrhœa had been regarded as essentially a local disease, spreading by continuity. There are, however, a sufficient number of reliable reports which definitely establish that this organism may cause metastases in various distant parts of the body. Such localizations are numerous; in the joints, tendon sheaths and bursæ, pleura, peritoneum, meninges, sheaths of nerves, heart wall and valves, spleen, lungs, kidneys, periosteum, lymphatic glands, subcutaneous tissue, skin and parotid gland. From the circulating blood gonococci have been recovered several times, so that we have absolute proof that this organism may cause a general septicemia, or pyemia, and may produce pus wherever localized.

As "grippe," with rheumatic pains in various parts of the body, not infrequently complicates an acute gonorrhœa, or exacerbation of a chronic process, it is probable that mild systemic infection occurs, which never goes on to a definite arthritis. The rôle which gonotoxin absorption plays in producing these symptoms has not yet been determined.

TIME OF OCCURRENCE OF METASTASES.

Though a period of from two to six weeks usually elapses before metastasis occurs, the joint complications may first appear months or years after the original infection. Fingers's statistics seem to show that the joint lesions occur more frequently in chronic or relapsing gonorrhœa than during the acute stage; certainly in the older cases, where few or no local signs exist, far more errors are made in diagnosis. Very

rapid dissemination may occur within a few days of infection. For example, a case of Resniko's, a girl of twenty, four days after marriage, acquired an acute infection from her husband, who had purulent discharge at the time. She developed with the symptoms of general infection a severe polyarthritis. The ruptured hymen was regarded by him as the infection atrium. In chronic gonorrhoea the connection between an increase of local symptoms and a recrudescence in the joint is most striking and characteristic in many cases. The opposite may be true, and as in epididymitis, local symptoms may cease with the complication, or may show no change from the previous condition. Recent medical literature is full of articles emphasizing the long duration of gonorrhoea and demonstrating the difficulties of determining when infection has actually ceased. Particularly is this true in women, where the disease may appear to be chronic and mild from the start, and unknown to the patient. Owing to the numerous bacteria which exist in the vagina, culture methods and even staining are often most unsatisfactory. Negative findings after careful search are so commonly proved erroneous by the subsequent infection of another party that their value for exclusion is slight. In 226 cases of chronic cervical catarrh in prostitutes without symptoms, gonococci were found 117 times. In many of these cases the organisms could be found only during or after menstruation.

Kopp reports 52 cases of chronic urethritis where repeated search was made for gonococci in vain; yet without renewed infection, recidives occurred in which the organisms could be demonstrated. Therefore, in males also the latent period is often as impossible to diagnose, and is certainly far longer than is usually thought.

In a patient of mine who was positive that no new infection had occurred, gonococci were found in the seminal vesicles five years after the original disease. I dwelt on this part of the subject simply to emphasize that, apart from the mere misstatements or ignorance of patients in regard to gonorrhoeal infection, there are many cases where the physician can find no reason to suspect a connection between the present "rheumatism" and past venereal disease, and to show that the danger of gonorrhoeal metastases endures for a long time. Though there is a general belief among genito-urinary surgeons that the metastases in males occur most frequently after posterior urethritis, it would appear that the depth to which the gonococci have penetrated into the mucous membrane is of more importance than the part of the urethra involved. A few days after infection the gonococci proliferate deep in the mucous membrane and are carried about within the migrating leucocytes. The not infrequent edema of the prepuce and swelling of the inguinal glands are usually due to toxin absorption, though the presence of gonococci has been occasionally demonstrated. Though infection may thus occur through the lymphatic apparatus, it is believed that the organisms enter through the blood vessels.

Wertheim was able to show the gonococci in a thrombus of the bladder wall. The chain was thus made complete, and found to be similar to ordinary pyemic infection.

Though males are probably more frequently afflicted with joint complications than females, the disproportion is not as great as was once thought.

In babies, subsequent to gonorrhoeal ophthalmia, there is naturally no disproportion between the sexes. In childhood cases occur in young girls from vulvovaginitis more frequently than in boys of the same age. In adults, Nasse reports in one year 43 cases, 24 in males and 19 in females; Northrop, 117 in men and 76 in women. As attention has not been called sufficiently to gonorrhoeal arthritis in women — and venereal disease is by them denied or unknown more commonly than by men — more cases have undoubtedly been overlooked.

Bedouin reports 42 cases of arthritis in connection with the puerperium. While some of these were ordinary pyemic joints, many of them showed the presence of gonococci. The lacerations attendant upon childbirth were considered as the source of entrance. The well-known tendency of puerperal non-suppurative arthritis to prolonged stiffness or ankylosis is regarded by him as characteristic of a gonorrhoeal joint. One case now in hospital illustrates this disease. Coincident with her confinement she had acute swelling of the metacarpophalangeal joint, ankle and knee on the right side. There was no evidence of uterine sepsis. The baby had gonorrhoeal ophthalmia. Salicylates gave no relief to the pain; the local lesions, which will be spoken of later, were quite characteristic of gonorrhoea. The organisms were recovered from the joint contents in pure culture, as well as from the urethra.

In addition to the error of believing that women rarely suffer from gonorrhoeal arthritis is the mistaken idea that such arthritis is essentially a monarticular affection, and different in that respect from acute articular rheumatism. Recent statistics have shown that more than one joint is involved in 60% of cases; yet, though several joints are involved, it is true that *one usually* bears the brunt of the infection.

The larger joints — the knee, ankle and elbow — suffer most frequently. The small joints of the hand, foot and fingers are more commonly attacked than in acute articular rheumatism, though usually in connection with other joints. The jaw, spine and sternoclavicular articulation are affected more often than in rheumatism. The sheaths of tendons, the bursæ, especially the bursa under the Achilles tendon, are favorite seats for gonorrhoeal metastases. The tendons about a joint may be involved with it or independently. Trauma and overexertion are predisposing causes. Curetting, the passage of sounds, too vigorous local treatment, may precipitate a metastasis or make an existing joint lesion worse. Exposure to cold or wet exercises no influence.

SYMPTOMATOLOGY AND COURSE.

In a disease like this, which varies in its manifestations from a slight effusion with little pain to disorganization of a joint with formation of pus, accompanied by severe general and local symptoms, it is naturally difficult to classify the various forms and hard to describe any definite type.

Though at any given time the joint lesion may closely simulate acute or subacute articular rheumatism, it is, I think, possible in a great majority of cases to make a clinical diagnosis of gonorrhoeal arthritis. In cases of acute joint disease, not conforming typically to articular rheumatism, a careful history will often make the physician at least suspicious of a past gonorrhoeal infection. Thorough local examina-

tion may show the presence of an old urethritis or signs of an old gonorrhoea in women. Bacteriological examination of urethral shreds, discharges from the cervix, urethra, Bartholin's ducts or adjacent crypts, may show the presence of gonococci. When such evidence is wanting the course of the disease and the general local symptoms can alone be relied upon. The mode of onset varies. The majority of joint lesions are mild; particularly in connection with chronic gonorrhoea an acute or subacute synovitis develops most frequently in the knee. There is little pain, moderate stiffness, a varying amount of effusion, which may rapidly disappear, or may persist with thickening of the capsule as a painless chronic relapsing synovitis. In such cases there is nothing characteristic, and unless in the acute stage the gonococcus can be demonstrated by puncture, diagnosis is extremely difficult. If one or more times this synovitis recurs with increase in the urethral signs, the diagnosis is probable. The cases which are most frequently confounded with articular rheumatism are more severe, beginning usually in the morning without preceding exposure to wet and cold, or tonsillitis. One of the larger joints begins to swell, with fleeting pain in several others. The amount of pain is so variable that from it little help can be obtained in diagnosis. It may be extreme, but is generally less than in articular rheumatism. The pain is usually worse at night. Several joints may be involved, or one joint may follow another in fairly rapid succession; but the tendency to improve in one as another becomes involved, so characteristic of articular rheumatism, rarely occurs in gonorrhoeal arthritis. The joint most affected shows little tendency to improve, and remains swollen and tender for a long time, entirely out of proportion to the general symptoms. The amount of fever varies; rarely absent at the onset, it may disappear at the end of a few days, though the joint symptoms remain active. In severer cases it may last for a number of weeks, and soon assume the suppurative type with morning remissions. This is true in cases which have been proved to be uncontaminated by ordinary pyogenic organisms. Almost never does the fever curve show the markedly irregular remissions characteristic of real rheumatism. The acid sweats are wanting; endocarditis is very rare. The amount of effusion varies. On the whole it is rather slight, and the chief changes occur in the synovial membranes and periarticular tissues. In some cases the joint capsule becomes rapidly thickened without much edema, but as a rule the subcutaneous infiltration is well marked, extending above and below the joint, and giving a doughy, boggy feeling. The skin is not reddened, the papillae are apparent, and the glossy, mottled blush characteristic of articular rheumatism is absent. The local heat and superficial sensitiveness are slight. In short, except for the tenderness and the acute onset, the gonorrhoeal joint strongly suggests a tumor albus. For weeks the local signs are out of proportion to the general symptoms. Often the pain disappears within two weeks; yet for a long time tender points on deep pressure are found over the sides of the joint at the insertion of the ligaments or tendons. In acute cases, the joint is fixed. In the knee flexion occurs relatively early. The great sensitiveness to deep pressure, the early tendency to stiffness and ankylosis, are most characteristic. In the wrist, more than in any other joint, softened tender areas appear among

the tendons, which suggest the formation of an abscess. Pus, however, is infrequent, and one finds only softened hemorrhagic granulation tissue. The contents of the joint may perforate the capsule, or infection by continuity occur. Residual abscesses, often unaccompanied by fever, may extend along the tendon sheaths or into the subcutaneous tissue.

The edema and exudate about the joints and tendon sheaths persist longer than the serous infiltration of acute articular rheumatism, and after their disappearance the boggy thickening of the capsule and sub-synovial tissue, with little effusion, is apparent; whereas, in rheumatism the joints usually recover in six weeks, gonorrhoeal joints often remain stiff and swollen for two to six months. A non-traumatic arthritis which persists for weeks in one joint should always arouse suspicion.

In several cases I have seen at the hospital, especially in the wrist, acute tuberculosis was closely simulated. In such cases tuberculin may aid in the differential diagnosis.

Periarthritis of the shoulder, not infrequent in young adults, without the history of trauma, may be due to gonorrhoeal infection.

BACTERIOLOGY AND PATHOLOGY.

A great deal of work has been done on gonorrhoeal joints in the past two years, especially by the Germans, as a result of which the behavior of the gonococcus in the joint and the resulting lesions are fairly well understood. Rindfleisch has published the results in 30 cases very carefully investigated by him. In 19, gonococci were demonstrated. In 2, the staphylococcus aureus alone; in 1, mixed with gonococci was found. In 1, the staphylococcus albus alone, in another with the gonococcus. In 9 cases no organisms could be found. Weiss has collected 121 cases of undoubted gonorrhoeal arthritis, from 92 of which the gonococcus was isolated. Young, of Johns Hopkins Hospital, recently reports 13 cases of joint and tendon sheath infection, in which the gonococcus alone was present. The gonococcus apparently first localizes itself in the subendothelial tissue, there proliferates, and is carried into the joint cavity by the migrating leucocytes, or the desquamated endothelium. In the first few days the organisms are infrequent in the joint fluid. At the end of three days the leucocytes and endothelial cells appear in about equal numbers, and the gonococci are most abundant, yet are conspicuous for their relative scarcity, occurring in twos and fours within and without the cells. The joint fluid is not a favorable medium for their growth. Degenerate forms soon appear, shown by their refusal to grow on culture, and the crowding of the leucocytes with more organisms. Subsequent proliferation occurs not in the joint fluid, but in the synovial membrane, as Rindfleisch and others have demonstrated. In 1 case, numerous organisms were present in the fluid on the third day, had disappeared by the thirteenth, yet could be demonstrated by culture and smears, in curettings from the synovial membranes.

In reviewing the cases reported of positive findings, it is striking that in all of them the joint infection was relatively fresh, or a recurrence had taken place. I can discover no mention of gonococci found in chronic synovitis. When we consider this early disappearance from the joint cavity, the relative scarcity of the organisms, and the well-known difficulties in

their successful cultivation, we can understand why so many aspirations may be sterile, and the necessity for early puncture of the joint for diagnostic purposes is evident. Both culture and staining methods should be used, for in many instances cultures have proved positive where no organisms could be found by staining, and vice versa. Though exudation, and even suppuration, has been produced by injection into joints of sterile products, gonotoxins, in view of the above-mentioned facts it seems more likely that the gonococci have early disappeared from the joint, or failed of demonstration than that local joint disease is caused by toxins absorbed from the urethra. In the effusion there is nothing characteristic. It is more apt to be blood stained and purulent than in acute articular rheumatism. König regards a reddish, gummy, seropurulent fluid as insignificant.

The gonorrhoeal process in joints is characterized chiefly by proliferative rather than destructive changes. The synovial membrane and periarticular tissues are much thickened and infiltrated, even at a distance from the joint; the granulation tissue formed is very richly vascularized. The capillary walls are thin, areas of hemorrhage are frequent, and blood usually escaped into the joint. In more chronic processes in the joint and about the tendon sheaths, the dark red, easily bleeding granulation tissue, giving to the joint or sheath a velvety appearance, is suggestive of a gonorrhoeal process. It is the rapid organization of this granulation tissue and surrounding exudate which causes the early tendency to stiffness and ankylosis.

CASES.

A few cases which I have seen at the hospital will illustrate typical gonorrhoeal joints.

A girl of thirty, who denied venereal history, entered the hospital suffering from debility. Three days after entrance she suddenly developed, with moderate fever, an acute swelling of the right metacarpophalangeal joint and right knee. The thumb was swollen, tender, not red; moderate effusion in the joint. In the knee the synovitis was slight. The capsule was evidently thickened; periarticular edema lacking. Pain severe, worse at night; leg moderately flexed. The inflammation in the thumb quickly subsided, but the local tenderness in the knee steadily increased. Three weeks after the onset the joint was tapped, and a small amount of seropurulent fluid obtained, tinged with blood. This relieved the pain. Cultures were sterile on ordinary media. No organisms could be found by the microscope. As the fever continued, varying from 99° to $101\frac{1}{2}^{\circ}$, and the joint had not improved, operation was decided upon. The knee was held moderately flexed, very tender on deep pressure over the external lateral ligaments, and presented the appearance of a chronic white swelling. At operation a small amount of turbid blood-tinged seropus escaped. The cavity of the joint was small, limited by the greatly swollen synovial membrane, which in places was an inch thick. Fibrin was small in amount. Already adhesions had formed between the patella, femur, and several parts of the capsule; the alar ligaments were greatly thickened. Cultures and smears were again negative. No organisms could be found in the sections from the synovial membrane. At operation a purulent vaginitis was found, but no gonococci could be demonstrated. A history of cystitis was finally obtained four months before the

present illness. The fever gradually subsided, but the joint swelling and tenderness persisted for several weeks with great stiffness, and ultimately ankylosis was absolute. Large doses of mercury and iodide had no effect.

Another case previously alluded to showed, coincident with confinement, a swelling of the thumb, ankle and knee. The symptoms in the hand and foot rapidly subsided, but in spite of salicylates the knee joint remained very painful, flexed to a right angle, not red, very tender at several points, with moderate effusion and moderate thickening of the capsule. This joint was opened by Dr. Harrington. The fluid was turbid, blood stained, seropurulent. Examined under the microscope, the leucocytes were numerous. In a few of them diplococci which decolorized by Gram's stain were found; in two days pure cultures of the gonococcus were obtained by Dr. Wright.

A man of forty-two, who had contracted a gonorrhoea eight weeks before, entered the Out-Patient Department with the following history: Two weeks ago, with moderate fever and much pain, he had swelling of the ankle, shoulder and wrist. In a few days the inflammation in the other joints subsided, but the wrist continued swollen. The hand and forearm were much swollen, the exudation firm and boggy; there was no redness, little heat. Motion at the wrist was impossible without great pain. In the anatomical snuff box and over the extensor tendons at the wrist, two apparently fluctuating areas existed. Gonococci were demonstrated in the urethra. On incision, the subcutaneous tissue was porky, the sheaths of the tendons were filled with a gummy, slightly hemorrhagic exudate. Communication with the joint could be made out. Gonococci were recovered from the pus and granulation tissue by Dr. Wright in smear and culture. The temperature was 100° , the leucocytosis 26,000. Recovery followed very slowly, with marked tendency to ankylosis.

Another case represented the appearance of an ordinary palmar abscess over the head of the fifth metacarpal bone. Duration six days, with superficial redness of the skin and great tenderness at operation. No pus was found, but the adjacent joint was filled with seropurulent material in which were diplococci decolorizing by Gram's stain. No growth on ordinary media. The girl had contracted gonorrhoea four months before, and the organisms were still present in the urethra.

TREATMENT.

Of the many drugs which have been advocated as beneficial in gonorrhoeal arthritis, none in my experience has exerted much influence on the joint lesion. The pain is rarely relieved by the salicyl or coal-tar products, thus giving some aid in discriminating between a gonococcus infection and articular rheumatism. Morphia is often required in the acute stages. The treatment of the urethra should be begun at once, with mild, hot permanganate, or citrate of silver irrigation. No sounds should be passed during the acute joint disease. Laudanum fomentations, turpentine stupes, guaiacol, or ichthyol ointment, so often used, have appeared to me to be of little benefit. Most relief has been obtained from the continual use of ice bags, or dry heat, preferably with a hot oven, at a temperature of 250° to 400° . The circulation is stimulated, pain relieved, and absorption of the exudate

favored. It was hoped at one time that the temperature of the joint could be raised sufficiently to inhibit the growth of the gonococcus, which is very susceptible to heat. This seems not to be the case. Flaming with the actual cautery is the best counterirritant and often relieves the pain.

Absolute immobilization by appropriate splints is the best treatment in the acute stage. As in other forms of arthritis, flexion of the knee may occur early. If gradual extension is too painful, an anesthetic should be given at once, and the joint straightened and immobilized, for if ankylosis results adhesions can be more safely broken by flexion than by extension. In the elbow the opposite is true, and this joint should be flexed to a right angle.

While the acute process usually subsides within two or three weeks, in many cases great pain follows attempts at motion, probably due to the rapid formation of adhesions within and about the joint. Here the physician is at a loss to decide upon the proper treatment. The joint grows stiffer day by day, yet movement is bitterly complained of by the patient. In such cases, advantage should be taken of the period of diminished sensitiveness to pain which usually follows the hot-air bath. Massage should precede movement. Unless the signs in the joint become worse, treatment should be firmly persisted in. At intervals, under an anesthetic, the joint may be *once* fully flexed and extended, allowed to rest for a couple of days, when active and passive movements should be continued. In the acute stages, when the capsule is much distended, aspiration should be done for the purposes of diagnosis, and irrigation of the joint. In the subacute period the usually small amount of fluid is probably beneficial, separates the inflamed joint surfaces and prevents their adhesion. Pressure with immobilization should not be used at this time. The question of operation in gonorrheal arthritis is coming more and more to the fore, and is advocated even in relatively mild cases by good surgeons, who report numerous cases where the fever, general symptoms and pain have been quickly relieved by operation, and earlier use of the joint followed.

By operation the toxins and gonococci in the joint fluid may be rapidly evacuated, and such treatment is indicated in all severe gonorrheal joints, as in any septic arthritis. With proper precautions the danger from sepsis is probably slight in comparison with the advantage to be gained; good temporary results may follow operation in the knee, where the surfaces can be seen, thoroughly cleaned, and superficially disinfected; but, as the gonococci will continue to proliferate in the synovial membrane beyond reach, the process, though checked, will often continue. As relatively few pure gonorrheal infections lead to suppuration, the treatment by immobilization and early passive motion is safer for general adoption. Particularly is this true in the more complicated joints, as the elbow, ankle or wrist, where thorough irrigation and drainage are usually impossible, and where incisions among the adjacent tendons would not infrequently lead to the ankylosis which operation is intended to prevent. When pus can be demonstrated by fluctuation, edema and redness, or aspiration of the joint or tendon sheaths, then only should operation be resorted to. Incision, irrigation, immediate suture, without drainage, should be attempted.

The passive hyperemia method, advocated by Behr,

in the treatment of joint tuberculosis, has been used with good results in gonorrheal arthritis. The limb is bandaged up to the joint; above it a flat tourniquet is applied, sufficiently tight to impede the venous circulation. The joint swells, the pain is relieved, and earlier motion is reported. This was true in 2 of my cases. In 3 others no benefit followed.

SUMMARY.

In this paper I have endeavored to show: (1) That the gonococcus alone can cause arthritis, which, without the presence of other organisms, may be purulent.

(2) Gonorrheal arthritis occurs not only in acute gonorrhea, but in the chronic or latent stages, which persist much longer than is commonly believed.

(3) The signs of such chronic infection in the male and female are often slight, and disregarded or overlooked by the patient and physician.

(4) In consequence, not a small proportion of cases are diagnosed as articular rheumatism which are really of gonorrheal origin.

NEUROPATHIC JOINTS.*

BY SIDNEY A. LORD, M.D., BOSTON.

It is obvious that the term "neuropathic joint" might reasonably be of very wide or extremely limited application, according to whether we had most in mind the fundamental rôle played by the nervous system in all vital processes on the one hand, or on the other the smallness of the number of joint affections generally regarded as essentially trophic in nature.

I shall apply the term in this paper to all those affections which seem, from the evidence at present available, to owe their characteristics to the direct influence of the nervous system, whether strictly trophic or not. The limitations of time will prevent any more than passing mention of the neuromimetic and so-called hysterical joints, which indeed do not fall within my province, for they depend upon disorder of ideas, are psychopathic in origin, not resulting from physical lesion. They have moreover but slight bearing on the differential diagnosis of the profoundly altered joints with which this paper principally deals.

Taking up first the classic examples of true nervous arthropathies as they are called—those of tabes dorsalis and syringomyelia—we find that the anatomical characters are almost identical in the joints, notwithstanding the great and essential differences shown by the diseases as a whole, so that much of what can be said of one applies to both.

It is of primary importance to recognize the facts that the joint lesions of these two cord diseases are in typical form almost absolutely limited to them, that they occur with frequency, 5% to 10% of all tabetics and about 10% of syringomyelics being thus affected, and that conspicuous among the symptoms in both troubles are extensive losses of sensation. The course of these arthropathies need not be here described in great detail.

The following mode of onset is not at all uncommon. Entirely without warning, entirely without pain, entirely without evident cause, during some mild

* Read before The Massachusetts Medical Society, June 13, 1900, and recommended for publication by the society.

muscular action, absolutely without effort, often quite before any development of ataxia, the leg gives way or the arm drops, and the joint—knee or shoulder, for example—becomes at once useless; or if not at once, in a few minutes or hours. For there quickly ensues an enormous, tense, fluctuant swelling, utterly destroying action of the joint. In its suddenness and extent, this swelling is quite out of the domain of all other conditions besides tabes or syringomyelia, except that following the great crushing violence of accident cases. The swelling extends usually beyond the joint limits—this is very characteristic; in fact it is not uncommon for the whole limb, or one segment, to increase enormously in size with astonishing rapidity. The cause of this is a remarkable subcutaneous and muscular infiltration, hard, non-pitting, often visibly hemorrhagic. There is no pain, and signs of inflammation are absent.

The further course of these arthropathies is the reverse of the onset: absorption is slow and rarely complete, there remaining permanently moderate hydrops, with eventual (sometimes extremely rapid) development of flail joint or *Schlotter-gelenk*, a unique condition of painless, fully mobile luxation. This state of abnormal mobility does not necessarily require a long time for its production—it may often be detected to slight degree in the course of a very few weeks, or as soon as the swelling has considerably receded. During the stage of active distention, it is not usually present. The extreme grades of it, resulting in those fantastic shapes which, as Marie¹ says, “shame the double-jointed man” and result even in perforation, are only found in chronic cases. After this stage there sometimes occurs complete *restitutio ad integrum*, not without tendency to relapse, however. There commonly remains grating on movement, and the neighborhood of the joint slowly enlarges. Termination in ankylosis is rare. (Schlesinger² reports 2 cases in syringomyelia.) Other than this, cure is not to be expected.

The pathologic anatomy of these lesions is most interesting. It resembles much that in arthritis deformans, and consists in rarefaction and hypertrophy of bone, cartilage, ligament, and synovial membrane. Combinations of these changes are most diverse, and explain the clinical variations in large degree. Bony fragility and weakness of ligaments are of especial importance.

There are two principal types of change—atrophy and hypertrophy. In the atrophic form there is sometimes immense absorption of bone, which may include a considerable part of the shaft,—of the humerus or femur, for example,—the heads of the bones having completely disappeared. The opposing bony joint surface is likely to become somewhat hypertrophied under the influence of abnormal attrition. The hip and shoulder usually show the atrophic form.

The hypertrophic form is more common; there are irregular bony projections, perhaps free pieces of bone, large and small, in the joint, the cavity of which looks shrunken, through the great development of connective tissue. In the middle of the joint the cartilage has disappeared. The fluid in the joint is thick, yellow, sometimes hemorrhagic, occasionally almost pure blood. The ligaments are destroyed and ossified in varying degrees. The synovial membrane is often luxuriantly fringed. Fracture into the joint is com-

mon. This last statement indicates that there is an extreme degree of bony fragility; in arthritis deformans such fracture, at least of the whole head of the bone, as is here seen is absent or extremely rare. Anatomically still other distinctions between the two conditions have been described.

What is the immediate cause of these arthropathies? In discussing this it will be important to mention the chief clinical variations. It is vital to point out that, in its etiology, it is impossible to separate fracture from the arthropathies themselves. There can be no doubt of very frequent coincidence of fracture with arthropathy; and in the joints above discussed, with large swellings, the relation is probably nearly constant. I believe it highly probable that in such cases the fluid is, much more commonly than at present supposed, purely the result of active hemorrhage. Brissaud's³ interesting case illustrates this. Tapping is unfortunately rarely done, so that we cannot be sure.

It seems to me that this factor of hemorrhage is necessary to complete the theories of Paget, Volkmann, Kolisko⁴ and others who believed that the whole cause of arthropathy lay in violent ataxic movements, sufficient to fracture bones and to rupture the joint structures. The great force of these unfelt inco-ordinated movements, the inco-ordination being augmented sometimes by irregular muscular atrophy, must be acknowledged, and the potency of this cause admitted, in view of the occurrence of so-called spontaneous fracture of even thick and sclerotic tabetic bones (Kolisko). It is easily seen that joint hemorrhage would be highly apt to result from such violence, would be rendered even more likely by the erosion of soft structures, and would explain particularly well the rapidity of swelling. There is, further, special ground to suspect hemorrhage when, as very rarely happens, much pain exists (Brissaud).

But ataxia, if a factor in producing these arthropathies, is not their exclusive cause. For, how would it account for their appearance in syringomyelia, in which there is no ataxia, or in tabes before the development of ataxia, or for their following exceedingly slight direct blows? Or, how would it explain the enormously diffused serous infiltration (not explainable mechanically), or the progression of symptoms during quietude, and the continuance of bone atrophy when the articular surfaces are no longer in contact?

It is evident that the final cause of these arthropathies is other than the immediate mechanical influence of ataxia, and that a more subtle pathology is demanded.

Arthritis deformans, gout and syphilis, all of which have been widely believed in, and strenuously put forward as exclusive causes, will, it is obvious, not begin to account for the extraordinary phenomena just described, nor will they account for the milder forms of arthropathy which their manifestations much more resemble, for those milder forms pass finally into severe ones. (Strümpell,⁵ formerly skeptical, now admits that it is hard to avoid the assumption of trophic disturbance.)

The association of these arthropathies with tabes and syringomyelia in some perfectly definite way is quite evident—their rarity in other cord diseases points to this—likewise the large number of other

phenomena of undoubted trophic origin in tabes and syringomyelia; it seems in fact quite necessary to assume a special trophic disturbance, to account for the joint disease in question.

Is this trophic disorder due to neuritis? There is much evidence in favor of this, but not enough to warrant the assumption that neuritis is the only cause. Its presence is not constant, though very frequent, as Pitres and Carrière⁶ have shown. We do not know whether it is secondary to the joint trouble, or whether it is due to the cord lesion. It is most intense in the neighborhood of the affected joint, and this points to the first possibility as the true one.

The following may be regarded as a conservative view: Several factors undoubtedly can and do exist in the etiology of both high and low grades of the arthropathies; but the only absolutely constant element is the nervous system, which acts directly by influencing nutrition, and indirectly by causing ataxia. These factors are, in the order of their probable importance, central and neuritic trophic disorder; anesthesia of the joints; traumatism, direct and (through ataxia) indirect; muscular hypotonia; arthritic tendency and syphilis. They act probably in this way. The nervous trouble predisposes the joints to disease through alteration of the sensory neurons. That the sensory nerves, while furnishing sensibility to the bones and joints, in some way take care of their nutrition may be regarded as proved. Now there is equal reason to suppose that normal synergetic muscle actions depend on continuous afflux of stimuli from the periphery. Therefore, any interruption of function of the centripetal joint nerves will result in inco-ordination, with consequent loss of normal support to the joint. This loss entails uneven and violent stretchings and pressures on the ligamentous structures and articular surfaces. The disorder increases in a vicious circle on account of the relation between muscle and ligament. Osseous hyperplasia or atrophy occurs, this being determined probably by increase or loss of blood supply from vasomotor change. Irritation from rubbing is part of the cause of the exostoses. Latent arthritic tendencies, which, of course, must often be present, are hastened into activity, and pursue a more extended course than they would otherwise take. Continued use of the joint, on account of the absence of all pain, after the lesion has begun, is a most important element in causing further damage. It must be added that the early inco-ordination which occurs on the development of joint anesthesia probably begins at once to damage the joint even before ataxia has been manifest. This helps to explain the excessively early appearance of some of these lesions. The rôle of hypotonia etiologically is likewise constant, if less important. That of syphilis may be deemed comparatively unimportant on account of the fact that there is nothing to show that the disease is frequently present.

In concluding this matter of etiology, the close and interesting correspondence of the arthropathies to the seat of the chief cord lesion must be mentioned—localization in upper limb in syringomyelia, in the lower in tabes. On the contrary, when the gliosis is of the lumbar type the arthropathies affect the lower limbs. Cervical tabes in like manner has been associated with upper limb arthropathy. It is to be presumed that shoulder affections of tabes are always to be explained on the anatomical basis of cervical

involvement, and that, in general, leg arthropathies occur the earlier in tabes.

The other joints affected in tabes are, beside the vertebræ, nearly all the articulations, knee, hip, shoulder and elbow being the most frequently involved.

The "tabetic foot" is of rather different type, showing constant tendency to hypertrophy of bone, including even tibia and fibula, and ending in ankylosis. Its sudden and painless beginning results from rarefaction and crumbling of tarsal and metatarsal bones. The shape is unlike anything else; the foot looks shortened, thickened and rounded, and the vault has disappeared. The appearance known as Chinese foot is largely due to muscular atrophy (Senator⁷), and occurs in various other diseases. It must be distinguished from true tabetic foot.

In syringomyelia, the arthropathies of the small hand joints and the severe grades of kyphoscoliosis, all ascribed to trophic disorder, are worth mention. The purity of the type in the hand is obscured by infection and suppuration (Schlesinger).

There are certain unusual events in the course of classic arthropathies, notably the very rare occurrence of pain, sometimes severe, ascribed by Brissaud wholly to stretching from effusion. It is, however, not wholly understood. It is possible that the usual rupture of the capsule, allowing escape of fluid and permeation of the periarticular tissues, here fails to occur. It is not clear why pain appears unless we assume analgesia of the joints but not of the skin. Investigation of possible association with neuritis would be of interest. The presence of pain has been adduced without justification, in my opinion, as an argument against the causative influence of analgesia. Suppuration and inflammation are most uncommon and certainly obscure the type of tabetic joint when present. The pathology is obviously different from usual. Suppuration is almost invariably secondary to trauma, occurs in the late cases, and should not confuse. Its course is remarkably mild, and in general the reaction of these joints to infection is slight.

The diagnosis of these joint lesions is rarely difficult except in certain early cases not long under observation. Mistakes would almost never occur if the possibility of cord lesion were in mind. Enough has been said to show the distinctions from simple fracture and luxation. There is, however, a condition of habitual luxation of the shoulder joint in syringomyelia, often preceded by direct trauma, which is of great practical and medico-legal importance. This may occur before obviously extensive change in the joint, and the patients have usually come to the surgeon unaware of central trouble. Schrader⁸ reports 15 cases. Some of these had had previously no cord symptoms.

Occasionally an early case with slow, chiefly hypertrophic changes, especially if tending towards ankylosis, will be confused with osteo-arthritis. The resemblance may be close clinically, but these cases are uncommon and rarely long unassociated with symptoms of the central lesion. There may be a history of undue mobility. Characteristic involvement of small joints is lacking. There is also likely to be much more extensive periarticular and subcutaneous ossification than occurs in arthritis deformans, and a greater liability in the presence of large, free, bony masses in the joint.

In those cases in which, like that of Dereum and

Spiller⁹ (syr.), grating in the joint precedes by years the development of typical arthropathy, the diagnosis may at first be impossible.

The extreme atrophic cases with luxations are unmistakable.

There have been reported anomalous combinations of symptoms resembling both syringomyelia and tabes; the greater tendency in the former to diffuse ossification in the limb and to necrosis of bone would assist in the diagnosis of any joint trouble.

The complex of Morvan's disease, so called, is common to both leprosy and syringomyelia, and need not be further considered as such. Leprosy occasions difficulty only in hand affections and only in atypical instances.

One case of central cord tuberculosis produced typical tabiform arthropathy and was not diagnosed *intra vitam* (Schlesinger).

Hematomyelia, a condition of hemorrhage into the cord in which the distribution of the blood is much like that of the gliosis process, appearing generally after accidents, may be in question. One doubtful case of this kind, that of Goldthwait,¹⁰ has come to my notice.

Syphilis must always be considered as a remote possibility, simulating perhaps more the foot affection than those of the other joints. Practically speaking, antispecific treatment never benefits these troubles. When it does do so it might be expected that other luetic symptoms would be present; but this is not true, otherwise a suspicion would be warrantable that not tabes but spinal lues was the central lesion.

Londe¹¹ calls attention to one case of true arthropathy in progressive muscular atrophy of the spinal type, and to one in chorea. He draws a fundamental distinction between the genuine lesions occurring in those diseases and gliosis and tabes, on the one hand, and all other nervous joint disorders on the other; asserting that, in the latter, one of two factors — infection or auto-intoxication — is always necessary for the production of the arthropathy, plus the nervous element. The nervous system is supposed to determine principally the location of the joint trouble in such cases, and Londe is right on the whole in thus assigning to it a subordinate part. I think, however, that two additions may be made to his list of diseases in which genuine arthropathies occur, to wit, central tuberculosis of the cord and certain instances of the trophic variety of intermittent hydrops, and perhaps hematomyelia.

Those non-genuine arthropathies emphasized by Londe are seen most frequently and typically in myelitis, neuritis and hemiplegia, also have been reported in Friedreich's disease, ataxic paraplegia, bulbar paralysis, and tuberculosis of the spinal column. They are all rare, and occur with significant inconstancy compared to the regularity of joint involvement in tabes and gliosis. And it is to be observed that they are not associated so definitely with extreme sensory losses as are tabes and gliosis.

The false arthropathies, as they may be called, are of quite different type from the genuine — they are distinctly inflammatory in nature, accompanied constantly by pain, redness, and often by suppuration.

In regard to those in hemiplegia, Weir Mitchell¹² has recently renewed attention to the intense irritative — not paralytic — sensory symptoms, and deprecates the superficial reasoning which assumes a mere

coincidence with rheumatism. These hemiplegic joint lesions are in most remarkable manner preceded, sometimes for years, by lively pains which are limited to the side afterwards paralyzed.

There are several other joint affections which may be spoken of as neuropathic. Among them the most interesting is *hydrops articulorum intermittens*. About 35 examples have been reported; they represent several different pathological states, but after eliminating those cases in which some such obtrusive condition as acute osteomyelitis gives at least an anatomical basis for the disease, if it does not afford an explanation of the periodicity, there remains a group in which the regularly or irregularly recurring hydrops, of apparently spontaneous beginning, is susceptible of no other explanation than that of vasomotor disturbance. Some of these are certainly hysterical. The location is far more commonly in the knee than elsewhere, but the other joints have been affected. It is usually unilateral, sometimes alternating right and left, seldom very painful, and often quite irregular in its manifestations. The more striking cases are, however, almost uniform in recurrence, and in duration of attack and in location. The intervals vary from hours to months, but most frequently last from ten days to two weeks. The disease sometimes persists for many years, finally to cease spontaneously or seemingly through the influence of treatment. This trouble is rarely mentioned in the books. Among others, Senator¹³ has recently written upon it and points out that the question of the presence of slight degrees of real inflammation cannot be decided as long as we do not know the absolute distinction between exudate and transudate. An exceptionally well-marked case which I have lately seen will be made the subject of further report.

Another type of great interest is the acro-arthritis of Hutchinson, recently described further by MacMahon,¹⁴ regarded by the former as induced by gout in cases showing marked tendency to Reynaud's disease; that is, to conspicuous circulatory disturbance in the fingers. In this trouble the terminal finger articulations become typically wobble-jointed, with effusion, in tabetic fashion. The anatomicopathological appearances correspond to those in tabes, which, it must be remembered, may itself produce arthropathies in this location. Tabes, however, is not present in Hutchinson's group.

The disease described by Marie as osteo-arthropathy of pulmonic origin is not an arthropathy to any essential extent, and is better described as ossifying osteo-periostitis with hypertrophy of neighboring soft parts. It is usually of toxic origin, and occurs in many other than lung diseases; although in those it develops the most acutely and to the highest degree.

Its essential lesion occurs in syringomyelia at times. Clinically, it begins with clubbing of the fingers, but the ordinary form of finger characteristic of lung disease is accentuated into a marked drumstick type with enormous nails, which attain the full width of the phalax, leaving no marginal flesh. Decided or even cauliflower-like tufting of the bone shows constantly, in radiographs. When fully developed, this disease induces pronounced enlargement of wrists, ankles and adjacent parts of the long bones. It is uncommon. The photographs which I show you indicate the freedom of the joints from the affection.

In regard to the treatment of the trophic joint

lesions, unfortunately only too little can be said. But it is certainly true that it has been unduly neglected. The outlook when the affection occurs in tabes or gliosis is undeniably bad; but can we not do a little more in prophylaxis? In all severe nervous troubles, particularly when extensive paralyses of sensation accompany them, every precaution should be taken to prevent violence to the joints. There should be constant watchfulness for grating or undue mobility; and with the first definite indication of approaching trouble in a joint, this watchfulness must be redoubled, and temporary rest in bed enjoined, with measures for immobilization. Relief of pressure from effusion must be secured in the event of tense swelling, by tapping. If done early in hemorrhagic cases the bleeding might be stopped by hemostatics, and the weakened joint structures saved from the destructive effects of great distention. Antispasmodic drugs should be given their slim chance in the beginning. The deleterious influences of ataxia should be guarded against by the early employment of Fraenkel's invaluable method of training.

The extreme forms of joint disorganization with dislocations must have orthopedic treatment; leather splints, properly applied, are very efficacious. Amputation is sometimes advisable, and I see in the peculiar state of trophic function no contraindication. As a matter of fact, these joints and limbs heal readily. Indeed, it is often affirmed that the union of fractured bones takes place with unusual speed, the large callus being held to corroborate this view. This is wrong. The repair of bone occupies generally as much time as usual, indeed sometimes obstinate non-union is seen. The great callus often observed is the result of continued attrition in the ataxic, analgesic member.

The inflammatory type of arthropathy is more amenable to treatment. Suppuration demands surgical measures. As has been pointed out, there is not here the menace to life associated with other forms of acute suppurative arthritis.

For intermittent hydrops, besides removal of obvious cause of inflammation, the use of arsenic in long continued moderate doses has seemed to be of much service. But in the purely idiopathic variety our present crude methods achieve little result.

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AMBIDEXTERITY TO BE TAUGHT IN PHILADELPHIA SCHOOLS. — It is said that the Board of Education in Philadelphia is about to undertake to train school children to be ambidextrous through a regular course of exercises to be carried out at the schools. The success of the experiment will be watched with interest.

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PLAGUE.

WITH the development of improved and more rapid means of communication, it is a self-evident fact that distant parts of the world are being brought into closer and closer relation, and the danger of the spread of disease thereby very greatly increased. Thirty years ago we had small fear of the introduction of tropical diseases into our large cities; now we must be constantly on our guard lest through some carelessness an infected vessel gain access to our ports and its crew be the possible source of the dissemination of disease. No more striking evidence of the acknowledgment of this new responsibility could be furnished than the success of the recently organized London School of Tropical Medicine, which is already crowded with students in preparation for the intelligent study and treatment of diseases of the tropics. During the past months the danger of the introduction of disease from regions where it is endemic has been strikingly shown in the appearance of plague at various distant points in almost every part of the world. The fact that it has gained no headway is an equally strong proof of our increasing ability to cope with the large question of prophylaxis. The experience through which Glasgow has gone with regard to plague, and its gratifying outcome, is an object lesson which we should do well to ponder. In the October number of the *Scottish Medical and Surgical Journal*, Dr. W. Leslie Mackenzie, medical officer of health, narrates certain matters of interest with regard to the situation in that city. However stringent a quarantine may be, he feels that the spread of the disease is usually brought about by the mild, unrecognized ambulant case, which means vigilance far greater than is necessary to comply with ordinary quarantine requirements. Furthermore, the rats and fleas must be exterminated, a task apparently of no small magnitude. So far no really successful method has been found. Dr. Mackenzie concludes his very vigorous paper as follows: "The public confidence in Glasgow vigilance and energy

should not be allowed to mislead. The plague is everywhere, because the ports infected with it are in daily converse with every important place in the Eastern and the Western World. Europe is continually under a menace. Glasgow will solve its own problems; but every local authority in Britain had better be putting its house in order. The profusion of arrivals from South Africa is no small danger. The army will come home and bring with it much typhoid and dysentery. It may bring the plague too. The stupid creatures that deprecate 'alarmist' views are just those that run from the real danger. Our towns are none too clean, our rats are none too few, our streets are none too little strewn with foul dust, ashes and paper, that we should give any quarter to the arm-chair sanitarian, who is 'not as other men are.' The price of freedom from plague is vigilance against dirt—and rats."

ANNUAL REPORT OF THE BOSTON CITY HOSPITAL.

WE have before us the thirty-sixth annual report of the Boston City Hospital, a volume this year comprising two hundred and twelve pages. The changes and improvements at this hospital during the last few years have been so numerous that it is with a sense of surprise that we take up the report each succeeding year to find that still others are in progress. Apart from certain minor changes in the heating and power plants, necessitated by the rapid growth of the hospital, and the proper equipment of the laundry, completed in 1898, the administrative portion of the institution has not been enlarged. The most notable new building is the Ann White Vose House for nurses, to which attention has already been called in these columns. This building provides a permanent and wholly adequate home for the nurses.

The continued success and growing usefulness of the South Department, devoted to the care of contagious disease, should be a source of satisfaction to every one, whether or not he belong to the medical profession. The following statistics are of interest, showing an increase in the amount of work over the corresponding period of the preceding year, and a marked increase in the winter months: At the beginning of the year there were 258 patients, against 155 the previous year. The number of patients admitted was 2,787, against 1,620 for the previous year. The largest number at any one time was 323, against 260 for the previous year. The daily average number of patients was 250, an increase of 106 over the preceding year. The average days' stay was 30. The total number of weeks' board was 13,053. Of the total number of patients admitted, 324 have died, including 107 who died within forty-eight hours after admission, or 33 per cent. of all deaths. The death rate from diphtheria during the year was 9.9 per cent. as compared with 12.8 per cent. for the preceding year; omitting patients admitted in a moribund condition, the mortality would

be reduced still further, to 6.3 per cent. During 1899, of all cases of diphtheria occurring in Boston 55 per cent. were treated at the South Department. A problem soon to be met is increased room for this class of cases; already the hospital is frequently in danger of overcrowding. Another fact, which we note with satisfaction, is the final establishment of a relief and ambulance station on Haymarket Square, in accordance with a recommendation made by the Board of Trustees two years ago.

The hospital at present requires much larger accommodations for both the Medical and Surgical Out-Patient Departments, owing to the very rapid increase in the number of patients. Two years ago the number of visits to the surgical department was 48,482 as against 62,131 during the past year, and within the last five years the total number of surgical cases has doubled. The out-patient buildings now are the same as those in use ten years ago, although the number of patients treated is nearly three times as great. We have always felt that the work of the out-patient department of a large hospital is one of its most important services to the community, and its medical administration one of the most arduous duties a physician is called upon to perform. It is unfortunate, therefore, that a more active interest should not be shown in this department of a hospital's work, to the end that adequate accommodations be provided. There is too great a tendency to regard out-patient departments as appendages of a hospital, rather than as one of its integral parts.

A considerable portion of the report is taken up with hospital statistics, which we are glad to observe are prepared with much greater care than usual, as regards classification. The volume has several illustrations, chiefly of the new Nurses' Home, and two large diagrams of the hospital grounds and buildings.

MEDICAL NOTES.

YELLOW FEVER IN HAVANA.—It is reported that yellow fever prevails in Havana to a greater extent than at any time since 1897. For the week ended September 15th there were 9 deaths. The week ended September 22d also showed 9 deaths, while there were 19 during the week ended September 29th. The Marine Hospital reports show a total of 49 deaths for August. In August, 1898, there were 16 deaths from yellow fever in Havana; in August, 1899, there were 13. Statistics of other years are: August, 1893, 100 deaths; 1894, 73; 1895, 120; 1896, 262, and 1897, 102. The excess of mortality during the present year over the two preceding years is supposed to be due to the fact that there are many more unacclimated persons in Havana now than at any time since 1897. The filthiness of Havana harbor is regarded as one of the essential causes of the continuance of the disease, in spite of active sanitary measures within the city.

RÖNTGEN SOCIETY OF THE UNITED STATES.—The first regular meeting of this newly organized society will be held in the Academy of Medicine, New York City, December 13 and 14, 1900. The object of the society is the advancement of the knowledge of x-ray work and allied arts and sciences. Membership is open to physicians and to others interested in the general subject. The president of the society is Dr. Heber Roberts, of St. Louis, Mo.

GLASGOW PLAGUE CHECKED.—An official bulletin reports that the outbreak of plague in Glasgow has been completely checked. Twenty-one days have elapsed since the last case. The reception houses were closed October 11th.

MEDICAL CLUB OF PHILADELPHIA.—The Medical Club of Philadelphia will hold a reception for Dr. Maurice H. Richardson, of Boston, at the Hotel Bellevue, Friday evening, October 26th.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, October 17, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 124, scarlatina 26, measles 23, typhoid fever 20.

SMALLPOX IN NEW BEDFORD, MASS.—Another case of smallpox has been discovered in New Bedford in a child of thirteen. Although she is said to have been sick three weeks, the attention of the Board of Health has just been called to her. This added case is the more disappointing since the epidemic was supposed to be well in hand. Twenty-one patients were discharged as cured from the Clark's Point Hospital Saturday, leaving but 23 patients in the hospital.

TYPHOID FEVER AT NEWPORT.—A number of cases of typhoid, generally mild in character, have appeared in a small section of Newport. An examination of the surroundings and of the water and milk supply of the affected region has been instituted by the Board of Health. The Newport Hospital has been taxed to its utmost limit by these cases. Patients under treatment October 16th numbered 59. There have been 15 deaths.

NEW YORK.

TENEMENT HOUSE BUILDING.—The Tenement House Commission, appointed by Governor Roosevelt, in response to a list of forty-seven questions sent out by them on June 15th last, to one hundred prominent persons representing various professions and branches of business having relation to the subject, have received some 4,700 answers in regard to tenement house building. The writers for the most part agree that not more than 65% of an inside lot and not more than 85% of an outside lot or corner should be built over; that all airshafts should open on the outside air; that five stories should be the limit for a non-fireproof and seven stories for a fireproof tenement, except where elevators are provided; that owners should be forced to provide bathing facilities for the

tenants, mainly in the shape of shower or needle baths in the basements; and that bathrooms and closets as a rule be provided for every family. The last question on the list was the following: "In general, what suggestions have you to make to the commission with regard to its work?" To this Dr. Roger Tracy, chief of the Department of Vital Statistics of the Board of Health, replied: "It seems to me that matters relating to construction have been pretty well thrashed out, as shown by the practical agreement among the builders of new model tenements that privacy, safety and ventilation can be best secured by the fireproof structures, by outside stairways, and floors entirely separated. Although a good deal is done now, more ought to be done toward teaching the poor how to make the best of what they have, the vast importance of cleanliness, good food (and the cheapest is often the most wholesome), and right living. I think the municipality might do something towards this, and that is where an appeal to the legislature would be necessary."

SCARCITY OF WATER.—The scarcity of water still continues in the Boroughs of Brooklyn and the Bronx. In Brooklyn on September 25th, the situation in brief, according to a statement made by Chief Engineer Birdsall, was that there were on storage 100,000,000 gallons, the daily flow of water was 80,000,000, and the consumption, 90,000,000 gallons. On September 27th the East New York Avenue main was closed, with the result of reducing the pressure of water throughout the borough. On the 28th the Kings County Grand Jury for September made a presentment in which they declared that the relief needed by Brooklyn could be obtained by the construction of the Milburn conduit, a bond issue for which was recently authorized by the Municipal Council. They advocated that in the revision of the city charter the Borough of Brooklyn be given entire charge of its water supply through a commissioner, and not through a deputy commissioner, as at present, and, in conclusion, suggested that, in view of the fact that, owing to the pressure of other matters, they had found it impossible to fully inquire into a matter of such magnitude, the water supply of Brooklyn should be taken up by the October grand jury. On September 28th Commissioner Dalton, of the Water Department, signed a contract for the laying of a temporary pipe line, which it is believed will relieve the water famine in the Marble Hill and Kingsbridge sections of Bronx Borough, and the work of carting the 12-inch pipes was begun during the day. By this means it will be possible to pump water from the old Croton aqueduct in the region referred to, and the expense is provided for by an emergency fund voted by the Municipal Council on September 25th.

MORTALITY STATISTICS.—The mortality in the city in the month of September represented an annual death rate of 18.46, against 19.02 for August. This rate is slightly higher than that for September, 1899,

namely, 17.89; and the increased mortality is, no doubt, attributable to the higher temperature prevailing this year. It is noteworthy, however, that in the month of September the mortality from several of the prominent zymotic diseases was lower than at any time since the formation of the Greater City of New York. Thus, the weekly average of deaths was only 19.25 from diphtheria, 2.25 from scarlet fever, and 3.5 from measles. The weekly average of deaths from diarrheal diseases declined from 200 in August to 149.75 in September; from diarrheal diseases in children under five years, from 176.5 to 135.5; from pulmonary tuberculosis, from 143.75 to 129.75; and from whooping cough, from 10.5 to 7.75. On the other hand, the weekly average of deaths from typhoid fever increased from 14 to 24.25, and from pneumonia, from 78.25 to 82.75. There were 15 deaths from sunstroke in September, 10 of these occurring in the first week in the month.

THE LOST IDENTITY PATIENT AN IMPOSTOR.— Even the most experienced observers sometimes make mistakes, and Dr. Schmid has had to acknowledge that his unique case at the White Plains Hospital, where the patient's identity was supposed to have been lost through a stroke of lightning, is not genuine. From letters received by Dr. Schmid after the case was reported by him from Dr. Henry Hun, of Albany, and others, it appeared that the man was William Smith, of Fall River, Mass., who for a number of years has been a cunning impostor and hospital beat. At various times since 1887 he has been an inmate of hospitals in Albany, Fall River, North Adams and Stonington, and of the insane asylums at Northampton and on Ward's Island, N. Y., as well as other institutions in various places.

NEW YORK OBSTETRICAL SOCIETY.— At the annual meeting of the New York Obstetrical Society, held on Tuesday, October 9, 1900, the following officers were elected for the ensuing year: President, H. J. Boldt, M.D.; First Vice President, Ralph Waldo, M.D.; Second Vice President, H. W. Vineberg, M.D.; Recording Secretary, G. L. Brodhead, M.D.; Assistant Recording Secretary, G. G. Ward, Jr., M.D.; Corresponding Secretary, E. E. Tull, M.D.; Treasurer, J. Lee Morrill, M.D.; Pathologist, W. S. Stone, M.D.

OPERATION FOR HYPOSPADIAS AT FIVE MONTHS.— At the October meeting of the Medical Association of the Greater City of New York, Dr. Carl Beck presented an infant on whom he had operated, with perfect result, for hypospadias. At the time, the child was only five months old, and Dr. Beck stated that this was the earliest age at which such an operation had ever been performed.

A CASE OF YELLOW FEVER.— After the Ward Line steamer *Havana* arrived at quarantine on October 9th, one of the saloon passengers was taken ill with yellow fever, and was removed to the hospital on Swinburne Island. Health Officer Doty states that

this is the first case of the disease that has developed in the saloon cabin of any vessel this year.

THE PEQUANNOCK WATER SUPPLY.— The contract between the city of Newark, N. J., and the East Jersey Water Company for the Pequannock water supply terminated on September 24th, and by agreement of the legal counsel for both parties the city has taken possession of the reservoirs and pipe line.

THE LOOMIS SANITARIUM.— At a meeting of the Trustees of the Hospital Saturday and Sunday Association, held October 10th, the city branch of the Loomis Sanitarium for Consumptives was admitted to membership in the association, and the institution will hereafter participate in its annual collection.

Miscellany.

ARSENIC IN MANUFACTURES.

WE publish the following circular as sent to us by the State Board of Health:

The Massachusetts Legislature of 1900 enacted a law relating to the manufacture and sale of articles containing arsenic, and directed the State Board of Health to make the necessary investigations relative to the existence of arsenic in the materials mentioned in the act, and to adopt such measures as may be deemed necessary to carry out its provisions and to facilitate its enforcement.

The act is as follows:

CHAPTER 325, ACTS OF 1900.

AN ACT RELATIVE TO THE MANUFACTURE AND SALE OF TEXTILE FABRICS AND PAPERS CONTAINING ARSENIC.

SECTION 1. Any corporation, person, firm or agent who directly or by an agent manufactures, sells, exchanges, or has in his custody or possession with intent to sell or exchange, any woven fabric or paper containing arsenic in any form, or any article of dress or of household use composed wholly or in part of such woven fabric or paper, shall on conviction thereof be punished by fine of not less than fifty nor more than two hundred dollars; *provided, however,* that this section shall not apply to dress goods or articles of dress containing not more than one one-hundredth grain, or to other materials or articles containing not more than one-tenth grain of arsenic per square yard of the material.

SECT. 2. The State Board of Health shall make all necessary investigations as to the existence of arsenic in the materials and articles mentioned in section one of this act, may employ inspectors and chemists for that purpose, and shall adopt such measures as it may deem necessary to carry out the provisions and to facilitate the enforcement of this act.

SECT. 3. This act shall take effect on the first day of January in the year nineteen hundred and one. (Approved May 18, 1900)

Inasmuch as it will become the duty of the State Board of Health, after January 1, 1901, to enforce the provisions of the foregoing act, this circular is published and distributed by the board for the information and guidance of such corporations, persons, firms or agents as are mentioned in the act.

METEOROLOGICAL RECORD

For the week ending October 6th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer.		Relative humidity.			Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...30	30.13	62	66	59	95	97	96	W.	E.	3	5	R.	O.	.22
M...1	30.38	66	56	61	97	97	97	N.E.	N.E.	5	5	C.	O.	
T...2	30.50	64	54	59	89	92	90	N.E.	N.E.	7	10	F.	C.	
W...3	30.41	60	55	58	97	96	96	N.	E.	7	4	C.	O.	
T...4	30.29	74	55	64	97	90	94	S.W.	S.W.	3	9	G.	C.	
F...5	30.04	82	61	72	90	78	84	S.W.	S.W.	8	6	F.	C.	.01
S...6	30.24	58	61	54	87	97	87	N.W.	N.E.	10	9	O.	R.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. — Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCTOBER 6, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup	
New York	3,654,594	1170	448	23.60	11.52	7.04	1.20	1.68	
Chicago	1,898,575	—	—	—	—	—	—	—	
Philadelphia	1,293,197	—	—	—	—	—	—	—	
St. Louis	575,238	—	—	—	—	—	—	—	
Baltimore	508,957	192	78	29.64	4.16	52.00	4.16	4.68	
Cleveland	381,768	—	—	—	—	—	—	—	
Cincinnati	325,902	—	—	—	—	—	—	—	
Pittsburg	321,616	90	32	31.08	5.55	11.11	8.88	5.55	
Washington	277,000	82	32	39.36	9.84	9.84	7.38	2.46	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	55	22	27.30	3.64	12.74	1.82	—	
Nashville	87,754	—	—	—	—	—	—	—	
Boston	560,892	191	80	34.84	9.88	15.60	3.64	5.72	
Worcester	115,231	32	16	62.60	6.26	15.65	9.39	6.26	
Fall River	166,594	45	22	42.18	6.66	35.52	—	—	
Cambridge	95,185	28	16	35.70	3.57	14.28	3.57	—	
Lowell	98,611	32	9	18.72	6.24	12.48	—	—	
New Bedford	74,943	22	12	49.55	4.15	37.35	8.30	—	
Lynn	69,769	11	3	9.09	—	—	—	—	
Somerville	67,863	23	8	47.85	—	13.05	—	—	
Lawrence	60,937	34	19	39.68	8.82	17.64	2.94	—	
Springfield	60,095	14	3	28.56	7.14	14.28	—	—	
Holyoke	45,623	—	—	—	—	—	—	—	
Brockton	40,299	4	1	25.00	—	25.00	—	—	
Haverhill	38,714	19	1	5.26	5.26	—	—	—	
Salem	38,583	—	—	—	—	—	—	—	
Malden	38,321	16	8	43.75	6.25	12.50	6.25	6.25	
Chelsea	35,022	12	6	16.66	—	—	—	8.33	
Gloucester	32,285	3	1	—	—	—	—	—	
Fitchburg	31,648	10	6	30.00	—	20.00	—	10.00	
Newton	31,224	5	1	20.00	20.00	—	—	—	
Everett	31,167	5	2	20.00	—	—	—	—	
Taunton	28,891	11	4	27.27	—	9.09	—	9.09	
Quincy	25,653	4	2	50.00	—	50.00	—	—	
Pittsfield	24,226	—	—	—	—	—	—	—	
Waltham	23,783	7	2	14.28	—	—	—	—	
North Adams	22,196	6	2	33.33	—	16.66	—	—	
Brookline	20,225	—	—	—	—	—	—	—	
Chicopee	18,790	6	3	16.66	—	—	—	—	
Medford	17,869	2	1	—	—	—	—	—	
Melrose	15,411	1	—	—	—	—	—	—	
Newburyport	15,157	3	—	—	—	—	—	—	

Deaths reported 2,141; under five years of age 842; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 617, consumption 253, diarrheal diseases 223, acute lung diseases 202, diphtheria and croup 57, typhoid fever 49, whooping cough 10, cerebrospinal meningitis 10, scarlet fever 7, measles 4, erysipelas 4.

From whooping cough New York 5, Washington 3, Pittsburg and Providence 1 each. From cerebrospinal meningitis New York 6, Worcester 2, Somerville and Marlboro 1 each. From scarlet fever New York and Worcester 2 each, Boston, New

Bedford and Everett 1 each. From measles New York 4. From erysipelas New York 2, Boston and Washington 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending September 22d, the death rate was 18.1. Deaths reported 4,041: acute diseases of the respiratory organs (London) 203, diarrhea 497, whooping cough 105, diphtheria 72, fever 50, measles 26, scarlet fever 21.

The death rates ranged from 11.5 in Croydon to 25.5 in Blackburn; Birmingham 17.9, Bradford 12.3, Cardiff 13.2, Gateshead 17.6, Huddersfield 15.5, Hull 23.8, Leeds 19.2, Leicester 15.9, Liverpool 23.1, London 16.5, Manchester 23.2, Newcastle-on-Tyne 17.6, Nottingham 19.3, Plymouth 21.9, Salford 24.3, Swansea 19.3, West Ham 16.4, Wolverhampton 17.5.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending September 29th, the death rate was 18.5. Deaths reported 4,110; diarrhea 495, acute diseases of the respiratory organs (London) 187, diphtheria 79, fever 76, whooping cough 70, measles 30, scarlet fever 26.

The death rates ranged from 11.1 in Bradford to 27.6 in Salford; Birmingham 20.2, Cardiff 15.3, Derby 21.2, Gateshead 19.5, Hull 20.5, Leeds 18.0, Liverpool 23.0, London 16.7, Manchester 26.6, Newcastle-on-Tyne 21.6, Nottingham 18.3, Plymouth 14.8, Portsmouth 14.7, Sheffield 22.4, Sunderland 27.6, Swansea 19.3, West Ham 14.9.

VACANCIES, CARNEY HOSPITAL.

There are two vacancies in the staff of surgeons to out patients; one in the staff of physicians to out patients and one in the staff of assistant ophthalmic surgeons. Applicants for these positions will send their names to the secretary, Dr. James J. Minot, 188 Marlborough Street, Boston, before November 10, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, October 24, 1900, at 8 P. M.

Papers: Dr. Sarah E. Palmer, "Report of a Cesarean Section."

Dr. Frank A. Higgins, "Some Cases of Placenta Previa." Dr. Francis D. Donoghue, "Treatment of Placenta Previa by Cesarean Section, with Report of a Successful Case." Discussion by Drs. Edward Reynolds, C. M. Green, F. W. Johnson, M. F. Gavin, F. A. Higgins and Alfred Worcester.

Business: Election of chairman for the ensuing two years.
R. A. KINGMAN, M.D., Chairman.
C. H. HARE, M.D., Secretary,
285 Marlborough Street.

SUFFOLK DISTRICT MEDICAL SOCIETY.—There will be a stated meeting at the Massachusetts Institute of Technology, Walker Building (corner of Boylston and Clarendon Streets), Room 22, Saturday, October 27, 1900, at 8 P. M.

Papers: "Recent Investigations on the Origin of Cancer," Dr. J. C. Warren.

"Statistics of Cancer," Dr. W. F. Whitney. "First Annual Report to the Surgical Department of Work Done on the Etiology of Cancer," Dr. E. H. Nichols.

Business: Election of a committee of five to prepare a list of candidates for officers of the society.

Supper after the meeting at the Hotel Brunswick.
HERBERT L. BURRELL, M.D., President.
HOWARD A. LOTHROP, M.D., Secretary,
10 Marlborough Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, CENSORS' EXAMINATION.—The censors of the society, officiating for the society at large, will meet to examine candidates for admission to the Massachusetts Medical Society, at 19 Boylston Place, on Thursday, November 8, 1900, at 2 P. M.

Candidates should make personal application to the secretary and present their medical diploma, or its equivalent, at least three days before the examination.

For further particulars apply from 2 to 3 P. M., to
HOWARD A. LOTHROP, M.D., Secretary,
10 Marlborough Street.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.—The next meeting of the association will be held in Minneapolis, Minn., December 27-28, 1900

GEORGE H. SIMMONS, Secretary and Treasurer.

RECENT DEATH.

FRANKLIN SMITH, M.D., of New York City, died on October 9th, at the age of seventy-six. He was born in the State of New York and was graduated from the Medical Department of the University of the City of New York in 1865. His son, Dr. Charles Smith, was associated with him in practice.

Original Articles.

CONGENITAL DISLOCATION OF THE HIP JOINT.

BY E. H. BRADFORD, M.D., BOSTON.

THE collected experience of the operative treatment of congenital dislocation of the hip joint has demonstrated the following facts:

In many cases successful reduction of the dislocation has been performed. Frequently, however, relapse has occurred after apparently successful reduction. Relapse is more frequent after operation without incision than after operation with incision. Operative treatment, with or without incision, lacks precision.

Among others it will be seen that an important obstacle is encountered by the surgeon in a fold of the capsule attached to the lower part of the acetabulum, which may be termed an acetabular or capsular hymen, and is often pressed in front of the entering head of the femur allowing apparent reduction, but preventing complete reduction, and favoring relapse

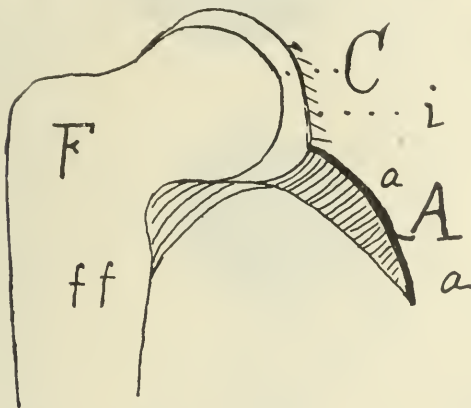


DIAGRAM 1. Congenital hip; F, femur; C, capsule; A, acetabular pouch; a, a, adhesions of stretched capsule to acetabulum; ff, attachments of capsule to femur.

as the limb is placed in certain positions. An anatomical knowledge of the contracted tissues has been acquired, and means have been devised for stretching, tearing, or dividing, by force or incision, the contracted tissue. Where this has been done, the head can be placed under the upper edge of the acetabulum, but frequently an elastic resistance is encountered which prevents a complete reduction well in the acetabulum, without which relapse occurs.¹

Where the opening is sufficiently large to admit the entering head into the acetabular pouch through the constricted portion of the capsule, without pushing the acetabular hymen between the head of the femur and the bottom of the acetabulum, complete reduction can be effected (Diagrams 1 and 2).

It does not, however, follow that the reduced head will remain permanently in place after the remaining bandages have been removed, for the reason that a relaxed capsule and the lengthened pelvic trochanteric muscles may be inefficient in holding the head in its normal place. The influence of the capsule in retaining the head in the socket is well illustrated on exam-

ining a case of infantile paralysis in a child of two, affecting all the muscles of the hip, so that the arc of motion was abnormally large. It was found possible under an anesthetic to move the hip in the socket, but not to the extent that could be done in a congenital dislocation with or often without an anesthetic. Furthermore, the neck of the femur is often so twisted that to retain the axis in its proper direction in relation to the acetabulum, it is necessary that the femur be twisted inwards, a position incompatible with locomotion, and an anterior dislocation often follows.

The way in which it is planned that these conditions be overcome in the treatment without incision is as follows: First, by retaining the introduced head into the acetabulum under such pressure that if a fold of the capsule is interposed between the head and acetabulum, it will in time be absorbed by pressure; also by the supposition that the loose capsule, lengthened muscles and twisted neck be gradually changed



DIAGRAM 2. Head inserted under acetabular rim encounters the obstructing acetabular hymen or fold of capsule.

by adaptive alteration if the limb is retained a sufficient time in a normal position. It is unnecessary to state that under these conditions it is not strange that relapses are frequent. It is as true with this as with other procedures in surgery that if the essential indications are met, a cure is effected; if not, relapse occurs.

It is manifest that for the best result as little injury as possible be done to the tissues. Little is inflicted if the following procedure be carried out:

An incision is made along the outer and anterior edge of the femur, reaching from above the greater trochanter to two inches below the lesser trochanter. The upper portion should be curved slightly upward so as to uncover the head and neck of the dislocated femur. The tensor vaginae and glutens medius muscles are separated. When the femur is reached the femoral insertion of the rectus is pushed aside, and the attachments of the psoas and iliacus are pushed away by a periosteum elevator, the lesser trochanter being well bared.

The capsule is then opened and cut across, first on the head in the line of the axis of the neck, and then from the neck downward towards the acetabulum, in

¹ Kermisson: Rev. d'orth., March, 1899, p. 153; also Halfa, Arch. f. klin. Chir., Bd. lxx, II, 2, S. 525.

front and behind. The finger is then inserted and the acetabulum exposed and the size of the capsular neck estimated. The capsular insertion on the femur is

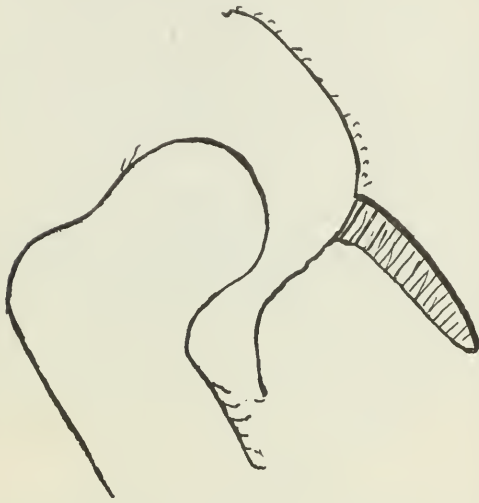


DIAGRAM 3. Head freed from capsule.

then entirely cut away, as well as the ligamentum teres if present, and the head of the femur pulled aside (Diagram 3).

If the capsular neck is sufficiently large the head of the femur can be passed through it readily into the acetabulum and the capsule stretched over this; but if not, the lower portion of the capsule is to be held upon the stretch by hooks or by two inserted stitches. A blunt-pointed bistoury is inserted into the acetabulum, and the acetabular hymen is divided from within out (Diagram 4).

The head of the femur should be placed in the

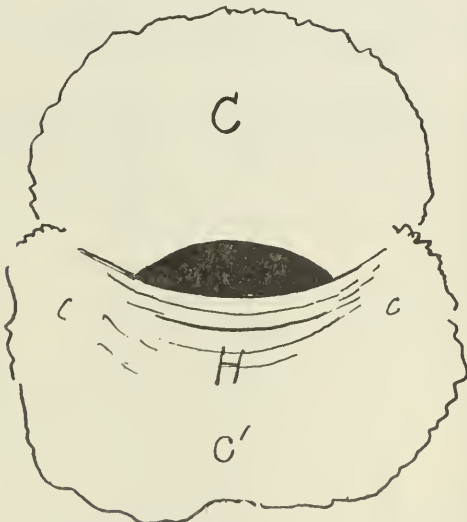


DIAGRAM 4. C C', capsule; H, portion of capsule in front of and attached to acetabulum, filling it and causing an obstruction to reduction.

acetabulum and the incised capsule stretched around the neck and secured by catgut sutures to the cut tissues around the neck or to the opposing parts of the cut

capsules. To accomplish this it is necessary first that all contracted tissues which prevent pulling the head to the level of the acetabulum be lengthened. This can be done in suitable cases, as has already been shown by clinical experience. It will be found advisable in some of the more resistant cases to supplement stretching the contracted tissues by division of the intermuscular fascia through an open skin incision. In the few cases in which this has been done it has seemed more surgical than the use of extreme force. An oblique incision is made along the middle of the thigh across to the bellies of the hamstrings and the adductors, and the intermuscular fasciæ are divided and the limbs pulled into place (Diagram 5).

In certain cases the stretching is accomplished with

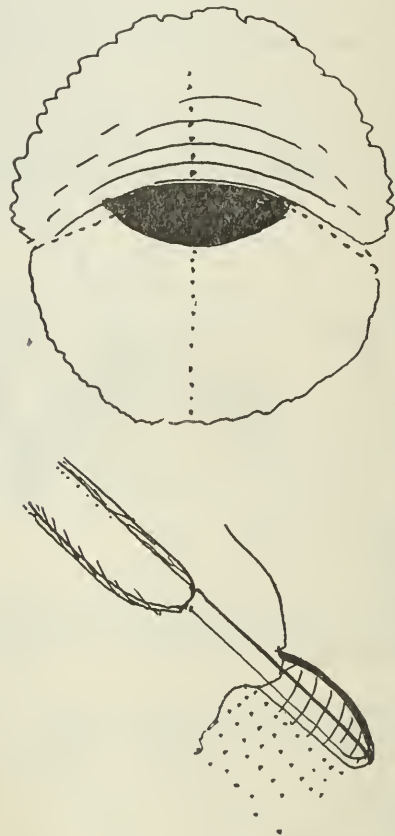


DIAGRAM 5. Lines of division of capsule.

but little difficulty in manipulation, especially by forcible abduction carried to an extreme, stretching the abductors and hamstring of the straightened leg, but in some cases this is not easy, and in these here reported it has seemed better to forcibly stretch with myotomy, if necessary, in a preliminary operation, the dislocation being practically reduced by the bloodless method and the limb properly secured by plaster bandages. If, at the end of a month, it seems that the head is not sufficiently firm in its normal position, preparations for operation are made and the head securely placed in the acetabulum, according to the method of operation already described (Diagram 6).

In certain cases after operation it will be found, owing to a twist of the neck of the femur, or an anterior obliquity of the plane of the acetabulum, that un-

less the limb is forcibly turned inward, the head of the femur (although well in the acetabulum when inverted) is in a position of forward dislocation when the foot points forward. Under these circumstances, an osteotomy of the femur is necessary. This can be performed at the middle or lower end of the femur, in the latter case by an osteotome, in the former by a Wyeth's fragment saw, or by a Gigli wire saw (Diagram 7).

It is believed that an osteotomy is of advantage as high up in the femur as is compatible with safety. This weakens the dislocating force of the abductor and hamstring muscles and can be utilized in correcting or diminishing the deformity of coxa vara often found in a congenitally dislocated femur. Attempts have been made to secure, until healing is well established, the reduced head in place by passing a silver wire through the trochanter and the skin, and another through the tuberosity and skin and tying firmly the free ends of the silver wire together, protecting the underlying skin by felt or rubber. In the 2 cases this has worked satisfactorily, but where the head is

children ranging from fourteen to one year, but most satisfactorily in ages of two and over, and under seven. It is believed that as improvements in skill increase, the range of suitable ages for operation will be extended. It is not claimed that the operation by incision can be permanently successful in all cases; it is claimed that it is successful in many cases, and where the details here mentioned are carried out precisely it can be expected that it can be performed without danger to the patient, with precision, and with a reasonable chance of success, with practically no serious injury to the tissues.

The 34 cases, single and double, 44 hips, operated upon by the writer may be grouped as follows: The cases operated upon between 1890 and 1895 were not benefited by the operation; in 8 cases, 11 hips; no death followed the operation (2 deaths occurred, 1 from scarlet fever and 1 from cholera infantum some months after operation). Those cases, 19 to 23 hips, between 1895 and 1898, show a small percentage of successful reduction, with 1 death from shock on a double operation, radical, on too young a child, one year old (an unjustifiable procedure and a preventable

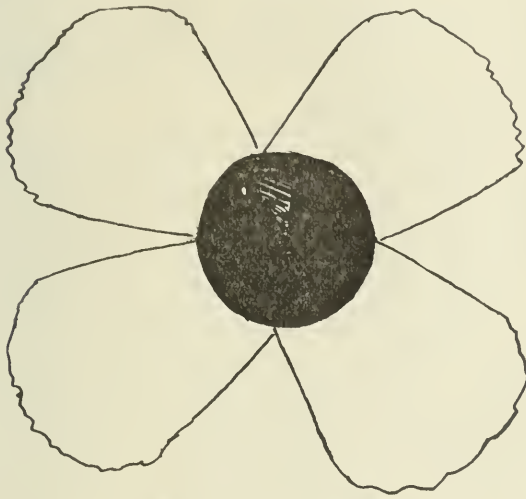


DIAGRAM 6. Divided capsule.

well placed in the acetabulum, this procedure seems unnecessary if the limb is well secured by a plaster-of-Paris spica. The wound, though a deep one, will be found healed after from two to three weeks, if strict aseptic precautions are used.

Strict aseptic precautions will be found necessary for the reason that a joint cavity, rudimentary in character, and not subjected to the absorption of retained blood, is opened by the operation and stopped by an introduced femoral head. An elevation of temperature for a day or two immediately following the operation is sometimes seen even in wounds which heal rapidly, thoroughly and permanently, without suppuration and without any evidence of sepsis. It has not been found necessary to retain the limb in any abnormally peculiar position during the healing process. A plaster-of-Paris spica is worn for two months with the limb slightly abducted; after this a stiffened leather spica is worn. The patient is allowed to stand and walk with this, using it from two to three months.

These conclusions are based upon the past ten years' experience in this operation with improving results each year. The operations have been done on

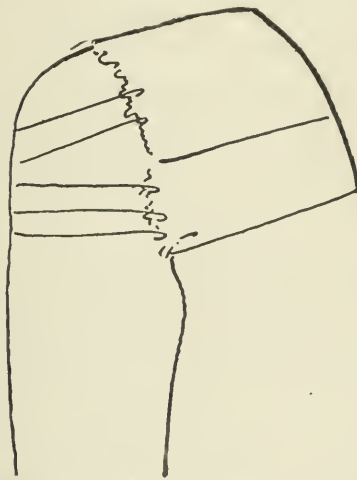


DIAGRAM 7. Divided capsule stitched around the inserted head.

death). In 18 cases, 15 single and 3 double, 3 hips were firmly replaced by operative reduction (as proved by the x-ray); 1 was not heard from after leaving the hospital. In 4 hips, 3 cases, there was improvement; in 8 cases, 9 hips, there was improvement, but the head was not firmly in place. In all these, bloodless reduction was first performed with a relapse. In 4 hips bloodless reduction was tried with a relapse in 3 cases; in 1 the reduction has seemed permanent. In 1 of the above-mentioned cases death took place from whooping cough a month after successful radical operation on one hip, but before the radical operation on the second hip, both having been reduced by the bloodless method with relapse. The pathological specimen shows firm reduction in the operated side.

Cases operated upon in the last year, 1899 to 1900, with improved technical experience: Seven cases, 10 hips, all reduced, first with bloodless operation, and all relapsed; of these, 9 operated upon again by radical reduction with incision. Four hips were firmly replaced, as shown by x-ray; 2 hips firmly replaced, but no x-ray as yet secured; 1 apparently reduced, by

x-ray photograph; 2 relapsed after radical operation; 1 relapsed after bloodless reduction, without attempt at radical reduction.

THE CORONER SYSTEM IN THE UNITED STATES AT THE CLOSE OF THE NINETEENTH CENTURY.¹

BY S. W. ABBOTT, M.D., BOSTON.

IN the following paper I propose to show as concisely as possible the present status of the coroner system in the United States, as derived from an examination of the latest compilation of the statutes of each of these States. A very good and complete digest of such laws as they existed twenty years ago may be found in Lee's "Handbook for Coroners," published in 1881, in which the laws are quoted in full as they then existed.

The office of coroner has probably existed for a thousand years, possibly for a longer period. The system appears to have been well established at the time of Edward I of England (thirteenth century), since, in the Statute 3 of Edward I, 10, the methods employed at the coroner's inquest appear to have been quite fully described, and the rules of action definitely laid down.

Connected with the coroner system in early times were many singular customs which appear to us today quite as absurd and useless as some of the remaining adjuncts of the system as it now exists among most English-speaking people. I shall allude to only two of these.

Any personal chattel, animal or thing, forfeited to the king for pious uses, on account of its having caused the death of a human being, was termed a *deodand* (*deo dandum*). Blackstone traces the custom back to Greek and Jewish laws, which required the destruction of anything which caused a man's death, the notion of the punishment of the animal or thing being implied. Certain peculiar distinctions existed in relation to *deodands*, as, for instance, between objects in motion and objects standing still. If a horse or any other animal in motion killed any one, either infant or adult, or if a cart ran over him, it was forfeited as a *deodand*. If death was caused by falling from a cart or a horse at rest, the law made the chattel or animal a *deodand* if the person killed were an adult, but not if he were a child. If death was caused by a thing not in motion, that part only which was the immediate cause of death was forfeited. If one were climbing upon the wheel of a cart, and were killed by falling off, the wheel only was a *deodand*. If the cart were in motion and ran over some one, the whole cart and its burden were also forfeited. Similar distinctions prevailed with reference to vessels at anchor and under sail.

The finding of a jury was necessary, not only to determine the facts, but also the value of the chattel which was thus decided to be a *deodand*. The nature and value of the weapon or chattel must be distinctly stated. This singular custom became deservedly unpopular, and juries interfered with the action of so unjust a measure, until the act of 1846² provided that there should be "no forfeiture of any chattel for or in respect of the same having caused the death of a man,

and no coroner's jury sworn to inquire, upon the sight of any dead body, how the deceased came to his death shall find any forfeiture of any chattel which may have moved to or caused the death of the deceased, or any *deodand* whatever; and it shall not be necessary, in any indictment or inquisition for homicide, to allege the value of the instrument which caused the death of the deceased, or to allege that the same was of no value." With the numerous accidents constantly occurring at the present day, on sea and on land, on railways, street cars, steamers and other conveyances, such a law would be productive of great inconvenience and obstruction to public travel.

The term *felo de se* is nearly synonymous with suicide. It has, however, occasionally a more restricted significance when applied to "any one who commits an unlawful malicious act, the consequence of which was his own death, as if, attempting to kill another, he runs upon his antagonist's sword, or shooting at another, the gun bursts and kills himself." For many centuries it was the custom in England to bury each *felo de se* on the highway with a stake driven through his body. This ignominious form of burial was abolished in the reign of George IV, by an act of Parliament which ordered the burial of the body of a *felo de se* within twenty-four hours after the inquest, between the hours of nine and twelve at night, and without the rites of Christian burial.

The following is a condensed statement of the coroner system as it now exists throughout the United States: The laws in all the States without exception bear the marks of English origin, and afford the strongest evidence that English laws and English customs, once implanted in a new soil, are only uprooted by the most vigorous efforts, and the presentation of convincing evidence of a necessary change. English laws and customs are almost coeval with the marvelous spread of the English language and its hold upon nations. Habitual inertia toward the acceptance of new and improved methods and a tenacity in retaining old and established usages and ways of action, even in the face of evidence showing the need of better methods, is a peculiarity of our race. The marvelous discoveries of recent years, which have emanated from the schools and laboratories of Berlin and Paris, and other Continental cities, have usually been accepted at London only after mature deliberation, and even then with tardy acknowledgment.

This habitual slowness undoubtedly accounts for the fact that English-speaking communities are extremely slow to adopt better and more rational methods for dealing with deaths from violent and sudden causes.

Laws relating to coroners' inquests may be found in the early statutes of all the States as part of the legal machinery under which those States were established, and, going still further back, this is true of the colonies which existed in the seventeenth and eighteenth centuries, down to the Revolutionary period.

One of the best statements of the coroner laws of the Massachusetts Colony is that which appears in the statutes of the year 1700, chapter 3, enacted June 10th of that year. Eighteen jurors were summoned, of which number fourteen were sworn in sets of three or four. Two oaths were administered to them. The fee of the coroner was then ten shillings per day, and that of the jurors two shillings each. As new colonies were planted, and, still later, as new States and Ter-

¹ Read before the Massachusetts Medico-Legal Society, June 5, 1900.

² 9 and 10 Victoria, c. 62.

ritories were established, the same ancient method was invariably adopted with slight variations, for want of due care in searching for a more rational model, and it was not until the last quarter of the present century that our own State broke away from the established usage and adopted the excellent system under which medico-legal inquiries are now conducted.

The coroner, the inquest and the jury exist in nearly all the States in practically the same form. Rhode Island and Connecticut have imitated the example of Massachusetts, but not in so radical a manner.

There are, however, certain minor points of difference among the States, to which I will now refer. These relate chiefly to the functions of the coroner's office, the mode of his election or appointment, his fees, the number of the jury, and the employment of medical officers. The vicarious duties of the coroner, whereby he was occasionally required to perform the duties of sheriff, were also copied from the English statutes, and certain still more incongruous duties have been added in some of the Western and Southern States.

In some of the States an inquest may be held in the case of a person who is seriously wounded, and in imminent danger of death. In Indiana the jury was abolished by an act of 1879. In Texas also an inquest is held without a jury. In Alabama the coroner must be keeper of the jail, if the sheriff is imprisoned. In Kentucky the coroner may hold an inquest in cases of house breaking. In several of the States the coroner is a conservator of the peace, and must suppress riots and disturbances and may apprehend and commit felons and traitors. In Mississippi the coroner is also the county ranger, and it is his duty to take charge of stray horses, mules, jacks, cattle, sheep and hogs.

The modes of election are quite diverse. In Alabama, Arkansas, Colorado, Georgia, Idaho, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Nebraska, New Jersey, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Washington, Wisconsin and Wyoming the coroner is elected by the inhabitants of the county. In Tennessee he is appointed by the county court. In Virginia also the county court appoints a coroner for two years and can appoint more if necessary. In Illinois, Indiana, Maine and New Hampshire the governor appoints the coroner.

In Texas, Vermont and Utah the office of coroner (under that name) is unknown, a justice of the peace acting in all cases where the presence of such an official is required.

The fees of coroners are also quite varied. In New Hampshire the fee for holding an inquest is \$1.50, in some States it is \$5.00 and in others \$10. The fees for recording, for mileage and other items also present a considerable range of variation. In some States, by recent statutes, stenographers may be employed at inquests, payable either by monthly salary, as in Kentucky, or by fixed prices for the amount of work performed.

In several States physicians receive regular appointments for aiding the coroner in his official work. In others the coroner selects any one whom he prefers for the time being. The compensation of such physicians ranges from \$6.00 in Minnesota to \$50 in some States for an autopsy, and \$100 in Mississippi in cases where the body is exhumed. In Missouri the fee for

an autopsy is \$10, but if the coroner makes it, it is \$25. In New Jersey the coroner may provide grave clothes for nude bodies at an expense of \$1.00 each.

In several cities of the United States the coroner is a salaried officer, this being the case in New York, Philadelphia, Detroit, St. Louis, Cincinnati, Cleveland, Washington, Charleston and other cities, a plan which has obvious advantages.

The requisite number of jurors is usually either six or twelve. In New Hampshire three only are required, in Louisiana five and in Tennessee seven. In several States the number of jurors summoned is larger than the number sworn for the inquest, the number thus summoned ranging from nine to twenty-three.

The amount of bond required of a coroner varies from as low as \$250 in Colorado, to \$50,000 in the large cities of Ohio.

The jury is usually selected from the inhabitants of the town or county. In Iowa, North and South Dakota, from the "electors." In Kentucky they must be "housekeepers." In Utah they must be "qualified residents." In Washington a juror must be a "male inhabitant over twenty-one years old and of sound mind." In West Virginia he must be "a suitable resident." In Washington a jury is thus defined: "A jury of inquest is a body of men, six in number, summoned from the qualified inhabitants of a particular district, before the coroner or other ministerial officer to inquire of particular facts."

In Wisconsin the coroner is *ex officio* a deputy fish and game warden, and must assist the State warden upon due notice. He must resign to the sheriff, who transmits his resignation to the governor. The coroner must also make complaint as to violation of the statutes relative to the sale of liquors to Indians. In Colorado the coroner may be held for bribery and assault. He cannot practise as an attorney. He must investigate mining accidents and must also seize gambling implements, take snares, traps, nets, etc., and is liable to very many penalties.

Whenever a reform is proposed in any department of the government, every species of argument is employed for the purpose of convincing the law-making authorities. Arguments from the moral standpoint, from the sanitary standpoint, from the patriotic standpoint, all have weight, but experience has shown that the economic argument has usually proved the most successful in the end. An appeal to the public purse is usually the appeal which wins. It was shown after three years' experience in Massachusetts that the abolition of the jury, and the introduction of a system requiring investigations by skilled practitioners of medicine in every case of violent death, had not only wrought a marked improvement in the method of work, but had resulted in a material financial saving to the State. In the city of New York in 1898 the coroners estimated the expense of conducting their work for one year at \$239,050, or about seven cents per capita for the city of Greater New York. In Massachusetts in the same year the cost was only one and one-third cents per capita, or less than one-fifth as great, and this too over a territory of 8,000 square miles.

There are in the United States about 3,000 counties, in the majority of which a coroner exists by law. There are also at least 100 cities of sufficient size to require the continuous services of at least one medical

man for medico-legal work of this character. There is no valid reason to prevent the medical profession from taking the initiative in this much needed reform. The old time coroner is a foe to medical progress, and it is time to "move on his works."

AUTOPSIES AND PHYSICAL EXAMINATIONS.¹

BY DISTRICT ATTORNEY R. O. HARRIS, EAST BRIDGEWATER, MASS.

MR. PRESIDENT AND MEMBERS OF THE MASSACHUSETTS MEDICO-LEGAL SOCIETY:—Since I, somewhat rashly, agreed to read you a paper on the subject of "Autopsies and Physical Examinations," I have been afraid that you might feel that I had undertaken to invade your province and deal with a subject better understood by you than by me.

The two professions of medicine and law should go hand in hand in search of truth. Medicine, in capital cases, must often go first, and upon her judgments must the law base its proceedings. I find, in discussing the matter with physicians, that there are two opinions as to the purpose of the autopsy.

One school, if I may so term it, holds that the duty of the post-mortem operator is only to ascertain the proximate cause of death, and that the manner in which death came is of no concern to him. That is to say, if a man is found dead, with skull split or crushed, and a bloody axe or club is found near by, the operator can report the proximate cause of death as wounds upon the head, and that the axe or club would be an instrument adequate to give such wounds.

The other school holds that the operator is also an examiner, and that every detail should be noted, both of appearances upon the body, and of surrounding objects, and furthermore that nothing should be assumed or taken for granted. The latter opinion is the better one, and the reason is not far to seek. The very purpose of the autopsy is to obtain information, evidence. The examiner should therefore approach his case with mind open, unbiased and unwarped by theories or opinions. He should note *every* abnormal appearance. He should also note carefully the appearances following upon his own operations. The contents of stomach, bowels, bladder, and other organs should be accurately observed. Surrounding objects ought not to go unnoticed.

Very many of these things may be noticed and not reported. Above all, in a case when, by any possibility, a charge of unlawful killing may be made, judgment as to the *manner* of the killing ought to be suspended. The medical examiner is not a prosecutor; he has no power to commit or examine parties. His duty is to ascertain facts within a certain field, and instruct the officers of the law in regard to them. He cannot anticipate explanations or defences. If careful and thorough in his work, however, he can pass upon them when offered, and tell whether they are good.

This, I fear, may seem trite and uninteresting to you, and you may say that of course we should do all these things.

The experienced medical examiner, who has been in many trials, will do these things, because the importance of what I say has probably been borne in upon him at some time, and with great force. Let

¹ Read before the Massachusetts Medico-Legal Society, June 5, 1900.

me cite a few instances out of my own limited experience.

Several years ago a woman, of some seventy years of age, was found dead in her house. The body was found doubled up like a jackknife, in a closet, the door of which was closed. After the door was opened they could not close it again, owing to the rigidity of the body. The medical examiner, a skilful and intelligent man, called in another to assist him in performing the autopsy. Marks, as of fingers, were found around the throat. Evidences of death by strangulation were abundant, and vomitus was found in the windpipe and air passages. Death by violence was clearly established, and the *proximate* cause of death was clear. The physicians were not content to stop there, and examined the body minutely. A very slight abrasion or bruise upon the genitals led to examination of the vagina, and rape was clearly shown. The subject, both in age and personal appearance, had passed the time when one would have expected her to be the object of either solicitations or sexual attack. The choking might well have had robbery as its motive, and an examiner would be tempted to stop with that. The rape, however, once demonstrated, care required examination of the contents of the stomach and all the organs. The stomach assisted to fix the time of day when she died, as the remains of the last meal were found upon the table. No such food as the defendant told about was found either upon the table or in the stomach. The examiners were thus able to stamp his story as a lie. The rigor mortis also helped to establish the time. No one could possibly have anticipated what the story of the defence would be, but the complete *examination*, as well as autopsy, enabled the prosecution to hear down the defence completely.

In another case, again of an old woman, upon opening the head, the brain was found to be edematous, and the heart affected, and the proximate cause of death was apparent. Again a bruise upon the genitals, slight and easy to be overlooked, led to examination for rape. That once demonstrated, other bruises on the hands, arm, and legs, all slight, and none of fatal character, told a story much more important than that told by heart and brain. A bullet hole in the back of the head tempted one examiner to form his conclusion, and stop his examination. Upon being urged to go further, another hole was found, and the discovery changed the whole theory of the *case*. The word *case* I use advisedly, as the examinations are made with a view to gaining exact knowledge of facts, for use in further proceedings, not medical, and in the course of which the physician's may be a small, although very important, part.

It is impossible to anticipate the theories that may have their origin in the necessities of a defendant who has the assistance of ingenious and intelligent counsel. Unimportant bruises upon the body of a man that shows apparently clear evidence of foul and wilful murder may be the foundation for a theory of killing in self-defence, or at most of manslaughter.

The autopsy, at least the exact and careful autopsy, can be made but once. Only by thorough observation will you be able to successfully meet all theories, to fully answer all questions. Any one of you may be called in to assist at an autopsy at any time, and I am, unduly, perhaps, but earnestly, trying to impress upon you all the need of care. There are two par-

ties who have a right to demand it, the commonwealth and the accused. The commonwealth, while prosecuting all cases, never intends to convict the innocent, or to ask more than is due. The accused, when his time comes to speak, may state a case which some apparently trifling mark or condition, in its relation to something else, may substantiate. He is entitled to the benefit of your knowledge and of your testimony. Failure to observe, and consequent inability to testify to the existence of such mark or condition, will carry the presumption that it did not exist, and may deprive an honest defendant of his life or his liberty. I have spoken of care in observing the results of your own work. Recently one of the most skillful operators in the State had to face the proposition that the appearances in the vagina that were claimed to be evidence of rape were caused by him in the course of post-mortem operation. Absurd as it seems, it was yet seriously urged that the lower blade and end of the entrotome scissors, in the hands of a skilled examiner, caused the tears that are characteristic of rape. The experts for the defence finally took the ground that it "was possible, but not probable." Could the theory have been anticipated, the positive answer would have been ready. As it was, the surgeon could only say that he did not cause the wounds. Probably no one believed that he did, and yet it was a suggestion of a possibility, and such suggestions, in capital cases, are sometimes as good as proof. The operator who has to admit that he did not observe any abnormal appearance, or the results of his own work, may sometimes find himself in the uncomfortable position where he knows, but yet cannot testify as of his own knowledge.

Passing from the autopsy, and coming to physical examinations of the living, I am aware that I come upon dangerous ground. Let me preface what I shall say by the remark that my own profession is open to much criticism in the matter of expert testimony. I am aware that it is, by some, looked upon as legitimate to construct a theory, and go from expert to expert until one is found who will testify to suit. Still, the average practitioner goes to his expert for an unbiased opinion, seeking only to know how much of a case he has got from the medical side. It is a trifle disturbing and dazing to have a man whose skill as a specialist in certain sorts of cases is well established, and to whose care you would gladly give yourself for treatment, tell you that a client who has been in a railroad smashup isn't hurt, but is "faking."

When one has known a person in health and vigor, has seen him emerge from a wreck, bruised, shaken, lame, and in such condition that he has to be put to bed; when in the train of the accident come positive symptoms, noticed by physicians, nurse and family, symptoms that never before existed, it is disheartening to have your specialist say that they have nothing to do with the accident, but are merely "coincident." I have known of a physician's refusing to see an injured person, and saying that such an accident or injury could not possibly account for the conditions that followed, and that the patient must be lying. Even when a skillful and reputable local physician has observed and treated positive troubles, which the nurse has had to give attention to, troubles which followed immediately upon the receipt of a heavy blow, I have had the expert calmly declare that physician and nurse must be telling untruths, or the symptoms must be concurrent without being conse-

quential, because in his opinion no such trouble could result from such an injury.

We who are not physicians believe that the swelling that follows when we bump our heads is caused by the blow; that if we are well and sound one minute, and the next are a mass of bruises and lameness as the result of a railway or other accident, the lameness and subsequent disturbances are attributable to the collision. The tendency is to divide men who are supposed to be, and who are in fact, learned and skilled men in surgery into two camps, plaintiff's experts and defendant's experts, the members of one ready to agree that almost any result may come from any injury, the others poolpoohing at everything and saying, "impossible, impossible," to everything. The result is that the expert has become a partisan. He cannot treat his case as he does his patients, disinterestedly. He is bound to one side of the case, and is always a plaintiff's or defendant's expert. This has become so marked that some men will say to us when we seek their opinions, "Go to So-and-so, he is more sympathetic than I am; I can't testify for a plaintiff," or else, "I am not the man you want; So-and-so is a good defendant's expert." These things have been said to me when I have gone to good men, whom I have met in cases and found to be skilful.

This may seem to you like mere scolding, but you must remember that it comes from a member of another profession. I try on both sides; I have to consult your profession; and I can see no reason why, if it chanced that, when trying for the plaintiff, I meet a physician whose opinion seems to me to be entitled to weight, I should not consult him when I need a man for the defence to instruct me as to medical facts or probabilities. All I want is his best knowledge; when I get that, I can shape my own course. As in the case of the autopsy, the physical examination is for the purpose of gaining information, evidence; of establishing that a condition does or does not exist and testifying accordingly. It is not intended for the purpose of enabling you to ascertain conditions, and then raise theories to account for them that have no foundations except in theory.

You come to us for opinions in law, based on facts stated, and you do not want us to suppose some other facts and give opinions based on them, and you do not want us to tell you that your facts are mere imagination.

Pardon me for being so long, but believe me that I am moved to say what I have only by my desire that our two great professions may be held in the esteem to which they are entitled.

THE MORTALITY OF FOREIGN CITIES. — The following statistics are, according to the *Medical Press and Circular*, the latest official returns of the mortality in 26 cities in widely separated parts of the world, and represent the last weekly death rate per 1,000 of several of the populations: Calcutta 36, Bombay 75, Madras 75, Paris 16, Brussels 13, Amsterdam 12, Rotterdam 15, The Hague 13, Copenhagen 16, Stockholm 13, Christiania 13, St. Petersburg 25, Berlin 21, Hamburg 17, Dresden 29, Breslau 22, Munich 29, Vienna 16, Prague 18, Buda Pesth 15, Rome 16, Turin (ten days) 16, Cairo 42, Alexandria 37, New York (including Brooklyn) 19, Philadelphia 15.

Clinical Department.

A CASE OF CONTRACTING SCAR OF THE PALM OF THE HAND REMEDIED BY A FLAP FROM THE ABDOMEN.¹

BY F. M. BRIGGS, M.D., BOSTON,

Professor of Clinical Surgery, Tufts College Medical School; Surgeon to the Boston Dispensary.

THE patient, a woman aged twenty-four, while working in a steam laundry had her left hand caught and carried in between two rollers. The upper of these rollers was covered with heavy felt- ing, and was not hot; the lower one was of polished metal, and was very hot. Upon withdrawing the hand it was found that its back, which had come in contact with the felt (not heated) roller, was badly lacerated but not burned. The palm, which had come in contact with the heated roller, was both badly burned and badly lacerated. This accident occurred in January, 1898, and she was treated at the Boston City Hospital, where she stayed for two months.

When she left the hospital both front and back of the hand were covered with a thin, delicate cicatrix, which slowly contracted on the palmar surface. This contraction gradually flexed the fingers and the thumb until, at the end of one year, the ring and little fingers were drawn down on the palm and could not be extended. The thumb, also, was strongly flexed and held in this position by a rigid band of cicatricial tissue. The index and second fingers were but slightly affected.

The usefulness of the hand was greatly impaired by these contractions, as the only motion it possessed was between the flexed thumb and the second finger, and this was extremely limited. The hand was practically useless, and the patient depended for her needs almost wholly upon the uninjured right hand. In addition to this loss of function, the cicatricial tissue, which had replaced normal skin, was extremely delicate, and was the cause of much pain and discomfort, for upon exposure to cold it fissured and slight injuries caused abrasions. The result of the injury was, therefore, twofold, as it caused both loss of function and a painful cicatrix.

The patient consulted me in February, 1900, or about two years after the injury, and stated that there had been no noticeable contraction for nearly one year, thus indicating that the progressive contraction had reached its limit. She was a strong, healthy individual, with a clear skin and good capillary circulation. I decided to operate by removing the cicatrix entirely and making a new palm from an abdominal flap, thinking that, even if I failed to restore the functions of the hand, I stood a good chance of replacing the delicate, painful, cicatricial tissue with normal skin. If the operation proved unsuccessful she would be no worse off than before.

Operation, February 7, 1900. — Assistants: Drs. N. T. McLean and S. McLeod. The double field of operation (the hand and the abdomen) was carefully cleansed and made aseptic. Patient etherized, and circulation to the hand cut off with a rubber bandage and tourniquet. It is to be noted that the

entire palmar surface of the hand was composed of cicatrix. There was no normal skin at any portion of its surface. This palmar cicatrix was wholly dissected off, cutting away the superficial fascia and freeing the ring and little fingers. The thumb was found to be bound down by deeper adhesions than were the fingers, the adhesions spreading out in a fan shape. These were all dissected off, allowing full extension of the thumb. The palmar tendons were found nowhere adherent. The rubber tourniquet was then removed and a large, firm compress laid over and bandaged to the denuded surface. There was very little bleeding. An outline of the surface left bare by this denudation was carefully marked out on a piece of paper before applying the compress, this outline being made a trifle larger all around to allow for shrinking of the flap. This pattern was laid over the left side of the abdomen, just below the sternum and with its base on the median line. In this way the outlines of the flap were indicated, marked out with the scalpel and dissected up, leaving for its pedicle the broad base line running vertically along the median line. The flap was then turned over, just as a book is opened, or, a better illustration, just as a leaf of a book is turned, thus having its cut surface upwards. Five long sutures were inserted at regular intervals along the edges of the flap and were not unthreaded. Bleeding was quickly checked by compression.

The hand, its compresses having been removed, was then brought over from the side and its denuded palm laid directly over the upturned cut surface of the flap. The two surfaces fitted nicely, and the sutures were tightened and knotted after being passed through the edges of the wound on the palm. This fastened the hand to the abdomen. A corrosive dressing was placed between the forearm and the open wound left by the removal of the flap, a second dressing was placed under the fingers and the whole combined seat of operation was then covered with a large sterilized dressing. The hand was held in position by long strips of adhesive plaster carried around the elbow and the body, the whole being encased in a Velpeau bandage. In this way the hand was kept fixed and quiet. The patient was kept closely confined to the bed, and the course of the case was uneventful.

Fourteen days later the patient was again etherized and the pedicle cut free from the abdomen. This was not easy, as it proved difficult getting under the forearm and dissecting away the abdominal attachment of the flap. However, it was done successfully, and the free edge of the flap then stitched to the corresponding edge of the palmar wound. The hand was confined in a spoon splint. The abdominal wound was left to heal by granulation, no attempt being made to replace the lost skin.

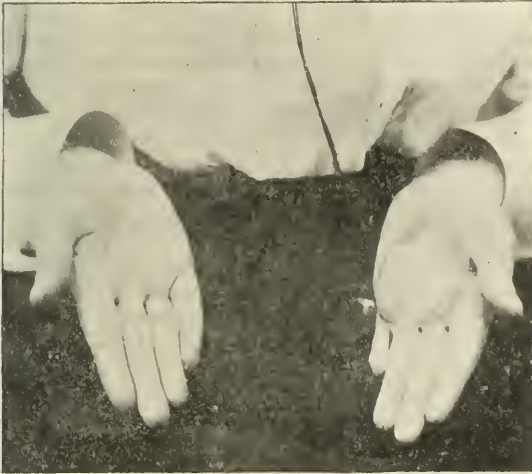
The new palm united rapidly and firmly, but the skin was much thicker than that of the other hand, and had a most unsightly appearance on that account. This thickness of the flap prevented closure of the hand, and attempts to flex the fingers on the new palm made the skin rise up in the centre, somewhat resembling a rubber ball. This tendency persisted for some time, but finally, as the flap grew more and more firmly attached to its base, it began to disappear. With the disappearance of the tenderness necessarily present after such an operation, the patient began to

¹ Read before the Boston Society for Medical Improvement, May 7, 1900.

use the hand, and, with continuous efforts to close the hand over firm objects, the thickness of the flap began to wear away. It disappeared first from that portion of the palm where pressure was most constant, or along the line of junction of the fingers with the palm. Slight thickness of the portion near the base of the hand has persisted, and there is one spot which is tender to the touch. Slight sensation was present from the first, but it was greatly impaired. It gradually returned until finally full normal sensation was regained.

It was interesting to note the development of the lines, or "creases," of the new palm. When the skin was first laid in its new position it was wholly smooth, like the normal skin of the abdomen, and could not be made to crease. But with more and more closure of the hand lines began to be visible. These at first varied from the normal lines of the palm, but with the progressive thinning of the skin, the regular "creases" of the palm are to be noted in their proper positions and running in the usual directions.

The result of the operation is wholly satisfactory.



The skin of the new palm is very soft and pliable and is fully doing its work. The operation would have been a success if it had accomplished nothing beyond this substitution of good skin for weak cicatrix. But it has done more than this. It has restored the functions of the useless hand. The case is of more than ordinary interest, in that it demonstrates what it is possible to accomplish towards correcting some of these old deformities, and it is for this reason that it is reported in full detail. Taking such a flap from the abdominal wall ensures good nutrition, provided a long base line is left for the pedicle, and the skin grafted in the manner described makes an excellent substitute for the original skin. In this case there were no adhesions between the cicatrix and the tendons, nor were any of the finger joints ankylosed. This, of course, made the operation more promising than would be the case where contraction is due to old inflammatory processes with resultant adhesions, or in cases where long-standing flexion has resulted in fixation of the joints by bony ankylosis. Still, the operation seems to me to be well worth trying in any case of palmar contraction involving the skin, for it is

devoid of danger, offers a possible remedy, and, in any event, leaves the patient no worse off than before.

So far as I can learn, this is the first case where this particular method of plastic work has ever been attempted in the treatment of these cases. The accompanying illustration gives a good idea of the appearance of this hand as it now is.

PHYSIOLOGICAL DILATATION AND THE MITRAL SPHINCTER AS FACTORS IN FUNCTIONAL AND ORGANIC DISTURBANCES OF THE HEART.¹

BY MORTON PRINCE, M.D., BOSTON.

This subject is of great practical importance, not only in examinations for civil service, life insurance, etc., but for a clear understanding of diseased conditions. I used to reject many men whom I now would not think of rejecting because of this evidence of regurgitation. Sir William Broadbent has lately called attention to the great number of murmurs heard over the various cardiac orifices in candidates for civil service examination, and this, I am pleased to think, has corroborated the accuracy of my own observations, although he has not undertaken to give an explanation of the mechanism of the murmurs. He calls attention to the unnecessary rejection of candidates for civil service because of murmurs of this kind. The recognition of this principle of physiological dilatation whenever the heart is called upon to do an increased amount of work, no matter from what cause, is of the utmost importance. Whenever the heart is obliged to do an increased amount of work, whether this be due to increased stimulation of the heart or to increase of the resistance against which the blood is thrown, the heart physiologically dilates. This dilatation within normal limits may be so great that the volume of the blood thrown out at each contraction may be trebled or quadrupled. At the end of systole the heart may be larger than it was before at the end of diastole. The sphincters may be so dilated that the valves cannot close the auriculoventricular orifices and thus physiological regurgitation may result. Normally this is observed under nervous excitement and severe physical exercise. The same law of necessity applies as much to diseased hearts as to healthy hearts and, for example, the dilatation observed in aortic stenosis may be physiological rather than pathological. In general systemic conditions, such as the febrile diseases, anemia, Bright's disease, etc., the dilatation and regurgitation are of the same sort, due either to an absolute increase of resistance or a relative increase: in the latter case because of a weakened heart working against normal resistance. Unless this is recognized there is great danger of confusing this purely physiological condition, which probably exists in a great many such cases with serious cardiac disease and in consequence giving an unfavorable prognosis.

As to the absence, notwithstanding the dilatation, of murmurs in the contestants of the last Marathon race, I agree with Dr. Williams in his explanation. To this I would add the fact that the heart was not beating with the force which I think is necessary to produce murmurs. It did not seem to me the heart was beating very strongly in any of them. They were examined so long after the race that the heart

¹ Abstract of a paper read before the Boston Society for Medical Improvement, May 7, 1900.

had quieted down besides being weakened by fatigue. The heart's action did not compare with the action in the men who were under the nervous stress of the civil service examination. Besides that the absence of murmur does not so frequently denote the absence of regurgitation, as is frequently assumed. Every one admits, in principle, that you can have regurgitation without murmur, but, in practice in the consulting room the tendency is to say: "No murmur, no regurgitation." It is well recognized that even in organic disease, where there is mitral regurgitation, when the heart becomes weakened the murmur ceases, but when the heart recovers strength the murmur appears. In these cases of the Marathon runners I think the weakened force of the heart is a perfectly satisfactory explanation of the absence of murmurs. As a matter of fact, and this Drs. Williams and Arnold showed last year, they are fugitive, and only appear when the hearts are beating strongly. This was my experience. In most of the cases they are very fugitive and have got to be caught "on the fly." I feel fairly confident there was regurgitation in the Marathon runners, even in the absence of murmurs. I base this on the cyanosis present, the feeble circulation and the condition of the kidneys showing passive congestion as well as on the dilatation of the heart.

REMOVAL OF THE GREATER PART OF STOMACH FOR CARCINOMA; CLOSURE OF THE PYLORIC END; ANASTOMOSIS BETWEEN JEJUNUM AND CARDIAC END; RECOVERY.

BY W. A. BROOKS, JR., M.D., BOSTON.

On May 24, 1900, A. L., a resident of Dorchester, was admitted to the Massachusetts General Hospital. For a little over a month previous he had been under the care of Dr. F. Pfaff, who had made the diagnosis of carcinoma of the stomach and had advised operation. The patient was a man a little over forty-four years of age, and up to two or three years previously had always enjoyed good health. His father died of "ulcers," but his mother and five sisters are alive and well. The patient gave the history of his trouble as beginning about two years ago, before he saw Dr. Pfaff. His first symptom was pain in the epigastric region, and for a time this symptom was relieved by drinking hot water. About a year ago he commenced to be troubled with a great deal of gas in the stomach and within the last four months he has had frequent attacks of vomiting, has lost weight, and has been in constant pain. On account of the pain, distress and vomiting, he was compelled to give up his work as a cigar maker three months ago.

Dr. Pfaff stated that there was no retention of food in the stomach, that HCl was absent, and that the stomach contents did not contain blood or shreds of tissue.

When the patient was examined in the ward, it was found that he was much emaciated and in very poor general condition. His heart, lungs and kidneys were apparently normal, although the urine was of low specific gravity. In the epigastric region, a little to the left of the median line, there could be felt a hard lump, the anterior surface of which seemed nodular. This lump or tumor moved up and down with respiration. It was about as large as a medium-sized closed fist and was not tender to the touch.

The patient was operated upon May 29, 1900. For the twenty-four hours previous he had been given nothing by mouth, but had been fed by rectal enemata. On the morning of the operation the stomach was washed out with hot water and a boracic-acid solution and a cleansing enema was given. The rectum was cleared by an S and G enema. He took his ether very well, and when etherized was placed in almost a sitting position.

With the assistance of Dr. Graves and Dr. Simmons the following operation was performed: A long median incision was made extending from the ensiform cartilage to the umbilicus. Edges of the wound retracted and the anterior surface of the stomach was brought into view. There was some omentum adherent to the anterior wall, and it was this that gave the nodular feel through the abdominal parietes. The wall of the stomach itself felt hard and very much thickened.

At first it was thought that the growth only involved the anterior wall and some valuable time was wasted in placing the line of sutures external to the mass in preparation for excision of tumor. When, however, the stomach was lifted forward it was found that the growth had extended completely around it, close up to the pyloric end, and for a considerable distance towards the fundus. The original plan of the operation was then changed. A loop of the jejunum was brought up and a lateral anastomosis was established between it and the top of the fundus. (The loop and anastomosis were about 18 inches from the beginning of the jejunum. In making the anastomosis, Lembert's sutures were used.) Two ligatures were now passed around the pyloric end of the stomach, and the stomach walls severed between them. The edges of the pyloric end of the stump were turned in and the peritoneum stitched over it. The removal of that part of the stomach containing the new growth was then begun.

The greater and lesser omenta were sutured and cut away from edges of stomach. The arteries remaining along the greater and lesser curvature were ligated. The stomach walls were then cut through as close up to the place where the anastomosis had been made as possible. The free edges of the stomach were then brought together and tied with a series of Lembert's sutures. Before this procedure was completed the pulse became very weak and the patient had to be infused with a salt solution. The wound was swabbed out with peroxide, a wicking-off wick was left towards the intestine, and another was passed to the pyloric stump of the duodenum. A third was passed to where the stomach edges had been sutured together.

The patient made a good recovery from the ether. His pulse came up quickly. He felt comfortable the evening of the operation and passed a comfortable night with very little pain. He was given $\frac{1}{6}$ grain of morphia. Occasionally during the night he would vomit a little, but suffered no great distress.

May 31st. He was in good condition. He was fed by nutrient enemata every six hours.

June 1st. There was no vomiting. Patient felt comfortable. There was no distention of the stomach, but the gauze wick had become infected. Cultures from the wicks showed streptococci, diplococci and some unknown bacilli.

June 3d. For the first time the wicks became

stained with bile. He was given sips of water every half hour.

June 4th. Was given ice cream.

June 7th. Great many silk stitches were removed from the wound.

June 9th. Sleeps well. Is perfectly comfortable, and was given sugar and water by mouth.

June 11th. Was fed on liquid food.

June 16th. Sat up in bed with a bed rest.

June 24th. Was fed on soft solids.

July 1st. Was given six meals daily, consisting of meat, soft solids and milk.

July 9th. Went out of doors for the first time in a chair.

July 30th. Has gained nine or ten pounds since he was able to get out.

September 1st. Has been up and about the hospital since July 20th. He takes short walks through the grounds, and is out nearly all day. There are two sinuses, and unless they are tightly plugged with gauze allow the escape of bile and fluid. He eats six meals daily and has gained about fifteen pounds since he first came out after the operation.

September 15. Patient is not so well. He has been suffering from an attack of phlebitis and has lost some weight and strength.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D., BOSTON.

IMPLANTATION OF THE URETER INTO THE BLADDER.

DR. ACHILLE BOARI,¹ Pascia, Italy, accomplishes this operation by means of a small button similar to that used by Murphy in performing intestinal anastomosis. It has been recently used in 4 cases in women with favorable result in all. The button is small and may be removed, in women, through the ureter; in men it can be extracted only by a suprapubic cystotomy. The operation consists, first, in isolating the ureter by means of a small incision through the peritoneum covering it, dividing it across at the point that may be desired, inserting the one side of the button, securing the dividing end of the ureter around it by a suture. A purse-string suture is then inserted in the bladder at the point selected for implantation; the incision of the bladder is then made in this area, the larger end of the button is pushed through, the purse-string suture is drawn tight, and the two halves of the button are pushed together. Rapidity and ease of performance are the advantages claimed for the method.

TUBERCULOUS DISEASE OF THE KIDNEY.

This article, by David Newman,² appears in this and the two following numbers of the *Lancet*, and is a full and interesting exposition of this very important subject. The remarkable power of the healthy kidney to destroy organisms or to eliminate them is noted, and the frequently observed passage of tubercle bacilli through the kidney without producing any pathological change in the organ is cited as an ex-

ample. Their presence, therefore, in the urine is not pathognomonic of tuberculous disease of the urinary tract necessarily.

The author goes on to consider the methods of invasion of the kidney by the bacilli as follows: (1) By the blood stream, (a) the tuberculous particles being so small as to be arrested only by the terminal capillaries, where they give rise to miliary deposits; (b) from infective emboli passing through a branch of the renal artery, and giving rise to a definite area of local infection corresponding to the distribution of that branch; (2) by invasion along the lymphatics of the kidney from foci in the lower urinary tract; (3) by contagion along the lumina of the excretory ducts; (4) by direct extension to the kidney through neighboring organs. In the majority of instances the renal infection probably occurs by means of the blood current, which has become infected when passing through the lungs, alimentary canal, or mucous and cutaneous surfaces.

In the form originating in tuberculous embolism the renal lesion appears as a wedge-shaped area, and while they often break down and are disseminated, they sometimes, on the other hand, become encysted, in which case the disease is generally unilateral and involves but a portion—occasionally more than one distinct area—of the kidney substance, and usually remains limited to the parenchyma. This is the form of the disease which offers the best chance for recovery if treated surgically, when not too far advanced.

The manner of invasion of the kidney from the lower part of the tract is carefully considered, the ascending form of the disease being by no means uncommon in the author's opinion.

The much greater frequency of renal tuberculosis is referred to and illustrated by pathological statistics.

Symptomatology.—The following are pointed out as amongst the most important evidences of the condition; pyuria especially, when associated with evening rise of temperature, loss of strength, and anemia, is highly suggestive of renal tuberculosis. The local and constitutional symptoms vary, however, greatly, and depend largely upon the extent and position of the lesion in the kidney.

When the lesion is limited to the parenchyma, fever is rarely marked, pain is slight and sometimes absent, the urine is acid, and the quantity of pus is very small. Occasionally it happens that there is an absence of local symptoms even when the pelvis and ureter are involved; the kidney may be wholly destroyed, even without having caused sufficiently marked symptoms to attract attention; ordinarily, however, pain, bladder irritability, and marked evening pyrexia become conspicuous with the pelvis and ureter. Vesical irritability is very characteristic even when the bladder is not involved. Renal swelling sometimes attains considerable dimensions. In about one-fifth of the cases collected by the author tuberculous pyonephrosis was discovered by palpation during life. One of the earliest symptoms to which attention should be drawn is polyuria. Hematuria is seldom profuse; it may precede, as in pulmonary tuberculosis, the development of other recognizable symptoms.

Diagnosis.—The diseases with which tuberculous lesions are most likely to be confounded are tumors, septic pyelitis or pyonephrosis, and renal calculus. The author makes the point in this connection that

¹ Ann. des mal. des organes genito-urinaires, November, 1899.

² London Lancet, February 24th, p. 526.

the pain attendant upon tuberculosis does not radiate, as does that of calculus; blood is not apt to be increased by exercise.

With regard to treatment the writer dwells upon the fact of the increasing recognition of the possibility of spontaneous cure, but does not conclude because of this that hygienic treatment is to be preferred to the operative under all circumstances. The statistics and conclusions of Dr. L. Bolton Bangs, of New York, are quoted to the effect that from the study of the former he is led to state that upon the whole operation affords better remote results than hygiene, and that the undoubted fact is that the immediate results of operation in suitable cases of renal tuberculosis are brilliant.

TREATMENT OF RENAL RETENTIONS.

Gosset,³ in the course of an investigating communication, notes amongst other observations the following:

If a ureteral catheter be passed, the kidney being in a normal condition, there is, at first, no flow of urine through it; then, after a few seconds, an intermittent flow begins and continues as long as the catheter remains in place. In certain pathological states, on the other hand, the flow of urine, which is continuous, takes place as soon as the tip of the catheter has entered the renal pelvis, until more or less has been passed, when it suddenly ceases. Whenever a continuous flow like this of even a moderate quantity of urine (25 grammes) takes place it is a sure indication of renal retention. The quantity of the liquid passed is the measure of the degree of retention.

Suppuration of the renal pelvis (pyelitis) does not imply the existence of renal retention.

In some of the cases of renal retention noted by the writer the quantity of the retained urine amounted to 300 grammes.

It is not necessary to resort to the ureteral catheter to establish the presence of the retention, since the condition is always accompanied by a pathognomonic symptom, which is intermittence. In many cases of intermittent hydronephrosis this phenomenon is a conspicuous feature, the emptying of the renal pelvis being also preceded by an attack of pain which is coincident with a marked diminution of the quantity of the urine, and which is relieved with the re-establishment of the flow. This intermittence is equally characteristic of pyonephrosis.

The necessity for surgical intervention is considered by the writer to be imperative and to rest on the following grounds: (1) That the progressive character of the condition is practically invariable, and eventually results in the total destruction of the kidney; (2) the liability of infection of the affected kidney, and (3) the probability of the other kidney being involved.

These factors are reviewed in an instructive manner and numerous reasons in support of the writer's contention are clearly set forth.

In the course of the discussion of these data it is pointed out that there is no tendency whatever toward a spontaneous restoration of the affected kidney to the normal condition. The most important factor in the perpetuation of the pathological change is the formation of a pocket or pockets in the renal pelvis or the renal substance itself, or both, and once established such pockets are never abolished by any natural effort of the organ, nor, it is asserted, is a restoration

ever wholly brought about by lumbar drainage of the kidney, although a decided improvement does take place after a lumbar nephrotomy, no matter how long continued. What is accomplished by drainage, however, is to prevent further progress of the renal destruction which was being produced by the distention of the urinary retention, and also to avert the painful crises dependent upon the periodic recurrence of that condition.

With regard to the destruction of renal tissue, the writer calls attention to the fact that it is far greater in the complete than in the incomplete retentions, though the pocket formation and thinning of the renal cortex is more extensive in the latter, and that even in the cases in which but very little of the renal cortex remains, it may — in that class — retain a surprising secretory power. But while this is true, the need of relief for the retention at as early a date as possible is not the less manifest; it is more imperatively demanded in the suppurative, but is also essential in the non-infected retentions as well. The great ease with which an aseptic renal retention becomes septic is the writer's ground for urging early surgical intervention in these cases.

In the treatment of all renal retentions there are two indications to be fulfilled: (1) To evacuate the retained contents; (2) to prevent its recurrence, that is to say, to re-establish the normal and entire emptying of the secretion by the ureter. The first of these is met by nephrotomy, the second by various plastic operations upon the kidney or ureter. It is no longer a question of nephrectomy and nephrotomy, for the proper sphere of the former has become limited, practically speaking, to tuberculous and new growths, and today nephrotomy should be practised systematically as the first step, at any rate, in all renal retentions. This is, according to the writer, the first imperative indication in these cases. It is absolutely unimportant whether there is suppuration or not; relief of the renal retention is the first indication to be met, and there is no need to determine the condition of the other kidney previous to doing this by establishing drainage through the lumbar operation of the one known to be the seat of the primary retention. The article is summarized as follows: The treatment of all renal retentions should be by two successive operations: First, lumbar nephrotomy for drainage, which permits in many cases a partial restoration at any rate of the diseased portion of the organ and the possibility of determining by urinary analysis of the liquid coming from the fistula, and to what degree the restoration has proceeded, and the value of the kidney which is being drained. In infected renal retentions the drainage permits disinfection of the affected tissues and places the organ in the most favorable condition possible under the circumstances for the success of the secondary operation, the nature of which will be determined by the conditions found at the time or determined beforehand by aid of the primary one.

NEW OPERATION — RENAL PAPILLECTOMY.

This article, by E. Hurry Fenwick,⁴ is "a contribution to the study of painless unilateral renal hematuria in the young adult." It is based upon 2 carefully studied cases of renal hemorrhage, in each of which the affected kidney was determined by the use

³ Rev. de chir., March 10, 1900, p. 335.

⁴ British Medical Journal, February 3, 1900.

of the cystoscope, and then operation through a loin incision was performed. In each case the pelvis of the kidney was incised and a varicose condition of one papilla was found. The removal of the papilla by curette cured the hemorrhage in both instances. This short article is a really valuable addition to our knowledge of renal hematuria.

VALUABLE SUMMARIES OF CASES.

Dr. Assendelft⁵ has made a study of 630 cases of stone occurring during a period of twenty years. Of these cases 616 were in men or boys and 600 were operated. Of the 600, 460 were operated by the suprapubic route and only 12 by litholapaxy. His mortality was 3.6%. The author says that in skilled hands litholapaxy is the operation of choice, but that in his country (Russia) with its enormous distances and its comparatively small number of surgeons, it cannot be expected at present that many have the skill requisite for the proper performance of this operation.

PRIMARY MALIGNANT DISEASE OF THE PROSTATE.

E. Hurry Fenwick⁶ has made a study of 50 cases. Forty-four cases were of hard scirrhus growth, and 6 cases were of soft, rapidly growing disease. In the scirrhus cases three years is given as the average duration of life, and in the latter group of 6 cases, progress of the disease was rapid, and death from sepsis came quickly.

VESICO-INTESTINAL FISTULE.⁷

A. Pascal⁸ has made a study of 300 cases representing all that he could collect. The article is of value as a résumé of all cases to date.

INTERESTING AND UNUSUAL CASES.

Calculi Impacted in the Ureters.

David Newman⁹ presents a most valuable article in which is embodied the report of 4 unusual cases of impacted ureteral stone.

CASE I. Three attacks. Stone located in ureter at brim of pelvis. Expelled after nine days' massage over ureter.

CASE II. Ureteral catheter detached calculus, which was removed by a suprapubic cystotomy after ureteral orifice was dilated to allow it to drop into bladder.

CASE III. Cystoscope showed swelling at ureteral orifice. Thought to be a tumor. Operation revealed stone impacted in orifice of ureter.

CASE IV. Suprapubic cystotomy for hypertrophy of prostate with stone in bladder. Second stone (un-suspected) found impacted in ureteral orifice.

Excision of a Seminal Vesicle for Tubercular Disease.

Mansell-Moulin¹⁰ reported at the meeting of the Medical Society of London (January 8, 1900) 2 cases of excision of a seminal vesicle for tubercular disease, which had extended upward from the epididymis. In each case the vesicle was removed through the perineum by a modification of the Zuckerkaudl in-

cision. Little bleeding. One case healed promptly. The other maintained a small urinary fistula for a few months. The author advocates complete removal of the vesicle where it can be felt enlarged per rectum in cases of tubercular epididymitis.

A Case of Ruptured Ureter or Renal Pelvis.

E. Percy Paton¹¹ points out that the ideal treatment of immediate suture can rarely be carried out, as in the majority of cases diagnosis cannot be established until some time has elapsed after the injury.

NEW INSTRUMENTS.

Wossidlo,¹² of Berlin, reports a new cystoscope which he calls *Incisions Kystoscop*, and which he expects to use in performing the Bottini operation for hypertrophy of the prostate under the control of the eye. The author operated with the instrument, which consists of a cystoscope in which slides the Bottini knife, on January 24, 1900.

Dr. Franklin H. Martin¹³ has recently demon-

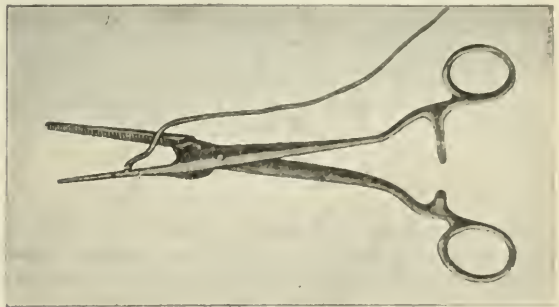


FIG. 1.

strated a new clamp for ureterorectal anastomosis. The object of the instrument is to facilitate the operation by shortening the time of the procedure, to guard against leakage at the mucous membrane of the bowel without, at the same time, getting constriction of the ureter, to provide for a free flow of urine, to guard against the possibility of occluding the ureter

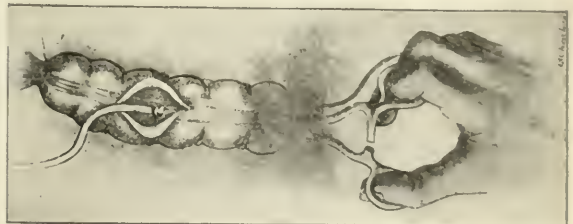


FIG. 2.

by thoroughness of suturing, otherwise necessary, and to provide for adequate burying of the ureter. The application of the instrument is easily understood, but rather difficult to explain. The bowel is prepared, as I have described heretofore, for ureterorectal anastomosis by denuding it of the serous and a portion of the muscular coats (see illustrations). A small opening

⁵ Arch. für klin. Chir., Bd. ix, H. 3.
⁶ British Medical Journal, July, 1899.
⁷ Les Fistules vesico-intestinales acquises chez l'homme et chez la femme.
⁸ Thèse doctorale, Paris, 1900.
⁹ British Medical Journal, April 21, 1900.
¹⁰ British Medical Journal, January 13, 1900.

¹¹ British Medical Journal, January 13, 1900.
¹² Centrbl. f. d. Krank. d. Haru- u. Sexual-organe, Bd. xi, H. 3.
¹³ Transactions of Chicago Gynecological Society, 1900.

is then made through this oval-shaped denudation, which denudation is about 2 inches in length on the lateral wall of the rectum, sufficiently large to admit one of the blades of the clamp. This blade is passed through the anus into the bowel and passed through the opening in the mucous membrane until it projects for the distance of an inch or an inch and a half. The ureter, which has been prepared, is placed over this blade. The blade, by the way, is hollow, having an opening through its centre large enough to allow the free passage of urine, the opening passing off to the side of the blade lower down. After the ureter is put upon the blade, a small piece of catgut is tied around it to secure it at a point where there is a slight notch in the blade. This secures the ureter to the blade; the blade is then partly withdrawn so as to draw the ureter through the bowel opening into the interior of the gut. Only about one-half inch of the



FIG. 3.

blade is outside of the denuded surface, and at this point the forceps are closed and locked, and the ureter secured to the mucous membrane and the denuded portion of the bowel. The blade remains clamped until it comes away as the Murphy button does by pressure atrophy. The opening in the bowel is now closed around the ureter. As the ureter contains the hollow blade of the forceps there is no danger of constricting it. One suture, properly placed, will accomplish that; so that but one catgut suture is really necessary to fix the ureter to the mucous membrane and to the muscular coat of the bowel. Then, with the application of two rows of catgut sutures, the ureter is buried, and the operation is finished.

There should be different sizes of the instrument, as the ureters vary markedly in size. The opening at the side of the blade has a small olive tip, over which a rubber tube is slipped, which will conduct the urine out of the bowel.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting Monday, May 7, 1900, Dr. E. H. BRADFORD in the chair.

Dr. F. M. BRIGGS showed a case of

CONTRACTING SCAR OF THE HAND REMEDIED BY A FLAP FROM THE ABDOMEN.¹

Dr. MORTON PRINCE read a paper entitled

¹ See page 422 of the Journal.

PHYSIOLOGICAL DILATATION AND THE MITRAL SPHINCTERS AS FACTORS IN FUNCTIONAL AND ORGANIC DISTURBANCES OF THE HEART.²

DR. ARNOLD: It seems to me that this matter has a decidedly practical bearing in its clinical aspect. As a rule I think one is apt to look upon the mitral valve in the same way that we do upon the arterial valves, and to consider chiefly the question of disease of the valve itself. From this point of view we are a little surprised to find that so many of the mitral murmurs are clinically of little importance. Our old distinction between organic murmurs and functional murmurs is not entirely satisfactory and is not as sharply defined as we are apt to think. With regard to mitral murmurs I think the explanation is to be found in the part taken by the muscle of the ventricular wall in the closure of this valve. Whether Dr. Prince's description of it as a sphincter helps our ideas is a little questionable in my mind. There is not an absolute muscular sphincter, for on the inner side the mitral valve is contiguous with the aortic valve. The essential point is that it is the contraction of the circular muscular fibres of the heart which narrows the mitral valve and thus enables the valve curtains to completely close the opening. We may call it sphincter if we understand it in that light. Again, in valvular disease its importance, as we know, depends not entirely on the disease of the valve itself, but on the condition of the cardiac muscle. As long as we have a good condition of that muscle, or good compensation, as we call it, as long as the mitral valve closes muscularly, the valvular lesion is of comparatively little importance. When the muscle diminishes in its force and yields to a certain extent, when it does not aid by contracting in the closure of the valve, we get broken compensation and leakage which is of practical importance. It seems to me that is the practical bearing of the question, and if we keep in mind this action of the heart muscle about the mitral valve we shall better understand the various conditions in which the mitral murmur is heard. It is, of course, understood that we may have a lesion of the mitral valve itself so extensive that the muscular contraction will not enable the valve to close tightly, however strong that contraction may be.

DR. HAROLD WILLIAMS: Dr. Prince's paper is so complete that it does not seem to me one can say very much in addition to it. Anything further would be simply what Dr. Prince has omitted to read. What Dr. Arnold has said is very important, and for my part I think it probable, not only that the other muscular fibres of the ventricle participate in this contraction, but also that the papillary muscles play a more or less important part, as pointed out in our article of last year. In connection with this subject I should like to emphasize one thing, namely, the importance of judging of these muscular exercises according to their individual merits and the characteristics of the individual participating. It seems to me we are apt to generalize too much on the effects of muscular exercise without considering what the exercise is and the conditions under which it is taken. There are many factors which enter into these cases. Each case should be considered on its own special merits.

DR. J. B. BLAKE: The point which Dr. Williams

² See page 423 of the Journal.

made that each form of exercise must be judged for itself and under its own conditions, I should think was illustrated both by the temperature and the fugitive heart murmurs. I will refer to the temperatures found at the finish of the race which differed considerably from those found last year. Last year it was run on a cold day (temperature about 44° F.), against a wet, stiff east wind, and some extreme subnormal temperatures were discovered, in some cases 5° below normal. This year there were 1 or 2 cases of increased temperatures before the race, but after the race in 23 cases we found mouth temperatures were either a little above the normal or very slightly below the normal in 7 cases, the lowest mouth temperature after the race being 97°, highest mouth temperature in the race 102°.

DR. HAROLD WILLIAMS: In regard to the absence of murmurs in this last examination I should like to say a word. I think it can be accounted for in two ways. Certainly for 26 men to run twenty-five miles each and for none of them to have heart murmurs would be an unusual occurrence, and one that ought to be accounted for. In this instance I think it is to be explained in two ways: In the first place it must be remembered that these murmurs are very ephemeral in character, and as a rule are only to be heard at the time of the exercise. We examined the hearts of the men as soon as they came into the building. They were carried to the examining room in the elevator, laid on the table and the hearts were examined instantly. During our examination the murmurs disappeared in a large number of cases. In only one case was the murmur persistent. In that case it lasted one-half hour and then disappeared. In the others the murmurs lasted only a few minutes, in some of them seconds only; so that if the examination of the heart had been deferred, as in the recent examination, the murmurs would have disappeared before auscultation was practised. The other reason is the degree of exhaustion. The participants in the recent race were not so exhausted as the men in our race. The freshness of the men at the close of the recent race as compared to the condition of exhaustion of the competitors of last year's race was very marked, and was a matter of comment among the spectators. I consider the extreme exhaustion in our race to have been largely due to the cold. The men ran in ordinary running costume, and to expose the body thus lightly clothed to external air at 44° F. and a high head wind for three hours would probably call for a very great loss of heat and very great lowering of the vital forces, so that probably exhaustion in that case was very much greater than in the recent race, when the conditions were much more favorable.

DR. MEYLAN showed

SPHYGMOGRAPHIC TRACINGS.

The general result shows a very great dilatation of the vascular system, and in the number of the men, especially those most exhausted at the end of the race, there is almost complete loss of the regular normal curve. In the case of the men who finished strong, the sphygmograph showed the heart to be in better condition.

NUMBER OF STUDENTS AT JOHNS HOPKINS MEDICAL SCHOOL. — Johns Hopkins Medical School has opened this year with 215 students.

AMERICAN PEDIATRIC SOCIETY.

TWELFTH ANNUAL MEETING, HELD IN ST. JOHN'S PARISH HALL, WASHINGTON, TUESDAY, MAY 1, 1900.

FIRST DAY.

THE chairman, DR. HENRY KOPLIK, of New York, presented his paper, entitled

THE AMBULATORY AND HOSPITAL MANAGEMENT OF THE GASTRO-INTESTINAL DERANGEMENTS OF INFANCY IN THE SUMMER MONTHS AMONG THE POOR OF LARGE CITIES.

He said that the breast-fed infant is not as much exposed to infection as the infant who is artificially fed. Cow's milk in the latter case is the substitute for the breast in the opinion of every practical man. But before the milk reaches the infant it passes through so many channels and is open to so many sources of infection that it is surprising the mortality is not greater. Milk, of all the foods, attracts infection, even if the milk is not directly infected. The animals from which the milk is obtained first introduce infection; reference was not made to tuberculosis but to filth. The udder of the animal may be the means of introducing into the milk streptococci, which are capable of causing virulent forms of diarrhea. Dirt, while milking, is likewise introduced. Further, in going from receptacle to receptacle in commerce, milk is exposed to many sources of infection. All practical persons will agree that cleanliness is the light that has penetrated the dark and baffling problem of infant feeding. The basis of artificial feeding is necessarily breast feeding, although by this natural process the greatest diversity is found in the quantity and quality of the food, giving equally brilliant results. In a limited number of studies upon breast-fed infants it is shown that there is much variety in quantities; where one infant will take only 89 caloric equivalents daily, another will take 126. Both infants at the same time will be equally well nourished. Another feature, fat varies in the milk of different breasts, yet children of each breast thrive. The problem is a more difficult one in the case of milk from the cow. The milk must not only be diluted, but the waste is large, even in thriving infants, of the proteid constituents of the milk. An indication of this is phosphoric increase in the excreta. Both mild and severe forms of gastro-intestinal diseases are therefore infectious.

DR. IRVING M. SNOW, of Buffalo, N. Y., read a paper on

INTESTINAL OBSTRUCTION THROUGH A LOOP FORMED BY MECKEL'S DIVERTICULUM WITH LIGAMENTOUS ATTACHMENT.

with specimen showing a Meckel's diverticulum of 12 inches; the constricted portion was the last foot of the ileum. A three-year-old boy was the patient, and up to the present illness he was in good health. The history of the case is, that falling some little distance from some steps he struck on the abdomen to the right of the navel. He suffered no bad effects from the accident and in an hour's time there was complete relief. He ate freely of grapes a day or so later, and it was believed that this dietetic indiscretion, by producing intestinal irritation and increased peristalsis, was the exciting cause of the obstruction. He had a normal fecal passage three days after the accident, but for four days he vomited persistently, and laxatives

and enemata failed to move the bowels, which for five days were obstinately constipated. Agonizing and almost continuous abdominal pain was present and opiates were required. There was no tenderness, induration or abdominal tumor to be felt. There was a slight distention of the belly, with a little gurgling and rumbling on palpation. The temperature was only a little above normal and there was no fever during the entire course of the illness. The patient died inside of twelve days. The cause of death, as shown by the post-mortem, was due to exhaustion and inanition from pain, vomiting and interruption of assimilation from an unrecognized abdominal obstruction. As the condition was not recognized as intestinal obstruction, it was not relieved by operative treatment, hence, it ended in death.

A case was reported by DR. AUGUSTUS CAILLE in which the symptoms of obstruction were present, although the obstruction was not complete. Exploratory laparotomy should be made in such instances on the first occasion of fecal vomiting. The patient might have been saved by prompt surgical interference.

A case that was not operated upon until the symptoms became alarming was reported by DR. SAMUEL S. ADAMS. There was a free movement of the bowels while the patient was being placed under anesthetics. The invagination was not found to be disturbed.

In a case reported by DR. W. S. CHRISTOPHER, where air was injected into the intestines after the abdomen was opened, he said that sufficient pressure could have been exerted to burst the intestines without loosening the intussusception. As this was the second time intussusception had occurred in the same patient, the case was of more than usual interest and Dr. Christopher noted that the patient recovered from the second attack.

DR. IRVING M. SNOW said it was very difficult to make a diagnosis in cases where the symptoms are obscure. An exploratory incision should be made even if there be a doubt as to the diagnosis.

DR. B. K. RACHFORD, of Cincinnati, O., presented a paper entitled

PANCREATIC DIGESTION OF CASEIN.

In his experiments he used rabbits' pancreatic juice. This was collected in a common receptacle and then equally divided between digestion tubes by an experiment giving to each tube an equal quantity of pancreatic juice of like digestive capacity. The bile, which was also obtained from the rabbit, was filtered before using. Ordinary dairy milk, boiled and neutralized, was employed. Free fat or butter, he ascertained at the close of such experiments, floated on the surface of digestive mixtures in which the milk had been subjected to the action of both bile and pancreatic juice.

DR. AUGUSTUS CAILLE thought hydrochloric acid a proper agent to assist digestion in a child from one to two years of age.

DR. L. E. HOLT was opposed to giving hydrochloric acid to infants. He approved of diet exclusively.

Farinaceous matter, DR. T. M. ROTCH said, did not assist the digestion as much as lime water, and on that account he rather objected to the former.

DR. RACHFORD said his object was to determine how a baby should be treated, and the manner of these investigations could be determined afterwards. To his mind there were two things to consider, (1) whether hydrochloric acid caused a larger amount of casein

to be digested by the pancreatic juice, and (2) whether hydrochloric acid was found upon examination to be deficient.

DR. AUGUSTUS CAILLE read a paper entitled

CLINICAL OBSERVATIONS UPON THE OPERATIVE TREATMENT OF TUBERCULOUS PERITONITIS,

and stated a case in which a diagnosis of tuberculous peritonitis was made by exclusion. In this case tuberculosis of the hernia sac developed, the Bassini operation for the cure of the hernia at the same time effecting a cure of the tuberculous peritonitis. He stated, however, that the abdomen was not encroached upon. Other cases referred to by him presented solid tubercular tumors of the peritoneum and mesentery. He had observed these cases himself and the variety was distinct from the other well-known forms of tuberculous peritonitis. In another case the diagnosis was made very early, but operative interference refused. For nearly two years every well-known method of medication, both internal and external, was persisted in, but without any apparent benefit. His conclusion was that medication was useless so far as cure is concerned. He stated that diagnosis is made by exclusion except where the tuberculosis bacillus is found in the puncture fluids, when a diagnosis is positive. Exploratory laparotomy, in all doubtful cases, is imperatively indicated because surgical interference can effect a cure only in cases that are recognized early and when they are not complicated by tuberculosis of other parts. He stated that in every case observed by him there was a low, irregular tumor. The main diagnostic features are the abdominal symptoms—pain, distention, disturbed bowel action, affusion.

DR. T. M. ROTCH referred to more than 200 autopsies in fatal cases of diphtheria in infants and young children, there being 17 or 18 cases of tuberculosis in some part of the body. He dwelt on the importance of diagnosis between primary and secondary peritonitis. In the secondary condition, the treatment of tuberculous peritonitis is nearly useless. In the primary instance, however, good results are obtained from laparotomy. A case was reported by him in which an enlarged mesenteric gland was removed, and the importance of the early removal of such glands when tuberculous was strongly emphasized, as in this way a further spread of the infection is prevented. He considered the use of tuberculin in diagnosis very important, especially where there is a low range of temperature.

DR. J. HENRY FRUITNIGHT reported obtaining good results in a number of cases of tuberculous peritonitis following an operation in the Children's Hospital, New York, but, in his opinion, recovery could not be considered permanent.

In the absence of positive clinical evidence, DR. A. C. COTTON stated that he was turned to bacteriological findings to decide the diagnosis in suspicious cases of tuberculous peritonitis. He drew attention to the indications for exploratory laparotomy in such cases.

This brought a reply from DR. ROTCH that he did not see why exploratory laparotomy should not be made in all cases.

DR. JACKSON emphasized the advisability of examination of the blood for leucocytosis, but questioned whether such examination would separate the disease from typhoid fever.

DR. CAULLE did not consider medicinal treatment of any avail in these cases. He did not think it worth while to waste any time on guaiacol and creosote. He considered it the absolute duty of the operator to open the abdomen if the disease is suspected. Fluid in the abdomen may be due to a chronic muscular infection, a large spleen, sarcois, anemia, nephritis, or to valvular disease of the heart. The opening of the abdomen, if the diagnosis could not be made otherwise, was harmless, as the patient, being anesthetized, suffers no pain. So far as the examination of the blood was concerned, he did not lay much stress upon it, as such an examination, he thought, would not differentiate cases of tuberculous peritonitis and every case of affection caused by chronic malaria or anemia. He admitted, however, such an examination might occasionally be useful in diagnosis.

SECOND DAY.

DR. EDWARD P. DAVIS, of Philadelphia, presented his paper, entitled

THE TREATMENT OF HYDROCEPHALUS BY CRANIECTOMY.

He cited a case of an infant six months old, the mother of whom had two other children, and was in excellent health before the birth of the present child. The birth was spontaneous, and the mother nursed the child for three weeks, at which time she was taken with what was called a "bilious attack." The secretion of milk failed and the child was fed upon starchy food. At the time of its birth, the child weighed $5\frac{1}{2}$ pounds, and 9 pounds at six months of age. The child was restless and had a poor appetite, and it was brought for treatment. It was stupid and apparently suffered from intracranial pressure. It was seen by Dr. W. W. Keen, in consultation at the Jefferson Hospital, where it was transferred, and an effort made to secure continuous drainage. The fluid was difficult to withdraw from the ventricles. The child was then anesthetized, and the cranium was trephined at one side of a sagittal suture, and in the parietal bone on the right side, antiseptic precautions having first been taken. The child finally collapsed and died.

So far as the operation was concerned, DR. ROTCH said it appeared to be quite simple. No bad results had taken place from the operation. He referred to a case in the Infants' Hospital at Boston in this connection, and said that the cases were either treated with one tapping, or there was frequent drainage with tubes introduced into the ventricle, the fluid being withdrawn every day. He did not think that the operation was curative, but thought perhaps it might be palliative, the child being more comfortable for the time being.

A case was reported by DR. DORNING where 2 ounces of fluid were withdrawn. The child was quiet after puncture and seemed to improve for some three weeks. Unfortunately, he lost track of the child, so that definite results could not be reported.

Three interesting cases were reported by DR. KORLIK, which came under his observation. One of them was a baby seven months old which developed symptoms similar to those in tuberculous syphilis. It was tapped in the lumbar space, and from 10 to 20 centimetres taken, which varied according to the indi-

cations. There was a visible improvement after each tapping.

DR. ROTCH recited his experiences in the Infants' Hospital, where great care had been taken to tabulate the amount of pressure under which the fluid was withdrawn, and the amount up to the time the child died. His opinion was that it was a palliative treatment.

DR. DAVIS said that the danger of immediate death appeared to depend largely in this case upon the amount of fluid which was drawn. He laid stress upon the care to be exercised in withdrawing the fluid so that very little should escape. Hence the effort to maintain pressure while the drainage was being inserted.

DR. ROLAND G. FREEMAN, of New York, presented his paper, entitled

NEPHRITIS OF INFLUENZA IN CHILDREN.

He cited the case of a four-year-old boy, who, for three years past, has suffered from influenza. The ordinary symptoms of cold, prostration, fever and moderate earache accompanied the present attack in January, 1899. There was no discharge from the ear. His temperature on January 31st was 102.5° . On February 5th it reached 105° , then gradually diminished. On February 9th it varied between 100° and 101° . Some very red urine was passed on this date containing a large amount of blood, about 5% by bulk. The doctor thought that, although albumin is fairly frequent, the influenza nephritis is a rare complication. The nephritis complicated in influenza is usually clinical of an acute hemorrhagic type, and morphologically shows toxin lesions. The attacks occur more frequently apparently in children than in adults. He added that any disturbance may appear some days after the acute symptoms of influenza and sometimes a month later.

DR. FRUITNIGHT stated that he had found but 1 case of albumin in 57 cases, and this had disappeared in a few days.

More care should be exercised in examining the children, DR. DORNING said, in his report of 3 cases of complicated nephritis; he cited the fact that one child nine years of age had shown some adenia of the face. Upon examination of the urine, 30% of albumin and a large number of blood casts appeared. It was three weeks later before the casts and the albumin disappeared. In another child of four years, which showed adenia on the face, pathological and blood casts were found which cleared up and are now entirely well. The third case reported was that of a four-year-old child, in which it appeared that influenza affected every member of the family. A very pronounced form of nephritis was shown. An examination of the urine showed blood casts and 50% of albumin.

One case of nephritis was reported by DR. JENNINGS, following a double infection. The nephritis followed an attack of influenza and was of a mild character. The urinary findings amounted to 16 ounces and its specific gravity 1.015. The urine cleared up in a very short time and on the third day the blood casts disappeared. For a week later the granular casts persisted in a few numbers. The urine increased to 20 ounces on the third day and 28 on the

fifth day. The child was practically convalescent after that period.

It would be very interesting, said DR. ROTCH, to see a case following nephritis. He thought that these cases of nephritis and influenza are of an acute interstitial type, following the general rule of an infectious disease. A diagnosis of any special form of renal disease in young children should be made by means of an examination of the urine, and he laid stress on this point.

A case was reported by DR. CARR, which to him bore a very striking feature, namely, that the child suddenly developed a taste for sugar. The case was interesting to him by reason of a sudden increase in the specific gravity, the child's fondness for sugar and the absence of albumin.

A question was raised by DR. CHURCHILL whether in these cases of influenza, as well as other infectious diseases, they are not often the beginning of inward trouble which developed later on in life, particularly at puberty or later. He wanted to know whether we find manifestations of inward trouble by careful and thorough examination of the urine. A case was cited by him of a young man, nineteen years of age, who was suffering from an attack of appendicitis. While examining the urine, simply as routine practice, he found chronic nephritis.

DR. FREEMAN stated that more than a year ago the examination of this child's kidneys had been made, and that during all this time the kidneys remained perfectly right, and there had never been any deviation from the normal. There was no otitis at any time, and it did not figure as a factor in the matter. The child had complained during the months of January and December of pain in the ear at times, but it would pass off in a short time and would not recur for a week perhaps. The cases reported by him, he said, were the result of an exhaustive search through the literature of ten years past, and by calling attention to the matter he hoped it might be of interest to others.

DR. AUGUSTUS CAILLE presented a paper on

SUDDEN DEATH FROM PERFORATION OF TRACHEA AND BURSTING OF CASEOUS GLAND.

He showed a specimen which, he said, had been taken from a body of a girl with a diagnosis of bronchitis. A cold basis about the size of a walnut was revealed by the autopsy. This was a little above the bifurcation of the trachea. It had ruptured into the trachea, the contents being a cheesy matter, which had completely flooded above the trachea. This child, it was stated, had been sent in by some doctor with a diagnosis of bronchitis. In going over the child, however, the house physician had heard a few râles underneath the sternum. There was no fever and no pain, and but little cough.

DR. BLACKADER referred to the bronchial nose and thought that a large nose interfered to some extent with the entrance of air, especially if it has been associated with bronchitis.

Post-mortems, DR. FRUITNIGHT said, had, in several cases, revealed enlarged bronchial noses. In this case, auscultation had not revealed the presence of bronchial nose, and it did not possess any symptoms to indicate the presence of this condition.

A case was reported by DR. WEST where the symptoms disappeared and then reappeared. It was due,

he thought, to an enlargement of the glands. In one case the child had a cough that resembled whooping cough and there was a resemblance to whooping cough in another case he had in mind.

DR. A. C. COTTON, of Chicago, presented a paper on

CONGENITAL CARDIAC MALFORMATION WITH ENDOCARDITIS AND ANURIA.

The family history in this case was negative, and there was no history of syphilis obtainable. The baby was born March 19, 1900. It weighed at birth 7 pounds and 4 ounces, and was 22½ inches in length. It was well developed and presented no external malformations. There was a marked pallor which changed to a greenish hue, actual cyanosis supervening gradually as a light symptom. There was a loud, harsh diastolic murmur upon examination of the heart, which was heard all over the chest, and it was difficult to locate the exact position of this murmur. The child died of progressive asthenia on the fifth day, there having been no urine secreted.

(To be continued.)

Recent Literature.

Ear Records. A Method of Recording Ear Cases.

By JOHN C. LESTER, M.D., and VINCENT GOMEZ, M.D. Pp. 175. New York: J. W. & George H. Hahn. 1899.

The method of recording ear cases provided for in the record book of Drs. Lester and Gomez has evidently been very carefully considered with a view to including all items likely to be demanded in the running record of the personal history, functional examination, physical examination and treatment of the majority of cases of aural disease. The book is provided with a lettered name index, and has on each page a schematic figure of the sound-transmitting apparatus of the middle ear, and in addition sufficient space for notes. Based upon the method of Dr. Rohrer, of Zürich, this book, for practitioners who use this form of case record, will be found to be practical, suggestive and time saving.

Manual of the Diseases of the Eye. For Students and General Practitioners. By CHARLES H. MAY, M.D. Pp. 406, with 243 original illustrations, including 12 colored figures. New York: William Wood & Co. 1900.

The author in preparing this handy little volume has kept well in mind the desire on the part of the medical student and the general practitioner to possess a manual which shall contain the essential facts of ophthalmology and at the same time not be overburdened with theory and irrelevant detail. Although it is very elementary in character and not likely to be of especial interest to those who are familiar with the more pretentious treatises on this subject, it will nevertheless serve as an easy introduction to an already extensive special literature. An unusually full index facilitates a ready reference.

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PHYSICIANS AS SPEAKERS.

THE matter of public speaking is becoming one of greater and greater importance to physicians. It certainly rarely happens nowadays that a man goes through his professional life without being called upon to express his thoughts at some time before an assemblage of his associates. That some men, and we are disposed to think a growing number, do this well is undoubted; that others, and we fear this is the larger proportion, fail lamentably in expressing their ideas in an interesting and convincing manner is equally self-evident. The demands of medicine as a profession do not particularly call for the cultivation of oratorical gifts, as law, for example, is supposed to do; nevertheless attention to the principles of public speaking should be developed far more than is ordinarily done.

An interesting criticism and analysis of the shortcomings of physicians in this regard has recently been given by William Whitford, official stenographer of the American Medical Association, in a paper entitled "Physicians as Speakers," recently published in the *Journal of the Association*. Mr. Whitford unquestionably speaks from a dearly-won experience, and his suggestions are worth more than a passing notice. One can hardly imagine a more trying position than that of a stenographer who is called upon to report with exactness the remarks of a body of medical men. He is in a position to recognize faults which a less responsible person might easily overlook, and to place the blame for the often criticised reports exactly where it belongs. Mr. Whitford gives much good advice, which we have no doubt will be read by physicians with no feelings of resentment and we hope with some sense of personal application. We are told that the first duty of a physician in addressing an audience is to make himself heard, a warning which is frequently unheeded in spite of the best intentions. The following paragraph, which we quote in part, admirably expresses the real point at issue: "The real secret of effective delivery lies in the ability of a speaker

to impress himself with his subject. He for the time becomes the standard by which all thought and feeling and sentiment of a whole assembly are measured; nor can he hope to produce in his hearers an interest greater than his own. A good speaker, as his mind becomes inflamed with unwonted activity, rises to a plane of thought and feeling of which he himself is altogether incapable in his calmer moments. His conception is sharpened and his thoughts come with a clearness and precision that leave no time for hesitation. The mind, as it were, becomes intoxicated with its own ideas. The perception of the hearer is correspondingly quickened, and the audience, catching the inspiration of the speaker, unconsciously rises with him if animated by the same spirit."

Our experience has been that if a man is really deeply interested in his subject and has the enthusiasm which always goes with such interest, he can hardly fail to impress himself upon his audience, however lacking in oratorical finish his remarks may be. Self-consciousness must be laid aside, as a prerequisite to success in speaking before an audience; if that can be done the subject is given an opportunity. Again, we are warned against over-diffuseness and are told that this is an error most common among young physicians, although their elders are not always exempt. Diffuseness is certainly one of the most glaring faults to which young and old are alike exposed, and which does more to deaden interest even than poor delivery. We are, however, by no means sure that Mr. Whitford is right in attributing this error especially to the young. In fact we have a vague impression that men of the older generation are at times likewise prone to verbosity. We should rather say that over-detail is a weakness of youth and diffuseness a fault of riper years. The indefinite wandering into fields of experience is one of the labyrinths into which the relative inexperience of the younger man is not likely to lead.

As in all other classes of public speakers, Mr. Whitford finds that physicians vary greatly in the rate of utterance, from a hundred and ten to a hundred and sixty or more words a minute, from which it is clear that the difficulties of the stenographer are in certain cases greatly increased. Here comes in a defence of the reporter, of which we are glad to make mention. It is common enough to hear complaints on the part of individuals who have spoken at medical gatherings that their remarks have been miserably reported, that they never could have said what they have been credited with, and so on. Mr. Whitford gives fourteen reasons why reports may at times be inaccurate, through no fault of the stenographer, all of which, no doubt, are important. One, however, he omits, which certainly should have a place, and that is the carelessness of the speaker. Comparatively few men realize exactly what they say when speaking extemporaneously; repetitions are unnoticed; extraordinarily inappropriate words are used, and sentences mangled in various ways, all of which is

attributed to the inefficiency of the reporter. If speakers knew exactly what they had said, there would be far less criticism of the stenographic reports which they look at with dismay perhaps a week or two after the occasion of their remarks.

This really entertaining discussion closes with a classification of speakers, of which Mr. Whitford finds thirty-eight varieties. A few of these we give: The moderately slow speaker; the exuberant and tempestuous speaker; the musical, flowery speaker; the loud, husky speaker, whose voice is somewhat indistinct; the grandiloquent speaker; the rapid and spasmodic speaker; the one who hurls disconnected sentences at the reporter; the clear, distinct, unassuming speaker, who talks with absolute precision, with perfect grammar; he is a *rara avis*; the physician who commences his speech in a deliberate, measured, distinct, far-reaching tone of voice, and who, when he becomes influenced by the magnetism of his audience and their rapt attention, gives vent to rare flights of oratory; the man who does not realize that his first duty is to make himself heard; the physician who never completes his sentences, but is utterly oblivious of that fact when he criticises the report of his speech; the foreigner who imagines that he speaks like a native; the man with a strange and unfamiliar style, whose sentences are portentously long; the rapid and monotonous speaker who becomes tangled in his own sentences and mispronounces words; the physician who is known for his elegant diction, his scholarly references, and the ornateness of his phraseology; the physician who stutters, speaks indistinctly, and yet is extremely technical; the pompous speaker; the physician who begins a sentence, but is not satisfied with its construction; he therefore draws up, makes a plunge in another direction, wanders about in a maze, and finally lands in a region of impenetrable obscurity; the physician who is afflicted with that terrible malady — *cacoethes loquendi*.

We trust none of our readers are in any of these classes; if such be not the case, however, possibly the pinching of the shoe may have a salutary effect.

THE ANNUAL REPORT OF THE SURGEON-GENERAL OF THE ARMY.

SURGEON-GENERAL STERNBERG'S report for the fiscal year ending June 30, 1900, of which we have before us an advance summary, is of more than usual interest because of the added duties and responsibilities of the medical arm of the service incident to our recently acquired possessions. In spite of the increased demands being made upon the medical department it appears that there are at present but 192 officers, a number hardly sufficient before the outbreak of war with Spain, and wholly insufficient when the strain of that campaign was well inaugurated. Since the close of the war the medical department has been undermanned, rendering necessary professional assistance

from civil life. The surgeon-general acknowledges the excellent service received from this source, but insists that much experience is needed to fit these civilians for the sanitary work required, and to render them familiar with army methods. On the 30th of June there were 462 acting assistant surgeons under contract, all of whom have been examined by properly constituted boards relative to their physical and professional fitness for the discharge of their duties. Two boards of specially qualified physicians have been appointed for the study of tropical diseases, one for duty in and about Manila and the other in Cuba. The army nurse corps appears to be in a very satisfactory condition. There were 210 female nurses in the service June 30th. There are now 122 nurses in the Philippines as against 33 the beginning of the year. Women are serving in increasing numbers on the army transports in the Pacific; the service of these nurses is highly appreciated, and they are in demand at almost all hospitals of importance. As time goes on the organization of the army nurse corps has improved, and its adjustment to the conditions in the army made more satisfactory in details.

A number of new hospitals have been opened during the past year, among them one at Fort Bayard, New Mexico, for the treatment of army officers and men suffering from pulmonary tuberculosis.

The following comparative statistics are of interest regarding the health of the army in 1899 as compared with 1898. During the calendar year 1899 there were 229,885 admissions to sick report recorded in a mean strength of 105,546 regulars and volunteers. This is equivalent to a rate of 2,178.06 per thousand of strength as compared with 2,146.18 per thousand during the year 1898, and with 1,237.24, the mean annual rate for the decade 1888-1897. Of the admission rate for the year, 714.99 was constituted by malarial diseases, 380.69 by diarrheal diseases and 192.48 by injury, of which 21.56 admissions per thousand men resulted from gunshot; typhoid fever contributed only 20.69 cases per thousand of strength. Of the admission rate for 1898, malarial fevers constituted 611.78, diarrheal diseases 388.62, injuries 140.38, of which only 13.92 resulted from gunshot; typhoid fever contributed 141.59 cases per thousand of strength.

The report from the Philippines shows a considerable number of sick and a relatively large death rate among the troops, due, no doubt, to the exposures and fatigues of a long campaign. The opinion is said to be prevalent among medical officers that in time of peace and while doing only garrison duty, the sick rate of the army in the Philippines would be no higher than it ordinarily is in the Southern United States. Malarial fever, diarrhea and dysentery head the list in point of numbers. A relatively small number of cases of typhoid fever is reported, and but 238 cases of wounds and injuries out of a total of 2,807. The cases of malarial fever, on the other hand, constitute approximately one-fifth of the whole number.

The whole report is worth a careful reading, as

demonstrating both what has been accomplished in the way of prophylaxis and treatment, and also as showing how much remains to be done before the medical department may look with entire complacency at its work. To accomplish the best results it is clear that the medical corps must be materially increased in numbers.

MEDICAL NOTES.

YELLOW FEVER IN CUBA.—The situation in Havana regarding yellow fever is not encouraging. Every part of the city has contributed cases, and it is thought that many of the inhabitants will leave unless an improvement in the conditions takes place soon. The south side of Cuba, on the other hand, of which Santiago is an important city, is practically exempt from the disease, owing to the precautions taken by General Wood, and the fact that few Spanish immigrants, who are apparently particularly susceptible to the disease, come to that part of the island. General Wood is reported to have said that the large amount of yellow fever in Havana is due to the constant arrival of these immigrants, and also, from a later reported interview, that the relative number of cases this year as contrasted with previous years is really about the same, though apparently greater, because of insufficient returns heretofore.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, October 24, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 122, scarlatina 31, measles 23, typhoid fever 25.

LIABILITY OF PHYSICIANS IN THE COMMITMENT OF INSANE AND INEBRIATES.—The full Bench of the Supreme Court of Boston, in a recent decision, sustains the judgment of the Superior Court relative to the liability of physicians in committing insane and inebriates to institutions. The court holds that physicians, acting under our statutes relating to the commitment of dipsomaniacs and insane persons, are not liable for mere negligence in making a false certificate that a person was a dipsomaniac or inebriate, as a result of which the person was committed to the hospital at Foxboro for inebriates, provided they act in good faith and without malice. The decision is put upon two grounds: (1) Because assuming the defendants' examination was a careless one and their certificates false, their conduct was not the proximate cause of the commitment of the person, as a judge must, under the statutes, determine that, and (2) public policy, because they should be protected against liability by being made privileged, like parties and witnesses in other cases, as long as they act in good faith and without malice.

BOSTON SOCIETY OF MEDICAL SCIENCES.—A meeting of the Boston Society of Medical Sciences was held October 23d, the general subject of the evening being the first annual report of the Cancer

Investigation Committee to the Surgical Department of the Harvard Medical School. Dr. J. C. Warren spoke of the conditions under which the investigation is being undertaken, and showed, as did Dr. W. F. Whitney in remarks which followed, charts illustrating the increase of cancer during recent years. Dr. E. H. Nichols read a paper on "The Etiology of Cancer," in which he discussed the existing evidence for and against the parasitic theory of the disease, and gave the results of his own investigations, which are, as yet, inconclusive. Dr. R. B. Greenough presented a communication representing his work on the histology of mammary cancer. Mr. E. E. Tyzzer spoke on "Tumors and Sporozoa of Fishes." Mr. E. M. Locke showed a wax reconstruction of a nodule of cancer, and described the technique. Dr. Oscar Richardson gave the results of attempts to cultivate the parasites of cancer, which were unavailing.

DIPHTHERIA IN BROOKLINE AND WALTHAM, MASS.—A number of cases of mild diphtheria have been brought to the notice of the Board of Health of Brookline. It is at present confined chiefly to school children. A second circular to parents has been issued and distributed, warning them to take all possible precautions against the spread of the disease. Waltham is also suffering from a mild epidemic, confined to no special portion of the city. The contagious hospital is already very much overcrowded, so that it has become necessary to care for a number of patients at their homes.

INCREASE OF TYPHOID FEVER IN CONNECTICUT.—During September, while most of the infectious diseases decreased in Connecticut, there was a striking increase in the number of cases of typhoid fever. It is reported in fifty-four towns, and the cases number 228, as compared with 190 in August, making a total in two months of 418, which is 51 in excess of the same months in 1899. The increase is to be attributed largely to the low state of the wells. There is reason to expect an increase of typhoid in October.

ENFORCEMENT OF BOSTON MILK REGULATIONS.—Eleven dealers, charged with violation of the milk law, have recently been tried in a Roxbury, Mass., court. The court imposed a number of fines, one of the offences being the use of formaldehyde as a preservative, a violation of the law which forbids the use of foreign substances in milk.

NEW YORK.

VERDICTS OF \$37,000 AND \$7,500 FOR DAMAGES.—On October 17th in the Supreme Court Mrs. Elizabeth Rhoades obtained a verdict for \$37,000 damages against the Metropolitan Street Railway Company for the death of her husband, Captain George B. Rhoades, of the Seventh Regiment, in July last. This is the largest amount ever rendered against a surface railroad in New York in a suit growing out of personal injuries or death, due to the alleged negligence of the railway company. Two days later in Part V of the Supreme Court a jury

rendered a verdict of \$7,500 damages against the same company. This was the second trial of a case in which at the first trial, in June, 1899, a verdict was given awarding six cents damages for the life of a child who was killed by a trolley car, the smallest sum ever awarded in a similar case in the history of the State. The foreman of the jury explained after the trial that this insignificant amount was decided upon because the father of the child was rich. An appeal was promptly taken to the Appellate Division of the Supreme Court, where the six-cent verdict was set aside, and a new trial ordered.

NEWARK'S WATER SUPPLY. — In the last issue of the *JOURNAL* brief mention was made of the acquisition of the Pequannock water supply. Newark has now become the absolute owner of a water supply ample for all the needs of the city for fifty years to come, and capable of still further enlargement at comparatively small cost. With an outlay of \$6,000,000 there have been acquired the water rights of the Pequannock Valley and a plant capable of delivering by gravity to the distributing reservoirs a daily supply of not less than 50,000,000 gallons of clear, unpolluted water. With the construction of three distributing reservoirs, the necessary pumping stations, and a large storage reservoir at Cedar Grove, and with the cost of the connecting mains and 250 miles of street mains, the total expenditure will amount to \$10,700,000. Incident to the establishment of the water plant Newark has enforced economy in the use of water by compelling the use of meters by consumers who are likely to waste water. Thus far 9,000 meters have been installed, and since May 1st, 1899, the consumption of water has thereby been reduced 6,000,000 gallons a day.

CONTRACT WITH A LUNATIC. — Another case of medico-legal interest has just been decided in the Appellate Term. One Louis Fiegenbaum, who was of unsound mind, but had not been judicially so declared, applied to a well-known firm of lawyers to institute an action for divorce against his wife, paying them \$110 on account, in advance. One of Fiegenbaum's delusions, it seems, was with respect to the fidelity of his wife, though the lawyers were entirely ignorant of his mental condition and undertook the case in good faith. A summons and complaint was made by them, but was never served. In a suit by Mrs. Fiegenbaum, as committee, in the Fifth Municipal Court, to recover the sum advanced by her husband, the case was decided against her. In the Appellate Division of the Supreme Court this judgment has now been reversed, the court holding that the mere drawing of the summons was not a bringing of the suit, but only a preliminary step, and of no use or advantage to the plaintiff, and that, therefore, a cause of action had been made out against the lawyers, as for money had and received.

MIDWIFE HELD FOR CAUSING AN INFANT'S BLINDNESS. — Mrs. Barbara Harpreicht, a midwife, has been

held in \$600 bail for trial, charged with causing, by her negligence, the blindness of an infant at whose birth she officiated last spring. This is said to be the first case of the kind in recent years in which the Health Department has been able to get the evidence in such a shape as to enable it to proceed against the responsible person, although it is well known that a large part of the blindness existing at present has been caused by neglect and improper treatment during early infancy. The section of the Penal Code under which the woman will be tried provides that when the eyes of a young child whose birth has been attended by a midwife become affected, the midwife is forbidden to treat or prescribe for the condition, but must either notify the board of health or secure the services of a physician. Violation of the statute is punishable by a fine of \$250 or six months' imprisonment, or both.

THE EFFECT OF TWO BULLETS IN THE HEAD. — At the autopsy of a male patient, sixty-five years old, who died recently in the insane pavilion of Bellevue Hospital, where he had been confined for one month, it was found that there were two bullets, from a .22-calibre revolver, in the head, one being lodged in the structures of the internal ear and the other in the substance of the brain. Nothing was known of the man's history, but later Dr. John A. Beurman called at the coroners' office and stated that he had been acquainted with the deceased, and that several months ago the man had informed him that he had fired two shots into his brain with suicidal intent. He had, however, discredited his story at the time.

LAPAROTOMY UNDER SPINAL ANESTHESIA. — In a laparotomy performed at Bellevue Hospital last week, for the removal of a malignant abdominal growth, Dr. Henry C. Coe employed with entire success Dr. J. Leonard Corning's method of anesthetization by the injection of cocaine within the sheath of the spinal cord in the lumbar region.

A CASE OF YELLOW FEVER IN NEW YORK CITY. — A mild case of yellow fever is reported to have developed among the passengers of the Ward Line steamer *Mexico*, which arrived from Havana on Tuesday. The passengers and patient are under observation.

REQUESTS OF \$5,000 TO FOUR HOSPITALS. — By the will of Ignatz Hoff, who died recently in New York, a bequest of \$5,000 each is left to the German Hospital and Dispensary, St. Francis's Hospital, the Columbus Hospital, and St. Joseph's Hospital.

Miscellanp.

THE ENDOWMENT OF PROFESSIONAL SCHOOLS.

We quote the following from a recent article by Rev. James H. Ross, of Cambridge, Mass., relative to the question of the endowment of professional schools:

The question of the medical school and the law school receiving only those who have given themselves the advantage of a liberal education is a question of profound significance to American life. It is also, in particular, a question of gravity for every member of the professional faculty and for every member of the board of trust which manages a school of law or a school of medicine. For if the student is to give so large a share of his life's time to the preparation for his life's service, if he come up to the law school or to the school of medicine with powers well trained, with the capacity of appreciation large, with his character matured, he has a right to demand of the professional school that it shall give to him advantages adequate to the ripeness, richness and maturity of his character. It is simply absurd for a medical school or a law school, such as can be found in many of our States, to demand that candidates for admission shall have a college training; for the schools cannot offer adequate opportunities to men of these advanced attainments. For medical schools, such as can be found in many of the great cities of this country, to ask that students who are admitted shall be liberally educated is quite as absurd as for a high school in New York or Boston to require that candidates for its junior class shall have already taken a college course. The medical college which demands a liberal education from candidates for admission should offer as good teaching in the fundamental branches of anatomy, physiology, bacteriology, chemistry, histology, materia medica, therapeutics, and in special branches, as these candidates themselves have received in Latin, mathematics, philosophy, German, and history in the undergraduate colleges. These schools, furthermore, should offer the student a fitting scholastic environment. The medical college should offer to him hospitals and clinics having many cases and unique, and the law school should put into his hands a properly equipped library.

For schools of medicine and of law to offer the student such opportunities requires, primarily, money — and money, too, in large amounts. Professional education in this country has not yet received, with the exception of theological education, a fitting endowment. The theological schools of this country are now possessed of about \$20,000,000 of endowment, and the value of their buildings and grounds is about \$12,000,000. Be it said, also, that one-half of this amount is found vested in the theological seminaries of the North Atlantic States. Of the seminaries of the various churches the Presbyterian are the best endowed. About one-fifth of the entire amount of endowment funds of churches in America are found belonging to the Presbyterian Church. This endowment allows each professorship in these seminaries to have about \$40,000 in case there were an equal division of these funds. In the Congregational and Episcopal Churches the endowment would be about \$35,000 for each chair. But the endowment of the medical and law schools is so slight that one hesitates to give any figures at all. In fact, the endowment is so slight that some schools of law and of medicine are unwilling to reveal their poverty. The largest endowment in this country belongs to the medical school of Johns Hopkins University; the next largest is that of Harvard Medical School, and the next largest, so far as reported, is that of Western Reserve University Medical College. In a recent year \$1,500,000 was given to endow professional education in this country, and of this sum 63% was given to schools of theology, 17% to schools of medicine, 14% to schools of technology, and about 1% to schools of law. For the improvement of professional education in medicine and law the American people must give of their wealth with a generosity akin to that with which they have poured out their millions each year to the undergraduate colleges. The great need of American life at the present time is better trained doctors and better trained lawyers. This need can be met only by the rich endowment of schools for the training of doctors and lawyers; for it is only such schools, well endowed and well equipped, that can worthily and fittingly ask men of a liberal education to become their students. The next

movement in the endowment of American education should be directed toward the schools of law and the schools of medicine.

With these statements we are in essential agreement and are particularly glad to note that they come from a representative of the clerical profession; we think, however, that Mr. Ross loses sight of two important points in the development of his argument. In the first place, so far as we are aware, only those institutions which can offer to the student adequate clinical and laboratory facilities are demanding a preliminary training equivalent to a bachelor's degree. In the second place, it is no longer reasonable to class the schools of law and medicine as equally in need of endowment. Law is a study which requires relatively small provision for its students, whereas medicine, on account of the increasing demand for laboratory space and laboratory instruction and the necessarily greater length of the course, is each year becoming more expensive, and is by all means the most costly form of professional education.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, OCTOBER 13, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1208	470	23.84	10.56	6.80	2.16	2.40
Chicago . . .	1,698,575	—	—	—	—	—	—	—
Philadelphia . . .	1,293,197	338	96	30.00	16.50	3.90	2.70	5.40
St. Louis . . .	575,238	—	—	—	—	—	—	—
Baltimore . . .	508,957	169	61	30.09	6.49	7.67	5.31	2.95
Cleveland . . .	381,768	—	—	—	—	—	—	—
Cincinnati . . .	325,902	—	—	—	—	—	—	—
Pittsburg . . .	321,616	97	35	30.90	12.36	10.30	9.27	2.06
Washington . . .	277,000	—	—	—	—	—	—	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	54	18	25.90	5.55	12.95	—	1.85
Nashville . . .	87,754	—	—	—	—	—	—	—
Boston . . .	560,892	199	68	31.50	5.00	10.50	2.50	8.00
Worcester . . .	115,231	23	9	34.80	4.35	8.70	4.35	8.70
Fall River . . .	106,594	32	15	31.30	9.39	15.65	3.13	3.13
Cambridge . . .	95,185	24	17	70.72	8.32	33.28	—	8.32
Lowell . . .	98,611	28	11	28.56	7.14	10.71	—	—
New Bedford . . .	74,943	34	14	32.34	11.76	23.52	5.88	—
Lynn . . .	69,769	—	—	—	—	—	—	—
Somerville . . .	67,863	15	7	52.22	—	33.33	6.66	6.66
Lawrence . . .	60,937	31	16	48.45	12.92	29.07	—	9.69
Springfield . . .	60,085	—	—	—	—	—	—	—
Holyoke . . .	45,623	25	11	48.00	8.00	12.00	12.00	—
Brookton . . .	40,299	4	1	—	—	—	—	—
Haverhill . . .	38,714	6	2	16.66	16.66	—	—	—
Salem . . .	38,583	13	6	13.58	—	—	6.79	—
Malden . . .	38,321	7	4	28.56	—	14.28	—	—
Chelsea . . .	35,022	6	2	16.66	—	—	—	—
Gloucester . . .	32,285	4	1	25.00	—	—	—	—
Fitchburg . . .	31,648	3	2	—	—	—	—	—
Newton . . .	31,224	7	3	14.28	—	—	14.28	—
Everett . . .	31,167	6	4	—	—	—	—	—
Taunton . . .	28,891	—	—	—	—	—	—	—
Quincy . . .	25,653	7	2	42.84	—	—	14.28	14.28
Pittsfield . . .	24,226	—	—	—	—	—	—	—
Waltham . . .	23,283	7	1	57.12	—	—	—	42.84
North Adams . . .	22,196	2	1	—	—	—	—	—
Brookline . . .	20,225	—	—	—	—	—	—	—
Chicopee . . .	18,790	5	3	—	—	—	—	—
Medford . . .	17,869	3	2	33.33	—	33.33	—	—
Melrose . . .	15,411	5	3	—	—	—	—	—
Newburyport . . .	15,157	3	—	33.33	33.33	—	—	—

Deaths reported 2,369; under five years of age 889; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 626; consumption 262; acute lung diseases 246; diarrheal diseases 195; typhoid fever 71; diphtheria and croup 61; whooping cough 12; scarlet fever 10; cerebrospinal meningitis 8; erysipelas 4; measles 3.

From whooping cough New York 4, Philadelphia and Pittsburg 2 each, Baltimore, Boston, Lynn and Clinton 1 each. From erysipelas New York 3, Philadelphia 1. From scarlet fever New York 4, Philadelphia, Pittsburg, Providence, Worcester, New

Bedford and Haverhill 1 each. From cerebrospinal meningitis New York 3, Lynn 2, Worcester, Somerville and Gloucester 1 each. From measles New York 2, Boston 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending October 6th, the death rate was 17.8. Deaths reported 3,964: diarrhoea 406, acute diseases of the respiratory organs (London) 164, diphtheria 92, fever 66, whooping cough 49, scarlet fever 32, measles 28.

The death rates ranged from 8.7 in Croydon to 26.0 in Manchester: Birmingham 19.5, Bradford 14.7, Cardiff 14.2, Gateshead 23.4, Hull 16.2, Leeds 18.5, Liverpool 22.8, London 15.8, Newcastle-on-Tyne 22.7, Nottingham 13.8, Plymouth 16.3, Sheffield 21.4, Sunderland 25.1, West Ham 14.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING OCTOBER 20, 1900.

E. G. DORR, medical inspector, detached from the Navy Yard, Portsmouth, N. H., on reporting of relief, and ordered home to wait orders.

B. F. STEPHENSON, surgeon, ordered to the Navy Yard, Portsmouth, N. H., October 25th.

H. E. ODELL, assistant surgeon, order to the Asiatic Station modified; to take passage on the "Solace."

B. F. STEPHENSON, commissioned medical inspector from May 31, 1900.

H. A. DUNN, assistant surgeon, detached from the "Dorothea" and ordered to the "Frolic."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING OCTOBER 18, 1900.

GASSAWAY, J. A., surgeon. Leave of absence for four days from October 15, 1900, under provisions of paragraph 179, Regulations, M. H. S.

STONER, G. W., surgeon. Granted three days' extension of leave of absence. October 16, 1900.

STONER, J. B., passed assistant surgeon. Granted leave of absence for twenty-two days from October 30th. October 12, 1900.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for one day. October 12, 1900.

CURRIE, D. H., assistant surgeon. To proceed to Indianapolis, Ind., in charge of the laboratory exhibit of the service, to be shown at the meeting of the American Public Health Association. October 12, 1900.

SCOTT, E. B., hospital steward. Granted leave of absence for twenty days from October 22d. October 13, 1900.

BOARD CONVENED.

Board convened to meet at the Purveying Depot, New York, N. Y., on Wednesday, October 24, 1900, for the purpose of revising the official supply table of the service. Detail for the board: Surgeon G. W. STONER, chairman, and Surgeon C. E. BANKS.

APPOINTMENTS.

ALBERT M. ROEHRIG, appointed temporary hospital steward and assistant chemist for duty at Immigration Depot, New York, N. Y. October 13, 1900.

W. F. SCHLAAR, reappointed senior hospital steward. October 13, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The first regular meeting of the society for the year 1900-1901 will be held at the Medical Library, 19 Boylston Place, on Monday, October 29th, at 8 o'clock.

Papers: Dr. H. F. Hewes will read a paper entitled "Observations upon the Symptoms and Treatment of Hyperacidity of the Stomach."

Dr. R. C. Cabot will present the subject of "Irritable Breasts, or Chronic Mastitis."

Dr. Fred'k J. Cotton will read a short paper on "Subperiosteal Fractures."

This is the last date for the nomination of new members for the December election.

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

NEW YORK STATE ASSOCIATION OF RAILWAY SURGEONS.—The annual meeting of the association will be held at the Academy of Medicine, New York City, on Thursday, November 15, 1900, under the presidency of Dr. J. L. Eddy, of Olean.

C. B. HERRICK, *Secretary*, Troy.

THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.—The thirteenth annual meeting of this association will be held in Atlanta, Ga., on November 13, 14 and 15, 1900.

EXAMINATION FOR LICENSES TO PRACTISE MEDICINE IN NEW HAMPSHIRE.

The next examination for licenses to practise medicine in the State of New Hampshire will be held at the State House, Concord, on Tuesday and Wednesday, December 11th and 12th, beginning at 8 o'clock A. M.

All unlicensed physicians who were not in practice in this State on and before March 16, 1897, must pass the examinations in order to receive a license to practise legally their profession.

All information regarding the examination will be cheerfully given by the Department of Public Instruction, State Library, Concord.

CHANNING FOLSOM, *Regent*.

RESIGNATION OF SAMUEL O. L. POTTER, M.D.

Dr. Samuel O. L. Potter has resigned from the Board of Trustees and from the chair of theory and practice of medicine and clinical medicine in the College of Physicians and Surgeons of San Francisco, and has severed his connection with that institution, of which he was one of the incorporators.

RESOLUTIONS ON THE DEATH OF JOHN M. BROWN, M.D.

At a meeting of the Medical Board of the New York Metropolitan Dispensary and Hospital, the following resolution was passed:

"Inasmuch as by the death of Dr. John M. Brown the Metropolitan Dispensary and Hospital has sustained a loss which is poignantly felt and with difficulty retrieved, and since, individually, we miss the rugged honesty, the incorruptible friendship which was constantly evidenced to us who knew him intimately, be it *resolved*, That this feeble expression of our esteem for his character and our appreciation of our loss be spread on the minutes and a copy of this resolution be sent to his family and to the medical press."

GEORGE MCAULIFFE, New York City.

RECENT DEATHS.

WM. R. LARKIN, M.D., a prominent Harlem physician, died of cerebral apoplexy on October 15th, at the age of forty-two. He was born in New York City and educated in Manhattan College. He was graduated from Bellevue Hospital Medical College in 1883, and afterwards served on the house staff of St. Vincent's Hospital. He was one of the founders of the Manhattan Hospital, now known as the J. Hood Wright Memorial Hospital, and for several years was one of the surgeons to the New York Fire Department.

JOSEPH L. CUTLER, M.D., for fifty years one of the leading surgeons of Alleghany County, died on October 14th, at his home in Bolivar, N. Y., at the age of seventy-one years. He was born in Moravia, N. Y., and was graduated from the Medical Department of the University of the City of New York in 1850. He served as assistant surgeon of the 134th Regiment, New York Volunteers, during the Civil War.

BOOKS AND PAMPHLETS RECEIVED.

Typhoid Fever and Our Water Supply. Anatomy of Hauging. Medical Education. By Edmund W. Holmes, A.B., M.D., Philadelphia, Pa. Reprints. 1900.

A Contribution to the Study of Anastomosis of the Hollow Viscera: A Modified Murphy Button. By John S. Miller, A.M., M.D., Philadelphia. Reprint. 1897.

A Short Practice of Gynecology. By Henry Jellett, B.A., M.D., B.Ch., B.A.O. (Dublin University), F.R.C.P.L., L.M. Illustrated. London: J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1900.

Anleitung zur Diagnose und Therapie der Kehlkopf, Nasen und Ohrenkrankheiten. Vorlesungen gehalten in Fortbildungscursus für practische Ärzte. Von Dr. Richard Kayser, Breslau. Illustrated. Berlin: Verlag von S. Karger. 1901.

A Manual of Otology. By Gorham Bacon, A.B., M.D., Professor of Otology in Cornell University, New York. With an introductory chapter by Clarence John Blake, M.D., Professor of Otology, Harvard University. Second edition, revised and enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1900.

Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by Charles Adams Holder, M.D. Volume III, September, 1900. Diseases of the Thorax and its Viscera, including the Heart, Lungs and Blood Vessels; Diseases of the Skin; Diseases of the Nervous System; Obstetrics. Philadelphia and New York: Lea Brothers & Co. 1900.

Original Articles.

GUNSHOT INJURIES BY THE RIFLES OF REDUCED CALIBRE.¹

BY LOUIS A. LA GARDE, M.D.,

Major and Surgeon, U. S. Army; Delegate from the United States Army.

A CONSIDERATION of the effects of the rifles of reduced calibre is properly divided into (1) the theoretical, (2) the experimental, and (3) the observations in war.

(1) *Theoretical.*—The theoretical considerations deal with the advantages claimed by Hebler and they relate to certain ballistic values which have been generally admitted, and to humane effects.

(2) *Experimental.*—To an audience composed of distinguished military surgeons, many of whom have been among the foremost experimenters to determine the difference in destructive effects between the rifles of large calibre and lower velocities as compared with those of reduced calibre and high velocities, it is needless to dwell upon the conclusions that are based upon this experimental evidence. Suffice it to say that these conclusions were generally unanimous, and that they sustained the advantages claimed by Hebler to a marked degree, especially as to humane effects.

(3) *Observations in war.*—The effects of reduced-calibre weapons in war now are becoming thoroughly understood, so that the material already accumulated, when properly worked out, will give us a definite idea of the real value of the new arm as a military weapon.

I come before you in this instance to add some observations upon the effects of the 7-millimetre Mauser rifle among 1,400 wounded in the Spanish-American War, a consideration of which may be discussed as follows:

(1) *Shock.*—Shock on impact, as you know, increases with the velocity and sectional area of the projectile. If you will remember the experimental evidence showed that the shock from the reduced-calibre bullet was always less than that of the larger calibre leaden bullet. Many surgeons have entertained the opinion that the small jacketed bullet would not possess sufficient stopping power to arrest a man when hit, and that this would be a strong argument against its use in war. Upon inquiry among the line officers in the Santiago campaign I find that as a rule, to which there were but exceptions, men when hit fell back at once. The universal impression therefore was that the Mauser possessed sufficient stopping power for the purposes of war.

(2) *Explosive effects.*—The terrific explosive effects so universally observed by the experimenters with the reduced-calibre bullets on animate and inanimate objects were seldom witnessed in the campaign. This seemed to be a contradiction of the established notion of the experimenters who had witnessed explosive effects by the new bullet upon impact with resistant structures up to a distance of 400 metres. If one stops to consider the nature of the terrain over which the various engagements were fought, the infrequency of explosive effects will not be so strange. The ground was broken, rocky and covered with trees and thick grass. It is fair to presume that the remaining velocity of the Mauser bullet was often very much

reduced. This was substantiated by the large percentage of lodged balls, in 10% of all wounded; and to their deformed appearance, showing evidence of ricochet. In an open field, on even ground, I dare say the explosive effects of the experimenters would have been realized upon resistant structures, at close range.

(3) *Flesh wounds.*—The smaller frontage of the jacketed Mauser bullet caused it to inflict flesh wounds of a corresponding diameter. The wounds of entrance and exit and the narrow track of the missile favored rapid healing. Infection was but seldom noticed, and when present it was almost invariably about the wound of exit, consisting of a slight slough, or a drop or two of pus under a scab.

(4) *Hemorrhage.*—Johann Habart, Surgeon-General, Austrian Army, who among the experimenters referred to paid special attention to the injury to the blood vessels, states that "blood vessels are seldom torn by the small jacketed bullet and that when wounded they are not closed so easily by coagulation as those severed by leaden projectiles." Writers have deduced from this statement that alarming or fatal primary hemorrhage would be more frequent in future wars. The experience in the Santiago campaign does not confirm these apprehensions. Of the 1,400 wounded none died of external hemorrhage, nor was it necessary to ligate a vessel for alarming hemorrhage on the field. The femoral, the external iliac and the ulnar were each tied once for diffuse aneurism; whilst the radial and subclavian were each tied twice for the same cause. There were 5 cases of gangrene from injury to blood vessels which required amputation.

(5) *Diaphyses.*—The gunshot injuries of the diaphyses were as a rule attended with but little comminution. A number of instances of complete perforation and guttering without fracture came under our notice. It was rarely necessary to open up wounds to take out loose fragments of bone. The infrequency of fractures attended with marked fragmentation was attributed to long range and to interference with the remaining velocity of the bullet from the nature of the field, as already mentioned.

(6) *Joints.*—In gunshot wounds of the principal joints, including the epiphyses, clean-cut perforations without fracture were the rule. As an illustration of the humane feature of the joint wounds by the reduced-calibre bullet it may be stated that out of 17 gunshot wounds of the knee joint, recorded in the "Annual Report of the Surgeon-General for 1899," 14 were restored to duty and 3 were invalided. No amputation, no death.

(7) *Head.*—Of 31 cases of gunshot injury of the head, 58.1% ended fatally. Some of the injuries were marked by extensive fracture and laceration of brain substance, doubtless from shots at close range; others were marked by clean-cut perforation at point of entrance and exit in calvarium, with surprisingly few brain symptoms. These were undoubtedly from shots in the mid and remote ranges. Guttered fractures were apt to show extensive comminution of the inner table.

A remarkable case of lodged ball is that of Private J. G., First Nebraska Volunteers, in which a Mauser bullet entered above the left eye, and remains lodged as shown in the skiagraph fifteen months after the injury, with no symptoms of paralysis.

(8) *Thorax.*—Fifty-three penetrating wounds of

¹ Read before the Thirteenth International Congress of Medicine and Surgery, at Paris, August 6, 1900.

the thorax were observed, with a mortality of 24.5%. This mortality is less than half that observed in the Civil War. This happy outcome is largely due to the diminished frontage of the jacketed bullet, and to the fact that it here usually traverses the lung, a tissue offering very little resistance and therefore but little opportunity for the exhibition of destructive effects. Although more than half the cases of penetrating chest wounds were restored to duty, quite a number suffered complications worthy of mention. Greenleaf, who followed up 24 of the 53 cases in the Spanish-American War, found that 37% of them developed complications like hemothorax, pyothorax, etc. He therefore calls attention to the fact that perforating chest wounds are not so trivial as they might seem.

(9) *Abdomen.* — Penetrating gunshot wounds of the abdomen were very fatal. Of 41 recorded cases, 29 died. Three laparotomies were performed at the First Division Hospital with fatal results. The fatal cases very likely died of shock and hemorrhage, fac-

ognized by Surgeon-General Sternberg, who caused a machine to be placed upon the hospital ship *Relief*, and one at the United States General Hospital at Key West, under men of recognized ability in photographic work.

No attempt was made to locate projectiles except with the x-ray. The orders in the Reserve Divisional Hospital were *not to remove lodged projectiles except for urgent reasons*, because of the extra time and labor which such an operation imposed upon the already overworked surgeons. The value of skiagraphy and the use of the fluoroscope were exhibited, (a) in locating missiles; (b) in determining the extent of bone lesion, so often desirable in proximity to the main joints; (c) in detecting supposed cases of guttering or perforation of the long bones without fracture; (d) and in probable lesion to nerves and tendons by loose spiculae of bone. The use of the x-ray in the latter has done much to interpret remote effects, such as paralysis, neuritis, loss of function, etc. Cases such as these occur especially in the forearm, foot and

NUMBER, REGIONAL DISTRIBUTION AND MORTALITY OF GUNSHOT WOUNDS IN THE WOUNDED WHO CAME UNDER TREATMENT IN THE AMERICAN CIVIL WAR AND THE SPANISH-AMERICAN WAR.

Seat and character of injury.		Number of cases and percentage.	Per cent. of all wounds.		Recoveries.	Deaths.	Undetermined results.	Per cent. of fatality.	
Civil War.	Head :								
	Flesh wounds	7,739	64	3.14	4.9	6,573	2,676	2,480	28.93
	Fractures	4,350	36	1.76					
S.-A. War.	Flesh wounds	40	56	2.74	4.86	42	18	2	26.09
	Fractures	31	44	2.12					
Civil War.	Chest :								
	Non-penetrating	11,996	59	4.87	8.23	13,921	5,373	970	27.85
	Penetrating	8,268	41	3.36					
S.-A. War.	Non-penetrating	61	54	4.18	7.82	101	13	0	11.40
	Penetrating	53	46	3.64					
Civil War.	Abdomen :								
	Non-penetrating	4,748	56	1.93	3.43	3,455	3,293	1,600	48.80
	Penetrating	3,690	44	1.50					
S.-A. War.	Non-penetrating	20	31	1.37	4.39	35	29	0	45.31
	Penetrating	44	69	3.02					
Civil War.	Upper extremities :								
	Flesh wounds	54,801	62	22.29	35.68	80,090	5,608	2,095	6.54
	Fractures	32,992	38	13.39					
S.-A. War.	Flesh wounds	289	67	19.84	29.44	426	1	0	.0023
	Fractures	140	33	8.91					
Civil War.	Lower extremities :								
	Flesh wounds	59,139	68	24.06	35.15	73,665	11,813	935	13.82
	Fractures	27,274	32	11.09					
S.-A. War.	Flesh wounds	432	77	29.66	38.57	555	9	0	1.60
	Fractures	130	23	8.91					

tors which usually attend gunshot wounds in the explosive zone. The surgeons reported that the cases were apparently hopeless from the beginning. On the other hand, the 12 cases that ended in recovery very likely resulted from long range shots, or from projectiles whose remaining velocity had been lessened by traversing objects in their path. The edges of the small intestinal wounds were very likely closed by coming together, thus favoring healing without extravasation. In this connection I should state that our army had subsisted on a scant ration for three days before the battle.

Clothing or other infectious substances were not carried into wounds to cause inflammatory disturbances; and to this extent the work of the experimenters has been sustained. Indeed the small sectional area of the jacketed bullet of reduced calibre, its polished exterior, that affords little opportunity for the lodgment of dirt, and, again, the fact that it seldom deforms, add very much to the absence of infection in the wounds which it inflicts.

The value of the x-ray in diagnosis was early rec-

ognized by Surgeon-General Sternberg, who caused a machine to be placed upon the hospital ship *Relief*, and one at the United States General Hospital at Key West, under men of recognized ability in photographic work.

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hand, from cicatrization of the wound channel, which often exhibits injury in the surrounding soft parts, due to secondary projectiles such as bone sand, fragments of softer tissues, like pieces of tendon set free by the energy of superior velocities. In all instances of gunshot injury in these parts the fluoroscope should be brought into use at the earliest moment to determine what should be done in the way of treatment to prevent distressing conditions that are difficult to relieve later. The skiagraphs exhibited revealed in a striking way the lesions wrought by the projectiles of reduced calibre.

The killed. — The regional distribution of the wounds among those killed in action was reported in 64 instances as follows: Head, 26; penetrating wounds of abdomen, 19; penetrating wounds of chest, 17; thigh, 1; leg, 1.

Captain W.C. Borden, assistant surgeon, U. S. Army, in a study of the regional distribution of wounds treated in the Santiago campaign as compared with the Civil War, finds some interesting results, especially in the wounds of the lungs and extremities. Antisepsis and

the humane effects of the new projectile have doubtless been the controlling factors.

The following tables illustrate the effects of the new armament on the target areas of the human body as compared to the conclusions based upon the results of many battles with the old arm. The Santiago campaign, as far as it goes, shows that wounds of the lower extremities are not nearly so frequent as they were observed in former times. The battle tactics which cause a man to lie down to fire, and to advance by rushes have doubtless added much to these results :

TARGET AREAS OF THE BODY.

Region of Body.	Percentage of the whole Area of Body.
Head, face and neck	8.51
Trunk	28.91
Upper extremities	21.14
Lower extremities	41.44
Total	99.97

REGIONAL DISTRIBUTION OF WOUNDS IN THE PRINCIPAL WARS WITH THE OLD ARMAMENT.

Wounds of :	All Projectiles Included.
Head, face and neck	8.56
Trunk	19.56
Upper extremities	23.56
Lower extremities	48.30
Total	99.98

REGIONAL DISTRIBUTION OF WOUNDS IN THE SANTIAGO CAMPAIGN.

Wounds of :	All Projectiles Included.
Head, neck and face	12.50
Trunk	20.45
Upper extremities	27.95
Lower extremities	39.09
Total	99.99

PURPURA HEMORRHAGICA, OR MORBUS MACULOSUS OF WERLHOF.

BY STEPHEN SMITH BURT, A.M., M.D.,

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THE hemorrhages in the skin which are associated with a variety of conditions, and are essentially symptomatic, will not be considered under the heading of this monograph. So also the less serious form of the disease in question, termed "purpura simplex," even though a mild expression of the more serious affection, will be excluded from present consideration. Reference here is made more especially to the grave malady, in which the cutaneous hemorrhages are often of minor importance, known as Werlhof's disease, or purpura hemorrhagica. We are indebted to Paul Gottfried Werlhof,¹ who was born in 1699, and who died in 1767, for its first comprehensive description, and for the name of "morbus maculosus of Werlhof" in consequence.

This disease is characterized by the occurrence of ecchymoses in the skin, the mucous membranes, the viscera, and the serous membranes, while, at the same time, there is more or less profuse hemorrhage from all the mucous surfaces. Much bleeding is quickly followed by a profound anemia, in which the red blood corpuscles and the fibrin-forming elements are rapidly decreased, the white corpuscles increased, and the percentage of hemoglobin is diminished. After several days of general weakness, or suddenly without previous indisposition, a purpuric eruption appears upon the trunk and limbs, but preferably upon the lower extremities. This is fol-

lowed, or accompanied, or sometimes preceded, by bleeding from the gums and other mucous surfaces. Usually the blood lost is non-coagulable. The spots upon the skin, which may appear in successive crops, vary in size from 1 to 4 millimetres in diameter; the smaller being termed petechie, and the larger ones ecchymoses. In color they shade from a bright to a dark red, according to the depth of the extravasation, and they gradually fade to a brownish hue during their absorption. Unlike inflammatory congestions, they do not disappear upon pressure. Vierordt suggests the following test, namely, "through a piece of thin glass pressed upon the spot in question, a hemorrhage becomes more distinct, whereas an inflammatory congestion is obliterated temporarily." While the disease may exist without fever, there is usually a moderate elevation of temperature, and sometimes there is hyperpyrexia. The pulse soon becomes weak and rapid; the mind remains clear in some cases to the end, whereas in others there is delirium which lapses into coma towards an approaching fatal termination. Another group of symptoms, wherein multiple arthritis together with urticaria, as well as purpura, are dominant features, is called peliosis rheumatica. There is another group in which nervous symptoms, and still another in which gastro-intestinal and renal symptoms, are uppermost. These are thought by some authorities to be too closely allied to Werlhof's disease to admit of a separate classification.

"Scurvy," says Lockwood,² "if proved an infectious disease, may be really Werlhof's disease modified by the surroundings and poor condition of the patient, and also by the possibility of the infection being more chronic." Purpura hemorrhagica at present is differentiated from scurvy by the presence of fever and by the absence of swelling of the gums, notwithstanding the bleeding, by the fact that a mixed diet has been previously maintained, and by its failure to respond to an antiscorbutic regimen.

That Werlhof's disease is infectious seems to be well established. Adults as a rule are less likely to succumb to the infection than young children. The latter are very prone to die of the disease, and likewise women attacked during pregnancy. Four of the 5 cases complicating the pregnant state, cited by Lockwood,³ had a rapid and fatal termination. "In children the affection nearly always proves fatal," says Dr. Holder,⁴ who had seen a good many cases on Randall's Island. Of the 30 examples of various ages and different sexes included in Lockwood's⁵ paper there was a fatality of 25.

It is a disease of early life ordinarily, and is somewhat less frequent in the male than the female. It is also a treacherous disease, for it may begin with apparently mildness and rapidly become grave and exceedingly dangerous. There are some evidences which point to its communicability, yet this same proof might serve for an argument in favor of a common source of infection. Dr. Holder,⁶ in discussing a paper by Dr. Bremner on the subject, says, "The disease seemed to have a tendency to recur in groups and to affect especially a single ward at a time, so that there was little doubt of its contagiousness." The latter agreed with his colleague, and expressed similar sentiments as a result of a like experience. Moreover, Grüning⁷ has reported 3 cases of purpura simplex in children, three, four and sixteen years old

respectively, 2 of whom occupied the same room, and all of whom lived in the same house and came into frequent contact with one another. All presented high fever and profound constitutional phenomena. Furthermore, in an instance of my own, to be related, the mother of the child stated that 2 other children in her family had previously developed purpuric eruptions upon the lower extremities.

The grave forms of purpura hemorrhagica, at least in this country, fortunately are not of very frequent occurrence. During one year, stated Dr. Lewis,⁸ there were only 3 cases of this form of the disease out of 20,000 general medical cases in nineteen of the hospitals of New York. Among 63,834 medical cases, in sixteen and a half years at the London Hospital, cited by Mackenzie,⁹ there were but 200 examples of purpura of all descriptions. Of these 61 were associated with rheumatism, and 68 were unexplained, and hence Werlhof's disease, inferentially.

The *New York Medical Record*, during the past ten years, has published an number of papers upon this subject, and notably one by Lockwood, already quoted, who gathered 30 cases, 19 of which were from German, 4 from English, 3 from American, 2 from French, and 2 from Spanish sources; also one by Lewis,¹⁰ who reported 3 cases, 2 of which proved fatal. In the *Transactions of the Association of American Physicians*, during this same period, is a paper by Musser,¹¹ who described 5 cases, including 2 deaths. The *New York Medical Journal*, in 1897, published a paper by Weber,¹² who reported 3 cases that recovered, but which were manifestly mild in character. They were of interest in illustration of infection, probably through bacteria, which gained entrance into the system from gangrenous foci in the mouth and the intestines.

The following is a history of a patient who came under my care and observation during my service at the New York Post-Graduate Hospital.

William S., age eleven, admitted to the wards of the hospital December 29, 1898.

Family history.—Father and mother living and in good health. Upon the maternal side two uncles died of consumption. No other record of tuberculosis. A sister and two brothers alive and well, except that two of the children recently had a mild purpuric eruption upon the lower extremities.

Previous history.—The patient has had the usual diseases of childhood. One year ago he was operated upon for enlarged glands in the neck said to be tubercular. Last Tuesday morning (December 27th) he, being apparently in his usual health, began to bleed from the gums, and shortly afterwards the mother noticed a number of small hemorrhagic spots scattered over his body, but more especially upon the lower extremities.

Present condition.—Patient anemic; pulse weak and rapid; temperature 101°; blood oozing from the gums, which are not swollen; a purpuric eruption, moderate in extent and amount, chiefly upon the legs and thighs, the spots varying in size from a mere point to a quarter of an inch in diameter, and in color from a bright red to a faded brownish tinge. These ecchymoses do not disappear upon pressure. Both heart and lungs are normal, no swelling or tenderness of the joints, no edema, no pain, no soreness of the throat and no gastro-intestinal disturbances.

Examination of the urine.—Specific gravity, 1.012;

reaction, acid; color, yellow; transparency, clear; sediment, slight in amount and nebulous. Chemical analysis: Albumin, a trace; no sugar.

Microscopical examination.—Abundant hyaline and finely granular casts; moderate amount of cellular and coarsely granular casts. Blood, few red and white cells. Bacteria present.

During the first four days the patient continued to bleed more or less from the gums, especially at night, and finally from the nose, despite temporary relief from plugging the nostrils and the application of astringents. His mind remained clear, and his strength and appetite fairly good. The temperature varied between 99½° F. and 101¼° F., and the pulse between 110 and 132 per minute. On the fifth day he bled freely from the nose, and vomited considerable blood, and, what is more, passed blood from the bowels, at first in the form of black stools, and then in clots of pure blood. His mind was still clear. He had an exsanguinated appearance; his temperature fell to 97° F. and his pulse rose to 160 per minute. Of course he was in bed. His condition becoming alarming from sheer loss of blood, transfusion of a normal saline solution was performed in his left arm, and stimulants were administered. By midnight he was delirious. The following day his temperature ranged between 99° F. and 100° F., and his pulse between 120 and 140. He had two small black stools. On the seventh day he had six bloody stools, and vomited blood. He was in a stupor with intervals of delirium. His temperature was from 100° F. to 101° F., and his pulse from 138 to 160 in the course of the twenty-four hours. On the eighth day he had a small stool of blood and mucus; his pulse was weak, rapid and irregular; he was delirious. On the ninth day his temperature ranged from 99¼° F. to 102° F., his pulse from 140 to 150, and his respirations from 34 to 40 per minute. Finally, upon the tenth day, which was the 7th of January, with temperature 101½° F., respiration 42 and pulse 156 per minute, he died towards evening.

These comprise the essential facts which have been abstracted from the daily records. Besides plugging of the nostrils and transfusion, numerous remedies, including ergot, digitalis, hemostatics and stimulants, without avail were employed. In view of the mortality of the disease, and the contradictory statements in regard to the efficacy of remedies, one is inclined to be sceptical about the value of all medication, certainly in the virulent forms of purpura hemorrhagica. Dawson¹³ reported a case, which, however, was evidently not of a grave nature, where one deep injection of 5 minims of ergot worked a cure immediately. On the other hand, Mackenzie¹⁴ states that ergot may be tried, but that it has not in his hands proved very efficacious. Arsenic, turpentine, ergot, benzoate of sodium, nitrate of silver, iron preparations, all have their advocates. Meanwhile, like several other diseases, the mild cases are likely to get well under a diversity of treatment, and the severe cases are very prone to die, drugs to the contrary notwithstanding. This, at all events, is certainly true in regard to young children. Dr. Holder¹⁵ states that, "therapeutic experience on Randall's Island had rather fostered the idea that there is no specific medication for these hemorrhagic conditions in children." Blood serum, it is said, in doses of 250 cubic centimetres has been employed successfully. It is not impossible that the se-

rum of some naturally immune animal, which has been inoculated with a sterilized culture of the bacillus described by Tizzoni and Giovannini, may eventually find useful therapeutic application. Meantime, the discovery of the cause of this not infrequently malignant infection should exert a direct influence upon the prevention as well as the treatment.

Mackenzie¹⁶ remarks that "bacteria or their products must play an important part in the production of the cutaneous hemorrhages," and also that "it is certain the cutaneous hemorrhages are sometimes determined and in all probability primarily caused by nervous influences." Stengel¹⁷ says in connection with the subject under consideration that "organisms have been found in the blood by a number of observers. No definite and specific bacteria have, however, been isolated, and it is doubtful whether the infection in all cases is the same." Letzerich,¹⁸ in 1889, described a long bacillus having sharp angles and edges which he considered peculiar to this affection. These bacilli can be cultivated "from the blood of the petechia, and pure cultures in gelatine injected into rabbits give rise to hemorrhages spontaneously. A hyaline thrombus full of bacteria and spores was always found at the site of the bleeding."

Lapin¹⁹ mentions 2 cases of purpura hemorrhagica, 1 of which ended fatally, and in both of which micrococci were found in the blood. In the fatal case streptococci were present. In his opinion the infecting principle enters the body by the mouth and the pharynx. The proximate cause of purpura hemorrhagica is believed to be a hyaline and amyloid degeneration of the walls, both intima and adventitia, of the blood vessels, with ultimate hemorrhage, and by rupture of the vessels rather than by diapedesis. It seems probable that any unusual pressure of the circulation against the vessels, previously weakened by degenerative changes, would be sufficient to precipitate the extravasation. What is known regarding the part taken by bacteria or their products in the causation of these degenerations will be shown in the following extracts from Flüge's²⁰ "Die Mikroorganismen."

The hemorrhagic infections of man have not as yet been wholly elucidated, at least they have no uniform etiology. In many cases the process is dependent upon the especial malignant character of an infection otherwise progressing without hemorrhagic diathesis, or upon an abnormal disposition of the affected individual; in others upon specific microorganisms causing fragility of the vessel walls. Cornil and Ranvier* and Babes,† giving examples, distinguish three groups of causes: (1) Infection exciters, which are to be classed along with bacteria or hemorrhagic septicemia in animals; (2) such bacteria as gain access from gangrenous foci in the mouth and intestinal canal (*Bacillus proteus septicus et letalis* of Babes, *Bacillus capsulatus septicus* of Foa and Bonome, Bardoni-Uffreduzzi, and pyogenic cocci); (3) violently acting streptococci. Compare Claisse.‡

Bacillus hemorrhagicus septicus. — Cultivated by Babes§ from 3 fatal cases of hemorrhagic sepsis accompanied by stomatitis, angina, bronchitis, purpura, hematuria and fever. In the hemorrhagic pulmonary foci and mesenteric glands there were found dense masses of bacilli. From the spleen and lungs the following bacilli were obtained in pure culture: Non-motile short rods (3-4 millimetres thick), surrounded by a capsule. Stain faintly with aniline dyes, still fainter with Gram's method. No

spore formation. Facultative anaerobic. Slight growth on surface of gelatine; along the stab a granular stripe; no liquefaction. Upon agar agar minute transparent droplets; later, whitish-yellow, indistinctly defined spots. On potato, whitish drops. Bouillon is clouded.

Mice die within a few days, often with manifestations of septic changes (spleen tumor), with hemorrhages upon the serous membranes. Rabbits die in three to eight days with hemorrhages in all the organs, especially in the liver and lungs, and with swelling of the spleen. In those animals which die late the bacilli are often no longer microscopically demonstrable. Sterilized cultures (filtered or heated to 60° C.) also produce multiple hemorrhages. For guinea pigs and dogs it is slightly pathogenic. The cultures rapidly lose their virulence.

Bacillus hemorrhagicus (Kolb). — Isolated in pure culture from the cadavers of three persons who died in three or four days with fever, hemorrhages in the skin and mucous membranes.* Besides pin-head to twenty-five-cent piece sized hemorrhages in all the organs, the early autopsies show no other changes. The bacilli lie in all sections, especially numerous in the spleen, partially in clumps, partially isolated. Non-motile rods, .8 : 1-2 μ , also in long threads with slight capsule, which, however, is inconstant. They are in great part decolorized by Gram's method. No spore formation. Facultative anaerobic. Superficial colonies in gelatine show serrated periphery; no liquefaction. Upon agar-agar smooth, non-serrated layers. On blood serum thin, moist stripe; the same on potato. Bouillon is first clouded, then (on sixth day) simply a sediment. Slight reduction power. Exact biological description is wanting, as in the preceding bacilli.

A drop of bouillon kills mice in two or three days with numerous multiplication of the bacilli, which are found in especially large numbers in the organs; quite numerous small hemorrhages, and spleen tumor. Guinea pigs are susceptible to infection only on administration of large doses. Rabbits frequently die within one to three days after intraperitoneal injection of $\frac{1}{2}$ to 1 cubic centimetre, with production of extensive hemorrhages. Bacilli everywhere. Doves are not susceptible. In dogs hemorrhages are also noted, even after twenty days, if they do not die too quickly, as do rabbits. Sterilized cultures in doses of .3 to 3 cubic centimetres produce in experiment animals phenomena similar to those caused by the living bacilli.

Bacillus hemorrhagicus velenosus. — A non-motile bacillus, isolated by Tizzoni and Giovannini in a case of purpura hemorrhagica, secondary to an impetigo contagiosa, which came to autopsy. The bacillus occurred, associated with staphylococcus pyogenes aureus, in the hemorrhagic foci of the skin occupied by impetigo pustules, also in the liver, and venous blood, but not in the spleen and kidneys. The staphylococcus was found in the pure hemorrhagic foci of the skin and also in the kidneys.

The bacillus is pathogenic for dogs, rabbits and guinea pigs, but not for doves and mice. The bacilli multiply locally only (edema); they cause fever, hemorrhagic nephritis, vomiting, bloody stools, and cutaneous hemorrhages. Spleen normal; coagulation necrosis of the liver and renal epithelia; non-coagulability of the blood. Cultures sterilized at 70° C. produce albuminuria; repeated injections of the same immunize against subsequent infection.

In spite of admixture with staphylococci, this bacillus, as its behavior toward animals proves, is said to be worthy of consideration as the excitant of purpura.†

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EYE STRAIN AS A CAUSE OF GASTRO-INTESTINAL NEUROSES.¹

BY M. P. SMITHWICK, M.D., BOSTON.

"A GASTRIC neurosis is the local expression of some constitutional state or nervous irritation arising outside of the stomach." If this definition taken from the "American System of Practical Medicine" is made to include both stomach and intestines, it describes accurately the class of cases on which my remarks are based.

In searching for the cause of a gastro-intestinal neurosis one should avoid "snap" diagnosis. It isn't sufficient to discover astigmatism, deafness, inharmoonious environment, exhausting occupation, or other single cause of nervous fatigue. It is my custom to learn the temperaments of my patient's parents, brothers and sisters; to get a clear mental picture of the early home life, and review carefully the patient's life, endeavoring to see his environment from his point of view. By ascertaining when health commenced to fail it is possible frequently to determine the cause. All this requires time and patience, but often reveals a suitable background for the picture as we see it. Every means of diagnosis that can contribute to an accurate knowledge of the whole organism should be employed. Of course this includes a careful study of the gastric and intestinal functions. The eyes should be examined by an oculist.

One can attempt the removal of all possible causes or commence with the most probable. The latter allows the more intelligent study and is my preference. If, for example, the oculist reports defects to be corrected, and the eyes are probably responsible for the nervous exhaustion, the patient is allowed to wear glasses for a time, only dietetic errors being corrected.

After all possible causes have been considered it might seem easy to determine the real one. A little experience, however, teaches one that digestive neuroses tend to disappear spontaneously for considerable periods, improve temporarily under almost any treatment, and often persist for a long time under treatment that finally effects a cure. It may be impossible to state which of several possible causes was the real cause where all have been removed and the neurosis cured.

Treatment of the digestive tract is frequently necessary, but when once the diagnosis of digestive neuro-

sis is established, our chief aim should be to discover and remove the cause.

The first case which particularly directed my attention to this subject was a barber, thirty years of age, who consulted me in July, 1898, for so-called bilious attacks, from which he had suffered every two or three weeks since he began that work, at sixteen years of age. Previous to that time he was well, and excepting these attacks has always been well. His appetite has always been good, and the only digestive symptoms are moderate constipation and occasionally "sour" stomach. Between attacks headache is present only when he rides on cars, or occasionally when the electric lights are turned on in the shop. An attack may be preceded a day or so by the sensation of a "lump" in the throat, and commences with vertigo, partial loss of sight, nausea, vomiting and, for three or four hours, frontal headache. Symptoms of hyperacidity are more likely to annoy him before an attack.

Physical examination negative, except for exaggerated reflexes. Nothing uniform about gastric analyses. At times delayed motility and hyperchlorhydria.

From July until late in October I dieted and treated him in every way that occurred to me, and then stopped trying; told the patient that I had not helped him at all, and did not know the cause of his attacks. I sent him to an oculist and glasses were ordered for .75 D hypermetropia. The oculist suggested that the attacks might be scintillating scotoma and was not sanguine; I was not, and the patient wore glasses because asked to do so. Some months later he made me a social call, and asked why the attacks had ceased. Apparently he could not believe me when I insisted that glasses and not medicine had done it. Later he broke the glasses and was uncomfortable, but unfortunately for the cause of eye strain the optician repaired them in two days. Since October, 1898, he has had one slight attack and one severe one, the latter in December, 1898.

Early in November, 1898, I was consulted by a man, thirty-two years of age, clerk in a railway office. His work made severe demands on his eyes, and great accuracy was necessary. He was well until June, 1897, when he had an attack of vomiting which he attributed to strawberries and ice-cream soda, eaten after a long bicycle ride. In December, 1897, he was working on dividends, and the coupons were on green paper and caused headache. For a short time he wore glasses fitted by an optician. The attacks were usually worst when his work was most trying, and might be preceded an hour or so by sour taste. Then suddenly would come nausea and intense vomiting. This might last a day or several days. In the first attacks observed by me, there seemed to be no pain, except that at times after vomiting he complained of pain apparently caused by the exertion. Later he seemed to be in great distress. No headache. He was inclined to constipation, and worried much over this symptom, but usually had a dejection every day except Sunday. He was very neurasthenic. There was an indefinite specific history.

Physical examination was negative except for diminished pupillary light reflex, diminished knee jerks, and rather prominent abdomen. No inco-ordination. Several times fecal masses in the ascending and descending colon were palpated. In February, 1899, I referred him to two specialists for an opinion as to

¹ Abstract of a paper read before the Clinical Section of the Suffolk District Medical Society, May 16, 1900.

the attacks being crises of tabes. One thought it probably tabes, but neither felt justified in making an absolute diagnosis of tabes or excluding it. Several gastric analyses failed to explain the attacks. The most constant defect was atony. Feces suggested intestinal atony. He could eat plenty of everything without symptoms between attacks. We all agreed that he should have a vacation, and he arranged to go to Europe for two months.

Before he started it occurred to me that an oculist might cast some light on the case and the report was in part: Right eye $\frac{1}{2}$ D of hyperopic astigmatism; left eye 1 D of hyperopic astigmatism. Some muscular trouble — about 6° esophoria. Pupils react slowly to light.

He received glasses and wore them while in Europe. He travelled almost constantly while there and had several mild attacks. The last week was spent under the care of Dr. Magensdorf, at Kissengen. The treatment, according to the patient, consisted in absolute rest, massage, poulticing of epigastrium and systematic stuffing with boiled rice and beef steak. He gained 8 pounds in seven days. The attacks continued on his return and cost him his position. The excitement of receiving a very desirable position in a New York banking house brought on an attack. He worked three days and then spent a week in the Presbyterian Hospital.

This case is presented as an interesting study, but not as one of this series of gastro-intestinal neuroses. With the exception of being less painful his attacks resemble the gastric crises of 3 cases of locomotor ataxia which I have studied. A year ago this patient announced to me his engagement and asked for a prognosis. I was obliged to tell him that he should not marry, as I feared that the attacks were gastric crises of tabes, but then and since have allowed him to hope that his eyes are responsible. Employment that would not tax the eyes was advised — preferably out of doors. Antisyphilitic treatment was commenced a year ago but patient continued it only during a brief period. Regulation of diet and of bowels and correction of refractive errors have not influenced the attacks.

Following is an analysis of 20 cases representing various types of digestive neuroses. In all the general neurasthenic condition was overshadowed by prominent gastro-intestinal symptoms.

Eye symptoms other than headache were present in 7 of the 20 cases, and 1 of these had normal eyes. Headache was a symptom in 14 cases — all having eye defects. Eye defects were found in 18 of the 20 cases, and glasses given. Fifteen cases had astigmatism, 13 hyperopic and 2 compound. Of these 15 cases 5 had also hypermetropia, 3 muscular trouble, 1 axis "against the rule," 1 opacity of a lens, 2 diminished vision. Two cases had only hypermetropia and 1 myopia.

In most of these cases there were several careful analyses of the gastric contents after Ewald test meals. In certain cases heavy mixed meals were used in testing gastric motor power. The stomach was normal in size in all and in position in 15 of the 18 cases having eye defects. Three had gastropnoxis. The stomach emptied itself with normal rapidity in 3 of the 18 cases, too soon in 7, too slowly in 7, and too soon or too slowly in 1. HCl was normal in 4, increased in 7, and decreased in 7.

Of the hypochlorhydria cases 1 showed free HCl but once in several analyses during a year's observation, but gained 25 pounds in weight. His eyes were normal. All other hypochlorhydria cases had some free HCl most of the time. There was no case of achylia gastrica. (Phloroglucin vanillin was the final test for free HCl.) One cannot be too cautious in making a diagnosis of neurosis in achylia gastrica, in hypochlorhydria showing persistent absence of free HCl, and in cases with obstinate constipation or such constipation alternating with diarrhea, especially when there is increasing debility. Otherwise he may have to regret allowing a gastric or intestinal new growth to pass the operable stage. It is conservative to explore doubtful cases that are losing ground, and imperative if they show pyloric or intestinal stenosis.

Of the specimens of feces examined none showed a notable amount of undigested food. Of the 18 cases with eye defects 8 had normally acting bowels, 6 constipation, 3 a tendency to diarrhea, and 1 either constipation or diarrhea.

That eye strain was the sole cause of symptoms in any of these 18 cases has not thus far been demonstrated. One is not justified in taking away glasses that are apparently curative in order to demonstrate a cure. Presumably eye strain was the cause in the first case. In several other cases it may be a factor of greater or less importance.

In the article on Gastric Neuroses in the "American System of Practical Medicine," Stockton and Jones consider eye strain one of the most prolific causes of functional gastric disturbances.² They consider it the most important factor in causing achylia gastrica.³ They give hyperopic astigmatism as the eye defect most commonly causing nervous affections of the stomach.⁴

Reference to reports of the Massachusetts Charitable Eye and Ear Infirmary shows hyperopic astigmatism and hypermetropia to be the most common refractive errors treated.

While this preliminary report of cases does not make out a brilliant showing for eye strain, I am convinced that it can cause these neuroses. Several of my cases have been almost or quite free from symptoms since they received glasses months ago, but further observation will probably prove this to have been merely a coincidence.

There may be interesting combinations of causes. One patient fifty-seven years of age has been troubled two years with gastric acidity and several years with prostatic hypertrophy. The urine was ammoniacal. To remove the residuum and wash the bladder the catheter had been passed one or more times daily for two years, recently only once a day. A testicle was swollen and had been several times previously. He had taken urotropin almost constantly for two years until a few days previous to consulting me in regard to his stomach. On inquiry I learned that the gastric and bladder symptoms improved and grew worse coincidentally. The gastric analysis showed hyperchlorhydria. He had a small amount of hyperopic astigmatism and slight opacity of one lens. He was unable to recognize people across the street, or small objects near, and his work rendered the latter necessary. His glasses, used only for reading, were correct. He

² American System of Practical Medicine, vol. iii, p. 111.

³ Loc. cit., vol. iii, p. 117.

⁴ Loc. cit., vol. iii, p. 134.

received glasses for constant use enabling him to see clearly. He was allowed to eat what he liked and to use soda mints as he had done for two years. I prescribed "Tritipalm," a combination of triticum repens and saw palmetto with improvement in the force of the stream and diminution of bladder irritability. Soon benzoate of soda was added and the urine became acid. There was still residual urine, but on the seventh day after commencing treatment he voluntarily gave up the catheter and since the nineteenth day there have been no gastric symptoms—two and a half months. Permanent cure in such a case is hardly to be expected.

The object of this paper is to call attention to eye strain as one factor to be considered in searching for the cause of a gastric or intestinal neurosis. The cause or causes can be discovered and must be removed to effect a cure. Treatment, even when based on accurate conception of the kind of neurosis, is from the nature of the case only palliative.

To guard against the injurious effects of eye strain we should recommend the routine examination of children's eyes by oculists at the earliest practicable age.

A NOTE ON RECTAL FEEDING IN PEPTIC ULCER.¹

BY GEORGE G. SEARS, M. D., BOSTON.

THE two following cases have been selected as a text because they are interesting in themselves, beside illustrating a point in the treatment of peptic ulcer of which I wish to speak very briefly:

CASE I. Margaret H., age eighteen, a domestic, admitted to the City Hospital, July 19, 1898. Although never strong, she had had no special symptoms, and was in her usual health until her catamenia began three days ago. Since then she has several times vomited a dark, bloody material, which once "amounted to a pailful." She was in fair flesh, but anemic, the red cells, a few days after entrance, numbering 2,600,000 and containing but 25% of the normal hemoglobin. There was general tenderness over the upper abdomen, especially on the right of the median line. She was given nutrient enemata containing one egg in a pint of peptonized milk every six hours, and for the first week received nothing by the mouth; she was then allowed small quantities of water, although she complained but little of thirst or discomfort. After ten days the rectum became somewhat restive, and five minims of laudanum were added to each enema, but they were omitted two days later as no longer necessary. Her color improved and her weight apparently increased. On the fourteenth day small quantities of peptonized milk were given by the mouth, and from that time the diet was gradually increased without discomfort. On August 7th, twenty days after entrance, the red cells numbered 4,000,000. She was discharged at her own request on August 26th. Her temperature throughout her stay at the hospital was somewhat irregular, but it rarely exceeded 100° F.

She was readmitted on the surgical side on January 20, 1900. Since her discharge a year and a half ago she has complained at times of dyspeptic symptoms

with pain and nausea, but she has never vomited blood. During the last three months she has twice been confined to bed with a sharp attack of abdominal pain accompanied by vomiting. On the day before her entrance, without apparent cause, she had acute pain in the epigastrium, the left side of the abdomen and the left shoulder, which lasted about five hours. There was no vomiting and no blood in the stools. She was restless and feverish during the night, but in the morning she felt much better. Her color was good and she did not look ill. The temperature was 102° and the pulse 112. There was no abdominal distention, but there were spasm and tenderness of the left rectus muscle and the whole left side of the abdomen, with extreme tenderness over the epigastrium. Operation by Dr. Munro by median incision in the epigastrium showed a perforation about one-quarter of an inch in diameter through which some curds could be pressed, situated at the pyloric end of the stomach close to the lesser curvature. There was evidence of an old peritonitis in the neighborhood which may have accounted for her irregular temperature during her first visit to the hospital. A few flakes of lymph were found in adjacent coils, but no pus. The perforation was closed and the patient was discharged on March 2d.

CASE II. Moses P., age 66, a shopkeeper, of excellent habits, was admitted January 15, 1900. Since he was twenty-five years old he has been subject to attacks of indigestion resembling the present one in many details. They have recurred about every six months, and have been growing worse with increasing years. The prominent feature has always been pain which is relieved only after vomiting. The vomitus has never contained blood, but during an attack ten years ago, he noticed that the movements were tarry. He always becomes very pale and has a slightly yellowish tinge to the skin. On two occasions he has been so weakened that he has been confined to the house for three months. He has been losing flesh for the last three or four months, but the acute symptoms did not begin until three days before entrance, when he lost his appetite and began to have sharp pain in the epigastrium, which was relieved rather than increased by eating. After an injection he passed a small tarry movement. Two days later while sitting in a chair he suddenly felt faint and lost consciousness. On coming to he vomited considerable brownish-red blood.

The patient was very anemic and had evidently lost considerable flesh. The heart was not enlarged, but systolic murmurs were heard at both apex and base, the latter disappearing during his stay in the hospital. The peripheral arteries were in good condition for a man of his age, and the liver was of normal size. Pressure over the epigastrium was not painful, but there was slight spasm of the right rectus muscle. The feet were slightly edematous. The urine was negative. The red cells numbered 2,536,000. All food by the mouth was stopped, and he was given an enema containing one egg, two ounces of beef juice, one ounce of brandy, and enough peptonized milk to make a pint, every six hours. These were continued until February 3d, but he began to receive small quantities of peptonized milk on January 23d, as he was growing restive and complained of thirst. On the former date the red cells numbered 2,400,000, with 30% of hemoglobin. He steadily improved, and was

¹ Read before the Clinical Section of the Suffolk District Medical Society, May 16, 1900.

discharged at his own request on February 26th, when a blood count showed 3,756,000 red cells, with 35% of hemoglobin.

Apart from the interest which attaches to the first case from the success which followed Dr. Munro's prompt resort to surgical measures, and to the second from the length of time, apparently over forty years, during which the process was active, both cases illustrate the tolerance of the rectum to much larger enemata than are usually prescribed. Theoretically, the best treatment of peptic ulcer is by rest of the stomach, the more complete the better and for the longest possible time, but this cannot be obtained in every case, owing either to the patient's objections to the incidental discomforts, of which the chief is thirst, or to the intolerance of the rectum which may soon come on; yet, in an experience with a considerable number of cases requiring rectal feeding, during the past three years, intolerance has not seemed to be acquired sooner with the larger than with the smaller amounts, while the comfort of the patient is certainly enhanced and thirst alleviated by the larger quantity of fluid. The routine method has been to give a high enema of plain water, early in the morning. This is retained by the patient, if possible, for an hour, at the end of which time, if it has not come away, an enema of soapsuds is given to cleanse the rectum for the work of the day. The nutrient injection of peptonized food is then given through a half-inch soft-rubber tube. The patient's buttocks are raised and an attempt is made to get the fluid beyond the sigmoid flexure, but whether ever successfully or not I must leave to the anatomist to decide. At all events, it is possible to insert a tube of this calibre, which is almost too stiff to bend up on itself within the narrow limits of the rectum, from 8 to 12 inches. The fluid is injected slowly, the tube being gradually withdrawn. Efforts at expulsion are restrained by a pad in the usual way. The enemata are repeated every six hours.

It is not claimed that all the necessary nourishment can be given in this way, yet in the first case the improvement in the anemia and the apparent gain in weight are encouraging signs, and show that it is possible to prevent the patient at least from losing ground.

ACHLORHYDRIA; ITS EFFECTS AND THEIR TREATMENT.¹

BY H. F. HEWES, M.D., BOSTON.

OF 250 cases of disorder of the stomach which I have treated during the last few years, the condition of achlorhydria was present as a constant condition investigated by several analyses at considerable periods of time in 15. Of these cases 6 were cases of simple chronic gastritis, 4 cases of gastritis with carcinoma of the stomach, 1 achylia gastrica, 3 cases in which the achlorhydria was the only abnormal objective sign.

The importance of the recognition of this condition arises from the fact that it may itself, regardless of the nature of the organic lesion of the body with which it may be associated, be a cause of special definite disturbances in the process of digestion, and thus a special treatment directed to remedying its effects is necessary in cases where it exists. The results of this absence of hydrochloric acid in the

stomach are (1) an absence of peptic digestion, (2) an increase of bacterial fermentation in the stomach and intestine.

Where the motility of the stomach is undisturbed, as is not infrequently the case with achlorhydria, the absence of peptic digestion is of little or no effect upon the organism, since the intestine can perform this function of proteid digestion. Our first aim in the treatment of this condition is, therefore, the preservation or adjustment of the motor function of the stomach. The proteid diet must be in such a form and given in such a manner that it can be easily passed through the stomach, the starches with the cellulose envelope broken so that salivary digestion may occur freely in the stomach.

In some of my cases the achlorhydria has existed for years and it is only when the motility of the stomach becomes affected that the patients have symptoms of stomach trouble and come for treatment. A proper regulation of the diet, with a regimen of rest after meals, and regular out-of-door exercise and exercise of the abdominal muscles, with strychnia or hydrochloric acid and strychnia given internally, soon causes in these, as well as in the more numerous cases of hypochlorhydria, a relief of symptoms, and presumably a readjustment of function.

The device of supplying the hydrochloric acid for peptic digestion by administration of the artificial acid, often useful in cases of hypochlorhydria where the deficiency of acid is slight, cannot be utilized with success in achlorhydria, as it would be necessary to use excessive amounts of the acid—a quart of dilute hydrochloric acid, for instance, with a meal.

That an abnormal fermentation occurs when the stomach contents lack their normal antiseptic, the hydrochloric acid, has been definitely proven by Dubarry, Bunge, Simon and others. This causes little or no effect in the stomach or intestine where the motility is normal, although the quantity of bacteria or fermentative products which are passed into the intestine and the fermentation which occurs there are increased over normal even in these cases. (*Vide* Simon's "Researches upon the Conjugate Sulphates of the Urine in Cases of Hypochlorhydria.")

In cases where motility is affected a considerable amount of fermentative products is formed, causing frequently disturbance of both stomach and intestine. In these cases marked symptoms of intoxication and of intestinal sepsis, as drowsiness, urticaria (?), intestinal flatulency, diarrhea, may occur. The treatment of this second result is, therefore, like that of the first, primarily the adjustment of the motility of the stomach. Where this function is intact antiseptics destined to act in the stomach (salicylic acid, resorcin, or large quantities of HCl given frequently throughout digestion) or in the intestine (salol) may be useful in limiting fermentation. In cases where intestinal sepsis is suggested by symptoms the antiseptic treatment must be applied and foods which do not easily undergo fermentation must be given.

The presence of achlorhydria can be determined by a simple method of analysis of the contents. A qualitative test for free HCl determines whether or not we are dealing with a marked condition of hypochlorhydria. A further qualitative test of the contents for the presence of combined HCl² determines whether

¹ Abstract of a paper read before the Clinical Section of the Suffolk District Medical Society, May 16, 1900.

² Hewes: Analysis of Gastric Contents (Ewald-Sjoqvist Test). Journal, January 4, 1900.

we are dealing with a simple diminution of HCl (hypochlorhydria) or a total absence (achlorhydria). As I have demonstrated by an extended study of cases of stomach disorders, the subjective symptoms are no index of the nature of the chemical abnormality present in three-fourths of our cases, cases of hypoacidity and hyperacidity frequently having similar symptomatology.

The diagnosis of achlorhydria can be made therefore only by analyses of the gastric contents. And these analyses should be made at various periods of digestion and upon several occasions extending over a considerable period of time. Once diagnosed, the treatment of the results of the condition is very satisfactory.

PHTHISIS; SOME CAUSES OF FAILURE IN ITS CLIMATIC TREATMENT.

BY WILL HOWARD SWAN, M.D., COLORADO SPRINGS, COL.

DURING a short residence in Colorado the writer has been so many times impressed with the unsatisfactory results in the cases of some pulmonary invalids sent here, either from the far advanced stage of their disease, or because they were landed here with little or no means of support, unable to work and among strangers, or because of an erroneous idea of the sort of life they should live, that he thinks a few words of caution not inappropriate.

We consider that the cardinal means of treatment of pulmonary tuberculosis are: (1) The maximum of pure, fresh, dry air and sunshine; (2) abundance of nourishing food; (3) rest physically, and freedom from nervous care and worry.

All these factors are very happily met here. An altitude of 5,000 to 8,000 feet above the sea level gives pure, dry, cool and bracing air; the soil is largely sandy and porous; the winter months, during which more invalids come here than at any time of the year, give a possible nine hours daily of sunshine, and the statistics of ten years show an average of three hundred and fourteen clear or partly clear days a year.

The total yearly rainfall averages 14.46 inches, and of this the normal precipitation is 11.18 inches during the five months from April to August, inclusive, leaving 3.28 inches to fall during the remaining seven months, from September to March, inclusive.¹

The annual mean *relative* humidity for two years, 1893 and 1894, at Colorado Springs was 47%, and the annual mean *absolute* humidity for the same period was 1.48 grains.²

The climatic conditions are such that the invalid can live out of doors nearly all of the winter days, and may sleep out on protected balconies with advantage all winter.

Proper and abundant nourishment is as well provided here as elsewhere. Rest, physical and nervous, and recreation are as easily possible and rendered very agreeable to most sojourners.

But the three classes of invalids spoken of, unfortunately, unless the conditions named are changed, would be much better and be much happier, were they to remain at home, among their home friends and associates.

It is true that many cases with far advanced disease have done well here and have been for years living active, useful lives. But the outlook for such cases is much less favorable, and they require much more prolonged rest and careful feeding, than those in earlier stages of the disease. If such an invalid is financially able to live a *prolonged time* in this country, with an abundance of proper food and the necessary rest and freedom from worry, there is no reason why he should not do it, and with the feeling that he is giving himself the best chance of improvement. But for *any* person suffering from pulmonary tuberculosis to be sent to this climate with no means of support, or so little that he must work when he should be resting — perhaps in a vocation in itself harmful — and with poor and insufficient food and the worry attending such circumstances, is to impose more on the kindness of a favorable climate than a rational view of matters will justify. Such a person would have a better chance of recovery were he to remain in a less favorable climate, if he could there have the other measures of treatment with the freedom from care and worry so necessary if he would make a winning fight against a fatal disease.

People here are very philanthropic and are constantly helping such invalids, but the sad fact remains that many cases come here with bright prospects for recovery, but have to go home before any permanent good is accomplished, or have to go to work when rest is a necessity to them. There are good hospitals and sanatoria scattered throughout this region, but most of them have to make some charge to all patients. Moreover many come with the expectation of radical cure in a few weeks of a disease which should require many months.

Other invalids fail to do well simply from an erroneous idea that simply *living* in this climate will cure, without regard to the *manner* of living. It is not an unusual occurrence to see a patient, after three or four months' residence here, in a materially worse condition than on his arrival; and to find that he came with the belief (too often from instruction from his home physician) that if he will "live out of doors," exercise, ride horseback, play golf, tennis, — do anything to keep him in the open air, — he will get well. Very likely he may have climbed Pike's Peak, or have done some equally foolhardy thing within a few days of his arrival. The same person may have been kept very quiet while at home. Now it is a definite fact that a person coming here from a lower altitude, till he is adjusted to the change, fatigues much more easily than at home. At the same time the bracing, exhilarating air often acts as a constant nervous stimulant which spurs one on to exercise without his feeling fatigue, till at length his physical limit is exceeded, his powers of resistance depressed to such a degree that the tubercle bacilli or other germs within him seize their opportunity, a fresh or extended infection occurs, and a partially quiescent process is fanned into activity, which may require weeks of absolute rest and more careful nursing and attention before the patient can safely go about again.

The writer would urge, then, three points: (1) Do not send patients with far advanced phthisis to Colorado, unless they are able to make the change without serious fatigue, and unless they can live here in the manner they should and for a *prolonged period*. (2) Do not send *early* cases, unless there are assured

¹ Handbook of Medical Climatology, by S. E. Solley, p. 254.

² Loc. cit., p. 253.

means for proper hygienic living for a period sufficiently long to get the patient well enough to earn, in part at least, his living, and to find employment. How long will depend upon the individual case and his progress, but, roughly speaking, three or four months at least. There are many openings for employment, but more people looking for the desirable ones. (3) Most important of all, instruct the invalid to rest and *keep* quiet after his arrival until some one competent to advise him considers it safe to begin to exercise; and then have his manner of life and hygiene directed from time to time, according to his progress and condition.

Medical Progress.

REPORT ON THE DISEASES OF CHILDREN.

BY T. M. ROTCH, M.D., BOSTON.

FUNCTIONAL CARDIAC MURMURS.

IN an article on this subject, Dr. Jacobi¹ states that changes in the shape of the chest wall, such as irritate the heart, alter the character of the cardiac sounds. In 3 cases of rachitic infraction of the ribs Hochsinger observed distinct cardiac murmurs; Steffen the same in the common forms of rachitic deformities of the chest. Jacobi then says that "during the past forty years I have had many opportunities of publicly demonstrating, with or without apparent hypertrophies of the heart, more or less marked cardiac murmurs attributable to the triangular or quadrangular shape of the rachitic thorax, the walls of which, being no longer elliptical, touch a larger surface of the heart. These murmurs are not always the same. Within a few minutes the well-marked cardiac murmur of a baby sitting erect or bent forward may change into a muffled sound when the patient lies down, which is significant of the mechanical irritation caused by the chest wall. Indeed, this muffled sound and the murmur differ only in degree. The former may often be produced by the pressure of the stethoscope on the flexible ribs of the young. Such observations as noticed by Henoeh, and also by Hochsinger, who, however, speaks only of a coarse heart sound, may readily be verified, provided the age of the patient is taken into account. They will be the more positive the younger the baby and the more flexible the ribs. Now and then the cardiac sound may be changed by pressure over the pulmonary artery.

All those murmurs which cannot be explained by any anatomical alteration of a valve, or of the myocardium, should be called functional. The causes, however, which are held responsible for functional murmurs are altogether too numerous. To say that any single theory explains their etiology is not doing justice to the case. Indeed there are but few conditions of the heart and blood vessels to which "functional murmurs" are not traced back. Thus the imagination or the diagnostic skill — or its absence — of the writer has always a great deal to do with their alleged nosogeny. Protracted diseases and convalescences, losses and abnormal conditions of the blood, all forms of anemia, chorea, poisoning by alkalies or by

acids, acute intoxications and long continued eruptive fevers, septic processes, irregular contractions of the myocardium, degeneration of the papillary muscles, minute disturbances of the valves or of the blood vessels, chronic myocarditis, and fatty degeneration, are all charged with causing "functional murmurs." Nervous influences also come in for their share. Undoubtedly, strong emotions and excitement, mainly in the young and those very impressionable, influence the heart in the most varied ways, from temporary palpitation to change of structure.

As far as the heart is concerned, its muscular labor varies according to the amount of support it finds in neighboring organs. The inability of lying on the left side, which is experienced by most healthy people, is caused in this manner. In that position the heart is more flaccid and requires more exertion to overcome resistance, a fact which is best shown by the increase in the number of the respirations.

Functional murmurs are described as soft and low, short or long, not always blowing, and are frequently combined with, or are the termination of, a more or less normal heart sound. In almost every instance they are systolic; in the adult they are mostly aortic, and are audible in the carotid; in the child they are more frequently found over the pulmonary or over the pulmonary and mitral regions. In regard to the locality and extent of their audibility there have been many differences of opinion; still there appears to be unanimity in regard to their inaudibility posteriorly in almost every case. A functional murmur may persist weeks and even months, but it has not the uniform quality of an organic murmur. It is more or less soft, or loud, or prolonged. Many disappear quite rapidly, or, having vanished, return. In this respect they differ widely from organic murmurs, which are more persistent as far as time and character are concerned. It should, however, not be forgotten that organic valvular murmurs may disappear either through recovery from endocarditis or through the establishment of compensation, but in these cases they diminish in loudness and duration only very gradually. Nor should it be overlooked that an increased frequency of the pulse, with the frequent and insufficient contraction of the heart muscle, thin blood vessels, and shortened valve excursion, may conceal a murmur which was present when the pulse was slow, or which may return when a cardiac stimulant reduces the number of heart beats.

Duplicated sounds should almost never be taken to be accidental or functional. They are nearly always organic and are of more value than Leube appears willing to assume, both the splitting of the second sound (gallop rhythm) and that of the first (*rappel* of the French). The former is often observed in aortic stenosis, chronic nephritis, sometimes also in conditions of utter exhaustion, and in very bad cases of chlorosis; the latter in mitral stenosis, sometimes with oliguria, followed by polyuria. Both of them are rare in infants and in the very old. A fine specimen of the last anomaly has been under my observation in a boy ten years old with the diagnosis of mitral stenosis and chronic myocarditis in my division at Roosevelt Hospital.

Vascular murmurs should not easily be mistaken for cardiac; as a rule they are transmitted. They are very rarely confined to the arteries of the neck, either in the adult or in the young. The relatively

¹American Medical Quarterly, September, 1899; Pediatrics, February, 1900.

large size of the carotid in the young, mainly in the rhachitic young, with its lowered blood pressure, may give rise to an occasional soft murmur. This infantile condition of the carotid (and basilar) artery accounts for the murmur which is often audible over the open fontanelle and was (rather erroneously) attributed by Fisher (Boston, 1835) to rhachitis only. It is quite possible that the irregular shape of the rhachitic carotid canal contributes to the murmur which has always been mentioned among the "functional." If, however, the large size of the artery, with its consecutive diminution of blood pressure, or an anatomical change in the carotid canal, or both, cause the murmur, to what extent are we justified in calling functional the murmur which is due to tangible anatomical causes?

Venous murmurs should never be mistaken for those originating in the heart. They are frequent, mostly about the chest and neck, and are generally found in anemic adults, less so in anemic children, but still less in infants, and never, it appears, in babies suffering from atrophy. The jugular vein is a frequent seat of murmur, particularly when the *bulbus venæ jugularis* is large compared with the size of the vein; in these cases the murmur is explained by the formation of a vortex. The *venæ anonymæ* also exhibit murmurs, which are combined with those of the jugular, are heard on both sides of the sternum, and are not isochronous with the sounds of the heart. The number of very young children who develop other than organic murmurs is small. That is why, while venous murmurs are frequent in the pernicious anemia, leucocythemia, scorbutus and hemophilia of the adult, even when cardiac murmurs are still absent or not marked, they are often missed in those of the young child. In 50 cases of infantile scorbutus I do not remember to have ever seen them.

The heart of the young is comparatively large, heavy and healthy. Its weight in the newly born is .89% of the body-weight; in the adult, .52%. In the newly born the cavity, however, is small, 23 cubic centimetres, compared with 100 cubic centimetres at the seventh, and 140 cubic centimetres at the fifteenth year. Its muscle is massive, equally thick on the right and left sides, its contractions rhythmical and energetic and quite frequent. That is why the valves, which are small and elastic, vibrate easily and quickly. During the first five years there is an increase of the heart in bulk and weight, but none in circumference. That is why the area of dulness in early age is extensive and the impetus quite marked. The cavities dilate rapidly only after the fifth year, and the large arteries, mainly the carotid and subclavian, lose their disproportionately large size only after the seventh year.

This condition of things prevents a predisposition on the part of the infant heart to murmurs of any kind. Indeed they are very rare in the first four years. This was clearly stated by me in the *Brooklyn Medical Journal*, March, 1888, where, after remarking that authorities do not agree on this subject, I said, "the heart exhibits functional murmurs seldom. Whenever there are murmurs present in the infant, it is safe to attribute them to organic disease rather than to mere functional disorder." Fifty years ago Charles West expressed the opinion that they were frequent, but it is very probable he mistook or meant vascular murmurs. Gerhardt thinks that they are rare; Biedert and Steffen, how-

ever, frequent. Bouchut believed them to be very frequent, under the impression that what he described as a proliferating endocarditis (*endocardite végétante*) in the newly born must necessarily cause murmurs. What he so denominated was, however, nothing but Albini's valvular nodes, or the "blood cysts" of Luschka and of Parrot, recently again described by Giovanni Berti ("*Noduli Lematici delle Valvule Cardiache*," 1898), that is, small elevations on the lower side of the valves containing or depending on minute hemorrhages. They are very frequent and liable to disappear, but do not always do so. They are apt to be on the mitral valve; are found in the newly born, and persist, and suggest the diagnosis of intra-uterine heart disease; but are found in the left cardiac cavity, contrary to the rule according to which fetal inflammation or arrest of development occurs in the right side, and do not result in either dilatation or hypertrophy. Such cases, which I have had an opportunity to demonstrate in my clinic perhaps once a year, must surely have been observed by Hochsinger when he absolutely and positively denied the occurrence of functional murmurs within the first few years of life. Surely these murmurs when found cannot be called functional; they are organic.

THE USE OF INCUBATORS.

At the stated meeting of the Section on Pediatrics at the New York Academy of Medicine, November 9, 1899, several very important reasons were offered for the high mortality among premature infants. Among the causes particularly noted were an insufficient supply of fresh air, lack of development of the lungs and chest walls, atelectasis, improperly cleansed incubators leading to various forms of infection, and lastly improper feeding.

The opinion was given that when modified milk was used a very low percentage of fats and proteids should be insisted upon. In the *Revue mensuelle des maladies de l'enfance* for December, 1899, is an article by Prof. V. Hutinel detailing the results of his experience in the use of incubators at the *Hospice des Enfants Assistés*. The high mortality among incubator babies he attributes to the following causes:

(1) Some infants are not viable; their organs being incompletely formed cannot perform the functions necessary for the maintenance of life.

(2) Others present malformations inconsistent with life, or are affected with an hereditary taint, such as syphilis, which has already done irreparable damage at the time of birth.

In these two cases the incubator is useless; if it protects against cold, which is all it can do, it cannot perfect undeveloped organs or cure hereditary blemishes.

(3) Some babies which seem well at birth fall ill soon after; they are put into an incubator and die there. In these cases the incubator is not to blame.

(4) This class includes premature infants who are apparently well developed and comparatively healthy when placed in the incubator. It seems if they ought to develop but they die after a few days. The author considers that they die from various infections. These are not simple surface infections, for the actual presence of the pus-producing organisms in the blood has been frequently demonstrated. The infections are due to the lack of resisting power on the part of the infantile mucous membranes which cannot oppose

the entrance of germs if the surrounding atmosphere is contaminated. That the air comes from outside is not sufficient to eliminate contagion, as the incubator must be opened from time to time and the patients are attended by those who may readily infect them. The author insists most strongly upon a well-ventilated and sunny room for incubators, and holds that in hospitals there should be at least three apartments devoted to the rearing of premature infants, one for the healthy, one for the ailing, and one for the ill ones. Germs undoubtedly flourish in an incubator, with its constantly elevated temperature, so that an infant should be removed just as soon as it is able to maintain its temperature at 98.4° F. for thirty-six or forty-eight hours. It should then be enveloped in cotton and surrounded with hot bottles. Plenty of fresh air and sunshine is required. If one of these babies falls ill it must be separated at once from the others. In regard to putting it back into the incubator, infection when it occurs is more likely to be begun outside. Incubators should be so constructed that they can be readily cleansed. The temperature changes involved in doing this are of little importance provided they are not too prolonged. By following these principles the author has lost but 3 out of 21 cases, averaging less than four and a half pounds.

THE SPLEEN IN RHACHITIS.

The investigations made by Dr. Sasuchin² have shown that the spleen in rhachitis is invariably enlarged, with the exception of the cases of clearly pronounced general atrophy in which the spleen is of normal size and weight, or below normal. A second marked characteristic is more or less thickening of the capsule and the increase in the consistency of the organ. The third peculiarity of the rhachitic spleen is the significant anemia of the organ and the diminution in the number of Malpighian bodies, which in children are otherwise well developed, but in these conditions are smooth and hardly perceptible. On section the spleen is of a blood-red color and the trabeculae clearly marked by interlacing threads, and on drawing the knife over the cut surface there remains upon the edge blood and pulp tissue. The characteristics described hold true in all cases of rhachitis, and in general indicate approximately the intensity of the changes in the bones. Only in occasional cases was the spleen markedly enlarged, or did it show all the characteristic markings where there were unimportant alterations of the bones.

In 66 cases of rhachitis the spleen was enlarged in 12, that is, 15%; in 2 cases its weight was approximately normal, and in 2 cases below the average weight of the corresponding age. In both of these cases the whole body was, however, very much atrophied.

The author presents the accompanying table of the spleen in rhachitic cases.

Only those cases were taken into consideration in which the rhachitis was not complicated by any disease which could exercise an influence upon the size of the spleen, and the author made use only of the bodies of children dying of intestinal disorders and catarrhal pneumonia. In all the cases the alterations in the bones were clearly indicated. In the 15 cases studied the microscopic changes were very

marked in 10, and in the remainder important pathological changes of lesser degree were found. From the 11 cases in which the microscopic and macroscopic appearances of the spleen are described in detail the writer draws the following inferences:

He considers the process to be an interstitial splenitis. The fibrillary connective tissue in considerable quantity divides the spleen into island-like areas, which consist of a small number of lymphatic cells embedded in a thick reticulum of ground substance. Moreover, in all the preparations the walls of the great vessels were found to be thickened and the lumina narrowed. New formation of connective tissue occurs with the above processes and presents the appearance of a peri-arteritis. The veins are in sharp contrast, their lumina being widened. In the cases in which the changes were sharply marked there was also a perceptible alteration of the intima, which appeared thickened; there was endothelial swelling, and the lumina were still more narrowed. The inflammatory appearances showed themselves by the appearance of epithelioid cells of irregular form with turbid, very colorless protoplasm, and an indistinctly circumscribed nucleus which stained poorly, like the

SPLEEN.

Age.	Body weight, grammes.	Length, centimetres.	Breadth, centimetres.	Thickness, centimetres.	Weight, grammes.	Normal weight of spleen, grammes.
2 months, 7 days.	1,600	4.6	3.0	1.3	8.0	11.2
3 " "	4,500	7.4	4.0	1.5	27.0	22.4
5 " "	3,600	5.5	4.8	1.8	20.0	16.0
5½ " "	5,200	7.5	5.0	1.9	38.0	16.0
5 months, 20 days.	3,900	6.6	4.8	1.5	37.0	16.0
6½ " "	4,000	6.5	3.8	1.1	16.0	16.3
6 months, 20 days.	4,300	8.5	5.0	1.5	34.0	16.3
8 " "	4,500	8.3	3.5	1.5	20.0	17.4
10 " "	5,200	7.2	4.2	1.6	24.0	17.8
1 year.	5,700	7.0	5.0	1.6	26.0	17.8
1 year, 3 months.	6,050	7.0	4.0	1.4	21.0	20.4
1 " 10 " "	5,900	10.0	5.8	2.3	51.2	20.4
2 " 5 " "	Light.	7.0	3.4	1.4	20.0	26.0
3 years.	5,500	6.0	3.2	1.2	12.0	26.0
3 years, 2 months.	6,900	7.6	3.5	1.7	42.0	35.0
3 " 8 " "	7,200	8.0	4.8	1.8	48.0	35.0

nucleus of a round mononuclear lymphocyte. The nucleus had a round or oval shape. Epithelioid cells occupied for the most part the centre of the follicle, which at times consisted exclusively of these cells. One by one these cells lose their nuclei and contour, and finally they are transformed into a homogeneous mass. The writer is disposed to consider this process as a chronic productive inflammation, which is accompanied by an increase of the epithelioid cells with a subsequent fatty and albuminous degeneration of the same in the centre of the follicle. Moreover, the anatomical pathological changes described were accompanied in certain cases by an infiltration of the pulp and follicle with red blood corpuscles which were converted in some instances into masses of pigment. Similar inflammatory appearances in many preparations of the spleen in children who were not rhachitic, but who had died of diphtheria, catarrhal pneumonia and enteritis, were found, but in these cases the changes were considerably less marked. Whether the higher degree of inflammatory appearance bears any relation to rhachitis, or whether it is present to the same extent in other conditions in which the spleen appears to be more severely involved

² Jahrb. f. Kinderheilk., 51, der dritten Folge, Bd. 1, II. 3, March 13, 1900, von Dr. Med. P. N. Sasuchin.

than in the control cases, the writer is not able to determine definitely from the cases under his observation. Stilling² who investigated the spleen in catarrhal pneumonia and diphtheria found that large cells appeared in the centre of the Malpighian bodies and exceeded in size by three times that of the lymphocytes, and which showed a faintly colored granular protoplasm with round or oval nuclei. These cells were found in groups or singly. In the first case they occupied the whole central space of the follicles, which appeared less intensely stained than the periphery. Similar alterations were also found in cases of rachitis. Moreover, he observed that almost all around the follicles were spaces bounded on either side by endothelial cells (venous sinuses, according to Recklinhausen) and which furnished the source of the increase of the cells.

The question as to how long the rachitic poison takes to bring about the characteristic alterations in the spleen can only be answered in the following way: The youngest case in which rachitic changes were found in the spleen was two months. Whether these changes had to do with congenital rachitis could not be decided for lack of known data. The oldest child with rachitic changes showing a thickening of the trabeculae and reticulae, but without inflammatory appearances, was a girl of four years who died of an injury to the skull and whose spleen was macroscopically quite normal.

If one holds to the opinion that the appearance of the spleen in rachitis is dependent on the complicating diseases, it is not at all clear why one and the same picture prevails when the complications differ, why the appearances described were present in all the cases described, why in many cases the degree of interstitial inflammation corresponded in degree to the intensity of affection of the bony system, and why in the control cases of catarrhal pneumonia and enteritis without rachitis they were not present, or if present were of much less degree. As the changes in the spleen which have been described suggest the appearances which occur in syphilis and tuberculosis, these diseases were carefully excluded in the cases investigated. As a result of these alterations in the spleen the writer concludes that the spleen as a blood-manufacturing organ may be considerably impaired, and he suggests the careful examination of all the blood-manufacturing organs in the early stages of rachitis, as perhaps by this means some light might be thrown upon the etiology of the subject.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, May 16, 1900, Dr. H. F. VICKERY in the chair.

Dr. G. G. SEARS presented a short communication entitled

A NOTE ON RECTAL FEEDING IN PEPTIC ULCER.¹

¹ See page 446 of the Journal.

² Fragmente zur Pathologie der Milz. Virchow's Archiv, Bd. ciii.

Dr. SMITHWICK: It seems to me if nutrient enemata can be given successfully in such large quantities that one of the chief objections to depending on nutrient enemata in these cases is removed, and that is, that the patients lose strength. The idea is wholly new to me and I think it is a very valuable one.

Dr. BOLAND: In a practice of twenty years I cannot say that I have ever fed a patient satisfactorily by the rectum even temporarily. I have used a soft-rubber tube and have only succeeded in distending the rectum the first four or five inches. Dr. Sears uses a stiffer tube and possibly gets past the sigmoid flexure. Probably there has been something wrong in my technique. I am glad to hear the doctor's encouraging results and shall try again.

Dr. VICKERY: I should like to ask Dr. Sears if he will tell the society in what proportion of cases he is successful in giving a pint at a time.

Dr. SEARS: I asked my house officer today that question in order to get another opinion. We have used this method in all cases which required rectal feeding during the last eight months, so that he has had quite a little experience. He replied that he did not think that any more discomfort was caused by the larger amounts. Personally I should say that I cannot remember a case where I have not been as successful in this way as in the other and intolerance has come on no sooner. Many of the patients have continued to take them for two weeks. I do not remember having kept them up longer than that, although they were not stopped on account of the condition of the rectum. One of the most remarkable things occurred in the first case, where the patient seemed to gain weight. Of course, the enemata should be given to stay and it does make considerable difference how they are given. They should be injected very slowly, and if expulsive efforts on the part of the patient occur it is better to wait until they have stopped before continuing. I have found that some nurses are more successful than others, but they have been given in all my wards. The first injection is as large as the succeeding ones.

Dr. VICKERY: Certainly it would be a great improvement in rectal feeding if a pint could be given at a time.

Dr. H. F. HEWES read a paper on

ACHLORHYDRIA; ITS EFFECTS AND THEIR TREATMENT.²

Dr. SMITHWICK: I should like to ask if Dr. Hewes has ever seen the secretion of HCl re-established in any of these cases?

Dr. HEWES: I have never seen the secretion re-established in a case in which I had found the absence of free or combined HCl a constant feature during a period of one or two months. It is not uncommon to find absence of secreted HCl upon single examinations followed by presence of HCl upon examination a few days or weeks later. The cases which I have classed as achlorhydria have shown a constant absence for periods of three months or more.

Dr. SMITHWICK: My experience is confined to a few cases I have seen in the clinics of some of my friends; simply had them under observation. My experience is the same. I have watched some of them for months and never seen HCl re-established.

² See page 447 of the Journal.

DR. M. P. SMITHWICK read a paper entitled

EYE STRAIN AS A CAUSE OF GASTRO-INTESTINAL DISTURBANCES.*

DR. FAXON: I can give a case in point of a little boy of eleven who was suffering extremely with headache, eyeache and pain in the epigastrium. Any study or persistent use of his eyes would bring the same tendency to headache, eyeache and blurring and pain in the epigastrium. On examination the little fellow had eye strain and astigmatism. I do not think the errors have been corrected yet and I cannot speak of the results.

DR. COGGESHALL: I am very glad to see that some one has taken the trouble to call the attention of the society to this subject of eye strain in connection with indigestion and I think it is a thing that has been altogether too much overlooked by the general practitioner. We all know that headaches come from eye strain, and if the patient has any kind of headache many a doctor will send him to the oculist, and some of us can differentiate an eye headache and predict that glasses will cure the headaches, but I think very few of us realize how often, according to my experience, you can have persistent chronic indigestion which is apparently due entirely to the eyes. I think I can quote at least 9 cases in the past seven years where I have had complete cure of the indigestion, after every attempt at dieting and administration of all sorts of drugs for the indigestion itself had failed, on sending the patient to the oculist. In my experience they have been to great extent cases that did not have any headache accompanying indigestion, no attacks of sick headache, bilious headache, so commonly recognized as due to the eyes, but most of them simply persistent recurrence of eructations of gas, distress, nausea, feeling of weight in the stomach coming on anywhere from a few minutes to two or three hours after eating. These cases I speak of without affirming positively they were cures due to the glasses were cases where I was unable to make out anything in the habits of eating or the diet which would possibly account for the trouble. I think 7 out of the 9 cases were in women, and I have seen a few where the eye also seemed to complicate other cases, — at least the patient got partial relief from wearing glasses, though they did not cure the indigestion entirely, — but the majority of them were cases complicated by uterine trouble of more or less mild types with eye strain superadded, and where I do not know that one could say positively that the eyes were the only cause. If we all could adopt the practice Dr. Smithwick has adopted of investigating the eyes in every case of indigestion, I think we would find a larger number than we realize of cases where the eyes had at least aggravated the trouble, so that it is now my practice with any indigestion that does not yield promptly to treatment, or I do not get an obvious explanation in the use of eating or the character of the food, bad teeth or some other more immediate cause, to send them to the oculist and I very rarely indeed find obstinate cases which do not have at least a certain amount of eye trouble complicating the other causes, and in the majority of cases I have seen the last three or four years, I am sure they have nearly all got some relief to the stomach symptoms from wearing carefully fitted glasses.

In this connection I should like to say, what may seem absurd to some of the members of the society, that I believe we also ought to look for eye strain as a possible cause of some cases of obstinate constipation. If eye strain can cause gastric symptoms I don't know why it is any more impossible to suppose that eye strain can also affect the intestines, and I have the records of at least one case of constipation of twenty years' standing that was sufficiently bad, so that the patient, who was a nurse, had to take laxatives all the time, — she never let a day pass without taking laxatives. I tried her on very carefully regulated doses of cascara sagrada three times a day and aloin, belladonna and strychnine pills, and the common forms of laxatives I had found frequently would stand gradual reduction of the dose instead of becoming more and more inert, and in every case she had to take larger instead of smaller doses, until on account of other trouble, headaches which did point to the eyes, she was sent for the fifth or sixth time to an oculist and the last doctor she consulted succeeded in discovering slight degrees of astigmatism in both eyes, and after the last glasses her headaches not only disappeared, but her constipation diminished within six months so that instead of a drachm to a drachm and a half of cascara sagrada three times a day to get a moderate movement, she was taking but five minims at a time, and when I last heard of her she never had to take any laxative except when particularly tired from hard work. I have seen a number of other less striking cases where it seemed to me that the complete correction of some very slight eye difficulty produced a most marked effect on persistent constipation and on persistent intestinal indigestion, as well as on cases of ordinary indigestion.

DR. SMITHWICK: I would say that the point one of the gentlemen brought out about marked errors without headache has struck me in observing my cases. I asked an oculist today if he commonly saw the same thing and he said he did. He also told me that the small degrees of astigmatism are more likely to cause symptoms than the large ones. He explained it in this way: the eye will endeavor to rectify a defect and it succeeds in doing it if the defect is small, and, as it were, carries the load. If it is too great it gives up the battle after a certain length of time.

NEW YORK STATE MEDICAL ASSOCIATION.

SEVENTEENTH ANNUAL MEETING, HELD IN THE ACADEMY OF MEDICINE, NEW YORK, ON OCTOBER 15, 16, 17 AND 18, 1900.

FIRST DAY.

THE session was entirely devoted to executive business.

SECOND DAY — MORNING SESSION.

Upon calling the association to order the president took the occasion to state that it was their good fortune to be visited by Sir James Grant, of Ottawa, Canada, and that it was an honor to introduce so distinguished a practitioner from over the border.

SIR JAMES GRANT was received with hearty applause. He accounted for his presence in a way that at the outset seemed political. "I have come to New York," he said, "in the interests of annexation. In fact my son is about to annex in marriage one of the

* See page 444 of the Journal.

fairest of the daughters of your city, and this will be but one more tie added to the many strong ones which already knit me to the United States." In a brief address he spoke of his investigations, recently reported in Canadian and English medical journals, into the nature of muscular rheumatism. This, he had proved to his own satisfaction, is no more than the manifestation of abnormal electricity in the body. If this fact is recognized and treatment followed in conformity therewith, the muscular rheumatism can be got rid of in five or six minutes instead of as many months. He has found that the use of ten or a dozen fine No. 8 needles piercing the muscle tissue will serve to discharge the surplus electricity, the muscle becomes soft and pliable, and the pain vanishes.

DR. F. H. WIGGIN, for the Committee of Arrangements, of which he was chairman, reported in detail the plans which had been formulated for the entertainment of the members.

Owing to the enforced absence of DR. ALVIN A. HUBBELL, of Erie County, his paper on

THE RELATION OF MIGRAINE TO EPILEPSY

was read by title.

DR. A. D. ROCKWELL, of New York City, read a paper entitled

ON THE ANALOGY BETWEEN NERVOUS CONDUCTIBILITY AND ELECTRIC CONDUCTIBILITY AND THEIR RELATION TO FUNCTIONAL NEUROSES.

To compare nerve current and electric current it is necessary to become familiar with the coherer used in wireless telegraphy. When the neurons are studied in the light of this analogy, the most striking resemblances are discovered and a new explanation of many of the neuroses is seen.

SIR JAMES GRANT discussed this paper, which he characterized in the most complimentary terms. As a healthy neuron differs from a diseased neuron, it is found that electricity to be of value must be applied before the stage of paralysis is reached.

COCAINISM.

DR. THOMAS D. CROTHERS, of Hartford, read this paper. After commenting upon its prevalence and rapid increase, he remarked of the addiction to cocaine that it is characterized in its habitués by mental exaltation, great volubility of words without point or purpose and without logical conclusion, style smooth and continuous—this may be recognized in fiction, poetry, and even in medical journal articles; there is frequently a mania for the writing of many letters. The conclusion of the paper was a warning against the use of cocaine under circumstances which might lead to the formation of the habit.

DR. JAMES J. WALSH, of New York City, finding the end of the session close at hand, gave a rapid recapitulation of the more salient points of his paper on

HEART COMPLICATIONS IN RHEUMATISM.

In the course of his remarks he presented a digest of the more important conclusions on the subject, which were presented at the International Medical Congress in Paris.

AFTERNOON SESSION.

The session was devoted to a

SYMPOSIUM ON OBSTETRICS.

It was opened by PROF. EDWARD P. DAVIS, of Philadelphia, who read a paper on the

TREATMENT OF THE PATIENT DURING THE WEEKS PRECEDING THE EXPECTED CONFINEMENT.

He emphasized the importance of examining the different organs and also the urine and solid excreta. The diet should also be carefully attended to. It should be largely a milk diet. Tea and coffee should be avoided. Alcohol was not indicated, but on the contrary was apt to be injurious. Fruit should be stewed or baked. The body should be regularly sponged, the residence kept well aired, and gentle exercise taken in the open air. In cases of insomnia it was a mistake to give bromides; chloral or some derivative from it gave the best results. It was well to catheterize the patient under some circumstances under an anesthetic. In looking for sepsis, the possibility of syphilis should not be overlooked, and the same remark applied to gonorrhœal affections; when traces of either of these diseases were discovered they should be treated locally as well as constitutionally.

DR. AUSTIN FLINT, JR., of New York, followed with a paper in which he discussed the

MANAGEMENT OF LABOR, INCLUDING THE USE OF FORCEPS.

The proper management of these cases, he remarked, was more far reaching in its importance than the mismanagement of a few abnormal cases. Statistics showed a gratifying improvement in the success with which these cases were treated, and it was found that the less interference of any kind that was practised the less was the percentage of accidents. He advocated the careful examination of the patient at the end of the eighth month with the view of avoiding septic conditions. It was better to make one long and complete examination than a series of short ones. Undue delay in completing the delivery was almost as dangerous as undue haste. It was better in many cases to use forceps than to wait too long.

The third paper was by DR. GEORGE W. JARMAN, of New York, and dealt with the

AFTER TREATMENT OF THE MOTHER IN NORMAL CASES.

The fourth paper, by DR. BERNARD COHEN, of Erie County, referred to the

TREATMENT OF THE CHILD.

DR. JOHN E. WEEKS, of New York, described the

PATHOLOGY, PROPHYLAXIS AND TREATMENT OF OPHTHALMIA NEONATORUM,

quoting statistics to show the large percentage of children whose eyes were affected by the gonococcus of Neisser or other bacteria, for the treatment of which it was usual to use a solution of nitrate of silver.

DR. EDWARD REYNOLDS, of Boston, discussed the MAJOR OBSTETRICAL OPERATIONS FROM THE STAND-POINT OF A GENERAL PRACTITIONER,

calling attention to the great advances that had been made in this branch of surgery, and maintaining that general practitioners must either get into the way of

performing them themselves, or be prepared to call in an expert when a major operation appeared to be desirable.

PURPERAL SEPSIS, ITS PATHOLOGY AND TREATMENT.

DR. WM. B. R. PRYOR, of New York, brought the symposium to a close by reading this paper.

EVENING SESSION.

A SYMPOSIUM ON THE BLOOD

engaged the attention of the association at this session, DR. EDWARD K. DUNHAM, of New York, dealing with the technique of blood examination; PROF. JOSEPH C. BLOODGOOD, of Johns Hopkins University, with leucocytosis; PROF. ALFRED STENGEL, of the University of Pennsylvania, with pernicious anemia; PROF. C. Y. WHITE, of Philadelphia, with leukemia; DR. T. LEWALD, of New York, with parasites in the blood, and DR. H. C. GORDINIER, of Rensselaer County, with the value of blood examination in the diagnosis of trichinosis.

THIRD DAY. — MORNING SESSION.

NECESSITY FOR FURTHER ORGANIZATION ON THE PART OF MEDICAL MEN.

DR. C. A. L. READ, President of the American Medical Association, being introduced by the chairman, was received with applause. He said he accepted the cordial greeting as a mark of fealty to their great national association. He had peculiar pleasure in meeting the members of the New York State Medical Association because he discovered in their charter a proclamation of principles which appealed to him with particular force. These principles were the cultivation of their humane science, and the promotion of *esprit de corps* among its members, the maintenance of the honor and character of the profession. Were not these sufficient to commend the organization to the enthusiastic regard of every practitioner in that great Empire State? They had also provisions of a beneficiary character which he understood they were holding under consideration, and which must appeal to every man who had a sympathetic bosom and understood the mutability of fortune. It was the irony of experience that he who needed succor was often the Samaritan himself. This feature of their organization might well be imitated by every State organization in the country. On the present occasion, however, it was the fourth plank in their platform that particularly interested him. He referred to that plank which announced as one of their fundamental principles the promotion of harmony, or as the charter had it, "the establishment and furtherance of cordial professional relations and fellowship between the medical profession of the State of New York and the medical profession of other States of the United States and of foreign countries through the medical associations and societies of such States and countries." Criticism of this clause must exhaust itself in commendation. It breathed the spirit of harmony. That spirit of harmony was abroad in the profession, not alone in the State of New York, but the country over. This clause, if it meant anything, as it assuredly did, meant the union of their local profession. This clause meant that every member of their State organization should become a member of the American Medical

Association, and he was delighted to know that already many bore that relation. If it meant anything, it meant, as it should mean, that they stood consecrated to the idea, over and above all other ideas, of the unity and solidarity of their great national profession. He knew of no object more worthy of their zealous devotion. It simply meant that this movement was one on their part that would command the cordial co-operation of the great national body of the profession, not as represented by the American Medical Association, but of the great independent portion of the profession as well, and if they stopped to think of what that independent body consisted, they would appreciate its magnitude. With their splendid success as a State organization, unparalleled as it was among such organizations, notwithstanding the existence of another State organization in the same field, the fact remained that out of a total of about 10,000 regular practitioners there were only some 2,000 within the fold of organization, while in the United States, out of a regularly qualified profession of nearly 100,000, only 10,000 were enrolled in the ranks of the American Medical Association. There was therefore a large work before them if they were to aim at the real consolidation of the profession. Still, as he had said, the spirit was abroad in the land. It would brook no opposition, and it must work in the direction of union and harmony. The sentiment was deeply graven on the minds of the general profession that to make its influence effective at the State capitals and in Washington the profession must stand together, man to man and shoulder to shoulder. It ought to take but little effort to accomplish a change which was already accomplished in the sentiment of those most concerned. There was not much occasion for the rescinding of resolutions or for the modification of by-laws or constitutions. Some memories of past differences might well be effaced, and some resolutions which had served their purpose might with advantage be modified or revoked. These were subsidiary matters, and could be left to take care of themselves. What was important to remember was that he who interposed authority, prerogative or prejudice to delay the movement for unity and harmony would be regarded as the enemy of progress. He looked with confidence to that great and efficient organization to help on the good work, and he assured them that from the remotest districts of the country they would find coming back to them words of true encouragement and co-operation. He believed — and he had reason for the faith that was in him — that the medical profession the country over was ready to take any necessary and advisable step in this direction with the end that it might present a united front to the dawning century.

DIPHTHERIA AND MILK SUPPLIES.

In a paper on this subject DR. CHAUNCEY P. BIGGS, of Tompkins County, said strong circumstantial evidence had frequently been brought against milk supplies as being the source of infection in epidemics of diphtheria. There was, however, usually one missing link in the chain, but it had been supplied in an outbreak which had taken place at Ithaca in the beginning of the year. The milk supply of all the families affected was traced directly or indirectly to one dealer. On his farm being inspected no unsanitary conditions were found, nor was there any trace of

the disease in the household. It was elicited, however, that he bought some of his milk from another farmer, and on the latter's homestead being visited it was found that several of the family, including those who attended to the cows, were suffering from sore throats, some of the cultures from which were examined and found to be diphtheritic. The wholesale milkman was prohibited from selling milk for a time, and no other cases developed except such as could be traced to primary infection.

PROF. VERANUS A. MOORE, of Cornell University, read a paper on the

MANAGEMENT OF DIPHTHERIA IN SMALL CITIES FROM A BACTERIOLOGICAL POINT OF VIEW.

In the Ithaca case the previous freedom of the city from the disease made laymen and physicians alike sceptical as to the new methods adopted. Several members of the profession had no faith in antitoxin, the fact being that they had never had occasion to test it. The Board of Health, nevertheless, took drastic measures, making early cultures from suspicious cases, establishing a rigid quarantine and not removing it until a negative diagnosis was made, and then carrying out a thorough system of disinfection. The result was that the epidemic was promptly stamped out.

THE TONSILS AS PORTALS OF INFECTION.

DR. JOSEPH ULLMAN, of Erie County, read this paper. He especially referred to septic disease as malignant endocarditis, and said he regarded rheumatism as a mild form of pyemia, in which the staphylococci and their organisms became much attenuated. He also spoke of the relation to chorea and tuberculosis borne by affections of the tonsils.

DR. MARCEL HARTWIG, of Buffalo, presented a communication on the

PRESENT STATUS OF JONNESCO'S OPERATION.

He contended that neurectomy of the cervical sympathetic ought to be called by Jonnesco's name.

DR. CLARENCE G. CAMPBELL, of New York, read a paper on the

TREATMENT OF PULMONARY TUBERCULOSIS.

It had special reference to the climate of Arizona.

AFTERNOON SESSION.

This session was devoted to a

SYMPOSIUM ON TUBERCULOSIS.

It was opened by PROF. VICTOR C. VAUGHAN, of the University of Michigan, who dealt with the

GENERAL ETIOLOGY, PATHOLOGY, AND PROPHYLAXIS.

Starting with the assumption that the bacillus of Koch was the sole exciting cause of tuberculosis, he proceeded to show that, much as had been done in recent years, much more still remained to be attempted. He discussed the question whether the bacteria of the disease could exist and multiply outside of the animal body, and came to the conclusion that they could not, except when removed for experimental purposes, and then they only lived for a limited period. There was a pseudotuberculous bacillus, but there was no evidence to support the theory that it could change into

the bacillus which caused disease in the human body.

He contended that no dairyman should sell milk without a license, and all milk cows should be tested with tuberculin. Tuberculosis, so long as it did not become a mixed infection, was not likely to become malignant. It always began as a local disease, but it had a predilection for the lungs, where it was more likely to become mixed than elsewhere. He advocated the establishment of hospitals and other measures, and said that if this was done there was no reason why the present generation should not eradicate tuberculosis as their ancestors had succeeded in eradicating leprosy. If it was correct, as some supposed, that the germs differed greatly in virulence, it was important that those already affected should be protected from those who had more malignant germs. He also showed the importance of improving the condition of the poor, among whom the rate of mortality from tuberculosis was far above that among the better-off classes.

DR. JONATHAN WRIGHT, of Brooklyn, presented the next paper, which was on the

PATHOLOGY, DIAGNOSIS, SPECIAL PROPHYLAXIS AND TREATMENT OF TUBERCULOSIS OF THE NOSE AND THROAT.

It was important, he said, to distinguish between syphilis of the larynx and laryngeal tuberculosis, and he disclaimed the ability to do this without making a thorough examination. In making a diagnosis they should always think of syphilis, and keep on thinking of it. The ideal method of dealing with laryngeal tuberculosis was local and constitutional treatment under climatic change. It is doubtful if a radical cure was ever effected, but much could be done in palliating the dreadful symptoms, and prolonging life. He favored intratracheal injections.

TUBERCULOSIS OF THE EYE; ITS DIFFERENTIAL DIAGNOSIS, PATHOLOGY AND TREATMENT.

DR. CHARLES STEADMAN BULL, of New York, discussed this subject.

DR. SEYMOUR OPPENHEIMER, of New York, spoke on

TUBERCULOSIS OF THE EAR.

He laid stress on the fact that change of climate, diet and general constitutional treatment were as essential in tuberculosis of the ear as in ordinary tuberculosis. Surgical measures were contraindicated except in rare cases.

PROF. MAURICE H. RICHARDSON, of Harvard, read a paper on

TUBERCULOSIS OF THE LYMPHATIC GLANDS OF THE PERITONEUM.

He said the propriety of having recourse to surgery in many cases of this kind seemed unquestionable.

THE SURGICAL TREATMENT OF URINARY AND UROGENITAL TUBERCULOSIS.

This was the specialty treated of in the paper of DR. SAMUEL ALEXANDER, of New York. This form of the disease, he observed, did not differ materially from other tuberculosis, except in this respect, that it was more often complicated by pus infections. There were both primary and secondary infections, and it

was strange how little positive knowledge they had in regard to the former. He urged the importance of co-operation between clinical observers and pathological experimenters with the view of discovering more about the etiology of the disease. The usual remedy was to remove the whole focus of the infection. He believed that generally the epididymis was the original seat of the disease.

Dr. E. H. NICHOLS, of Boston, discussed

TUBERCULOSIS OF THE BONES AND JOINTS.

Dr. JOHN A. FORDYCE, of New York, considered

TUBERCULOSIS OF THE SKIN AND SUPERFICIAL FASCIA.

FOURTH DAY.

Dr. HIRAM H. VINEBERG, of New York, read a paper on the

DIFFERENTIAL DIAGNOSIS OF ECTOPIC GESTATION, with special reference to early abortion. He commented on the frequency with which extra-uterine gestation was mistaken for ordinary abortion, and maintained that every case of apparent abortion should be looked upon with suspicion, and the patient should be anesthetized so that a thorough examination could be made with a view to possible surgical interference.

In the course of a short discussion which followed, the PRESIDENT said an examination should never be made without the surgeon being prepared for an abdominal section.

THE RESOURCES OF MODERN MINOR GYNECOLOGY.

Dr. A. H. GOELET, of New York, discussed this subject. He protested against the growing tendency to regard gynecology as a purely surgical field. The resources of minor gynecology were much greater than they were fifteen years ago, and yet even before then many cures were effected without surgical interference. Among the modern resources which were of great value in this species of work he mentioned the vaginal speculum, the uteroscope and the cystoscope, sponge tents, etc., besides various anesthetics, electricity and numerous therapeutic agencies.

Dr. JULIUS H. WOODWARD, of New York, read a paper on

STRABISMUS AND ITS MANAGEMENT.

He described the pathology and symptoms of paralytic and non-paralytic strabismus, gave a recapitulation of the differential diagnosis, and pointed out the psychological and sociological significance and their relation to eye strain.

Investigations upon

SPECIFIC CORPOREAL GRAVITY AND THE VALUE OF THIS FACTOR IN PHYSICAL DIAGNOSIS

were reported upon by Dr. HEINRICH STERN, of New York.

Dr. DOUGLAS AYRES, Montgomery County, read a paper on

ASEPTIC MINOR SURGERY,

wherein he indulged in a retrospect of the pre-aseptic period, reviewed the instruments of olden times, and traced the thoughts and provings which gradually led up to the present greatly improved technique. The

importance of cleanliness in every detail in preparing for all operations was strongly dwelt upon, and a sketch given of an ideal office.

AMPUTATION AT THE HIP JOINT.

Dr. JOHN A. WYETH read a paper descriptive of this operation, and giving a report of 217 cases in which the author's method of hemostasis was employed. It had, he remarked, been always considered one of the greatest and most difficult of surgical operations, and it was only within a recent period that it had been recognized as justifiable. He then proceeded to show the simplicity and safety with which it could be performed under his methods, and adduced statistics to show that it had reduced the death rate from such operations to a very large extent, the percentage of those who died in the 247 cases reported being 21, of whom the larger number died from other causes, while under older operations the percentage was 40 and 50 and even higher. Several speakers bore testimony to the success which had attended operations in which the method referred to had been adopted.

Dr. JOHN F. ERDMANN, New York, submitted a report on 3 cases of

INTESTINAL OBSTRUCTION DUE TO MECKEL'S DIVERTICULA.

He called attention to the similarity in the symptoms of all 3 cases to the symptoms of appendicitis, and also to the difficulty of making an early diagnosis between these two conditions.

INTRASPINAL COCAINIZATION FOR THE PRODUCTION OF SURGICAL ANESTHESIA

was discussed in a paper by Dr. S. ORMAND COLDAN, of New York, who gave a sketch of the history of the operation from the time it was first performed by Corning, and described its technique as now practised by Tuffier in Paris. He showed the great advantages that would result from the operation, but admitted that it was not likely to become popular because of the difficulties and dangers that attended it. He reported a number of cases in which he had performed the operation with success.

In the course of the discussion which followed, Dr. J. RIDDLE GOFFE said he had had the good fortune while in Paris recently to accompany Tuffier to the hospital and see him operate. Tuffier was very enthusiastic about the method, which he had been using for about two years. He had followed it in about 200 cases, and was perfectly satisfied as to its safety.

Several of the other speakers dwelt on the danger of infection and of the cocaine reaching the brain, etc., the consensus of opinion evidently being that it was necessary to await further investigations before adopting the method.

Papers on the

TECHNIQUE OF BLOODLESS WORK

by Dr. ROBERT H. M. DAWBARN, of New York, and

OPERATIVE TREATMENT OF SYMBLEPHARON BY THE USE OF THEIRSCH GRAFTS.

by Dr. WILBUR B. MARPLE, of New York, were afterwards read, and the programme brought to an end by the reading by title of a paper by Dr. EDWARD

H. SQUIBB, JR., of Brooklyn, containing brief comments on the materia medica, pharmacy and therapeutics of the past year.

The following officers were elected: President, Dr. John A. Wyeth, New York; Vice President, Dr. Alvin A. Hubbell, Erie County; Secretary, Dr. F. H. Wiggin, New York; Treasurer, Dr. Edward H. Squibb, Brooklyn.

AMERICAN PEDIATRIC SOCIETY.

TWELFTH ANNUAL MEETING, HELD IN ST. JOHN'S PARISH HALL, WASHINGTON, TUESDAY, MAY 1, 1900.

(Concluded from No. 17, p. 432.)

DR. SAMUEL McC. HAMILL, of Philadelphia, presented a paper, being a report of

A CASE OF ANTENATAL HEMORRHAGE INTO THE SUPRARENAL CAPSULE AND PERIRENAL TISSUE.

This paper was read by title and showed that death ensued three days after birth from rupture of the hemorrhagic sac into the peritoneal cavity.

DR. A. D. BLACKADER presented a paper on

ENTERIC FEVER IN CHILDHOOD.

This paper was based on notes taken of cases, which were very numerous, of typhoid-fever patients both in Montreal and in his own practice. He went exhaustively into all the characteristics of the disease as manifested in these cases, with the relative frequency of the various symptoms and the results obtained by treatment. He emphasized the efficiency of cold baths, and the Brandt method in the treatment of typhoid fever in children; the regular and systematic employment of the cool or cold bath in the treatment was, in his opinion, of great value. He thought it might be employed regularly without too rigid adherence to the rule of Brandt, of only using it when the fever reached 102.2°. The bath was not to be employed for its effect on the temperature so much as for its effect on the nervous system and, through it, on the heart, respiration and secretion, especially secretion from the kidneys. This paper was very thoroughly discussed, there being a difference of opinion as to the propriety of using cold baths, and whether or not infants are attacked with typhoid fever.

DR. SAMUEL S. ADAMS used the rectal temperature, and considered it the only safe temperature in all children under twelve years of age.

It was the opinion of DR. W. P. NORTHRUP that children under two years of age are little susceptible to the invasion of typhoid fever.

Typhoid fever, said DR. GRIFFITH, is of frequent occurrence in infancy under the age of one or two years. The symptoms, however, are difficult to recognize on account of the tender age of the patient.

There is room for discernment, DR. DORNING thought, in the use of water. He was impressed with the value and also with the potency for harm of hydrotherapy. He did not believe that babies stood tubing very well.

In 2,000 autopsies, conducted on children under two years of age, DR. NORTHRUP said he had seen typhoid fever in none. It was not his opinion that an infant under two years of age was susceptible to typhoid fever.

DR. BLACKADER said that he had tried to empha-

size in his paper the necessity for care in each individual case.

THIRD DAY.

DR. T. M. ROTCH, of Boston, read a paper on

A CASE OF RHACHISCHISIS.

Rhachischisis was characterized by a deficiency of the vertebral arches either complete or partial, and it was one of the principal forms of congenital defects of the spine. The condition is of more interest pathologically than clinically. He reported the case of a girl three years of age who was admitted to the Infants' Hospital February 14, 1900. The head was of normal size, the face was flattened, the chin retracted, and held in forced position with the occiput on the principal dorsal sign. The skull was apparently well over, and the foramen magnum was as large as a silver dollar. The section of the brain passed almost through the median portion of the brain, which was poorly hardened. One could not find in the cranial cavity either the cerebellum or the pons.

DR. J. HENRY FRUITNIGHT, of New York, in his paper on

A FATAL POST-OTITIC CEREBRAL ABSCESS, WITH AMNESIC APLIASIA,

reported a case of a twelve-year-old girl of New York City, who, in January, 1898, had suffered very severely from an acute otalgia of the left ear. A physician who was consulted diagnosed otitis with an abscess. A paracentesis of the drum of the left ear was made and a large amount of pus let out. It appeared that the mother neglected or failed to carry out the instructions, and when Dr. Fruitnight first saw the patient her temperature was about 100° and pulse 98. She complained of frontal headache. She had occasional chilly sensations and nausea, and there was some prostration, and a scanty discharge from the left ear. The clinical diagnosis was a deep mastoid caries, possibly cerebral abscess and beginning meningitis. Violent convulsions took place December 17th and continued six hours, being finally controlled by the use of a rectal injection of chloral hydrate, inhalations of chloroform and hypodermic injections of morphine.

DR. HERMAN KNAPP, of New York, who had made a clinical observation of the child, stated that the location of the abscess would be higher up than where it was found, if it was assumed from the symptoms. An operation was performed which discovered conclusively the presence of an abscess. There was some congestion, but not sufficient to indicate the disease.

It is well to note, said DR. HENRY CHAPMAN, of New York, that where a mastoid disease does not affect the brain, but burrows in front, it is always best to look in that region. He laid stress on the mastoid trouble in children in which the brain is not affected, and in reporting a case of a boy, five years of age, he said there was tenderness back of both ears but no swelling. In this case the temperature fell from 103° to 101½°, and remained there for several days.

DR. FRUITNIGHT referred to the absence of low pulse and high temperature.

A very interesting and instructive paper was presented by DR. W. S. CHRISTOPHER, of Chicago, on the

MEASUREMENTS OF CHICAGO SCHOOL CHILDREN.

The doctor used thirteen charts in illustrating the paper, and showed instruments used in taking the measurements of these school children. In addition to the results of the ergograph, the observations represented ordinary anthropometry measurements. The amount of energy exerted by each pupil tested was expressed by the ergographic work in centimetres and kilogrammes in place of pounds. The test consisted in lifting at each alternate second with the middle finger of the right hand a weight equal to 7% of the gross weight of the individual, and permitting them, at the next second, to return. Ninety seconds was the limit of the test, during which time this weight was lifted forty-five times, a metronome being used to beat the seconds. The ergogram indicated the degree of fatigue exhibited by the child during the ninety seconds. The work of the boys was better than that of the girls; the endurance of the girls up to fourteen years of age showed a greater percentage than that of the boys. The girls practically reached the maximum at fourteen, and from there on up to twenty years of age the limit of the examination did not increase. The boys, however, continued to increase continuously up to twenty and the ratio of increase was greater than it had been previously. The amount of energy displayed by the girls at twenty amounted to very little more than half of that exhibited by the boys at the same age, so marked was the differentiation in the sexes at this time.

Another interesting feature of the ergographic work was in the range of ergographic possibility of the different grades. The range of ergographic endurance of children in the lower grades was comparatively slight, but increased continuously as the upper grades were reached, until, in the higher grades, the endurance of the boy pupils amounted to nearly six times that of the poorest pupils. Various tracings of ergograms were shown illustrating the peculiarities of the tracings in different individuals. A very interesting ergogram shown was that of a sprinter who said that he could run 300 yards, but could not go 330 yards. The ergogram showed that he maintained a high degree of strength for a short time, and then suddenly dropped to complete exhaustion in less time than a normal child would break. In an ergogram of a choreic child, the child showed a wonderful amount of energy, working on the ergogram considerably longer than the average child could do.

The work of Dr. W. Thompson Porter in the examination of school children in St. Louis, in 1892, was confirmed by Dr. Christopher.

Dr. PORTER thought that physical superiority in the school children was associated with intellectual precocity, and the same way with physical inferiority.

Interesting charts were shown describing physical peculiarities in children of twelve years in the different grades of the Chicago schools. It was shown, by taking the average physical measurements in each grade, that the weight of a child in the second grade was less than that of a child in the third grade. In the twelve-year-old child the highest physical measurements were noted, while a child of same age in a lower grade showed a lower average in the physical measurements. The averages were distributed fairly in the intermediate grades.

Dr. McDONALD, of Washington, thought that Dr. Christopher's paper contained the most important investigations on children extant. Those who under-

take the work in these lines only know the amount of time required to accomplish it. Representing the Board of Education, he had an opportunity of measuring some 20,000 children. Expeditions could be fitted out to the North Pole for scientific research, but objection was raised at once in the acquirement of facts about the children in such cases. This might be attributed to the lack of practicality in the results obtained. Boys at fourteen years of age matured and were in the advance of girls. Children born in summer are stronger, healthier and brighter than those born in winter.

Dr. FRUITNIGHT proposed that medical men should give more attention to this line of study. He thought the school child was kept at his desk when he should be at play, enjoying the sunshine and fresh air; that the time had come for reformation along this line. From ten or eleven o'clock, he suggested, until two, were appropriate periods for recreation.

Dr. COTTON felt the importance of close attention to this subject. He believed that benefits of great value would accrue to the children. He desired some light as to the period of greatest fatigue.

Dr. CHRISTOPHER said there was a period of diminished endurance from the fourth to the eighth grade.

Dr. CURCHILL asked whether children who show the greatest amount of endurance on the ergogram stand highest in the class, to which Dr. CHRISTOPHER replied that individually this had not been noted, but that he would answer the question affirmatively.

Dr. CHAPIN said that in the New York Juvenile Asylum 1,000 children were measured with results that were somewhat peculiar; they had developed mental vices.

Dr. RACHFORD thought that Dr. CHRISTOPHER had carried on his work under better conditions than any class with which he was familiar. He believed that the ergogram meant muscle fatigue as well as nerve fatigue. He thought that if the ergogram could show nervous exhaustion in the child it would be of great value. There seemed to be a trend toward precocity, that in children of a common age the child having the best physical development is farther advanced in school life than other children.

Dr. CHRISTOPHER said that no attempt had been made to solve problems. At the Aleut School the average weight of a six, eight or nine-year-old child was not found to be greater or less after vacation. He stated that color blindness had been found in the schools, although the teachers had asserted there was no defect, because the children were able to paint, etc. The actual test, however, showed distinct color blindness.

Dr. HENRY D. CHAPIN, of New York, presented a paper on

EPIDEMIC PARALYSIS IN CHILDREN.

He referred to the epidemic which had occurred in Poughkeepsie and New York, and stated that in a number of children the paralysis was due to poliomyelitis. He thought that some infectious agent had been at work there.

Dr. NORTHROP, in a paper on

ATRESIA OF THE LARYNX DUE TO FAULTY INTUBATION.

stated that in this case the fault was that of the operator. The latter was a beginner, he thought. The child had pulled it out several times, twice with a string, and in that way acquired relaceration up to the number of five in all, and at last was not able to lift it. The larynx had been wounded by some accident and dyspnea set in and tracheotomy was required. That allowed the laceration surface to grow together. A subsequent operation was performed, but he was not able to remove the obstruction. The child died in November.

DR. COTTON inquired whether the malformation of the larynx was either natural or due to inflammation or disease.

DR. NORTHROP, in closing, said that it was distinctly the fault of the operator, and yet he seemed to be properly instructed. The operator made the hole in which the intubation tube was to go naturally, small, bringing the submembranous tissue to the surface. He said that everybody could not do intubation without detriment to the patient.

DR. J. MILTON MILLER read a paper on

THREE CASES OF HEAD NODDING AND HEAD ROTATION.

He stated that 3 cases had come under his observation in the past ten years.

Recent Literature.

The Clinical Examination of Urine, with an Atlas of Urinary Deposits. By LINDLEY SCOTT, A.M., M.D. Philadelphia: P. Blakiston's Son & Co. 1900.

In the first 49 pages of this book the author takes up *very briefly* the physical properties of the more important normal and abnormal constituents of the urine and a practical chemical test for each of the substances considered; a short discussion of the bacteriology of the urine; suggestions relative to the examination of urine for life assurance; and lastly, an enumeration of the leading characteristics of the urine in diseases of the urinary tract. The remainder of the work is devoted to 40 plates, mostly colored, and an excellent index. All of the plates were, with one exception, drawn from specimens under the author's direction, and are for the most part very satisfactory. In the plates of uric acid, ammonium urate and sodium urate, the colors are in general not a true representation of the colors of these crystals; in Plate XX the outlines of the hyaline casts are altogether too heavy; and in Plate XXI the faint color that has been given to the waxy casts is misleading, since casts that have received this name are perfectly colorless, and in this way distinguished from the so-called fibrinous casts, which are colored yellow.

La Malaria propagata esclusivamente da peculiari Zanzare. B. Grassi, Professore di Anatomia Comparata all'Università di Roma. Milano: Fratelli Treves. 1900.

Professor Grassi discusses the question of malaria as an important national problem. He pictures the condition of middle Italy during the first six months in the year, in glowing colors, as a land of health,

plenty and contentment, all of which is changed after the incoming of July in consequence of the prevalence of malarial fever. He lays down certain propositions in regard to the methods of infection and answers *seriatim* the principal objections to the modern theories of infection by the mosquito. Considerable space is devoted to the natural history of the *Anopheles*, and several very good cuts are presented showing the anatomy of the insect.

The book closes with an appeal to the ruling powers for aid in the suppression of malaria.

Medical and Surgical Nursing. A Treatise on Modern Nursing from the Physician's and Surgeon's Standpoint, for the Guidance of Graduates and Student Nurses, together with Practical Instruction in the Art of Cooking for the Sick. Edited by H. J. O'BRIEN, M.D., Professor of Clinical Surgery, Hamline University, etc. New York: G. P. Putnam's Sons. 1900.

This is a small volume of 287 pages, to which 14 writers have contributed. We have a certain doubt whether the multiple authorship method is properly applicable to this type of book. The tendency in general seems to us rather too much in this direction, and in an elementary book on nursing it is perhaps especially inappropriate. The writers have commendably omitted details of various diseases, and have appended a chapter on Cooking for the Sick, which no doubt will fill a place.

Notes on the Mosquitoes of the United States. Bulletin No. 25, U. S. Department of Agriculture, Division of Entomology. By L. O. HOWARD, Ph.D. Washington: Government Printing Office. 1900.

Dr. Howard's notes on the mosquito contain a general statement of the natural history of the different genera, with suggestions as to the use of remedies for their destruction and the prevention of their propagation, preference being given to kerosene oil as the most permanent remedy for the treatment of stagnant bodies of water. He considers permanganate of potassium and coal tar as of inferior value. Drainage of swampy areas is still more important. The work is illustrated with cuts showing some of the different species of mosquito in various stages of development.

Essentials of Medical and Clinical Chemistry, with Laboratory Exercises. By SAMUEL E. MOODY, A.M., M.D. Fourth edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co. 1900.

In this fourth edition the text has been largely rewritten, especially the clinical portion, and some new matter added. The work is divided into three parts, that is, Inorganic, Organic and Clinical Chemistry. The third portion, or that devoted to Clinical Chemistry, contains many valuable suggestions, but from the standpoint of the physician it is too brief for thorough work. The book is simply a laboratory guide and best adapted to the use of students who have access to explanatory lectures and especially to practical laboratory instruction. The danger in such books lies in the tendency among students to use them for purposes for which they were not intended and are not designed. Students are apt to be uncritical, and to get distorted or false ideas from their textbooks unless they are most carefully selected.

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SANATORIA FOR PULMONARY TUBERCULOSIS.

THE Legislature of Massachusetts during its last session passed a resolution directing the State Board of Charity to inquire into the expediency of constructing and equipping a new building for the use of the State Sanatorium for Consumptives at Rutland; and if such construction should seem to the board advisable, it is directed to prepare a general plan of such building together with an estimate of its cost and to submit the same to the next general court. We do not know what the report of the Board of Charity will be, but the resolve of the Legislature opens up a wide field for legitimate reflection.

Of late years an extremely active discussion has been going on across the Atlantic and in our own country as to the best measures for dealing with pulmonary tuberculosis. National and international congresses on tuberculosis are being held almost yearly; the subject is under constant consideration before medical societies, by sanitarians, by philanthropists, and in the columns of the medical journals. The movement for sanatoria has developed rapidly. It is only twenty years ago that Hogt, of Berne, made the first proposals for united effort in the establishment of such sanatoria. Today there are between thirty and forty people's sanatoria for the care of suitable cases of pulmonary tuberculosis — supported not necessarily by the government, but in large measure by societies organized for that purpose, by insurance interests, by the Red Cross, by sick clubs, by employers, by trades unions — in Germany alone. The movement, in one form or another, has spread to Great Britain and to this country, and numerous sanatoria have been already started, or are being provided for either by public or private initiative on a more or less eleemosynary basis. The individual, the corporation, the municipality, the State, the United States, are all interested, are all being solicited and are all in action. The merits of this form of dealing with pulmonary tuberculosis, and the importance to the individual and

the community at large of an amelioration or eradication of this disease are generally recognized, have no longer to make their proofs. The prospective danger seems to lie in the common sentiment that "you cannot have too much of a good thing," in the tendency in this democratic country to the multiplication rather than to the perfection of what is supposed to be or going to be popular. In regard to this matter it is easier to admit that present conditions demand a remedy, that advancing knowledge and experience offer a good one in the sanatoria, than it is to agree upon the practical application of this admission; it is easier to begin the construction of sanatoria than to know where to leave off. There are estimated to be over 30,000 "consumptives" in the city of New York alone. Even if one admits that the gain to humanity and to the State justifies this form of paternalizing by Congress, by the legislatures, by the municipalities, where is the end to be unless looked for in the ultimate extermination of the disease? All cases of pulmonary tuberculosis are a danger to the community, but the advanced cases without hope of recovery are a danger to the earlier cases with such hope. The two classes should not be in contact, which means they should be separately cared for. Where is the line to be drawn? Perhaps the time has not yet come either to put or to answer this question.

One thing seems clear: that the good work of these sanatoria lies not merely in the care or even the cure of the individual tuberculous citizen, but in the propagation and dissemination through him and through his friends to the community at large by precept and by example of the gospel of hygienic, pulmonary righteousness. It is therefore from every point of view important that, if we are to have these sanatoria, they should be in all respects thoroughly well organized, equipped and provided for. This is more important than that they should be extensive or numerous. And this leads us back to our text, which was the resolve of the Massachusetts Legislature, and to the expression of the conviction that it would be wiser for the State, if it is to assume the care of pulmonary tuberculosis, to perfect rather than to enlarge its present provision for that end. If the resolve of the Massachusetts Legislature means provision for the perfection of the present undertaking at Rutland, it is well; if, on the other hand, it suggests a mere increase in the accommodations for additional patients, we should venture to trust it would not meet with the support of the judicious. We do not care to predicate whether money is better and more advantageously spent in disinfection and renovation, or in sanatoria, but we do feel sure that a too rapid sanatorial development will injure the cause at heart and retard the desired end, and we are inclined to think the movement has reached a stage where it is as important to control the indiscriminate zeal of friends as it is to stimulate the enthusiasm of the indifferent or to remove the opposition of the adverse.

RECENT RESEARCHES IN YELLOW FEVER.

WE have before us the report of the American Public Health Association, including the report of the commission late appointed by the Surgeon-General of the Army to investigate the etiology of yellow fever.¹ The work of this commission has been done by Dr. Walter Reed, U. S. A., assisted by Drs. James Carroll, A. Agramonte and Jesse W. Lazear, and up to this time comprises the clinical, pathological and bacteriological study of 18 cases of yellow fever, the cases varying widely in severity. An attempt to isolate the bacillus icteroides from the blood during life or from the blood and organs of cadavers signally failed. The writers therefore directed their attention more particularly toward the study of the bacteria from the intestinal tracts of supposed normal individuals or of those sick with other diseases, as compared with those found in patients suffering from yellow fever, and also gave very particular attention to the theory of the propagation of yellow fever by means of the mosquito. This line of inquiry has, of course, been forced into general notice by the work of Ross and others on the rôle of the mosquito in the spread of malaria. As is now well known, the theory presupposes the presence of an intermediate host, for example, the mosquito, which conveys the specific parasite of the disease through its bite from person to person. Following this idea, Dr. Reed and his colleagues experimented with 11 non-immune persons, with 9 negative and 2 positive results, in an attempt to verify the theory first proposed by Finlay. The 2 positive cases are reported in great detail, as observations upon which so much depends should be, and the writers are confident that their work will arouse new interest in the difficult problem of the method of dissemination of the disease. One of the positive cases records the history of a typical attack of yellow fever, following the bite of an infected mosquito, within the usual period of incubation of the disease, and in which other sources of infection could, they think, with certainty be excluded. The conclusions drawn from this preliminary study are that the bacillus icteroides stands in no causative relation to yellow fever, but when present should be regarded merely as a secondary invader, and that the mosquito serves as an intermediate host for the parasite of the disease. We presume the writers would not be over-dogmatic in their assumption, considering the small number of observations they have as yet been able to make. It is, however, evident that their work opens up a wide and attractive field of research, which may well prove of the very first importance in the understanding, and hence in the prevention, of this very fatal disease of tropical climates.

In connection with the work outlined above it is of interest to note that at this same meeting of the American Public Health Association, Dr. Henry B. Horlbeck, of South Carolina, read the report of the

¹ The full report of this commission appears in the current issue of the Philadelphia Medical Journal.

Committee of the Association on the Etiology of Yellow Fever, in which the conclusion was reached that the bacillus icteroides (Sanarelli) is probably the specific agent in causing the disease, and that as yet prophylaxis is still in a wholly empirical state.

It will no doubt require many and thorough-going investigations before an absolute unanimity is reached on these questions. Meanwhile, a healthy difference of opinion is certainly conducive to progress.

MEDICAL NOTES.

THE MEDICAL CLUB OF PHILADELPHIA: RECEPTION.—The Medical Club of Philadelphia tendered a reception on October 26th, at the Hotel Bellevue, to Dr. Maurice H. Richardson, of Boston. Previous to the reception the president of the club gave a dinner at the Union League Club in honor of the guest. The club has a membership of over three hundred and was organized about eight years ago to encourage a more friendly and intimate social acquaintance among members of the medical profession. Discussions of medical and scientific subjects are contrary to the provisions of its constitution. The club has a wholesome effect in cementing fraternal ties among its members and is in a most flourishing condition.

FATAL HORSE DISEASE IN MARYLAND.—Cerebrospinal meningitis, according to the *Philadelphia Medical Journal*, has broken out for the second time within the past year among horses in Southern Maryland. It is estimated that about 1,000 have died. Appeals for assistance have been received at the Maryland Agricultural College and Dr. Samuel Buckley has been sent to investigate the matter. He has been making experiments with a serum, with which by inoculation he hopes to prevent spread of the disease.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, October 31, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 170, scarlatina 26, measles 17, typhoid fever 23.

FIFTIETH ANNIVERSARY OF MIDDLESEX EAST DISTRICT MEDICAL SOCIETY.—The fiftieth anniversary of the Middlesex East District Medical Society was observed at Woburn last week. Dr. Josiah P. Bixby, president of the society, presided and introduced the speakers. Dr. Samuel W. Abbott, Secretary of the State Board of Health, gave a history of the organization, and stated that when the Massachusetts Medical Society was started a century ago it had on its rolls about 70 members; today it has 2,500. The Middlesex Society was organized in Concord, January 7, 1789, and the speaker thought it was dissolved about 1812. It might be said that that society was the parent and the Massachusetts Society was the grandparent of the Middlesex East District Society. The latter was organized October 22, 1850. At the

dinner which followed the formal meeting, Dr. H. P. Walcott spoke on the work of legislation and Justice William B. Stevens spoke for the bar.

FAMILY REFUSING VACCINATION RELEASED FROM QUARANTINE.—An English family has recently been released from isolation on Gallop's Island, having been kept there two weeks because of a refusal to submit to vaccination before landing. The members of this family had been in perfect health since leaving England, and were detained simply in compliance with the Federal law, which requires that immigrants shall be placed in quarantine during the period of incubation of smallpox, if they refuse vaccination. In this case the father and two children had never been vaccinated. There is some question as to who is responsible for the board of the family while enforced guests of the city.

MOSES C. WHITE, M.D.—Dr. Moses C. White, professor emeritus of pathology in the Yale Medical School, died at his home in New Haven, Conn., October 24th, aged eighty-one. Dr. White was born in Paris, Oneida County, N. Y. He first studied for the ministry and for six and one-half years was a missionary in China. He had been professor in the Yale Medical School for many years, and continued his active duties until last June, when he resigned and was made professor emeritus. He had been pathologist at the State Hospital and has given liberally to that institution.

DIPHTHERIA IN BROOKLINE.—Since the first of October, up to a week ago, 54 new cases of diphtheria had been reported to the Brookline Board of Health. This apparently large number is in part accounted for by the increased care now being taken through bacteriological tests to determine the existence of diphtheria even when no symptoms have appeared. The danger of a spread of the disease is thereby minimized, since all children showing positive cultural tests are taken from the schools. Rigid school inspections are being made and no apprehension is felt as to the complete ability of the Board of Health to cope with the situation.

WORK OF THE FREE HOSPITAL FOR WOMEN.—In the Out-Patient Department there have been treated during the year 7,977 patients, 878 of whom were new cases. There have been admitted to the wards 274 patients; 177 were discharged cured and 34 relieved. There have been 452 operations on 221 patients. It is proposed to enlarge the hospital by the addition of a new ward.

PRESIDENT OF TRUSTEES OF MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY.—At the annual meeting John Homans, Jr., M.D., was elected president of the Board of Trustees of the Massachusetts Charitable Eye and Ear Infirmary.

NEW YORK.

NEW YORK EYE AND EAR INFIRMARY.—The annual meeting of the Board of Directors of the New

York Eye and Ear Infirmary, of which Dr. Richard H. Derby is executive surgeon, was held on October 25th. The report of the secretary, Dr. Gorham Bacon, showed that in the year ending September 30th there had been treated in the Dispensary Department 30,878 cases in the eye service, 9,710 in the ear service, and 7,096 in the throat service. In the hospital wards 2,257 patients were treated, representing 20,734 days of hospital care. In the treasurer's report it was stated that during the year the permanent fund had been increased by \$65,000. A training school for nurses in the special departments of the eye, ear and throat has been organized, and there are at present six pupil nurses. Adjacent to the infirmary building on Thirteenth Street a pavilion for the reception of cases of contagious ophthalmia has been erected in memory of James N. Platt by the family of the latter.

PLAGUE IN GLASGOW.—Dr. William T. Jenkins, Commissioner of the Health Department, has just returned from a visit to Great Britain made principally for the purpose of examining the sanitary arrangements of various cities, especially as to garbage and sewage disposal. While there he made some study of bubonic plague in Glasgow. There were 18 cases in the hospital at the time. They were treated by the serum processes, the Haffkine and the Yersin, and he was very favorably impressed with the results. In preventing the spread of the disease the principal precaution taken was the inoculation with serum of persons coming in contact with those affected. All the physicians at the hospital had been inoculated. Dr. Jenkins secured twelve bottles of the Haffkine serum, nine of which he sent to Health Officer Doty.

MEDICAL SOCIETY, COUNTY NEW YORK.—At the annual meeting of the Medical Society of the County of New York, George B. Fowler was re-elected president. The report of the Committee on Hygiene, of which Dr. Henry Dwight Chapin is chairman, devoted especial attention to the city's water supply. Not only the quality, but the available quantity, it was pointed out, was a matter for the society's consideration. It was a fact that the supply had not kept pace with the growth in population, and the inadequacy, unless speedily remedied, would soon give rise to serious results. Additional supply and municipal ownership were strongly urged.

OUTBREAK OF TYPHOID FEVER.—An outbreak of typhoid fever has occurred at the Boys' Disciplinary School at Parkville, Borough of Brooklyn. Thus far there have been 9 cases, with 1 death. Dr. Jewett, Inspector of Contagious Diseases of the Health Department, after an investigation of the premises and their sanitary condition, reported that the place was "a disgrace to any civilized community and a crime against the boys of the school," and on October 24th, Dr. Robert A. Black, Sanitary Superintendent for Brooklyn, ordered it closed.

Miscellany.

CLASSICAL EDUCATION FOR MEDICAL STUDENTS.

THE *Medical Press and Circular*, commenting editorially on an address in which Sir John Williams deprecated an over devotion to classical studies, says in part:

"Every hour of school and student life is of extreme importance in view of the variety of subjects that have or ought to be studied, hence the importance of throwing overboard every educational item which cannot be shown to be potentially useful to the student in his after-career. The most pressing requirements of the student at the present day are, a better acquaintanceship with his own language to begin with—that is to say, a thorough command of the language which he will have to use for all the ordinary purposes of life, a more ample knowledge of its literature, a copious vocabulary, and a culture far larger and better than he can ever hope to obtain by acquiring an elementary knowledge of Latin and Greek. If the time at present devoted to Latin and Greek were devoted to French and German a very competent knowledge of these languages might be obtained, and the time is rapidly approaching when a man who knows no language but his own will find himself deprived of inestimable opportunities of adding to his technical knowledge, in addition to depriving himself of many of the delights of foreign travel. We are pleased that one occupying so conspicuous a place in the profession should have raised his voice against an indefensible adherence to an anachronistic system of education. Schoolmasters are a stiff-necked race, but they must in the long run bow to public opinion, and in no calling so much as in medicine, perhaps, is educational reform imperative."

We are, no doubt, much less travelled in America by an adherence to ancient custom than are our English cousins; it is probable that not many of our medical students are burdened with a knowledge of Latin and Greek. We sometimes wish they were.

EXAMINATION OF DRINKING WATER IN ILLINOIS.

DURING the last few years, according to *Science*, several thousand samples of drinking water from various ordinary house wells throughout the State have been sent to the State University of Illinois for analysis and report as to quality. By far the greater proportion of these water samples have proved, upon analysis, to be contaminated with drainage from refuse animal matters, and consequently have been regarded with grave suspicion, or have been pronounced unwholesome for use as drink. The present prevalence of typhoid fever in a number of places in the State makes it desirable that the public should remember that the State has made provision for the examination of all suspected waters. It is not practicable to isolate actually the typhoid-fever germs or to prove directly their absence from waters submitted for analysis; this for the reason that the work entails more labor and time than are made available by the means which the State provides. However, the chemical ex-

amination is sufficient ordinarily to show whether the water is contaminated with house drainage or drainage from refuse animal matters or whether it is free from such contamination. Any citizen of the State may have examinations made of the drinking water in which he is interested, free of charge, by applying to the Department of Chemistry of the State University.

It would, no doubt, be advisable if this practice were general throughout the various States. It is altogether probable that by such means, carefully carried out, a considerable protection against epidemic disease might be secured.

Obituary.

SIR HENRY WENTWORTH DYKE ACLAND.

SIR HENRY ACLAND died at his home in Oxford, October 16th, in the eighty-sixth year of his age. He was the son of Sir Thomas Dyke Acland, who represented the county of Devon in Parliament for many years. The family is one of the oldest and most distinguished in Devonshire, and their estate is in the beautiful Exmoor region, the home of the red deer, through which the traveller passes in driving from Porlock to Lynmouth. Sir Henry Acland was one of the most eminent of a race distinguished in various careers. One of his ancestors was with Burgoyne in his disastrous campaign during our Revolutionary War. He was educated at Harrow, and Christ Church, Oxford. His academic studies were interrupted by ill health, and during a journey in the Mediterranean undertaken for health, he explored and made a panoramic plan of the site of Troy. He took his B.A. degree at Oxford in 1840, and became a fellow of All Souls' College. He immediately began to devote himself to the study of medicine, not a little to the concern and distress of his friends and associates belonging to a class which at that period was unaccustomed to regard it as offering a suitable career for a gentleman. He began his medical studies at St. George's Hospital, London, subsequently studying in Edinburgh, and finally graduated in medicine in 1866, at Oxford. In 1847, at the age of thirty-two, he was elected a fellow of the Royal Society. In the same year he became physician to the Radcliffe Infirmary, Oxford, a position he held for forty years. In 1850 he became a fellow of the Royal College of Physicians of London, and in 1865 delivered the Harveian Oration, his being the first oration on that foundation delivered in English. In 1851 he was appointed Radcliffe librarian to the University of Oxford, and in 1857 he was made Regius Professor of Medicine in the university. In 1858 he was elected representative of the University of Oxford on the General Medical Council, and was president of that body from 1874 to 1887. In 1860 he received the degree of LL.D. from the University of Cambridge, he received the same degree from Dublin, and the D.C.L. from the University of Durham. He was one of the few members of the medical profession in civil life to be made a Companion of the Bath, and in recognition of his services to the profession and to the cause of medicine and public health he was made a Knight Companion of that order. In 1890 he was made a baronet of the United Kingdom. In 1860, when the Prince of Wales visited the United States and Canada, Dr. Acland accompanied him as a member of his suite and as his medical adviser.

The establishment of an interest in the natural sciences at Oxford and the reorganization of its medical teaching upon a somewhat modern basis were almost entirely Dr. Acland's work. He had a great capacity for work of all kinds, and an almost insatiable interest in a great variety of subjects. He made himself felt in educational and in

sanitary questions. He was skilful with both pen and pencil, a charming talker and a most agreeable companion. He had been intimate with such different men as Sir Benjamin Brodie, Dr. Alison, of Edinburgh, Mr. Gladstone and Mr. John Ruskin. Dr. Acland made several visits to the United States, where he had not a few warm friends. He was an honorary member of some of our societies, among others, of the Massachusetts Medical Society and of the College of Physicians of Philadelphia.

LAURENCE TURNBULL, M.D.

PHILADELPHIA has again lost an eminent physician in the death of Dr. Laurence Turnbull, which occurred October 24th. His reputation depended chiefly on his work on the ear. He was a native of Lanarkshire, Scotland, and came to this country when twelve years of age. He was later graduated at the Philadelphia College of Pharmacy and the Jefferson Medical College. He was the first surgeon in America to perform the mastoid operation, being successful with the first case. Besides holding membership in various medical societies, Dr. Turnbull presided over the Section in Otology of the American Medical Association in 1880 and of the British Medical Association in 1881, and was chosen a delegate to the Section of Otology of the British Medical Association in 1888, and the Congress of Otologists that convened in Brussels the same year. After the second battle of Bull Run Dr. Turnbull served in Emory Hospital, Washington, and at Fort Monroe. He was the author of many valuable works on diseases of the ear and eye and died at the ripe age of seventy-nine years.

Correspondence.

A CASE OF MEASLES; PERIOD OF INCUBATION.

Boston, October 25, 1900.

MR. EDITOR: — The following case may be of sufficient interest to merit a brief report.

May 12th, my patient, a very intelligent woman of twenty-two years, gave a piano lesson to two sisters, aged nine and eleven years, living in Roxbury. They had an eruption on their faces and said that it was also on their chests. These children are pale, and the contrast made a vivid impression on my patient. She described the spots as pale rose red, coarse but varying in size, discrete and not elevated. The rash came May 11th and was gone the 15th. The children felt well the 12th and returned to school the 15th, although they had severe coughs. The attending physician considered it German measles. The mother states that both children had measles severely four years ago during an epidemic and were under a physician's care. She further states that an epidemic of German measles prevailed in May and that many classmates of one of her children were affected. On inquiry at their school, I find that several cases of measles were recorded in March, and that one case of German measles was recorded for the three months of April, May and June, but I could not learn the date. It was not in the class of either child. In May, I attended a child in Allston with a typical measles eruption. The mother stated that the eruption commenced two weeks previously, and that children in Allston were having an eruption of German measles, and in about two weeks an eruption of measles. This child had enlargement of superficial cervical glands, as is the rule in measles. I cannot vouch for the diagnosis of German measles in the sisters or for the prevalence of an epidemic of the disease. These sisters may not have caused my case.

My patient had never had any eruptive disease. May

15th, without apparent cause, there commenced a sharp diarrhoea of one week's duration. Dejections averaged ten a day. She used home remedies. May 23d, she consulted me for a swollen, painful left occipital gland. Rotation of the head was painful. No local cause of glandular enlargement was found. In twenty-four hours the gland was size of a tame cherry and very painful. May 25th, glands below left ear were swollen and painful. Careful examination of the throat showed nothing. Later, other superficial cervical glands enlarged.

May 27th, patient commenced to feel weak. Post-auricular glands were enlarged the 28th and turning the eyes was painful. Her right occipital gland was enlarged the 29th, and at 2 p. m. she was too sleepy to go to pupils and had severe epigastric distress. Patient and her mother noticed that patient's face was purplish, but showed no rash. After an hour's sleep there was rash on face, hands and forearms. No further examination was then made. The epigastric distress was gone. That evening the mother reported the case to me as measles. She did not know if the rash was general, but on returning found it so.

At 2 p. m., May 30th, I examined patient carefully. She complained of photophobia, slight roughness and soreness of throat, slight cough but no coryza. Eyes were suffused. The chief suffering arose from a constant pain referred to the splenic region and unaffected by respiration or position. Tongue was slightly coated and papillæ slightly enlarged. Distinct rash on hard palate, which I described as papular. Throat and tonsils somewhat swollen. There was a general rather fine purplish-red papular eruption with marked crescentic and irregular grouping. It was least heavy on the limbs. Examination of heart, lungs and liver showed nothing noteworthy. The splenic area of percussion dulness was much enlarged, extending upward to the seventh rib. The area was not measured. I was uncertain if I felt the spleen, but could not the following day. Temperature 101.2° F., pulse 98; urine free from albumin; bowels constipated, but after a laxative, continued rather loose.

June 2d, the rash was fading, and slight branny desquamation was noticed in the eyebrows, and rarely a minute flake elsewhere. Considerable cough. Patient and her mother observed carefully the disappearance of the rash. Skin was normal June 10th, and nearly so the 8th. They had noticed slight branny desquamation on face and feet. The glandular enlargement disappeared slowly.

October 10th, there was still slight enlargement of the left occipital gland. There was marked debility and her usual strength was not recovered for several months.

Very truly yours,

M. P. SMITHWICK, M.D.

METEOROLOGICAL RECORD

For the week ending October 20th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
	Daily mean.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
														S.		W.		C.
S..14	29.96	60	65	56	88	73	83	N.W.	S.	8	12	O.	C.	.04
M..15	29.76	59	76	42	75	53	79	W.	N.W.	10	20	C.	O.	
T..16	30.13	44	52	35	63	57	60	N.W.	S.W.	20	10	C.	O.	
W..17	29.88	50	61	39	63	68	66	S.W.	W.	14	11	C.	C.	
T..18	30.15	42	50	35	61	51	59	N.	N.W.	15	3	C.	C.	
F..19	30.32	42	53	32	58	64	62	N.W.	S.	10	5	C.	C.	
S..20	30.16	57	68	46	76	69	72	S.W.	S.W.	12	12	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rains; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, OCTOBER 20, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup
New York	3,654,594	1146	407	22.32	10.56	3.60	1.28	3.04
Chicago	1,698,575	—	—	—	—	—	—	—
Philadelphia	1,293,697	—	—	—	—	—	—	—
St. Louis	575,238	—	—	—	—	—	—	—
Baltimore	508,957	182	79	26.40	7.15	3.85	1.65	3.30
Cleveland	381,768	—	—	—	—	—	—	—
Cincinnati	325,902	—	—	—	—	—	—	—
Pittsburg	321,616	95	34	19.76	15.60	7.28	3.12	3.12
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	62	17	25.76	3.22	11.27	—	1.61
Nashville	87,754	—	—	—	—	—	—	—
Boston	560,892	200	67	26.50	5.50	6.00	1.00	6.00
Worcester	115,231	42	15	35.70	5.76	14.29	4.76	2.38
Fall River	106,591	—	—	—	—	—	—	—
Cambridge	95,185	25	4	24.00	4.00	—	8.00	8.00
Lowell	98,611	33	15	18.18	12.12	6.06	3.03	—
New Bedford	74,943	17	8	47.04	—	23.52	—	—
Lynn	69,769	—	—	—	—	—	—	—
Somerville	67,863	17	4	29.40	—	11.76	5.88	5.88
Lawrence	60,937	18	11	26.66	—	16.66	—	—
Springfield	60,085	24	3	33.28	—	8.32	8.32	—
Holyoke	45,623	10	3	50.00	—	—	—	20.00
Brockton	40,299	5	—	40.00	—	—	20.00	—
Haverhill	38,714	8	3	—	—	—	—	—
Salem	38,583	10	4	—	—	—	—	—
Malden	38,321	7	4	14.28	—	—	—	14.28
Chelsea	35,022	9	3	—	—	—	—	—
Gloucester	32,285	11	4	27.27	—	—	—	—
Fitchburg	31,648	9	6	22.22	—	22.22	—	—
Newton	31,224	6	1	33.33	—	—	—	33.33
Everett	31,167	9	5	33.33	—	11.11	—	11.11
Taunton	28,891	—	—	—	—	—	—	—
Quincy	25,653	—	—	—	—	—	—	—
Pittsfield	24,226	—	—	—	—	—	—	—
Waltham	23,285	8	1	—	12.50	—	—	—
North Adams	22,196	6	2	33.33	—	—	33.33	—
Brookline	20,225	—	—	—	—	—	—	—
Chicopee	18,790	6	2	33.33	—	—	—	—
Medford	17,869	4	1	—	25.00	—	—	—
Melrose	15,411	4	1	—	—	—	—	—
Newburyport	15,157	3	1	—	33.33	—	—	—

Deaths reported 1,987; under five years of age 710; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 496, consumption 256, acute lung diseases 187, diarrheal diseases 108, diphtheria and croup 70, typhoid fever 35, cerebrospinal meningitis 11, whooping cough 7, scarlet fever 5, erysipelas 2, measles 2.

From cerebrospinal meningitis New York 6, Baltimore, Providence, Worcester, Gloucester and Everett 1 each. From whooping cough New York 4, Baltimore, Pittsburg and Boston 1 each. From scarlet fever Worcester 2, New York, Pittsburg and Holyoke 1 each. From erysipelas New York 2. From measles New York and Boston 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending October 13th, the death rate was 17.1. Deaths reported 3,799; diarrhoea 289, acute diseases of the respiratory organs (London) 173, diphtheria 85, fever 64, whooping cough 59, measles 39, scarlet fever 27.

The death rates ranged from 10.5 in Cardiff to 24.8 in Manchester; Birmingham 18.9, Bradford 14.0, Gateshead 23.8, Huddersfield 16.5, Leeds 17.5, Liverpool 23.1, London 14.8, Newcastle-on-Tyne 18.7, Nottingham 18.0, Portsmouth 20.6, Sheffield 20.9, Sunderland 20.9, West Ham 12.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING OCTOBER 27, 1900.

D. H. MORGAN, passed assistant surgeon, commissioned passed assistant surgeon from November 27, 1899.

R. E. LEDRETTER, assistant surgeon, appointed assistant surgeon from October 19, 1900.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, November 7, 1900, at 8.15 o'clock.

Papers: "Operative Treatment of Thyroid Tumors," by Dr.

J. C. Warren. Drs. J. J. Putnam, S. J. Mixter and J. C. Munro will take part in the discussion.

"Results of Operative Treatment of Thyroid Tumors," by Dr. Lincoln Davis.

F. G. BALCH, M.D., Secretary, 279 Clarendon Street.

NEW YORK SKIN AND CANCER HOSPITAL.

The governors of the New York Skin and Cancer Hospital, Second Avenue, corner 19th St., announce that Dr. L. Duncan Bulkley will give a third series of clinical lectures on "Diseases of the Skin," in the out-patient hall of the hospital, on Wednesday afternoons, commencing November 7, 1900, at 4.15 o'clock. The course will be free to the medical profession.

WILLIAM C. WITTER, Chairman of Executive Committee.

RECENT DEATHS.

EDWARD R. SQUIBB, M.D., of Brooklyn, N. Y., the well-known manufacturing chemist, whose preparations have for many years maintained a world-wide repute for standard excellence, died of cardiac disease on October 26th, in his eighty-second year. He was born at Wilmington, Del., and was graduated from the Jefferson Medical College, Philadelphia, after which he entered the medical service of the United States Navy. After being promoted to the position of passed surgeon he was placed in charge of the medical station at the Brooklyn Navy Yard. Later he resigned from the navy and established his laboratory in Brooklyn. About fifteen years ago he retired from active work and since then the extensive business has been conducted by his sons, Dr. Edward H. Squibb and Charles F. Squibb. Dr. Squibb was one of the founders of the New York State Medical and of the Kings County Medical Associations.

WILLIAM H. BELL, M.D., an old New York practitioner, died on October 21st, at the age of seventy-three.

BOOKS AND PAMPHLETS RECEIVED.

Annual Report, Department of Public Health, City of Newark, N. J. 1899.

Physicians as Speakers. By William Whitford, Chicago. Reprint. 1900.

Therapeutische Erfahrungen mit Citrophen. Von Dr. F. Kornfeld in Wien.

Notes of the Life and Character of Dr. William Paine. By George E. Francis.

Corneal Corpuscular Activity. By Joseph E. Willetts, M.D., Pittsburg, Pa. Reprint. 1900.

Speech Hesitation. By E. J. Ellery Thorpe. New York: Edgar S. Werner Publishing & Supply Co. 1900.

Transactions of the American Ophthalmological Society, Vol. IX, Thirty-sixth Annual Meeting, Washington, D. C. 1900.

Medical Legislation. Governor Thomas' Veto of the Colorado Medical Bill. The Love Medical Bill of Ohio. Medical Ethics.

Bacteriology and Surgical Technique for Nurses. By Emily M. A. Stoney. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

A Study of Shortening of the Tibia and Femur in Fifty Cases of Tuberculous Disease of the Hip Joint. By Russell A. Hibbs, M.D. Reprint. 1899.

Superheated Dry Air in the Treatment of Rhenmatic and Allied Affections. By Thomas E. Satterthwaite, M.D., New York City. Reprint. 1900.

Hernia: Its Etiology, Symptoms and Treatment. By W. McAdam Eccles, M.S. (Lond.), F.R.C.S. (Eng.). New York: William Wood & Co. 1900.

Kurzgefasstes Lehrbuch der Kinderheilkunde für Ärzte und Studierende. Von Dr. Carl Seitz. Zweite vermehrte und völlig umgearbeitete Auflage. Berlin: S. Karger. 1901.

A Textbook upon the Pathogenic Bacteria for Students of Medicine and Physicians. By Joseph McFarland, M.D. Illustrated. Third edition, revised and enlarged. Philadelphia: W. B. Saunders & Co. 1900.

A Practical Treatise on Genito-Urinary and Venereal Diseases and Syphilis. By Robert W. Taylor, A.M., M.D. Second edition, thoroughly revised, illustrated. New York and Philadelphia: Lea Brothers & Co. 1900.

A Textbook of the Diseases of Women. By Henry J. Garrigues, A.M., M.D., Gynecologist to St. Mark's Hospital in New York City, etc. Third edition, thoroughly revised, illustrated. Philadelphia: W. B. Saunders & Co. 1900.

Twentieth Century Practice: An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by Thomas L. Stedman, New York City. In twenty volumes. Vol. XX. Tuberculosis, Yellow Fever and Miscellaneous, General Index. New York: William Wood & Co. 1900.

Original Articles.

A NEW TEST MEAL.

BY A. E. AUSTIN, A.M., M.D., BOSTON,

From the Chemical Laboratory of Tufts College Medical School.

THE test meal has become an absolute requisite for the examination of stomach contents. One of the chief reasons for this is the difficulty of obtaining gastric juice from the fasting stomach; in fact, when any considerable amount of gastric juice can be obtained from the fasting stomach, it is generally considered to be in a pathological condition. Three meals have been chiefly employed for this purpose. One was proposed by Ewald, another by Riegel, and still another by Klemperer. That of Ewald, or as it is sometimes known, Ewald and Boas, consists of one to two rolls, in Berlin parlance called a *Schuppe*, which weigh from 35 to 70 grammes, and two glasses of water. For this we have an excellent substitute in the ordinary round cracker, of which two weigh on an average 30 to 31 grammes, or in the soda wafers, four of which weigh on an average 35 grammes. With this meal, the contents should be withdrawn one hour after eating.

The meal of Riegel consists of soup, a beefsteak and a roll. It is to be withdrawn three to four hours after eating. Klemperer's meal consists of half a litre of milk and two rolls, to be withdrawn two hours after eating. There are serious objections to all of these: (1) The indefiniteness of the amount of the food elements employed, nitrogen, fat and carbohydrate, and (2) that on account of the lack of fine division, the tube introduced is frequently clogged, which necessitates its removal, its cleansing and re-introduction.

The meal employed in these experiments consisted of 2 grammes of dried egg albumin compressed into half-gramme tablets. These are to be taken with two glasses of water, and the contents withdrawn one hour after taking. For the preparation of these tablets my thanks are due to the Metcalf Co., who furnished them at my suggestion. This amount of albumin is equivalent to that found in the crackers, but in a different and more soluble form. Seven per cent. of dried bread, and consequently of crackers, consists of nitrogenous substances. This calculated for 30 grammes of crackers would give 2.1 grammes of albumin, the equivalent of that found in the four tablets. The latter, however, are very much better digested than the vegetable albumin, and hence there is much less residue. True, the nature of the starch digestion cannot be determined from such a meal, but can be as easily determined from the amount of free hydrochloric present, for the organic acids, if present, are seldom in large enough amounts to disturb amylaceous digestion, and combined hydrochloric acid has no inhibitory action upon this. With this meal the contents never clog the tube, there is always a definite amount taken, and the contents filter much more readily than when vegetable albumin is used. It also avoids a large mass of starch granules, always present when making microscopic examinations. These tablets when once compressed can be preserved indefinitely, are always on hand, and can be given to the patient without his departure from the office or clinic. Furthermore, lactic acid when found is of vastly more diagnostic importance than after the Ewald meal.

When amylaceous matter has been given it is difficult to limit the disappearance of lactic acid to an hour, but in this case the acid must come from the remnants of the last meal, and hence point to a lack of motility. For cases on which to demonstrate this meal, my thanks are due to Dr. R. F. Chase, who kindly placed his dispensary service at my disposal. The meal was given to 18 patients on whom 57 examinations were made at different times, and to 16 patients only once, so that a total of 73 examinations were made. These patients had all of them symptoms which were attributed to the stomach, such as distress, heartburn, eructations of gas, nausea and vomiting. In this new departure, of course, it is advisable to compare the results of the examination with those from an Ewald meal. The following cases were selected for this purpose.

COMPARISON WITH EWALD MEAL.

D. W. was given on two consecutive days, first, the albumin meal, then the Ewald meal. With the albumin meal the amount withdrawn was 50 c. c. with no free HCl as tested with dimethyl-amido-azo-benzol, and combined HCl amounting to .3 per mille. There was no lactic acid. With the Ewald meal the amount withdrawn was 82 c. c. There was free HCl to the extent of .8 per mille, and combined HCl of .6 per mille, or a total of 1.4 per mille. Lactic acid was present.

E. B. Two examinations with the albumin meal, at an interval of five days, showed respectively amounts withdrawn of 132 and 43 c. c. There was free HCl in both amounting to 1.6 per mille, and no lactic acid; while 3 examinations with the Ewald meal, immediately following the former at intervals of seven days, showed amounts of 134, 156 and 94 c. c. The free HCl was respectively 1.5, 1.3 and 1.53 per mille, while in the last examination the combined HCl was .25 per mille, making a total of free and combined HCl of 1.78 per mille. There was a trace of lactic acid present in every examination.

A. A. With albumin meal, total amount withdrawn, 95 c. c.; free HCl, 1.49 per mille; total HCl, 2.22 per mille; no lactic acid present. With Ewald meal seven days afterwards, total amount, 122 c. c.; free HCl, 1.95 per mille; total HCl, 2.73 per mille; a trace of lactic acid, and starch in the form of erythro-dextrin.

H. L. With albumin meal, total amount, 145 c. c.; free HCl, 1.35 per mille; total HCl, 1.82 per mille; no lactic acid. Five days afterward with Ewald meal, total amount, 52 c. c.; free HCl, .8 per mille; total HCl, 1.49 per mille; lactic acid present; erythro-dextrin.

S. With albumin meal, total amount, 75 c. c.; free HCl, 1.67 per mille; total HCl, 2.4 per mille. Two weeks afterwards with Ewald meal, total amount, 88 c. c.; free HCl, .9 per mille; total HCl, 1.2 per mille; lactic acid present and erythro-dextrin.

L. With albumin meal, total amount, 15 c. c.; no free, and no combined HCl, but a total acidity of 10 parts per hundred; lactic acid present. With Ewald meal two weeks after, total amount, 40 c. c.; no free HCl; combined and total HCl, .4 per mille; lactic acid; achroodextrin.

O'N. With albumin meal, total amount, 60 c. c.; free HCl, 1.82 per mille; total HCl, 2.62 per

mille; lactic acid present. With Ewald meal five days after, the total amount, 80 c. c.; free HCl, 1.82 per mille; total HCl, 2.59 per mille; lactic acid present.

In order to present these results in a more convenient form for comparison, a short table has been prepared comprising the results already stated, and needing no further explanation:

TABLE OF COMPARISON.

Name.	Meal.	Amount Withdrawn.	Free HCl per mille.	Total HCl per mille.	Lactic Acid.
D. W.	Albumin.	50 c. c.	None.	.3	No.
	Ewald.	82 c. c.	.8	1.4	Yes.
E. B.	Albumin.	132 c. c. 43 c. c.	1.6	1.6	No.
	Ewald.	134 c. c.	1.5	1.78	Yes.
		156 c. c. 94 c. c.	1.3 1.5		
A. A.	Albumin.	95 c. c.	1.49	2.22	No.
	Ewald.	122 c. c.	1.95	2.73	Yes.
H. L.	Albumin.	145 c. c.	1.31	1.82	No.
	Ewald.	52 c. c.	.8	1.49	Yes.
S.	Albumin.	75 c. c.	1.67	2.4	No.
	Ewald.	88 c. c.	.9	1.3	Yes.
L.	Albumin.	15 c. c.	None.	None.	Yes.
	Ewald.	40 c. c.	None.	.4	Yes.
O'N.	Albumin.	60 c. c.	1.82	2.62	Yes.
	Ewald.	80 c. c.	1.82	2.59	Yes.

The first impression that one would derive from such a comparison would be that more HCl would be found with animal albumin than with vegetable albumin. By referring to our results, however, we find that HCl in the Ewald meal exceeds the HCl in the albumin meal four times out of seven. Another thing which attracts our attention is that the lactic acid is present in the Ewald meal and not in the albumin meal in all cases but two, where it is present in both. Another thing quite noticeable, that with the Ewald meal the amount withdrawn is generally larger than with the albumin meal. It is very probable that this is due to the greater need of a vegetable albumin for fluid to accomplish its digestion, or chemically speaking, its hydration. There is unquestionably an osmosis or interchange of fluids between the blood on the one side and the contents of the stomach on the other.

CHEMICAL NATURE OF GASTRIC CONTENTS WITH REFERENCE TO HCL, AMOUNT, ETC.

The course of some of the cases affords some interesting observations. On A. J., who complained of gaseous, non-acid eructations, vomiting, etc., eight examinations were made, covering a period of two months. Starting with an entire absence of HCl, the amount gradually increased until at the close the HCl had reached 1.8 parts per mille. On account of the early lack of the HCl, a quantitative test for rennin was made, which showed that milk could be coagulated with a dilution of 1-80 of the stomach contents, a result not far from normal. Lactic acid was invariably present. The increase of amount withdrawn from 12 c. c. to 72 c. c. may have been due to the increased

muscular tone of the stomach walls. This is further substantiated by the fact that, at first, suction was necessary to remove the contents, but at last voluntary compression on the part of the patient was sufficient.

The case of M. M., followed for one month with five examinations, showed a persistently low amount of HCl varying from entire absence to a total of .8 per mille. Here also the rennin was found to be active in dilutions of 1-180 and repeated microscopic examinations showed no cancer cells, when examined by the methods proposed by Henmeyer.

The case of Mary M., followed for seven weeks with seven examinations, showed the most marked variations in the HCl, due probably to nervous origin. They were respectively 1.3, .6, 0, 1.35, .8, 1.38 and 1.5 per mille, under the same conditions of meal, time of removal, etc. Lactic acid was also present when HCl was below .8 per mille, which must have come from the previous meal, since only albumin was used. On one occasion, bile was present in the stomach contents, which indicated only reflex vomiting from the introduction of the tube, since it was not persistent.

In the case of J. G. three examinations made in one week showed a total HCl of respectively .04, 1.3 and 1.2 per mille, and total amounts withdrawn of 102 c. c., 42 c. c. and 97 c. c.

The case of T. L. came nearest to being one of continuous secretion of gastric juice. At periods of from fourteen to sixteen hours after food had been taken, there were removed from the stomach on five occasions amounts respectively of 55 c. c., 80 c. c., 30 c. c., 87 c. c. and 19 c. c. This was of an almost watery consistency, perfectly clear, containing no food particles whatever, whose total HCl was .9, .7, .8 and .4 per mille. After an albumin test meal, 260 c. c. of stomach contents were withdrawn which had a total HCl of .8 per mille.

DISCUSSION OF DIFFERENT FEATURES.

Upon comparing the amounts withdrawn, we find that there was

Less than 20 c. c.	. . . . .	9 times.
20 to 40 c. c.	. . . . .	24 "
40 " 60 "	. . . . .	16 "
60 " 80 "	. . . . .	11 "
80 " 100 "	. . . . .	7 "
Over 100 "	. . . . .	8 "

Included among these results are two Ewald meals. The rest, however, were from albumin meals. The amounts withdrawn at intervals of an hour seem to depend largely upon the muscular tone of the stomach. It is very difficult, however, to set a limit beyond which we may say that hypotony or dilatation exists, and under which the stomach is normal. From the other conditions involved, it seems that with the albumin meal we may say that there is lack of muscular tone when 100 c. c. or more can be withdrawn. This is especially true if it is necessary to use suction, or if in introducing water for purposes of lavage it cannot be withdrawn readily, or a whirling motion in the funnel is noticed upon its introduction. The presence of free HCl was always determined by dimethyl-amido-azo-benzol, and was found present in 60 examinations and absent in 13. Lactic acid was determined by the modified Uffelmann test in the following way: One drop of ferric chloride was placed in a test tube, the test tube filled with water, this then divided into equal parts in two test tubes, each filled

up with water, and a drop or two of the filtered stomach contents added to one, the other serving as a control. As demonstrated by this test, lactic acid was found 40 times, 9 times with no free HCl, and twice the entire absence of free HCl was accompanied also by the absence of lactic acid. This is contrary to the teachings of Boas, who claims that lactic acid is absent when HCl is present to any appreciable amount, one hour after the meal. As our supposition is that the lactic acid must come from the previous meal, and be indicative of atony, then it should be associated with a large amount of contents. This cannot be demonstrated, however, since it is found when the amount of contents withdrawn varied all the way from 10 to 102 c.c. Lactic acid was also found when the free HCl rose to 1.8 per mille. As combined HCl has no inhibitory action upon the formation of volatile acids by their respective bacilli, no account was taken of it. A more detailed account of this association is given as follows: Lactic acid was found twice with a free HCl, of 1.8 per mille, once with 1.7, twice with 1.6, once with 1.5, twice with 1.3, twice with 1 per mille, and so on down. Its presence followed certain cases, as that of A. J., throughout the course of examination. The latter never lost the lactic acid in spite of the fact that his HCl steadily increased from nothing to 1.8 per mille.

In 40 cases only were both free and combined HCl or total HCl determined, and that by the method of Töpfer. In the rest, only the free HCl and the total acidity were determined. Of the entire number of examinations in which the albumin meal was given (73), there were, as already stated,

No free HCl in	13
Less than .5 per mille in	7
Between .5 and 1 per mille in	12
" 1 " 1.5 "	19
" 1.5 " 2 "	12
" 2 " 2.5 "	6
" 2.5 " 3 "	0
Over 3 per mille in	4

In the 40 cases where free and combined or total HCl were determined there was entire absence of both in only 3 cases. The total free and combined HCl was

Less than .5 total HCl per mille	9
Between .5 and 1 per mille	0
" 1 " 1.5 "	7
" 1.5 " 2 "	4
" 2 " 2.5 "	10
" 2.5 " 3 "	4
Over 3 per mille	6

As compared with the results of H. F. Hewes,¹ where the limits of normal total HCl were from 1.1 to 2.6, and the average from 1.2 to 2.5 per mille, 21 fall within these limits, 9 below and 10 above. Bile was present twice, and with the bile there was once associated pancreatic juice, which was demonstrated by the fact that the stomach contents in alkaline medium could both digest albumin and convert starch. Bile is not so rare in stomach contents, but is much more apt to be present in the first withdrawal in a patient, from the retching accompanying the introduction of the tube. After the patient has become accustomed to this introduction, the presence of bile is much less frequent. If it persists a long period, Boas² considers it a sign of the constriction of the duodenum, while Bouveret³ prefers to regard it not only as evidence of a constriction of the duodenum, but also of

a patent pylorus. These conditions can only be differentiated by blowing up the stomach with air. Under normal conditions no air can pass through the pylorus on account of its spasmodic closure, and hence the intestines cannot become distended.

Renin was always looked for where the total HCl was very much diminished, and no free HCl was present. The quantitative method of Boas was employed, which is as follows: One c.c. of stomach contents was diluted with water to 10 c.c. Five of this was taken in a test tube, and was again diluted to 10 c.c., and 5 c.c. more taken. The process continued until we had four test tubes with 5 c.c. of diluted contents in dilutions of 1-10, 1-20, 1-40 and 1-80. To each of these were added 5 c.c. of cooled boiled milk and a few minims of calcium chloride solution. We now have dilutions of 1-20, 1-40, 1-80 and 1-160. A control test is always prepared to guard against the possibility of spontaneous coagulation, consisting of 5 c.c. of milk, 5 c.c. of water, and the same amount of calcium chloride. These tubes are all placed in a brood oven, at a temperature of 30°, for from twenty to thirty minutes, and then note made of the coagulation.

Coagulation normally should take place in dilutions of from 1-80 to 1-160. The importance of this test cannot be over-estimated in cases of suspected cancer, being of vastly more importance than diminution of HCl or the presence of lactic acid. In all of our cases, coagulation was found in dilutions of 1-80 or over. In every case the contents were also examined with the microscope, and while several times fragments of mucous membrane of the stomach were found, nothing was seen approximating the peculiar arrangement of these cells in cancer of the stomach. These results were also verified by Dr. Timothy Leary, our pathologist, who kindly offered to assist in these examinations. Yeast fungi were always present; no degree of acidity nor use of albumin stayed their growth in any way. No sarcinae were found, fairly good evidence that in all cases no marked dilatation nor narrowing of the pylorus was present.

Among the interesting points brought out was the unreliability of the presence of lactic acid as a diagnostic symptom. It was present in the majority of cases where the Ewald meal was used, and also in very many cases where the albumin meal was used, and as a diagnostic symptom seems to have lost its significance. It is also quite evident that impaired motility is the most important condition in the so-called nervous dyspepsias, arising probably from the lack of enervation dependent upon shock or worry. It may be present with either impaired or superabundant secretion of HCl. The former condition is probably the more distressing from the formation of organic acids and gases. The importance of this motility can also be demonstrated by laboratory experiments in artificial digestion, where shaking the contents of flask or container accelerates in such a marked degree the process of digestion. It is of interest also that the increased flow of gastric juice is always accompanied by a relative increase in the amount of HCl, or it may be that lack of motility and diminished HCl are associated, and the small quantity withdrawn is due to our inability to remove the total contents of the stomach. Finally, dried egg albumin in the form of tablets seems to fulfil all the conditions that attach to a successful test meal.

¹ Boston Medical and Surgical Journal, vol. cxlii, No. 20.
² Diagnostik u. Therap. der Magenkrankheiten, 1 Th., S. 276, 1897.
³ Traité des maladies de l'estomac, 1893, p. 32.

SPINAL CARIES WITH ABSCESS: ANALYSIS OF CASES.

BY ERNEST B. YOUNG, M.D., BOSTON.

It has been the good fortune of the writer to be able to collect 78 cases of spinal caries complicated with abscess, and to obtain reports of the condition of those living at periods of from one to thirty-five years after the beginning of the disease, as well as the date of death of those who have already succumbed. The average time of the reports is about four and one-half years after the onset. With the exception of 18 cases, all the material comes from hospital clinics, as it is among the lower strata of society that spinal caries flourishes. These classes are the ones most liable to trauma and strains from the nature of their employments, while poor and insufficient food, bad air and inability to properly care for themselves make them good subjects for tuberculous invasion. The cases are in no way selected, except that nothing has been included where there was any doubt as to diagnosis. In addition to the cases where it has been possible to obtain full reports, a few have been utilized where the data at hand were known to be correct, even though not quite complete in all particulars.

Age and sex. — It will be seen from the cases considered under this heading, 52 males and 26 females, that the disease throughout life is about twice as frequent among males, although at different periods the ratio changes somewhat. The onset in 38 out of 78 cases occurred before the tenth year. This is undoubtedly due to the fact that both sexes are active and liable to injuries at this time. From *ten to twenty years* the ratio changes very little, but from *twenty to thirty years* the males outnumber the females nearly 5 to 1; for the female has ceased to be active as the male and at this time many of the men are performing the hardest kinds of manual labor. The figures seem to bear out the importance of trauma as an etiological factor in the disease; for as the female becomes less active, the frequency of the disease decreases, while in the male the two periods of greatest liability to injury, childhood and young manhood are each marked by a rise in the number of afflicted. After the thirtieth year, when the epiphyses of the vertebræ are firmly united, its occurrence in either sex is quite rare; yet even during the remaining years of life the males outnumber the females 2 to 1. Only 11 cases have been collected where the first symptoms occurred after thirty years of age. The youngest case was eight months old when the abscess appeared, and the oldest sixty-seven years.

Seat of disease. — Caries of the dorsal spine leads most often to abscess formation. Cervical and sacral disease with abscess seems rare at any time of life. Of 77 tabulated cases there are:

Dorsal	43
Lumbar	31
Sacral	2
Cervical	1

Under ten years dorsal disease is one-half again as common as lumbar; while throughout the remaining years of life the two regions average about the same.

Deformity. — The condition of spines of 77 cases when first seen was as follows:

No deformity	18
Slight "	30
Medium "	16
Great "	13

It would seem that abscess formation has little relation to the extent of the deformity, as those with no kyphos or a slight kyphos far exceed in number the cases with great deformity. The large kyphoses appear almost entirely when the disease begins early in life. After the twentieth year there is only one case of moderate and one of bad deformity. In one case there were two kyphoses of moderate size, one in the dorsal and one in the lumbar spine.

Abscess. — In 83 cases there are:

Psoas abscesses	63 (including 5 double psoas).
Lumbar "	21 (" 2 " lumbar).
Sacral "	2 (1 pointing in pelvis and 1 over sacrum).
Cervical "	1 (pointing in neck).

Psoas abscess is the most common when either the dorsal or lumbar spine is attacked, while double psoas and double lumbar abscesses are quite rare.

Abscesses associated with cervical or sacral disease are apparently quite uncommon.

Psoas and lumbar abscesses, when occurring in the same person, generally point on the same side of the median line; but in some few cases there is a psoas abscess upon one side of the median plane and a lumbar abscess upon the other.

As would be expected, in a few instances the pus has forced its way under Poupart's ligament and in one case has burrowed downward from a lumbar abscess into the superficial fascia of the thigh.

It is impossible to get any reliable data concerning the duration of abscesses or the date of first appearance. Often the patient has been ignorant of its presence even when filling one whole side of the abdomen and pelvis. In 2 cases the abscess has come on during treatment. These are the severe cases and both are dead. The sinuses have remained open for many years in some instances, and in others have closed within a few months. Some have the sinuses heal promptly only to break out again from time to time. Most of the sinuses remain open for a year or two, so far as can be learned, and in many cases, even with the patient in good health, they still persist.

Pain of any amount seems to become a prominent feature in many adult cases only when the abscess has reached such a size as to produce psoas contraction. While in children pain is generally referred to the abdomen, in the adult it is generally referred to the back, there being only two or three adults who have complained of abdominal pain.

Treatment. — In by far the greatest number the abscess has been treated by incision; but some have been collected of aspiration and spontaneous opening, as well as a few where the abscess has remained closed. Of 77 cases, 37 under ten years and 40 over ten years, the treatment was as follows:

	Under ten years.	Over ten years.
Remaining closed	2	8
Spontaneous opening	4	8
Aspiration	2	6
Incision	29	18
	<hr/>	<hr/>
	37	40

Two cases included under incision were aspirated, and incised shortly after. One adult and one child have been aspirated many times. One case, which opened spontaneously, was incised later.

Prognosis. — Many of the cases have been treated in general hospitals, which have as a rule no orthopedic department, and hence the after treatment has been either entirely neglected, or only partially carried out. At the same time it must not be forgotten that

this is often the fault of the patient or of circumstances which put him out of reach of skilled attendance.

The reports received from 78 cases at periods of from a few months to thirty-five years from the beginning of symptoms are given below. Ages given always refer to the time of onset, unless otherwise stated:

	Under ten years.	Over ten years.	Total.
Well	3	6	9
Good condition	19	8	27
Fair	4	3	7
Poor	3	4	7
Dead	17	11	28
	46	32	78

The average time from beginning of the disease to the last report, for those under ten years, is three years; for those over ten years, a little more than four and a half years.

Of 10 cases where the abscess remained closed the statistics are:

	Condition at onset.	Present condition.
Well	0	0
Good	3	5
Poor	7	1
Dead	0	4
	10	10

Average duration of disease is nearly four years. One child and 3 adults have succumbed at periods of from four to six years. In 2 cases the abscess is reported to have disappeared.

Spontaneous opening took place in 12 cases. The statistics are:

	Condition at onset.	Present condition.
Well	0	3 (after six, ten and thirty-six years).
Good	1	5 (after two to six years).
Fair	6	1 (after eleven years).
Poor	5	1
Dead	0	2 (after two and four years).
	12	12

Average duration of disease slightly over six and a half years.

Of 8 cases treated by aspiration alone the statistics are:

	Condition at onset.	Present condition.
Well	0	2 (1 after eleven years).
Good	2	1 (after two years).
Fair	2	1 (after six years).
Poor	4	0
Dead	0	4 (3 after one, two and thirty-three years).
	8	8

Average duration of disease about eight years; average time elapsed since operation, three years and two months; out of 4 children 3 are dead.

Incision has been the method used in 48 cases; 32 under ten years and 16 over ten years. The statistics are:

Under Ten Years.		
	Condition at onset.	Present condition.
Well	0	1
Good	3	10
Fair	15	5
Poor	14	3
Dead	0	13
	32	32
Over Ten Years.		
	Condition at onset.	Present condition.
Well	0	2
Good	2	5
Fair	5	1
Poor	9	0
Dead	0	8
	16	16

Average duration of disease in cases commencing under ten years is about six years and ten months;

while of those commencing at beyond this period, four years and two months.

Average time elapsed since operation in the first class is five years and two months, and for the second about three and a half years.

SUMMARY.

	No. Cases.	Recoveries.	Mortality.
Remaining closed	10	0	40%
Spontaneous opening	12	3	16 2/3 "
Aspiration	8	2	50 "
Under ten years	32	1	40 "
Incision, over ten years	16	2	50 "

The prognosis of spinal caries with abscess, apart from the cases where the abscess opens spontaneously, seems to be very slightly influenced by the treatment accorded the abscess, although undoubtedly affected by the proper fixation of the spine.

Considering the series as a whole, we may say that the mortality is about 35% at an average period of three years and nine months after the first symptoms, and that the mortality is slightly greater among those in whom the disease commences before the tenth year.

Unfortunately the number of patients from whom reports have been received is not very large, but undoubtedly the spontaneous opening is the most favorable outcome. When the abscess remains closed, the mortality is almost as large as when treated by incision or aspiration.

There seems to be a decided danger of general tuberculous invasion in these cases, as 3 out of 4 deaths were caused by tubercular meningitis.

Causes of death.—In both children and adults the most common cause of death seems to be a gradual deterioration of whole system, as most reports say: "Failed gradually after leaving the hospital." The causes of death in a few cases where it was possible to get a reliable report are given below: General tuberculosis, 4; amyloid, 1; tubercular meningitis, 3; shock of operation, 2; sepsis and renal, 1; phthisis, 1.

In 2 other cases, both adults, tuberculosis has attacked the genito-urinary system, and 1 is now in the last stages of the disease.

In closing, I wish to thank the staff of the Children's Hospital and the staff of the Massachusetts General Hospital for allowing me the use of their records, and also many friends who have kindly furnished me cases from their private practice.

CELLULOID AS MATERIAL FOR FLAT-FOOT SUPPORTS.

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THE use of celluloid as material for flat-foot supports was first suggested, as far as the writer is aware, by Kirsch. By him, as well as by Schanz, in two subsequent publications, the advantages and disadvantages of its use were pointed out. Lightness, the absence of any tendency to corrode, cleanliness therefore, and the ease with which the plates can be made innocuous to foot wear have been considered its advantages; in addition to this a certain elasticity which is necessarily lacking in metal supports and which is said to contribute toward the comfort of the patient as well as the efficiency of the brace.

On the other hand it is acknowledged that celluloid plates are less durable than steel ones, that material of the very best quality must be obtained in order to obtain uniform results and that this is not always easy. It remained also to be proved whether or not celluloid plates possessed the rigidity requisite for their usefulness in the treatment of flat foot.

In undertaking to test the value of this material for the manufacture of flat-foot plates, the writer felt also the need of improvement in the process of working it. When placed in boiling water for a few minutes celluloid becomes quite soft and flaccid, but upon removing it from the water it rapidly stiffens, so that it cannot easily be manipulated with the hands. This, however, is the method recommended by Schanz in both of his communications on the subject.¹ After a few attempts made according to Schanz's directions, the writer abandoned the method of shaping the material freehand as being necessarily inaccurate and unsatisfactory. The procedure of Kirsch² seemed to promise more, involving, as it did, the use of the plaster cast and might be briefly described as follows: The corrected plaster cast is made in the usual way and having cut a piece of sheet celluloid to the desired shape, it is applied to the cast by means of a towel, the ends of which are twisted over the dorsal aspect of the cast, the middle being in contact with the sole. The twisted ends being held, the cast is now lowered into boiling water, and after a few seconds have elapsed the continued twisting of the towel ends is expected to bring the celluloid sufficiently into contact with the cast, and upon removing the whole from the boiling water and dipping it into cold for a few minutes the maximum stiffness is acquired.

After experiment with this method the writer finds that in addition to being quite troublesome the adaptation of the plate to the sole of the cast is far from being exact. In addition, however, it is believed that the use of the plaster cast in the usual manner can be improved upon both as regards accuracy and simplicity, as well in the case of metal as of celluloid, however, as material for the plate and in the treatment of flat foot.

It is assumed that it is the object of the flat-foot brace to support the depressed or weakened arch so much as is compatible with comfort, and therefore to the extent permitted by the flexibility of the foot. The flexibility of the foot, however, is a factor which will be found to vary within fairly wide limits, even in feet which are not the seat of the inflammatory stiffness so frequently present in flat foot. The amount of correction which must be made in the plaster cast is an uncertain thing and one which is really done by guess, so that it is believed to be a common experience that more or less change is required to be made in the finished plate in order to make it comfortable or efficient in the maximum, as the case may be. After considerable experiment with the following method, it is believed that it can be offered as being simpler, but also more exact than the use of a corrected plaster cast.

A pattern is first to be made which differs according to the type of support which it is desired to produce. This is made upon an impression of the sole of the foot according to the method of Schanz, except

that the writer believes the following method to be less objectionable than the use of soot or other black material, and that it furnishes at once a permanent record.

The impressions are taken upon pieces of cardboard obtained from the paper stockhouse under the trade name of "black showcard." A piece being cut of proper size, say $5\frac{1}{2} \times 12$ inches, it is fastened to a board of slightly larger size with drawing tacks, and its dull black surface is rapidly coated with a fairly thick solution of shellac in alcohol. In the meanwhile the patient has been rubbing his foot in a pan upon whose bottom ordinary talcum powder has been evenly sprinkled. The patient should bear his weight upon the foot and rub in the powder thoroughly by moving the foot about. When the spirit in the shellac has evaporated sufficiently to leave a sticky feel, but *without adhering to the finger*, the board is taken to the patient, from whose foot the excess of powder has been blown, and he is told to bear his weight upon it. While he is doing so the contour of the foot may be scratched in with a suitable sharp instrument. It is well now to draw in with white ink the outline of the impression as well as the contour of the foot. The result is shown in the figure. By interposing tissue



FIG. 1.

paper between each pair of impressions, they may be conveniently and indefinitely preserved.

To make the pattern, a piece of tissue paper is placed upon the impression, and the pattern may now be drawn with the outline of the impression and the contour of the foot in plain view. The paper is now cut out, and from this paper pattern another is cut in sheet lead about $\frac{1}{16}$ inch in thickness (known as 4-pound lead). This lead pattern is now hammered by rough guess into the shape of the future support, a horn hammer or the handle of a file being used for this purpose. Due regard must be had for the "balance" of the support while so doing. The hammering of the sole has a tendency to make the whole piece curl, and it is well from time to time to press that which is to come in contact with the sole of the shoe against a plane surface so as to be able to properly estimate the amount of arch which is being given.

This having been done, the pattern is fitted to the patient's foot and with a very little practice one is able to obtain a perfect fit with a few taps of the hammer. The patient can assist one by telling whether there is too much pressure in one spot or whether the whole pressure is disagreeable. It will

¹ Schanz: Zeitschr. f. orth. Chir., Bd. vi, S. 495; Schanz u. Mayer: Zeitschr. f. orth. Chir., Bd. viii, S. 25.

² Kirsch: Centrbl. f. Chir. 1896, S. 837.

be found best not to attempt altering the lead pattern with the finger, but always with the hammer, not forgetting the "balance" each time that it is so changed. This pattern when so fitted is intended to serve as a form on which to mould the celluloid, or in case a metal support is to be made, the pattern instead of the foot is used to make the cast upon which the workman fits the brace.

In working with celluloid the material is first cut out in proper shape, a scroll saw being best adapted for this purpose. It is well now also to finish the edges of the celluloid. Celluloid or rubber scrapers made for the use of dentists will be found well adapted for rounding the edges and they can then be made smooth with fine sandpaper.

The celluloid is now superimposed upon the lead pattern, which must be handled with some care, for while it withstands the pressure which is necessary, it can, nevertheless, be easily bent by striking the floor or any hard object with force. The celluloid is fastened to the lead pattern with clips or with rubber bands, and it is necessary to see that now and afterward during the shaping process the outer edges of celluloid and lead coincide.

By means of forceps with smooth jaws, plate and pattern thus clamped together are now lowered into boiling water, which must be of sufficient depth to



FIG. 2.

cover them; a granite-ware baking dish will be found a convenient vessel. As soon as the celluloid has begun to soften it should be gently pressed down to the pattern and when thoroughly flaccid the whole is removed from the vessel with the forceps by one hand and received by the other hand, which is protected from the heat by a towel folded several times. The celluloid, still hot by the lead underneath, is now made to fit the pattern accurately. This can be done quickly and with ease. The whole is now immersed in cold water for a few minutes and is then ready to apply to the patient. The plate may be given a finish by rubbing the whole of it with fine sandpaper.

Good celluloid is a material of great toughness and if sufficient force is used can be bent to a certain extent without heating. If any further adjustment of the edges is required, to prevent injury to the shoes, for instance, this can be quickly accomplished by using the forceps before mentioned, whose jaws are smooth and which is considerably bent on the flat. If it is desired to make a plate with an external flange, the pattern having been shaped accordingly, this must first be shaped freehand so that when the celluloid is placed upon the lead, the flange as well as the outer edges of the plate and pattern, respectively, may coincide. Figure II shows a plate made in this way.

The material which has been used in these experi-

ments is known by the trade name of "pyralin"³ and has been found of uniform quality. Three thicknesses have been used, $\frac{1}{16}$, $\frac{1}{8}$ and $\frac{1}{4}$ inch. The thickness to be used depends upon the weight of the patient and in scarcely less degree upon the flatness of the arch as shown by the impression. Material of $\frac{1}{16}$ inch is used as a rule for children only and for persons weighing less than 100 pounds.

The writer feels that he must speak with some reserve with regard to the durability of these plates, for he has been using them not quite six months. But one of the plates has been broken; this was in the case of a very active young man with perfectly flat feet and weighing about 150 pounds; the break occurred in jumping from a street car and the material was $\frac{1}{8}$ inch. The rigidity of the plate has been well tested in one patient of 172 pounds, who has been wearing it for five months. Although of $\frac{1}{16}$ inch thickness, the plate shows no appreciable change upon comparison with the pattern from which it was made. However, if such yielding occurred it could be easily remedied by reshaping it in the boiling water with the original lead pattern.

Absolute accuracy cannot be claimed for the above method, especially when celluloid is used, for it is the under surface of the celluloid which is shaped to the pattern instead of the upper, and the inaccuracy will be in direct ratio to the thickness of the material. In practice this has been found unimportant, however. In addition it does not appear that such a degree of accuracy has been reached in the treatment of flat foot as to constitute a serious objection. When the lead pattern is used to obtain the plaster cast in the manufacture of metal supports, the inaccuracy is, of course, much less.

[NOTE.—Since writing the above there has come to the author's notice an article by Mœukmøller and Kafan in the *Neurolog. Centrbl.* of September 21, 1900. This has suggested a simpler and equally efficacious method of taking impressions of the feet. The following method has been found satisfactory: With a cotton swab the sole of the foot is moistened with a solution of tincture of iron and 70% alcohol, each 45; glycerine 10. Care should be taken in order that the entire weight-bearing part of the foot may be covered with solution; if the latter is used too profusely the impression will not be clear. The patient now steps upon a piece of white cardboard for about two seconds. The image is now developed by lightly painting the card with a strong solution of tannin in 70% alcohol. Mœukmøller and Kafan use ammonium sulphocyanate in ethereal solution for developing.]

THE AGGLUTINATION BY THE PATIENT'S SERUM OF THE BACTERIA FOUND IN CYSTITIS AND PYELITIS, WITH A CONSIDERATION OF THE PLEOMORPHISM OF THE BACTERIA FOUND IN THESE INFECTIONS, ESPECIALLY AS REGARDS CHROMOGENIC PROPERTIES OF THE STAPHYLOCOCCI.

BY THOMAS R. BROWN, M.D., BALTIMORE, MD.

SINCE the demonstration of the agglutination reaction by Widal in the case of the typhoid bacillus, numerous contributions have been made which describe similar instances of agglutination in the case of other micro-organisms. Thus, besides the enormous amount of work that has been done in this connection with typhoid, considerable attention has been paid to the diagnosis of Malta fever and of tuberculosis by similar means, while numerous isolated observations have

³ Obtained from the Arlington Company, 475 Broadway, New York.

been made describing the agglutination of various bacteria by the serum of their host. This communication will deal, in the first place, with a few cases of cystitis and pyelitis in which the bacteria giving rise to these infections have been tested with the patient's serum, to see whether or no they would be agglutinated thereby. Obviously, to be able to make this test satisfactorily, we must choose those micro-organisms with at least a moderate degree of motility, so that not only the clumping of the bacteria but the variations in their motility can be definitely studied.

CASE I. This was a case of cystitis of many years' duration, due to the bacillus coli communis in pure culture, the micro-organism in this case being more actively motile, and producing its characteristic changes upon the various media more rapidly than any other colon bacillus we have ever met with. The patient was an extremely anemic, poorly nourished girl, and the lack of resistance dependent upon her general physical condition coupled with the probably marked primary virulence of the micro-organism was in all likelihood the cause of the extreme activity of the bacillus in this case. The cystitis was present in its most marked type; the injection, ulceration and contraction of the bladder were most marked, although the condition existed alone, that is, was not associated with a renal infection. The condition had undoubtedly arisen after faulty catheterization more than ten years previously, and had been present ever since, constantly increasing in severity. The urine was acid, contained enormous numbers of pus cells and a moderate number of red blood and epithelial cells, with a trace of albumin, while a bacteriological examination made under the strictest aseptic precautions demonstrated that the bacillus coli communis was present in large numbers in pure culture. As stated before, the organism was very actively motile, grew rapidly and luxuriantly on all culture media, and produced the characteristic changes therein speedily and in a marked degree. The patient's serum was obtained by the method usually employed in the case of testing the Widal reaction in typhoid fever; that is, the blood was obtained in a pipette, the end of which was of fine calibre, and after the serum had separated from the clot the former was tested with an eighteen-hour bouillon culture of the micro-organism in the usual way, that is, with dilutions of varying strength examined ten, thirty and sixty minutes after the mixing of the bacteria with the serum. In dilution of 1 to 10 the reaction was distinct in ten minutes; almost complete, clumping with almost entire loss of motility, in thirty minutes, and absolutely complete in sixty minutes; in dilution of 1 to 20 the reaction was almost as positive, while in dilution of 1 to 50 the reaction was evidently beginning in ten minutes, there being some clumping and some loss of motility; in thirty minutes the reaction was positive, while in sixty minutes it was almost complete. It will thus be seen that the reaction in this case was absolutely positive.

CASE II. This was one of an acute infection of both bladder and kidney, due to bacillus proteus vulgaris. The history of the case in brief was as follows: After an operation for chronic recurring appendicitis without abscess formation the patient was catheterized by an orderly whose technique was remarkably bad. On the third day after the operation the patient developed all the symptoms of an acute ammoniacal

cystitis with large numbers of pus, blood and epithelial cells in the urine, while four days later he developed also the symptoms of a left pyelonephritis. The culture from the kidney and from the urine was that of the bacillus proteus vulgaris (the cultures from the kidney were made directly, two weeks later, when the kidney was opened and drained to relieve the pyelonephritic condition). The urine at all times contained large numbers of triple phosphate and ammonium urate crystals, while considerable albumin was also present after the kidney became infected. The testing of the agglutinating power of this patient's serum from the cultures of the bacillus proteus vulgaris obtained in the case were made as in the preceding instance, and, as in that instance, the micro-organism was a very motile one. In dilution of 1 to 10 in ten minutes the reaction was marked, in thirty minutes almost complete, and in sixty minutes absolutely complete, while in dilution of 1 to 50 the reaction was definitely beginning in ten minutes, positive in thirty minutes, and almost complete in sixty minutes. The reaction was thus as positive as in the preceding case.

CASE III. This was one of cystitis of four years' duration, associated two years after the beginning of the cystitis with a pyelitis, both due to the bacillus proteus vulgaris. At the time of the development of the cystitis the patient was in an extremely anemic condition (hemoglobin 50%), and was obviously in a state especially suitable for the development of infection. After the development of the pyelitis, the symptoms of cystitis became markedly less, so that at the time the patient came under observation both vesical lesions and symptoms were very slight. The urine from the bladder contained numbers of pus cells, some red blood and epithelial cells and considerable albumin, was either slightly acid, neutral or slightly alkaline in reaction, and contained large numbers of the bacillus proteus vulgaris in pure culture. The urine from the right kidney obtained by ureteral catheterization contained large numbers of pus cells, some red blood cells and some renal epithelial cells, considerable albumin, was invariably alkaline and also contained the bacillus proteus vulgaris in pure culture. The urine from the left kidney was absolutely normal. The agglutination test in this instance, made as before, gave the following results: In dilutions of 1 to 10 no reaction was noticed in ten minutes, in thirty minutes there was a suggestion of slightly decreased motility and a few clumps, while in sixty minutes the reaction was still more suggestive but not positive; in dilution of 1 to 50 the reaction was not present. Thus in this case the reaction if present at all was so in a very slight degree.

CASE IV. In a case of acute cystitis due to the bacillus typhosus in a patient who did not have typhoid fever, where the vesical infection was presumably introduced by catheter, the bacilli obtained in pure culture from the urine were unfortunately not tested with the serum of the patient; the bacilli were, however, tested with the serum of another patient who was suffering with a typical attack of typhoid fever, and reacted with this serum positively even in dilutions of 1 to 80.

These 4 were the only cases of cystitis and pyelitis in which this test was made, but the absolutely positive reaction in 2 of the 3 cases in which a complete test was made, and a suggestive reaction in the third

case, suggest that this might be frequently found in cases of cystitis and pyelitis. The fact that one case in which the reaction was positive was one of an acute infection of but two weeks' duration, and the other positive case, a chronic case of many years' duration, would suggest that the reaction may begin shortly after the infection has been set up and may continue for a long period of time.

These cases, although few in number, suggest a possible means of differentiating the bacteria in those cases of cystitis and pyelitis where there is doubt about the bacteria causing the infection, and they also suggest that in this class of cases there is possibly developed a certain reactive tendency of the organism as a whole against the special infection.

The pleomorphism of many micro-organisms under varying conditions has been frequently dwelt upon by numerous bacteriologists. Thus the morphology of the tubercle bacillus may be made to differ quite markedly according to the media upon which it has grown; the motility of the typhoid bacillus varies markedly under varying conditions. The virulence of the streptococci and staphylococci lies within widely divergent limits, dependent upon many previous factors in the life history of those micro-organisms; and, of course, many other cases of like nature might be added. The factors in the development of these various forms of the same micro-organism are probably to be found by a careful study of the previous life history of the organism in question. In cystitis we have an especially favorable field for studying the pleomorphism of the organisms which give rise to this condition. Thus we may have varying grades of resistance of the patient due, in the first place, to the general condition of the patient's health, whether she is robust and healthy or anemic and poorly nourished, and in the second place, to the condition of the bladder itself, whether it has recently undergone trauma, whether it is in a condition of anemia or congestion, whether there is constant retention of a portion of the urine, etc.; and also there may be various factors definitely dependent upon the micro-organism itself. Thus the virulence may vary markedly, depending upon its previous history and habitat, whether its existence has been parasitic or saprophytic, also upon the number of micro-organisms which were initially introduced. The condition of the urine also plays an important rôle; thus upon the presence of considerable, a small amount of, or no albumin depends the fact whether or no the micro-organism will find a medium favorable for its growth.

The multiplicity of these factors has shown us marked pleomorphism in our cases of cystitis and pyelitis, over 80 of which have been carefully studied bacteriologically. The results of these experiments, as will appear in full elsewhere, go to show that the colon bacillus is the commonest cause of cystitis and pyelitis in women, while various staphylococci, the tubercle bacillus and the bacillus proteus vulgaris are also quite frequently found, and numerous other micro-organisms are found in exceptional instances. The pleomorphism of the colon bacillus in the various specimens found by us was very marked; thus its shape differed from that of a rather long, not very thick rod to a form difficult to distinguish from a coccus; its motility in some cases was very active, in the majority of cases sluggish, and in a few cases *nil*

as far as we could determine. Marked variations were also seen in its behavior upon the various media. In some cases the growth was very profuse, and the changes in the various media (production of indol in pepton, coagulation and acidification of milk, the production of gas on glucose agar) very marked and very rapid, while in other cases the growth was very scant and the changes slow and slight. Although no definite conclusion could be drawn regarding the significance of these various forms, generally speaking it seemed that the more virulent micro-organisms were those which approached more the slender rod-shaped bacillus in form, in which the motility was most marked and in which the changes produced in the various media were most marked and most rapid.

In the case of the staphylococci, morphological pleomorphism was not so marked as in the case of the colon bacillus, as one would naturally expect. The rapidity and profuseness of the growth upon the various media and the changes produced therein differed, however, quite markedly in the different cases. The staphylococci found in our cases were the staphylococcus pyogenes albus and aureus and a white staphylococcus especially characterized by its marked ability to decompose urea and the slowness with which liquefaction of gelatine was produced. We were especially interested, however, by certain peculiarities in the chromogenic properties of these bacteria. In 2 cases the growth from the urine upon agar consisted of a number of small colonies of light lemon color. Transplantations from these upon potato gave colonies of a darker yellow color, while two subsequent transplantations from this latter upon agar gave colonies with the typical orange color of the staphylococcus pyogenes aureus. In a third case the primary culture consisted of growths almost white in color, which after six successive transplantations gave colonies of the same typical color as those of the staphylococcus pyogenes aureus.

These results, while few in number, are very suggestive in regard to the relation between various members of the staphylococcus family and suggest that many of what we now consider separate species may have arisen originally from a common staphylococcus, and the variations in cultural peculiarities, in chromogenic tendencies, etc., may have been directly dependent upon the various factors, favorable or otherwise, which surrounded the special micro-organisms since that time.

THE MANAGEMENT OF ABDOMINAL TESTICULAR ECTOPIA ASSOCIATED WITH INGUINAL HERNIA.¹

BY CHARLES A. POWERS, M.D., DENVER, COL.

ON June 18, 1900, Dr. Barkwell, of Cheyenne, kindly referred to me H. C., a boy of fourteen years, who gave a history of having had a reducible bubonocoele on the right side for one year. The testis on this side had never been found in the serotum. The hernia had been unusually painful and he was unable to wear any sort of a truss. Examination revealed a right oblique inguinal hernia of moderate size, not passing beyond the external ring. The testis on that side was not in the serotum, and, as said before, it had never been found there. Just above the external ring there was a small, tender lump: this was movable and thought to be the testis.

Operation was advised and was performed under ether at St. Luke's Hospital, June 20th. The sac was found with considerable difficulty. It was small, extending to about the external ring, and contained a small cord of adherent omentum. The lower end of this piece of omentum was somewhat enlarged and this was the mass thought before operation to be the testis. The hernia was of the congenital variety, the sac being very thin and densely adherent to the cord, which it surrounded and which extended pretty well toward the external ring. With great difficulty and much patience the sac was dissected from the cord up to the internal ring. On drawing it down from the abdomen a small atrophied testis was found to lie within it, or rather within the cavity of the peritoneum proper, that is, it was lying within the peritoneum in the sense that the appendix or the intestine lies within it. The cord seemed to have turned on itself; it was atrophied and dissection of it was difficult.

The peritoneum was cut off at the upper margin of the testis, dissected well back from the cord high up and sewn off flush with the general abdominal cavity. The internal abdominal ring was enlarged upward, the peritoneum reflected backward and upward, and a prolonged attempt made to free the cord sufficiently high to permit the testis to be drawn down into the scrotum. It was not possible to do this. After dividing the cremaster muscle and other tissues, and freeing the cord to the farthest possible point, the testis could only be made to lie just above the external ring and even then there was some tension on it. Accordingly, with permission of the lad's father, the testis was removed, the cord being divided at a high point and the canal tightly closed with layer sutures of chromicized catgut. The wound was closed without drainage and healed under a single dressing. There has been no further trouble.

Testis retained in the inguinal canal is fairly common; failure of the organ to leave the abdomen is rare. In general, the causes of ectopia may be placed under two heads: (1) Inflammation when the fetus is *in utero*, this inflammation causing adhesion of the testis to adjoining parts, and (2) abnormal size of the testis or unusual narrowing of the inguinal rings and canal. The latter factors may exist singly or they may be combined.

When the testis is retained in the canal it is easily subjected to injury; this may be sudden or it may be the result of continued irritation. Not so, however, with the abdominal form of cryptorchidism, for here the organ is well protected and not more often the seat of disease than when in the scrotum. An inguinal testis is commonly inflamed or diseased. The processus vaginalis is often left open so that secretion readily finds its way into the general peritoneal cavity. The cord of an ectopic testis easily undergoes torsion. Hernia is common because of the open processus vaginalis. It is difficult for the patient to wear a truss and consequently the hernia becomes irreducible.

Finotti believes the inguinal retention of a testis to be due to congenital developmental disturbances and that such testis is therefore peculiarly subject to malignant change, especially sarcoma.

Finotti further believes that although the ectopic testis may be incapable of secreting semen, yet it is not useless, for it is the seat of another secretion which he vaguely terms "internal" — the inguinal testis is capable of secreting this "internal" fluid which is of

importance in developing and preserving the nature of man. On the other hand, Besançon and Finotti¹ think that patients with abdominal ectopia present more the feminine type or are analogous to eunuchs. This belief corresponds to that of Lucas Championnière and is confirmed by Strobe.²

The position of a given testis exerts far greater influence on the psychic than on the bodily condition of a given man. The great majority of those affected with ectopia are very nervous. Further, they may be subject to eclampsia, peripheral epilepsy, hystero-epilepsy or chorea.

One does not always know just what should be done in these cases. Bull, whose hernia experience has perhaps been greater than that of any other man in this country, believes that in general it is better not to operate on children with retained testis and inguinal hernia before the age of puberty, on the ground that the testis will probably descend, and this seems to be the general opinion of surgeons. Lucas Championnière³ reports an operation which he performed twelve years ago on a child then eleven years of age, who suffered with bilateral abdominal testicular ectopia, with bilateral inguinal hernia. The testes were sought, mobilized and transplanted in the region of the absent scrotum in a cavity dug out for each with the fingers. The vas deferens and the testicular artery were the only supports left for one of them. Each testis was transplanted separately. The general health was completely transformed within a year, and the child developed into an exceptionally strong and well-built young man. Both testes worked up from their first position, the smaller to a point about over the scar of the hernia and it had to be extirpated because of pain during physical effort. Championnière has operated on 37 cases of inguinal ectopia, 6 of which were bilateral. He always seeks to retain the testes, for they aid in the normal development of the general physique. If the vas deferens is too short to allow transplantation, castration is the only resort.

In inguinal ectopia, persisting until or beyond the age of puberty, mobilization to the scrotum should be made when possible; a thorough division of the cremaster and all surrounding fibrous tissue will often render this possible. The details of this operation have recently been set forth in an admirable way by Bevan, who lays stress on the necessity for thoroughly freeing all tissue about the cord to the highest possible point within the abdomen. Schüller's operation is practically that of Bevan. Unless the testis lies without tension and easily below the external abdominal ring, it will surely and speedily work up. The external ring should be snugly closed on the cord. In certain instances, especially when the ectopia is bilateral, failure to transplant the testis to the scrotum may warrant its being placed within the abdominal cavity.

MEDICAL INSPECTORS FOR SCHOOLS. — It is reported in the *Philadelphia Medical Journal* that Congress is to be asked to provide eleven medical inspectors for the public schools of the District of Columbia, in conformity with the report of Health Officer Woodward on the need of frequent examination of the pupils. A salary of \$500 is to be paid the physicians appointed.

¹ Monatsb. Harn- u. Sexual-Apparatus, Bd. iv, II, 9, 1899.

² Gustav Foch: Ueber Hodenectomie, Leipzig, 1899.

³ Bull. de l'Acad. de méd., Paris, June 12, 1900.

Medical Progress.

RECENT PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

THE TREATMENT OF DIPHTHERIA AT THE BOSTON CITY HOSPITAL.

DURING the last hospital year, ending February 1, 1900, there were treated at the Boston City Hospital 55% of all the recognized cases of diphtheria in Boston. The number of cases was 1,813, and of this number there were 180 deaths, or a mortality of 10%. Eliminating the deaths which occurred within twenty-four hours after entrance the mortality falls to about 7%. Such a brilliant record leads to the question, by what means were such successful results obtained? And that I might answer this question for the readers of the JOURNAL, I have been so fortunate as to secure from Dr. McCollom, of the South Department, an outline of his views on the treatment of diphtheria at the present time. And as his experience this last year has been greater than that of all the other members of the medical profession in the city combined, the importance of his conclusions becomes apparent.

In the first place, Dr. McCollom and his assistant, Dr. Burroughs, are thorough believers in antitoxin. And this belief is based not only on the steady decline of the diphtheria mortality at the hospital, but on their experience with the disease among the doctors, nurses and employés of the institution. Of 100 consecutive cases of diphtheria (clinical as well as bacteriological) occurring at the hospital among the doctors, nurses and employés, there has not been a single death! With this the case, Dr. McCollom's statement that the doctors prefer diphtheria to scarlet fever excites no wonder, and Dr. Burroughs's story of the house officer who was disgusted and disappointed because Klebs-Löffler bacilli were not found in his sore throat is readily understood. For as the young doctor said, "If they were there you could do something for me; as it is there is nothing left but to bear it."

In the second place, Dr. McCollom feels sure that the importance of giving large doses of antitoxin is not fully appreciated. Two years ago 800 consecutive cases of diphtheria at the hospital were analyzed and the mortality was 15%. A short time ago another series of 800 consecutive cases treated with enormous doses was studied and the death rate proved to be 10%. As Dr. McCollom pertinently remarks, no hard and fast rule can be laid down with the dosage of antitoxin any more than with potassium iodide. You give the latter until you get the effect, and so you must do with antitoxin. It must be administered until the characteristic result upon the diphtheritic membrane has been obtained.

But it is particularly in those severe cases which come to intubation or tracheotomy that the advantages of large doses are seen. In the early days the child would do perfectly well for twenty-four or forty-eight hours, when a discharge of thick, tenacious mucus would appear, and the child would then gradually die from the extension of the process. This tough, tenacious mucus, by the way, is positively indicative that the membrane is extending. In these cases the mortality before antitoxin was given was 87%. During the first year of antitoxin it fell to 46%, but this last

year, during which the large doses have been given, it has fallen to 32%.

No case of diphtheria should be considered hopeless, and it has been interesting to me to note how much more strongly both Dr. McCollom and Dr. Burroughs insist on this point now than they did at my earlier visit six months ago. Cases come to the hospital practically dead—the child has ceased to breathe, and there is no heart beat, yet some finally recover.

And it seems probable that the reason that the Boston City Hospital's statistics are better than those of another institution just published lies in this fact, that these severe cases are saved by the large doses. It is idle to conclude that there is any great difference in the type of cases entering the two institutions, for this is not probable. Both the hospitals alike undoubtedly get the worst cases in the community, but here the mortality is 10%, there 24%.

Various factors have tended to make the customary dose of antitoxin small. There is the question of expense, and this is certainly a cold, hard fact. Then there is the bacteriologist, who with comparatively few units neutralizes the power of half a cubic centimetre of toxin. "But who knows how much toxin is being formed under a diphtheritic patch on a tonsil? Who knows how much toxin there is along the course of this cast, just coughed up by a patient, which extended throughout the trachea, the large bronchi and many of the smaller?" A third protest against large doses of antitoxin comes from the doctor in general private practice. But his conclusions have nothing to do with hospital practice. In the former instance the cases are often mild, are early seen and need comparatively little antitoxin anyway; in the hospital conditions are different. Finally, danger of an overdose sometimes deters the doctor from injecting large amounts. It should not! "You can't supersaturate with antitoxin! If there is one thing which the history of the City Hospital has shown, it is this—that no harm results from antitoxin. Urticaria may develop, it is true, but it is no worse after large than small doses."

Dosage.—In a severe case Dr. McCollom gives 4,000 units at once. This is repeated every four to six hours until the patient begins to improve. Children under five receive 3,000 units, but above that age 4,000. To one man critically ill 8,000 units were given at one time. The man recovered.

The mortality from diphtheria at the Boston City Hospital before 1895 varied for a series of years from 50% to 46%. At the South Department two years ago it had fallen to 12%, last year it was 10%. As a result of his experience with more than 6,000 cases of diphtheria Dr. McCollom recommends the use of large doses of antitoxin.

THE USE OF GELATINE AS AN HEMOSTATIC.

Bass summarizes forty articles on the use of gelatine as an hemostatic.¹ Though we referred to this subject in our last report, its importance deserves another mention.

On February 29, 1896, Dastre and Floresco published for the first time the results of their experiments upon the coagulating influence on the blood of intravenously injected gelatine. They injected into the tibial vein of a dog a 5% solution of gelatine in

¹ Centrbl. f. Grenzgeb. d. Med. u. Chir., Nos. 6 and 7.

physiological salt solution, and found the time of coagulation of blood withdrawn from the femoral artery was lowered. Whereas blood taken before the gelatine injection required two or three minutes for coagulation, blood removed under the same precautions after the injection coagulated within ten seconds to one minute. That this is not wholly due to the setting of the gelatine is shown by the fact that coagulation also occurs when the blood is drawn and kept at 38°. At this temperature the gelatine does not stiffen, but remains fluid above the blood corpuscles, and becomes firm only when cold.

No entirely satisfactory explanation of these phenomena has yet been presented, and it therefore seems best to pass on to the practical application of the discovery.

Carnot was the first to publish (July, 1896) successful experiments with the local application of solutions of gelatine. The first case was one of hemophilia, with uncontrollable epistaxis. After the injection of a few cubic centimetres of a 5% solution of gelatine into the bleeding side of the nose, and the apposition of a tampon saturated with gelatine, the hemorrhage ceased, not to return; when after some days a hemorrhage appeared on the other side, gelatine effected a similar result. The patient finally died of the intense anemia. In a second case of hemophilia the hemorrhage did not return after the local injection of a 10% solution of gelatine. Carnot applied this same treatment with success to rectal hemorrhages by means of gelatine enemata, and to hemorrhages of the female genital organs by means of intra-uterine gelatine douches or saturated tampons. The application of a tampon soaked with gelatine often avoided the necessity of using a ligature.

In animal experimentation the control of hemorrhage after resection of extensive portions of the liver was the most surprising feature. The bleeding surface was placed in contact with a solution of gelatine for some seconds, and at the cessation of hemorrhage some cubic centimetres of the solution were poured into the abdominal cavity and then this was sewed up. Not a single one of the animals suffered from a secondary hemorrhage.

As advantages of gelatine Carnot mentions, (1) its power of hastening coagulation; (2) its behavior in essentially favoring the nutrition of the cells and thereby the organization of the thrombus; (3) its harmlessness when the necessary precautions are followed, and (4) the ease with which it is procured.

Gelatine must be perfectly sterile; but since a temperature over 115° partially destroys its coagulability, Carnot sterilizes it by a double heating at 100° at an interval of two days. The flasks are kept well closed, so that when they are required they need only to be warmed in a water bath at 38°. The solution ought not to be used too hot, because too high a temperature on the one hand delays the setting of the gelatine, and on the other hand stimulates the vessels to contract, and so destroys the direct contact between the blood and the gelatine. As a local application Carnot used solutions of 5% to 10% in .7% salt solution. He does not recommend the addition of antiseptics, because these impair the favorable nutritive action of the gelatine upon the cells. He hardly advises the subcutaneous use of gelatine on people. These results have been confirmed by many writers too numerous to mention.

How important a rôle gelatine exercises in the treatment of gastro-intestinal hemorrhages is a matter at present to be received with reservation. Carnot denies its power in hemorrhages from the stomach, bearing in mind the changes which gelatine undergoes through the action of the gastric juice. Poliakow, however, mentions a case of profuse hemorrhage due to gastric ulcer, which ceased within twenty-four hours after the third dose of 200 cubic centimetres of a 10% solution of gelatine. It returned during the next four weeks two or three times, only to be again immediately conquered by the gelatine. Bauermeister also saw quick results in 3 cases of gastro-intestinal hemorrhage with 5% to 10% solutions.

Nogues introduced gelatine in the treatment of cystic hemorrhages by injecting gelatine into the bladder in 4 cases of bleeding caused by tumors. The bladder was first carefully emptied, washed out with boric acid, and not until then small amounts of gelatine injected. These were again removed and finally the bladder filled with the gelatine solution. In 3 cases there was prompt cessation of the hemorrhage without harmful results; in 1 case so large a coagulum formed that it had to be removed through a catheter.

Gelatine has furthermore been used subcutaneously in those cases of hemorrhage not otherwise to be reached—hemorrhages into the lungs, joints, and skin—or where hemorrhage is a result of disease of the blood—hemophilia, cholemia, etc.—and finally the prophylactic injection of gelatine before extensive operations has been earnestly considered. Bass reviews the results of various authors who have worked along these various lines. A case of Costinesco is of especial interest. A patient with severe dysenteric enteritis was given an enema of gelatine without effect, but after two subcutaneous injections of 100 grammes quickly recovered. As has been said above, the solutions of gelatine for external use are customarily 5 to 10%, subcutaneously 1 or 2%, made up with normal salt solution.

The chief contraindications are diseases of the heart and kidneys.

DIABETES.

It is a hopeful sign in the treatment of diabetes that so few new drugs have been recommended as specifics during the last six months. The medical profession is beginning to realize that reports of experiments with drugs in this affection are of no value unless the amounts of carbohydrates given during treatment are controlled. If the exploiter of a new preparation can show that a patient taking 200 grammes of carbohydrates daily has 100 grammes of glucose in the urine, but under the influence of the drug in question, the diet and surroundings being the same, he excretes only 50 grammes or less, then that drug is worthy of our attention. A single observation of this sort, however, is by no means decisive. Yet if the practitioner demands that all new drugs shall meet even this criterion before he introduces them into his practice, he will be spared many futile efforts.

The amount of work which is being done on diabetes is seldom realized, and the vast amount of experience which recent writers on the subject have acquired is too often overlooked. Take for comparison the number of cases of diabetes which were treated in the Massachusetts General Hospital during the

seventy-four years, 1824-1898. These amounted to 172, yet within the last three years Naumyn, von Noorden, and Lenné have published works on the subject each based on at least twice this number of patients, and the friends of Kütz have compiled a volume in which the records of 692 of his 1,100 cases are given at considerable length. Placed side by side with such authorities, how woefully insignificant the incomplete records of 4 cases appear when reported without regard to scientific study.

There is unanimity in the minds of all those best acquainted with the subject that patients should be kept either sugar free or as near that point as possible, provided (1) that on the strict diet they can hold their weight, and (2) that they are not placed thereby in imminent danger of coma. As to the weight, it is about the best guide there is of the success of treatment, because it is not only a measure of the patient's condition, but also can be made a test of the doctor's skill. For that doctor who can maintain his patient's weight and urine in a normal condition and yet allow the most carbohydrates is the best. This is the test in the mild cases, while in the severe the task is somewhat different. Here even on an absolutely diabetic diet the urine contains sugar and in a few cases it is almost impossible to entirely remove it. All agree that in these cases for certain periods a little carbohydrate must be allowed, and the aim is to maintain the weight and for this purpose to allow the least possible amount of sugar and starch. Each case of diabetes, then, is a test of the physician and if he takes the trouble to compare the condition of his cases with those of the leaders in this branch of medicine, he will very soon see to what rank he is himself entitled.

The chief aim in the diet is of course to supply the patient with food containing a large amount of fat. Dr. Pfaff has given a suggestion in this regard which I have been able to find nowhere in the books, though every once in a while there is an individual who has adopted the custom himself. This suggestion is to use butter instead of cream in the coffee. Before adverse criticism is made it is hoped that the physician will try a cup of coffee made according to the following rule: Place a half teaspoonful of butter in a very hot cup, and when melted fill the cup with very hot coffee, stirring the meanwhile. The butter mixes thoroughly and does not rise to the surface. The amount of butter used is a half teaspoonful (6 to 10 grammes) and the cup of coffee thus prepared is equivalent to 48 to 80 calories—about half the value of a single portion of beefsteak.

A tablespoonful of cream when added to a strict diet has great capabilities. One half of it will allow an omelette, and thus a whole host of new dishes can be prepared. The other half with the white of an egg can be used in making rennet, and possibilities in the line of custards are opened up. Again, a teaspoonful will wonderfully help out a cup of coffee or an eggnog. But there are creams and creams, and, as Dr. Pfaff has advised, one must secure that which contains the least amount of sugar and the greatest amount of fat. As a rule such creams are best obtained by centrifugalizing the milk.

Most English publications on diabetes are inadequate in this respect, that while they state what foods are allowable and what are prohibited to a diabetic, they do not contain the percentage composition of the various foods. To fill this lack a publication by the

United States Department of Agriculture will be found most useful. This comprehensive pamphlet of 87 pages is entitled "The Chemical Composition of American Food Materials, Bulletin No. 28" (revised edition), and was prepared by W. O. Atwater, Ph.D. and A. P. Bryant, M.S. It was revised in 1899, and can be had for the asking by addressing the United States Department of Agriculture, Office of Experiment Stations, Washington, D. C.

(To be continued.)

Reports of Societies.

THE NEW YORK ACADEMY OF MEDICINE. SECTION ON GENERAL MEDICINE.

STATED meeting, October 23, 1900, JOHN H. HUDDLESTON, M.D., chairman.

DR. ALFRED MEYER read a paper on

THE CITY AND ITS CONSUMPTIVE POOR; A PLEA FOR A MUNICIPAL SANATORIUM OUTSIDE OF THE CORPORATE LIMITS.

He estimated the total number of consumptives in the Greater City of New York to be between 25,000 and 30,000. The total deaths from consumption for the current year and the total number of incipient cases annually were both estimated at 8,100. Yet the total number of consumptives in all the public and private hospitals in the boroughs of Manhattan and the Bronx on January 20, 1900, was only 1,010, and the average daily number of cases charged to the city in these boroughs was 365 for the current year. The Department of Charities from January 1 to October 1, 1900, admitted 1,839 cases, and in this period 635 cases died. In the year 1899 twenty-six private hospitals in Manhattan, Brooklyn and the Bronx admitted 3,050 cases, and 924 cases died in these institutions.

It was not generally known, he said, that the first organized effort to secure proper hospital care for consumptives was made as long ago as 1855, when a society was organized for this purpose in New York, among whose managers were such well-known men as Peter Cooper and Dr. Alonzo Clark. The same arguments were urged then as now. At the present time, however, we had the three following additional ones: (1) The possibility of earlier diagnosis; (2) the greater chances of success in the treatment, and (3) the danger of infection. Having referred to the prospect of there being a State hospital for incipient cases in operation within the next fifteen months, he said that nothing has yet been done by the city, under the act passed by the legislature authorizing any city in the State with a population of 250,000 to establish a sanatorium for consumptives outside its corporate limits. While an adequate sanatorium for the city of New York would cost \$3,000,000, and require \$1,000,000 annually for its maintenance, he thought that an efficient start could be made with \$300,000; and that was all that was asked for at the present time. There was no conflict, as many had supposed, between the Department of Charities and the Department of Health in regard to the matter. While the vastness of the problem was deplored, the benefits of such an institution were freely admitted

by all the authorities. The objections raised were on the score of expense; but would any one think of returning to the old system of a volunteer fire department because the paid department was expensive?

The great question is not what will it cost, but will it pay? Enormous sums are now spent for the care of advanced cases that are hopeless which would be the means of restoring to lives of usefulness large numbers of individuals if employed for the proper treatment of incipient cases. The striking advantages of country treatment were well shown in the results obtained at the sanatorium for consumptives of the Montefiore Home at Bedford, Westchester County, which was only a comparatively short distance from the city. There was no fear that the hand of private charity would be palsied when the city undertook this work. There was an ample field for public and private endeavor.

Dr. Meyer then advanced a number of reasons for a city sanatorium. Among them were the following: Popular opinion in favor of the plan; the increased hopefulness of the medical profession as to the curability of the disease; the meagreness of both private and public endeavor up to the present time, as shown by the statistics quoted; the object lesson that would thus be furnished by New York to other cities; the great benefit arising from the instruction of inmates in hygienic rules; the saving of many lives. The agitation of this question, he said in conclusion, must and will bear fruit.

DR. JOHN B. COSBY, Commissioner of Health, said he had the assurance of his colleagues on the board that they would do everything in their power to have the sanatorium established. The great difficulty was to secure the money, and it was on the score of expense that the mayor had vetoed the bill passed by the last legislature which made the establishment of such a sanatorium mandatory on the part of the city.

A letter was read from Commissioner of Charities JOHN W. KELLER, in which he said he was heartily in accord with any movement looking towards relief from this great scourge. He was glad to report that the city's facilities for treating consumptives would soon be greatly amplified. In February next the Manhattan State Hospital for the Insane will have to vacate Blackwell's Island, and the three buildings there now occupied by it will revert to the Department of Charities. These, with the new pavilion at Bellevue Hospital, will be devoted to phthisis cases.

DR. H. M. BIGGS said that in 1894 he presented to the Department of Charities a scheme for the care of the consumptive poor. Three things were declared necessary: (1) A receiving pavilion at Bellevue; (2) a building on Ward's Island for advanced cases, and (3) a cottage sanatorium in the country for incipient cases. He suggested that the latter should be located at Central Islip for the reason that the city already owned a large tract of land there, with an institution for the insane, and there were thus afforded unusual facilities for economy of administration. President Porter, of the Board of Charities, approved of the scheme, but it was found that there was not at the time sufficient money to carry it into effect. Then came the "State care for the insane" agitation, and afterwards a certain number of wards in the City Hospital and portions of the almshouse on Blackwell's Island were set apart for tuberculous patients. Later, when the insane were removed from the Metropolitan

Hospital, wards were also arranged there. In the following administration (Mayor Strong's) the construction of a pavilion for consumptives at Bellevue Hospital was ordered, and this was only now just ready for occupancy.

In regard to the number of cases of phthisis in New York, Dr. Biggs was convinced that this was far greater than Dr. Meyer had estimated. He then gave a *résumé* of the various steps which the Health Department had taken since 1889 for the repression of the disease. When the first report of its consulting pathologists (Drs. Prudden, Loomis and Biggs) was received, it was referred to a number of prominent physicians in the city with the request for an expression of opinion as to the duty of the board in regard to cases of phthisis. It was a noteworthy fact that with a single exception (that of Dr. Janeway) every one of these physicians was opposed to the board's taking any action whatever. Since 1897, when the reporting of cases was made compulsory, the reduction in the mortality from consumption had been very great. If the alternative were presented of devoting a certain sum of money to the care of a limited number of incipient cases, or of expending the same sum in diffusing information regarding the disease and in renovation and disinfection he would prefer the latter. At the same time he was very strongly in favor of the establishment of such an institution as that contemplated by Dr. Meyer.

JOHN P. FAURE, ex-Commissioner of Charities, expressed his extreme gratification at the agitation of this subject, and stated that when he was in charge of the Charities Department there was no opportunity to separate the phthisis cases. He was very much impressed with the great good that could be derived from devoting special efforts to the accomplishment of special objects. As an illustration he referred to the reduction of infant mortality that had resulted from the system of floating hospitals carried out by St. John's Guild, in the management of which he had been actively engaged ever since the inception of the work. Again, while on a second visit to Denver he had been very much interested in learning that a group of poor young men had by their united efforts been able to secure a ranch in the vicinity of the city where consumptives with limited means could have the benefit of the climate at a minimum expense.

Letters were then read from the REV. DR. J. M. BULKLEY, president of the Seney Methodist Episcopal Hospital in Brooklyn, and from JACOB H. SCHIFF, president of the Montefiore Home, and short addresses made by FREDERICK STURGES, vice president of the Presbyterian Hospital, and CHARLES C. SAVAGE, president of Roosevelt Hospital. All expressed themselves strongly in favor of the city sanatorium, and spoke of the impossibility of treating phthisis in general hospitals, where, as a rule, all the beds are required for acute cases.

DR. NELSON H. HENRY, member of the Assembly for the last two years, said that the people of the State of New York had been educated up to the point where they found it necessary to do something, not only for human, but also for bovine tuberculosis. It was true that the appropriation for the State Sanatorium had been cut down from \$250,000 to \$50,000; but still we must not be discouraged. Such a project as that advocated this evening should get the active support of both the medical profession and the public at

large. There are two points to be attended to: (1) Removal of incipient cases to salubrious conditions, and (2) hospitals for advanced cases near the centres of population. At the same time careful attention should be given to the improvement of tenement house conditions and of the housing and the care of cattle.

Dr. H. W. BERG said that the Charities Department was already taking care of the very bad cases of advanced phthisis. Was it its duty to care for the incipient cases also? Under favorable conditions a considerable proportion of cases could be cured. The best treatment, however, was not by drugs or by anti-toxin serum, but that received in well-conducted country sanatoria.

Dr. LEONARD WEBER said that there was no question that the best treatment was to remove the patient to a country sanatorium. Such sanatorium need not be far away. He would suggest, as regards the city of New York, two sanatoria for the consumptive poor, one to be located in Rockland County, near the Dunderberg Mountain, for the boroughs of Manhattan and the Bronx, and one at Mount Kisco, in Westchester County, for the other boroughs. Such institutions should have a good cuisine and good arrangements for hydrotherapy, and should also afford good opportunity for walks. He thought it would be advisable for the various city dispensaries to have a special department for pulmonary tuberculosis, with a competent bacteriologist in constant attendance.

Dr. S. A. KNORF said that the problem was not a simple one, and, in his opinion, arrangements should be made at once for (1) sanatoria for incipient cases; (2) hospitals for advanced cases; and (3) measures for dealing with bovine tuberculosis. All these should be begun and carried on at the same time. To secure these, combined effort was required, and any appropriations that could be obtained from the authorities should be divided between the three objects mentioned.

A resolution was then adopted urging the municipal authorities to take action in accordance with the act passed by the legislature in regard to the establishment of sanatoria for cities, and also providing for the appointment of a committee of three to bring the attention of the Council of the Academy to the matter.

Dr. MEYER said that he had expected that Controller Coler would be present, and that he had every reason to believe that that official would do all that was in his power to secure the desired appropriation. Moreover, President Murphy, of the Health Department, had given him authority to say that he would use every possible endeavor in furtherance of this object. With regard to the increased accommodations referred to by Commissioner Keller, which would soon be available for consumptives, while these would be a great gain for advanced cases, the incipient cases would still remain to be dealt with; and it was for these that the country sanatorium must be provided. He was inclined to agree with Dr. Biggs that the number of consumptives in New York was underestimated in the paper, but he had purposely made his statements cautious and conservative lest he should be accused of magnifying the evil and the danger. While he agreed in the main with Dr. Knopf, he thought that at the present time the most important matter was to secure some provision for the care of incipient cases.

Recent Literature.

Kirke's Handbook of Physiology. By W. MORRANT BAKER, F.R.C.S., and VINCENT DORMER HARRIS, M.D. (Lond.), F.R.C.P. Revised by WARREN COLEMAN, M.D., Professor of Physiology in the Woman's Medical College of the New York Infirmary, etc., and CHARLES L. DANA, A.M., M.D., Professor of Nervous and Mental Diseases in the New York Medical School, etc. Fifteenth American edition. With upwards of 500 illustrations, including many in colors. New York: William Wood & Co. 1899.

In England "Kirke's Physiology" is a well-known textbook, and in this country, in former years, it was considered one of the best. Newer books, are, however, making their appearance and claiming a large amount of scientific attention; so much so, in fact, that probably in a few years this publication will be a thing of the past.

The title page of this book announces that it is the fifteenth American edition, but the title page fails to announce from what English edition the present volume has been compiled.

A prefatory note, over the name of Warren Coleman, announces the fact that "the form of the book has been left untouched in the main." To one who had been familiar with "Kirke's Physiology" for perhaps more years than he cares to remember, this announcement, on reading the book, is found to be hardly necessary.

The introductory chapters are practically the same in this edition as they were in former years, but several changes have been made in order to bring the book a little more up to date than it formerly was.

The description of the movements of the stomach in digestion is of uncertain age, particularly so when we consider the recent work of Cannon and others who have done much to lighten the darkness surrounding this important organ.

The account of the phenomena of coagulation of the blood is good, but, as in the majority of books, the student is treated to a long dissertation on the history of the experiments which aided (?) us in arriving at our present state of knowledge concerning this vital process.

On page 226 begins a discussion on the cause of the heart beat, or, perhaps more accurately described, a consideration of the physiology of cardiac muscle. The less said about this the better. We may remark, however, that it is questionable if Stannius's ligature, as a physiological experiment or explanation, has the value the authors seem to attach to it.

The chapter on the Liver gives us nothing new, and the chapter is carelessly printed, the whole line at the bottom of page 377 being reproduced on the top of page 378. Truly this is carrying the old style of printing a little *too* far. No reference is made to Delépine's work on the liver as a biliary gland, dividing it into vascular and biliary lobules.

Perhaps the most pleasing portion of the whole book is the latter part of the chapter on Secretion, dealing with internal secretion: here, certainly, the work is clearly put, and a student is not overwhelmed with a mass of doubtful experiments. The chapter on Muscle-Nerve Physiology consists of 21 pages, of which 7 pages are devoted to a description of appa-

tus. This chapter is short, and what information is given is not given any too well.

The chemical physiology contained in the book is of the ordinary description.

The plates and cuts scattered throughout the book are bad; the proof reading has been carelessly done (see above, one instance of carelessness); the paper and printing are very bad, and the binding is ordinary. The style of the book would be better had finer paper and better type been used, and the size of the volume consequently reduced. The American revisers should have insisted upon *hygienic* conditions in a *physiological* textbook. Let us suggest another improvement—acknowledgments for some plates used (those on blood crystals, for instance) and more references given to original work throughout the text.

Kirke's Handbook of Physiology. By W. D. HALLIBURTON, M.D., F.R.S., Professor of Physiology, King's College, London. Fifteenth edition. With upwards of 650 illustrations, including some colored plates. Philadelphia: P. Blakiston's Son & Co. 1899. [Printed in Great Britain.]

In this edition, Mr. Publisher, why not let poor Kirke's name alone? As Halliburton announced in his preface to the fourteenth edition, "the book is a new one" and has to a "great extent been rewritten." Properly speaking, the book is "Halliburton's Handbook of Physiology," and the professor should be pleased with it.

The introductory remarks are well written and the opening chapters on elementary histology are remarkable for lucidity and conciseness. To one who believes that the study of physiology is useless without a good preliminary foundation of histology, this fact will be appreciated.

After considering the histology of the tissues, Halliburton passes on to the physiology of muscle and nerve. These chapters are good, and a student will find here all the main experiments involved in the study of these structures, together with good descriptions of the apparatus employed. The chapters dealing with the circulation of the blood show a goodish portion of Hill's hand. On page 247 we find a reference to one of our American physiologists, Dr. Porter, citing his experiments on the mammalian heart apex and oxygen pressure. Other well-known authorities quoted are Gaskell, Langley, Pickering, Hill, in fact all the well-known authorities on circulatory physiology. (It may here be pointed out that throughout the book credit is invariably given, not only to original workers, but also borrowed plates are acknowledged. "Render unto Cesar the things that are Cesar's!" A pleasing feature, truly.) A break in logical arrangement occurs at this point by the introduction of chapters on Respiration and on Ductless Glands. Then we arrive at, perhaps, the best portion of the book, that is, a description of the blood and the phenomena of coagulation. To a student this chapter must be a regular godsend, leading him gently but clearly through the intricacies of coagulation and explaining the various (to him) complex substances found in the blood. The chapter on the Ductless Glands, dealing with internal secretion, is too short; it has evidently been very cautiously written. Too much attention has been given to old work and hardly enough to more modern explanations and experiments.

Respiration is practically the same as is found in all good textbooks.

A rearrangement of the several chapters considering the various phenomena of digestion could be carried out with considerable benefit to the readers. For instance, the chapter on the Mechanical Processes of Digestion could well follow the description of the alimentary canal, then let us have foods and the descriptions and actions of the various digestive juices, ending with absorption. The chapters on the Nervous System are up to date, are clearly written, and contain many capital illustrations. With regard to the rest of the book, it only remains to be said that the chemical physiology contained in the volume is beyond reproach. The remaining branches are dealt with in the ordinary manner.

The book is beautifully illustrated throughout. Too much praise cannot be given for the fine quality of the paper and the clearness of the cuts. "Printed in Great Britain" can be seen on the title page. Is this a challenge to American publishers? Certainly I have yet to see the physiology published entirely in America that will equal this book in cuts, printing and paper. Take notice, ye American publishers! The binding is neat, and of the usual textbook character.

To students and even to those more advanced in the study of physiology this book should be very welcome. The reviewer has pleasure in recommending it very highly to all those desiring a pithy and well-written physiology.

[REVIEWER'S NOTE. — It may seem strange to the uninitiated on reading the above reviews to find *two* books, both called "Kirke's Handbook of Physiology"; the reader will naturally stop and wonder which is *the* book. To explain this peculiar anomaly, by giving a short history of "Kirke's Physiology," this note is written.

About the year 1850 Dr. Kirke, with the aid of the late Sir James Paget, produced in England "Kirke's Handbook." This book, in vulgar parlance, "filled a long-felt want." It passed through many editions, until at last Kirke died; then, after passing through various minor changes, the editorship of the volume was assumed by Mr. Baker and Dr. Harris, and by them the book was kept up to date, Mr. Murray, the publisher, owning the book. In this country the book was reproduced by Lea Brothers & Co., and by them sold to Messrs. Wm. Wood & Co. (What they sold is a mystery, as they had no rights to sell.) This firm never had permission to use either the late Mr. Baker's or Dr. Harris's name in connection with their publication. Still the publication and the sale went merrily on. Over four years ago Dr. Harris and Mr. Baker resigned their offices as editors. Mr. Baker is now dead and Professor Halliburton assumed sole control, producing the present English publication, or Blakiston's American edition. Although Mr. Baker and Dr. Harris have had no connection with the book for over four years, Messrs. Wm. Wood & Co. still produce a Kirke claimed to be edited by these men and revised for American consumption by Warren Coleman and Dr. Charles L. Dana. In Wood's edition under review, several illustrations can be seen (those on blood crystals) which have been *lifted* bodily from Halliburton's edition and no acknowledgment made. There is also a remarkable similarity between the two editions in parts of the text. Perhaps this may be explained by the theory of telepathy!

Of the two editions I understand that Blakiston's is the only edition published in this country with the owner's permission and from which the editor, Professor Halliburton, receives any remuneration. However, the present unfortunate state of International Copyright Law places no legal obstacles in the way of Messrs. Wood & Co's producing

the book as they have done, but there is no doubt that fair-minded people will be shocked to find that in the noble profession of medicine, men are found who assist in such questionable proceedings, even after personal protests not only from Mr. Murray — the owner — but also from Professor Halliburton. To sum up the whole matter, it simply means that Blakiston's is the authorized edition, while Wood's is not. *O tempora, O mores!!*]

A Treatise on Diseases of the Nose and Throat. By ERNEST L. SHURLY, M.D., Professor of Laryngology and Clinical Medicine, Detroit College of Medicine, etc. New York: D. Appleton & Co. 1900.

This is a new textbook on laryngology for the use of the general practitioner and student rather than for the specialist. In common with many of the existing textbooks on the subject it contains about 700 pages, about 200 illustrations in the text and 6 colored plates, in this case mostly from Grünwald.

The opening chapter is a short perfunctory review of the anatomy of the region, illustrated by some very good photographs of frozen sections. Although the author appreciates that the chapter on anatomy is the one which is the most helped by illustrations, a few more outline sketches could be added, to the benefit of the student. The chapters on syphilis and tuberculosis show the hand of a master; especially in the latter subject no one will dispute the author's claim to the title. The complicated and important subjects included under the head of neuroses are clearly and practically treated. The same may be said of diphtheria. There is a good section on leucoplakia, a subject which the student often seeks in vain in his textbook, with a table to distinguish it from similar appearances. It is a little hard to see why atrophic rhinitis and ozena should be classed as separate and distinct diseases. In both cases the etiology is acknowledged to be in doubt, and in both places many of the authorities quoted referred to both the fetid and non-fetid forms. The chapter on neoplasms of the upper air passages is less satisfactory than most of the others. The arrangement is confusing. The etiology, description and treatment of ordinary nasal mucous polypus alternate with those of rare and totally dissimilar neoplasms, whereas from its clinical importance at least it should stand boldly out, and even from a pathological standpoint there is much about it which does not apply to other tumors. The class of new growths which might be included under a head of fibroid tumors of the nasopharynx does not receive proper attention. The few pictures of patients suffering from advanced malignant disease are worse than useless; they are disfiguring. Deformities of the nasal cavities are judiciously and concisely discussed. The section on injuries to the external nose is poor. The chapter on the accessory sinuses consists of a short sketch, especially of the antrum. The very vexatious subject of ethmoiditis has been largely simplified by omission.

The author has brought to bear good judgment and common sense in dealing with the different diseases of this part of the body. It is refreshing, for instance, to find the writer of a didactic textbook tell his students that many persons go through life whose nasal passages showed considerable deflection or spur or deformed turbinals, and who apparently have suffered no inconvenience whatever. And again, "Similar instances of relief from neuralgia and other neuroses by the cor-

rection of intranasal diseases could be adduced; still, before formulating principles or rules of action on this evidence, we must remember that accidents to or operations upon other parts of the body, even where intranasal disease exists, may produce similar fortuitous results."

The book is essentially American. It can be said without reflecting anything but credit on both that it contains much from the *Transactions of the American Laryngological Association*. It bristles with the names of American laryngologists. In some cases it almost seems as if the author, in an excess of modesty, had shrunk from asserting the simplest propositions, and had hunted up some confrère to whom he could give the credit. If names had been omitted except in reference to original work on the subject, and if in the latter case a bibliography had been inserted showing where the original work could be found, the text would be improved for the casual reader, and the references made more valuable for the more thorough student. The arrangement of the subject is unusual, and perhaps not quite so clear, especially for the class room, as the common one based on the anatomical regions. These criticisms are, however, trivial. As a whole, the book is attractive, judicious, well written and well balanced.

A Treatise on Nasal Suppuration, or Suppurative Diseases of the Nose and Its Accessory Sinuses. By DR. LUDWIG GRÜNWARD, of Munich. Translated from the second German edition by WILLIAM LAMB, M.D., M.C., M.R.C.P. (Lond.). New York: William Wood & Co. 1900.

Grünwald's book on suppurative diseases of the nasal cavities has become a necessity in the equipment of the student or practitioner whose work includes this part of the body. Even if we differ from the author in details, there can be no doubt that his work, and his book based on the work, are both of the greatest importance and value.

The object of the author is primarily an argument that nasal suppuration in the great majority of cases depends upon local or circumscribed disease. From this it follows that where a purulent discharge from the nose is present as a symptom, the nasal cavities and the accessory sinuses must be carefully investigated, and the source of pus being found, surgical treatment is generally necessary for its cure. At the same time he shows that the detection of focal suppuration requires a high degree of investigation and patience.

Many readers will not be prepared to trace quite as many morbid conditions to a localized focus in the nose or accessory sinuses as the author invites us to do. That nasal polypus is a secondary symptom is generally, but not universally, accepted; but that "ozena" is secondary to a localized suppurating focus will probably for some time to come be considered not proven. The etiology of "ozena" has long been in dispute. As the author says, "All kinds of fallacies have been assumed with regard to ozena, and have been received with that enthusiasm which interpretation of facts, however false, always elicit, if only the facts appear to have been obtained by exact methods." His observations lead him to believe that no case occurs without focal suppuration, though not necessarily from an accessory sinus.

The relation of diseases of the nose and sinuses to

different disturbances in the eye and ear, to headache and neuralgia, to asthma and irritation in the pharynx and larynx include a vast field for observation and research. The author may be considered over-zealous in bringing symptoms of doubtful origin into his line, but he is essentially judicial and not dogmatic in his reasoning. He has already induced a change for the better in the diagnosis and treatment of these conditions.

The book is not an elementary one. A knowledge of and frequent reference to the anatomy of the region, as well as practical experience, or at least previous study of diseases of the nose, is essential to the reader. It is the best treatise of its size on the diagnosis and treatment of suppurative diseases of the accessory cavities at our command. We find in different parts of the book concise general statements which should be put in italics and given to students to learn. For example, "One must always remember that almost every cavity in the nose is equally competent to act either actively as a suppurating centre or passively as a reservoir in which pus is simply retained." By injections and douches, "even if pus do not find its way into the middle ear it is at least possible that it may be driven into deeper regions of the nose." "Rule of thumb methods are most of all to be deprecated in chronic empyema of the antrum. The objects to be kept in view are always the same: free drainage for pus, and the removal of those secondary changes which keep up the suppuration and interfere with the cure."

Of the translation and general appearance of the book nothing can be said except in praise. A certain lack of clear subdivision and sequence is characteristic of all German books, and it would have been impossible to remedy it more than has been done. The English-speaking workers and students in this subject are to be congratulated on having so excellent a translation, and should make full use of their opportunity.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Volume XX, "Tuberculosis, Yellow Fever and Miscellaneous, General Index." New York: William Wood & Co. 1900.

This twentieth volume is the last of the "Twentieth Century Practice," and the series is now complete. This volume has 906 pages, of which the first 490 pages are devoted to two very important general subjects, Tuberculosis and Yellow Fever; a very full analytical index of the whole work occupies 304 pages, and the other 112 pages are taken by several short articles on miscellaneous subjects, among them being one on Poisoning with Snake Venom, by Dr. Thomas R. Brown, of Baltimore, and one on Mushroom Poisoning, by Beaumont Small, of Ottawa.

In a short preface to this final volume the editor allows himself a few words of thanks to his collaborators and of explanation to his public. There have been some unavoidable delays, and some deviations from the natural order of issuance of volumes, but not more than might be expected in a work covering so much ground, spread over so much time and dependent upon so many contributors. Some who were to have contributed died and had to be replaced, and

no less than nine well-known medical writers have passed away since contributing their last medical writing to this international encyclopedia.

The general subject of tuberculosis is subdivided. The Bacteriology, Pathology and Etiology are dealt with in one article by Dr. A. J. Lartigau, of New York; next comes a chapter on Symptomatology, by Dr. H. W. Berg, of New York; then a division on Diagnosis, Prognosis, Prophylaxis and Treatment, by Dr. S. A. Knopf, of New York, and finally a chapter on Tuberculosis of the Skin, by Dr. J. T. Bowen, of Boston.

The article on Yellow Fever occupies 95 pages and is by Dr. Wolfred Nelson, now of New York, formerly a member of the State Board of Health of Panama.

This volume is quite up to the general standard of the series, which taken in its entirety constitutes a medical encyclopedia of genuine value.

Diseases of the Chest, Throat and Nasal Cavities.

By E. FLETCHER INGALS, A.M., M.D., Professor of Diseases of the Chest, Throat and Nose, Rush Medical College, Chicago, etc. Fourth edition. Pp. 787, with 255 illustrations. New York: William Wood & Co. 1900.

The third edition of this popular textbook was published in 1894. In this one, the fourth, several additions or improvements of former chapters appear, increasing the size of the book by about 80 pages. The section on Diseases of the Chest has been improved by revision of the chapters on Bronchitis, Pneumonia and Tuberculosis, and the addition of an excellent chapter on Diseases of the Mediastinum. Other changes in many parts of both sections bring the work up to the present time.

The reasons for the popularity of this textbook are evident: the arrangement is clear, the description concise, and the treatment practical. Space is allotted to the different morbid conditions in good proportion to their clinical importance. By judicious condensing the author has succeeded in getting a great deal into a small space. The book is too small to be satisfactory for reference, except that the author's opinion on many subjects is valuable. It is especially fitted for the undergraduate medical class. In some colleges the chest is combined with the nose and throat in the courses of instruction, and for such it is convenient to have the subjects bound in one volume.

Syphilis and the Venereal Diseases. By JAMES NEVINS HYDE, Professor of Skin, Genito-Urinary and Venereal Diseases, Rush Medical College, Chicago, etc., and FRANK HYDE MONTGOMERY, Associate Professor of same. Second edition. With 58 illustrations. Philadelphia: W. B. Saunders & Co. 1900.

This work, the first edition of which deservedly occupies a place of merit in the somewhat overburdened list of publications which are devoted to the subjects with which it deals, may in this, its remodelled second edition, properly claim rather more than to have maintained its former standing, its authors having distinctly added to its value by the introduction of material which puts it on the plane of some of the best of its modern contemporaries. In arrangement of subject matter it is conspicuously good, in style concise and lucid, and its practical quality is notable.

The first portion of the volume, which deals with syphilis, is amply and well illustrated, in several instances by excellent colored plates copied from the atlas of Mraček, and is perhaps the most instructive and valuable part of it, the latter half having no distinctive excellence as compared with a number of other similar treatises recently published which treat of urethritis, its complications and sequela.

The work does not invite criticism in an adverse sense, but rather by way of suggestion, as, for example, it strikes us that perhaps a rather more extended consideration of syphilis of the internal organs than is here accorded them (for example, the lungs and genito-urinary organs) would have been acceptable. And the parts of the work devoted to gonorrhoea and to stricture would have been benefited by fuller illustration, for example, of organisms with which the gonococcus is liable to be confounded, colored facsimiles of the endoscopic field, and a larger number of the varieties of stricture and their effects upon structures involved in or adjacent to them.

The subject of sexual hypochondriasis is presented in an unusually clear and forceful manner, and the chapter relating to it has a certain touch of philosophy that gives it originality and adds to its interest. The volume will repay a careful consideration on the part of either student or practitioner.

Mental Affections. By JOHN MACPHERSON, M.D., F.R.C.P.E. Pp. 379. London: MacMillan & Co., Ltd. New York: The MacMillan Co. 1899.

This work, which is modestly labelled "An Introduction to the Study of Insanity," is the first thoroughgoing English exponent of what might be called the "new insanity," that has appeared and may be said to inaugurate a new epoch in the textbook literature of mental diseases. Not only is the neuron doctrine effectively applied therein, but auto-intoxication and the microbial toxins are assigned leading rôles in the causation of mental disturbances of nearly every degree. In fact, the author's predilection for toxins as the basis for all forms of insanity, a presumption for which he admits there is no direct proof, carries him, in our opinion, much too far. Nevertheless, unless one keeps in mind the fact that much of the investigation underlying the toxic theory of the causation of mental and nervous diseases has been imperfect and that only recently have indisputable counterfactors been brought to light, he will find it hard to overcome an inclination to side with a writer whose points are so well taken and whose argument appears to be so conclusive. His pathology, both general and special, as well as his pathological symptomatology, evince a thorough knowledge of the most advanced views on the subject and his opinions regarding the inter-relationship of the neuroses, the psychoses and the diatheses, are most suggestive and helpful. The chapters on the evolution and etiology of insanity are of especial interest, and show, together with a wide range of general information, great insight into the operation of general causes and a nice discrimination as regards the value of the various factors in the production of mental disease. His advice as to treatment is sound and practical. As a whole, the book is a valuable and opportune contribution to our knowledge of the subject, and one that thinkers and workers in this department of medicine are sure to welcome.

THE BOSTON
Medical and Surgical Journal.

THURSDAY, NOVEMBER 8, 1900.

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HENRY JACOB BIGELOW.

A MEMOIR.

As the generations of medical men come and go, and as the constantly increasing number of younger physicians gradually fill the places of their elders, it naturally and inevitably happens that the influential men of the past are in a measure, at least, forgotten. It is often hard for a man starting in his career to realize how great a debt he owes to his predecessors, and how much the privileges which he enjoys represent the work of those who have gone before. This is not so much due to ingratitude as to ignorance and lack of that keen interest in the development of his profession which demands of him a knowledge of the past. To very many now in the active practice of their profession in this community the name of Dr. Bigelow brings up personal recollections of a most vivid sort; to others the actual remembrance of the man is nothing more than a dim memory, and to a rapidly growing number even this is lacking, and nothing remains but the knowledge of what he accomplished. It has been said that however distinguished a man may have been there are always others to fill his place, which is clearly only a partial truth. Occasionally it happens that a man takes so unique a place in the work of his particular calling that his loss is permanently recognized, however well the work which he inaugurated may be carried on by his successors. We could easily name a dozen physicians in the history of the medical profession in Boston who may claim this unusual distinction, and there can be no doubt that one of these is Dr. Bigelow.

We have before us the recently published memoir of this eminent surgeon, prepared under the direction of his son, together with his published and some of his hitherto unpublished contributions to medicine and allied subjects. The four volumes in which this material is presented are a fitting memorial to a man whose professional work was closely associated with a critical epoch in the development of medical art and

medical teaching. The first volume contains an appreciative and concise account of his life and habits of thought. The writer of the sketch, whose name is withheld, is judicial in his estimate of the character and attainments of the man, permitting the reader quite clearly to see the combination of attributes which made up his somewhat unique personality. His conservatism, especially in the matter of medical teaching, and in his relation to the Harvard Medical School; his extraordinary versatility and his not infrequent dogmatism and intolerance are presented in a sufficiently candid spirit. At the conclusion of the memoir one feels as if he had been introduced to a man of undoubted genius, with many of those minor peculiarities which seem so inseparably associated with distinguished ability. The account is charmingly written and should be generally read not only by those who knew him in life, but also by the greater number who knew him only through what he accomplished. Over 100 pages of the volume are taken up with memorials, resolutions and obituary notices, which throw still further light on the estimation in which he was held by his associates and friends. Oliver Wendell Holmes's personal sketch is perhaps of particular interest in this connection.

The three remaining volumes are concerned respectively with Anesthesia, address and other papers; Orthopedic Surgery, medical papers; Dislocations and Fractures of the Hip; Litholapaxy. These are naturally of varying interest and varying permanence. The work on the hip and on stone are, of course, classical, and will always remain one of Boston's substantial contributions to medical knowledge. Many of his medical papers on more or less general subjects are entertaining and forcible, though it was certainly not in this field of literary endeavor that he especially excelled. His ideas, though always the product of careful thought, were frequently not progressive, and missed the broad point of view. Nevertheless, the Medical Faculty of Harvard University have put on record the following statement:¹ "As a member of the faculty he was distinguished for the ripeness of his judgment, the wisdom of his conclusions and the clearness and force of his arguments. Whether as advocate or opponent he was sure to add new light to the subjects under discussion, and was always to be recognized as a leader of men." His papers on vivisection show the curious contradictions of his mental attitude. His breadth of vision was not large enough to permit him to see the advantages and necessity to knowledge, of experiments on animals, no doubt because his immediate interest lay in the practical application of his special art rather than with the theoretical aspects of the whole subject of medicine.

It is a source of congratulation that these books have appeared to renew interest in the life and work of this really remarkable man. We have too few such memorials of the men who have left a definite impress upon their times.

A NEW EMPLOYMENT FOR WOMEN.

No sooner do the various employments which are open become filled to overcrowding than new ones appear, so that there seems always to be something for every one to do. Women's vocations are rapidly becoming practically the same as men's, and their entrance into the fields of active work is in fact leading them into regions where men may not go. The whole profession of nursing is pre-eminently a woman's work, and the sterner sex appears quite willing to yield this sphere of activity to them without question or dispute. A new suggestion has come through the columns of a New York lay contemporary, which contemplates that women fitted by nature and training for such employment devote themselves to the task of visiting persons who are ill or despondent, for the purpose of cheering them along the road toward the recovery of physical or mental health. It appears that a woman, whose name is quite unknown to us, has taken upon herself this sort of work as a calling. She goes for a certain time each day or less often, as the case may be, to persons who are incapacitated for the ordinary social enjoyments of life. In each instance she naturally uses her judgment as to what sort of amusement her client requires, whether conversation or reading aloud, or silence. In this instance the success of the plan is reported to have been so great that the woman's time is completely occupied, and she finds herself independent of the wearing monotony which is a companion's lot, who is continually devoted to the interests of a single patient. "In the case of one invalid," our contemporary writes, "she devoted the two hours spent with her daily to writing letters for the sick woman, and that furnished the means of passing the time so quickly that it never grew wearisome to the 'cheerer' and greatly improved the patient. Other similar expedients came to mind in different cases and the tedium of the companion's life was never noticed in this newer method of 'cheering by the hour.' The doctors find that an advantage to the patient in this system is the interest aroused by the arrival of the woman every day, whereas if she were always to be found, her presence would awaken no interest, if indeed it did not become irksome. The visitor, who comes from the outside every day, brings into the room an atmosphere of freshness quite impossible to one who remains there permanently."

A possibility occurs to us which should not pass unmentioned, and that is that the tendency toward gossip with which some women are said to be endowed would under this arrangement have a rare opportunity for development were it not held in strictest control. That women of the right sort are capable of discretion in such a matter can, however, not be doubted.

This appeals to us both as a feasible and reasonable idea; it is clearly a new sphere for the right sort of women, of whom there are, no doubt, many in search of just such work, if they but knew it. It requires no great stretch of the imagination to conceive of the

¹ Journal, November 6, 1890.

systematic organization of such a scheme. Any physician who practises medicine is well aware, whether or not he publicly proclaims the fact, that much of his most time-taking and arduous work consists in cheering on his chronic patients to another day or week of endurance, and also that his success, in the popular acceptance of the term, depends in great measure upon his ability in this regard. Such work is, no doubt, necessary, but it has, we confess, always seemed to us a type of treatment not quite in accord with the full dignity of his calling. Here is a legitimate way out of the difficulty, to delegate to an appropriate person the function of combating the *ennui* of invalidism. No doubt the work of our busiest practitioners would thereby be diminished, but their time could then be devoted to different things, and the patients, we venture to believe, would not in the long run be losers thereby. The physician might well direct the form of amusement or diversion his patients should have, but let the actual work be done by another. It is a field which the nurse evidently does not fill, nor the so-called companion. There is no element of novelty in their presence, but an outsider gifted in the art of entertainment might fill a place in the lives of many invalids which the doctor does in part, more or less unwillingly. At any rate the experiment is worth trying; we say it in all seriousness.

MEDICAL NOTES.

NEW BUILDING FOR RUSH MEDICAL COLLEGE. — Rush Medical College is to have a new building to cost \$80,000, for which Dr. Nicholas Senn has just given \$50,000. The building is to be called Senn Hall. Primarily, the new building will be for clinical purposes. In addition to complete arrangements for clinical work there will be classrooms and laboratories.

SIR WILLIAM MACCORMAC'S SERVICES IN THE FRANCO-PRUSSIAN WAR RECOGNIZED. — We learn from the *Lancet* that the German Emperor has recently conferred upon Sir William MacCormac the "Kaiser Wilhelm" memorial medal in recognition of his services during the Franco-German War of 1870-71, and Her Majesty the Queen has been graciously pleased to grant her permission to him to accept and wear the medal. The medal was not long since instituted by the present emperor in memory of his grandfather, "Der Grosse Kaiser."

DR. ALFRED STENDEL APPOINTED AT THE PENNSYLVANIA HOSPITAL. — Dr. Alfred Stengel, well known as the editor of the *American Journal of the Medical Sciences*, and director of the Pepper Laboratory, at the University of Pennsylvania, has been appointed visiting physician to the Pennsylvania Hospital to succeed the late Dr. Da Costa.

PAN-AMERICAN MEDICAL CONGRESS. — The Pan-American Medical Congress will hold its sessions in Havana, Cuba, December 26, 27, 28 and 29, 1900.

Communications are solicited. Information may be obtained of the secretary, Dr. Tomas V. Coronado, of Havana.

A SUSPECTED CASE OF PLAGUE IN BREMEN, GERMANY. — A sailor from a vessel arriving recently at Bremen from South Africa has developed symptoms suggestive of plague, and is now under the observation of experts to determine the diagnosis.

"SWALLOWING" A DIAMOND. — We are indebted to Surgeon-General Bidie, C.I.E., (I.M.S. retired) for sending us a local report of a curious case recently tried in Calcutta. A young man, having provided himself with a new suit of clothes, walked into a jeweller's shop and asked to look at a parcel of diamonds. He went to the window for better light, and presently it was discovered that the largest diamond, valued at Rs. 10,000, had disappeared. The gem did not appear, and it was suspected that it lay concealed in the man's throat. A skiagram was taken and revealed a foreign body in the throat which could not be dislodged. At the trial an old criminal swore that the concealment of stolen articles in the throat was a well-known habit of Indian thieves. An artificial dilatation of the pharynx is produced by the means of a round leaden bullet, which is "swallowed" and brought up several times a day until a pouch is made which fulfils for stolen articles—coins and jewels—the same function as the crop in birds and rumen in ruminants. — *British Medical Journal*.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, November 7, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 158, scarlatina 46, measles 20, typhoid fever 15.

MORTALITY STATISTICS. — The number of deaths reported to the Board of Health for the week ending November 3d is 184, as against 193 the corresponding week last year, showing a decrease of 9 deaths, and making the death rate for the week 17.3. The deaths from consumption were 22, pneumonia 19, whooping cough 1, heart disease 22, bronchitis 10, marasmus 3. There were 7 deaths from violent causes. The number of children who died under one year was 33; under five years, 49; persons more than sixty years, 30; deaths in public institutions, 60.

BERI-BERI VICTIMS TO BE SENT TO CALCUTTA. — Of the four Hindus who have been under treatment for beri-beri at the Boston City Hospital, one has died and three have recovered. The survivors have been sent to New York by the British Consul, whence they will be sent home to Calcutta. They came to Boston some weeks ago in the British steamer *Arava*.

NEWTON, MASS.. DISTRICT NURSING ASSOCIATION. — The annual report of the association shows that two nurses have been regularly employed during the year, who have made 5,096 visits to patients. Two hundred

and seventy-three cases have been cared for; 17 have died, and 13 sent to the Newton Hospital.

TYPHOID FEVER IN NORTHAMPTON, MASS. — Dis-closures made by the local Board of Health have shown within the town limits the presence of an epidemic of typhoid. The district most infected is known as the Bay State section, where 50 cases have so far been reported. It is probable that other cases will develop.

A NEW AMBULANCE FOR BROOKLINE, MASS. — The ambulance designed for the contagious hospital is about to be delivered to the Brookline Board of Health. It is a light vehicle, so arranged that it can receive two stretchers, one for children and the other for adults.

APPOINTMENT OF DR. ALFRED SCHAPER. — Dr. Alfred Schaper, formerly assistant professor of histology at the Harvard Medical School, has been appointed to a professorship of anatomy at Breslau, Germany.

NEW YORK.

A TRIBUTE TO DR. EDWARD SQUIBB. — In a recent editorial article the *Brooklyn Eagle* pays an eloquent tribute to the character and achievements of the late Dr. Edward Squibb, who was for so long an honored citizen of that borough. It was, it says, as a manufacturer of medicines for the use of physicians he won and deserved, among those for whose recognition and commendation he strove, a reputation that was a fitting reward for long years of strenuous and absolutely conscientious endeavor. Every doctor knew that the Squibb preparations were exactly what the names of them indicated and that they could be prescribed with perfect confidence that the patient would get what the prescription called for. There was never any question about this. Substitution and adulteration were lost arts, so far as the Squibb laboratory was concerned, and its owner set and long maintained almost alone the standard that has been equalled but never surpassed by the best American pharmacutists. Of course, many laboratories now exist modelled on the one he established, but they are successful and honored in proportion as they follow the copy he set. He was a great power in Brooklyn, yet he never advertised, he never made addresses. He wrote only within the lines, on the subjects and for the members of his own profession. He abhorred publicity or praise. Yet his influence on medicine, on medical thought, on medical practitioners, and sympathetically on public health, was not unlike that of the Gulf Stream on climate or that of the Nile on soil.

DEATH OF A LEPER. — Lee Hing, one of the four Chinese lepers who were isolated on Ricker's Island in 1893, died at the almshouse on November 3d. At one time the four escaped, but they were all captured and returned to the island. Soon afterwards, by a decision of Health Commissioner Cyrus Edson, made after a consultation with prominent dermatologists, to the effect that leprosy is not a contagious disease in

this climate, the four were set at liberty. Lee Hing returned to his friends in Mott Street, New York, but finding that he was practically ostracised, he applied to the city authorities to be taken care of. He was then sent to the almshouse, where he lived and finally died in a small isolated building set apart for his use.

FROM CHÂTEAU D'IF TO CHÂTEAU DE SING SING. — Edmond Dantes has been condemned to imprisonment again — this time, however, not in the terrible Château d'If, but in the more prosaic Château de Sing Sing. An individual with the name of Dumas's immortal hero was on October 31st sentenced to one year in State Prison for removing John Hall's name from a diploma issued by the New York College of Pharmacy and inserting his own, by which he was enabled to obtain a position as clerk in a Second Avenue drug store. It seems that Dantes worked in Paterson, N. J., for Hall, and while the latter was away on a vacation appropriated his diploma and came to New York to secure a situation by means of it.

GARBAGE RENDERING IN BROOKLYN UNCONSTITUTIONAL. — By a decision handed down by Justice Andrews, of the Supreme Court, the law prohibiting garbage rendering in the Borough of Brooklyn, which was passed by the last legislature, has been declared unconstitutional. This was in a suit against the Board of Health brought by the New York Sanitary Utilization Company, which in 1897 entered into a contract with New York and Brooklyn to render all their garbage on Barren Island, and expended over \$500,000 in building a plant for the purpose. The Health Department, by the act referred to, was empowered to put a stop to the garbage rendering on Barren Island.

DEATH OF GEORGE WASHINGTON HORNER GREEN. — Again the champion "old nigger" is dead. George Washington Horner Green, a former negro slave, died October 31st in the almshouse at Hempstead, Long Island, at the reputed age of one hundred and twenty-three years. He is said to have been born on a farm in New Jersey, on January 1, 1777. He was sold to a Virginia planter named Horner, by whom, it is alleged, he was sold to General Washington. Having been manumitted in 1812, he came north, and has ever since resided on Long Island. He was married several times, and is said to have been the father of thirty-seven children, most of whom are dead.

CITY BUDGET FOR 1901. — On October 30th the budget, which represents the estimated cost of the Government of the City of New York for the year 1901, was passed by the Board of Estimate and Apportionment. While the total appropriation shows an increase of \$7,321,440 (fully 80 per cent. of which increase, according to Controller Coler, was caused by mandatory legislation at Albany), the amount assigned for the Department of Health is \$12,671 less, and that for the Department of Public Charities \$1,322 less than in 1900. The appropriation for the Health Department is \$1,053,990.

Miscellany.

THE REFORM OF MEDICAL ORTHOGRAPHY.

The *Medical Press* comments on what it regards as an Americanism, namely, the effort to reform medical orthography. We are also inclined to place ourselves among the conservatives in this matter, and find considerable food for reflection in the following paragraph: "A correspondent calls us to account for our want of sympathy with the efforts of our American confrères to simplify the orthography of medical terms by eliminating redundancies and by approximating the spelling to the pronunciation of words. We must confess to a certain conservatism in matters orthographical, nor is this to be wondered at when one recalls the years of labor devoted to the acquisition of the knowledge how words should be spelled. We are free to admit that the dislike which the sight of truncated and mutilated words inspires does not repose upon any logical basis, and, further, that in many instances the orthodox manner of spelling a word, far from giving a trustworthy clue to the etymology, is often at variance with its true derivation. Our correspondent's appeal to educated men to abstain from discomenancing the movement in favor of reform is somewhat wide of the mark in so far as it is based on the assumption that the educated are more amenable to reason in this matter than the unlettered. The reverse is probably the case. To bid the scholar discard one of the most tangible results of a long and tedious education is about as reasonable as to bid the physician to "throw physic to the dogs." To plead that this is prejudice and not reason, is deliberately to ignore the fact that most things in this world are decided by custom, for example, prejudice, rather than by any act of the reason. That the reform for which he pleads will come to pass at some future time we cannot doubt, but as yet, though the spirit is willing the flesh is weak, and the repulsion which American mangled terminology inspires on this side of the ocean is still strong."

A QUESTION OF MEDICAL ETHICS.

DR. CHARLES LYMAN GREENE writes a forcible paper in the October number of the *St. Paul Medical Journal*, in which he speaks in no uncertain terms of the practice, apparently more prevalent in the West than here, of receiving commissions for patients sent in consultation. The Minnesota State Medical Society, at which the paper was read, has unanimously adopted the following resolutions:

WHEREAS, it has come to the knowledge of this society that the paying and receiving of commissions on cases referred by one practitioner to another is an established custom, among a certain small number of physicians, and

WHEREAS, we, the members of this society, regard such practice or practices as reprehensible, degrading, unethical and unprofessional and believe that their maintenance threatens the very existence of scientific and humane medicine, it is hereby

Resolved, That the giving or receiving of commissions as above described, after this date, shall be considered as constitutional grounds for expulsion from this society.

Resolved, That our delegates to the American Medical Association shall be and are hereby requested to use their

influence in every possible way to make the above described offence cause for expulsion from the national association.

Obituary.

E. J. CUTTER, A.B., M.D.

DR. EDWARD JONES CUTTER, A.B. (Harvard), 1877; M.D. (Harvard) 1881, was born at Peterboro, N. H., July 5, 1855. He was the son of Edward Stearns Cutter (A.B., Dartmouth, 1844) and Jaquette Swan. He was educated at Amherst and Manchester, N. H., and later at the Public Latin School in Boston. He was house officer at the Boston City Hospital from July, 1880, until January, 1882, when he was appointed assistant resident physician at the State Almshouse at Tewksbury. In November, 1882, he became assistant resident physician at the Boston City Hospital. In 1884 he began practice in Leominster, where he filled an honorable position as physician and citizen to the time of his death at Waverley, Mass., October 22, 1900.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, OCTOBER 27, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1203	381	20.32	13.60	3.04	2.56	—
Chicago . . .	1,698,575	—	—	—	—	—	—	—
Philadelphia . . .	1,293,197	396	118	19.50	11.50	1.75	1.75	4.25
St. Louis . . .	575,238	—	—	—	—	—	—	—
Baltimore . . .	508,957	172	55	25.52	6.96	6.33	3.48	4.06
Cleveland . . .	381,768	—	—	—	—	—	—	—
Cincinnati . . .	325,902	—	—	—	—	—	—	—
Pittsburg . . .	321,616	91	31	32.70	9.81	8.72	5.45	3.27
Washington . . .	277,000	—	—	—	—	—	—	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	52	17	32.64	4.76	9.60	1.92	3.84
Nashville . . .	87,754	—	—	—	—	—	—	—
Boston . . .	560,892	214	64	29.14	5.64	6.58	1.88	5.17
Worcester . . .	115,231	42	10	21.42	4.76	21.42	—	5.76
Fall River . . .	106,591	34	18	38.22	—	26.46	—	—
Cambridge . . .	95,185	25	9	40.00	—	—	—	16.00
Lowell . . .	98,611	37	13	24.30	13.50	5.40	5.40	2.70
New Bedford . . .	74,943	21	11	57.12	—	23.80	14.28	4.76
Lynn . . .	69,769	9	3	11.11	—	—	—	—
Southernville . . .	67,863	15	2	39.99	—	—	6.66	6.66
Lawrence . . .	60,937	25	9	20.00	—	4.00	—	4.00
Springfield . . .	60,085	9	3	34.44	—	11.11	—	22.22
Holyoke . . .	45,623	16	8	43.75	12.50	—	—	31.25
Brookton . . .	40,299	7	2	28.56	—	—	14.28	—
Haverhill . . .	38,714	12	4	8.33	3.33	—	—	—
Salem . . .	38,583	13	6	30.76	—	—	—	30.76
Malden . . .	38,321	9	2	22.22	—	11.11	—	—
Chelsea . . .	35,022	10	4	29.00	—	—	20.00	—
Gloucester . . .	32,285	6	1	33.33	—	—	—	33.33
Fitchburg . . .	31,648	6	2	50.00	—	16.66	16.66	—
Newton . . .	31,224	8	3	12.50	—	—	—	12.50
Everett . . .	31,167	4	1	25.00	—	—	—	25.00
Taunton . . .	28,891	—	—	—	—	—	—	—
Quincy . . .	25,653	—	—	—	—	—	—	—
Pittsfield . . .	24,226	—	—	—	—	—	—	—
Waltham . . .	23,231	7	—	42.84	28.56	—	—	14.28
North Adams . . .	22,196	5	1	—	—	—	—	—
Brookline . . .	20,225	—	—	—	—	—	—	—
Chicopee . . .	18,790	6	3	33.33	—	—	—	33.33
Medford . . .	17,869	2	1	—	—	—	—	—
Melrose . . .	15,411	6	3	16.66	—	—	16.66	—
Newburyport . . .	15,157	4	1	—	—	—	—	—

Deaths reported 2,473; under five years of age 787; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 583, consumption 308, acute lung diseases 264, diarrheal diseases 105, diphtheria and croup 70, typhoid fever 66, whooping cough 16, scarlet fever 13, cerebrospinal meningitis 9, measles 5, erysipelas 1.

From whooping cough New York 8, Pittsburg and Boston 3 each, Providence and New Bedford 1 each. From scarlet fever New York 5, Boston 3, Philadelphia, Pittsburg, Worcester, New

Bedford and Lawrence 1 each. From cerebrospinal meningitis New York 6, Worcester, Cambridge and Somerville 1 each. From measles New York 4, Pittsburg 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending October 20th, the death rate was 17.1. Deaths reported 3,815; diarrhoea 197, acute diseases of the respiratory organs (London) 182, diphtheria 85, fever 71, whooping cough 43, measles 37, scarlet fever 35.

The death rates ranged from 10.4 in Halifax to 28.6 in Gateshead; Birmingham 19.0, Bradford 14.3, Cardiff 10.7, Hull 17.9, Leeds 16.7, Leicester 15.5, Liverpool 21.9, London 15.8, Manchester 22.3, Newcastle-on-Tyne 18.2, Nottingham 20.2, Portsmouth 17.4, Sheffield 22.7, Sunderland 21.2, Swansea 17.3.

METEOROLOGICAL RECORD

For the week ending October 27th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Wet'r. *		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...21	30.34	49	59	54	65	44	55	W.	S.W.	5	7	C.	C.	.06
M...22	30.19	66	77	54	71	66	68	W.	S.W.	12	11	C.	C.	
T...23	30.30	70	80	60	87	76	82	S.W.	S.W.	6	9	F.	C.	
W...24	30.25	70	80	60	92	68	80	S.W.	N.W.	9	8	F.	C.	
T...25	30.54	55	60	50	80	87	84	N.E.	E.	15	6	C.	O.	
F...26	30.39	52	58	47	93	89	91	N.W.	S.	6	8	C.	O.	
S...27	30.20	57	60	54	92	100	96	N.W.	N.E.	4	9	G.	R.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. — Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 3, 1900.

A. M. D. McCORMICK, surgeon, commissioned surgeon from November 11, 1899.

R. E. LEDBETTER, assistant surgeon, ordered to the "Constellation."

C. BIDDLE, surgeon, detached from the "Texas" when put out of commission and ordered home to wait orders.

C. H. WHITE, medical director, detached from the Naval Museum of Hygiene, Washington, on reporting of relief, and ordered home to wait orders.

G. P. BRADLEY, medical inspector, ordered to duty in charge of the Naval Museum of Hygiene, Washington, November 15th.

H. E. AMES, surgeon, detached from the "Kearsarge" and ordered to the "Massachusetts."

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The regular meeting of the society will be held at the Medical Library, 19 Boylston Place, on Monday, November 12th, at 8 o'clock.

Paper: Dr. Frederick Coggeshall will read a paper entitled "The Relation of Pelvic Disease to Nervous Disorders." Drs. J. J. Putnam, Kilburn, Baker, Knapp, Storer and others have been asked to take part in the discussion.

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

RECENT DEATHS.

WILLIAM ARTHUR ZABRISKIE, M.D., of New York, died suddenly on October 24th. While on his way to visit a patient Dr. Zabriskie was seized with an attack of epilepsy and in falling to the sidewalk fractured his skull. He was a graduate of the College of Physicians and Surgeons, New York, in 1883.

WALLACE A. SIBLEY, M.D., one of the best known medical men in Monroe County, N. Y., died at his home in Rochester, on October 28th, from organic disease of the heart.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Commissioner of Education for the Year 1898-99. Vol. I. Washington, 1900.

Maps Accompanying Nineteenth Annual Report of State Board of Health of New York for the Year of 1898.

A New Nasal Splint. Retinitis Albuminurica with Report of Cases. By Francis W. Alter, M.D., Toledo, O. Reprints. 1900.

Modern Medicine. By Julius L. Salinger, M.D., and Frederick J. Kalteyer, M.D. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

Stringtown on the Pike: A Tale of Northernmost Kentucky. By John Uri Lloyd, author of Etidorpha, etc. Illustrated. New York: Dodd, Mead & Co. 1900.

Physical Diagnosis of Diseases of the Chest. By Richard C. Cabot, M.D., Physician to Out Patients, Massachusetts General Hospital, etc. New York: William Wood & Co. 1900.

A Practical Treatise on Medical Diagnosis for Students and Physicians. By John H. Musser, M.D. Fourth edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

Nineteenth Annual Report of the State Board of Health of New York for the Year of 1898. Transmitted to the Legislature, February 13, 1899. New York & Albany: Nynkorp, Hallenbeck, Crawford Co., State Printers. 1899.

Multiple Metastatic Sarcomata of the Lungs Secondary to Sarcoma of the Right Forearm. Adhesive and Hemorrhagic Pleurisy; Thrombosis of the Pulmonary Artery, with a Necropsy. By Stephen Smith Burt, A.M., M.D. Reprint. 1900.

Modern Surgery, General and Operative. By John Chalmers Da Costa, M.D., Professor of Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia, etc. Third edition, revised and enlarged. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

Laboratory Directions for Beginners in Bacteriology, an Introduction to Practical Bacteriology for Students and Practitioners of Comparative and of Human Medicine. By Veranus A. Moore, B.S., M.D. Second edition, enlarged and revised. Boston: Ginn & Co., The Athenaeum Press. 1900.

Report of Two Cases of Epithelioma of the Vulva. Report of a Case of Nephrectomy for Pyonephrosis due to Impaction of a Stone in the Ureter: With Remarks on the Importance of the Early Diagnosis and Treatment of Renal Calculi. By Charles P. Noble, M.D., Philadelphia, Pa. Reprints. 1900.

Heart Disease in Childhood and Youth. By Charles W. Chapman, M.D. (Durh.), M.R.C.P. (Lond.), Physician to the National Hospital for Diseases of the Heart, Soho Square, W., etc. With an introduction by Sir Samuel Wilks, Bart, M.D., F.R.S. London: The Medical Publishing Co., Ltd. 1900.

Hand Atlas of Human Anatomy. By Werner Spalteholz. With advice of Wilhelm His, Professor of Anatomy in University of Leipsic. Translated from the third German edition by Lewellys F. Barker. With a preface by Franklin P. Mall. Vol. I. Bones, Joints, Ligaments. Leipsig: S. Hizzel. 1900.

Practical Manual of Diseases of Women and Uterine Therapeutics for Students and Practitioners. By H. Macnaughton-Jones, M.D., M.Ch., Master of Obstetrics (*honoris causa*), Royal University of Ireland, etc. Eighth edition, revised and enlarged, with 640 illustrations and 28 plates. New York: William Wood & Co. 1900.

A Reference Handbook of the Medical Sciences, embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By various writers. A new edition, completely revised and rewritten. Edited by Albert H. Buck, M.D., New York City. Volume I. Illustrated. New York: William Wood & Co. 1900.

A Book of Detachable Diet Lists: For Albuminuria, Anemia and Debility, Constipation, Diabetes, Diarrhea, Dyspepsia, Fevers, Gout or Uric Acid Diathesis, Obesity, Tuberculosis and a Sick Room Dietary. Compiled by Jerome B. Thomas, Jr., A.B., M.D. Second edition, revised. Philadelphia: W. B. Saunders & Co. 1900.

Malaria according to the New Researches. By Prof. Angelo Celli, Director of the Institute of Hygiene, University of Rome. Translated from the second Italian edition by John Joseph Eyre, M.R.C.P., L.R.C.S. (Ire.), D.P.H. (Camb.). Introduction by Dr. Patrick Manson, Medical Adviser to Colonial Office. Illustrated. London, New York and Bombay: Longmans, Green & Co. 1900.

A Dictionary of Medical Science, containing a Full Explanation of the Various Subjects and Terms of Anatomy, Physiology, Medical Chemistry, Pharmacy, etc. By Robley Dunglison, M.D., L.L.D. Twenty-second edition with appendix. Revised and enlarged, with Pronunciation, Accentuation and Derivation of the Terms. By Richard J. Dunglison, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1900.

The American Illustrated Medical Dictionary: A New and Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry and the Kindred Branches, with their Pronunciation, Derivation and Definition, including much Collateral Information of an Encyclopedic Character; together with New and Elaborate Tables of Arteries, Muscles, Nerves, Veins, etc. By W. A. Newman Dorland, A.M., M.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1900.

Address.

PUBLIC HEALTH LABORATORIES.¹

BY THEODORE SMITH, M.D., BOSTON.

George Fabyan Professor of Comparative Pathology, Harvard Medical School; in charge of the Pathological Laboratory of the Massachusetts State Board of Health.

The marvellous development of sanitary science during the last quarter of the nineteenth century has been due chiefly to the determination of medical science to utilize physics, chemistry and biology, those fundamental departments of experimental science, in its efforts to control disease. The expression of these efforts are the various laboratories in which the problems of preventive medicine are being analyzed with the aid of these fundamental sciences. The rise of microbiology contributed largely to the creation of these laboratories, and in microbiology the special departments of preventive inoculation and serotherapy, with which the names of Pasteur and Behring will ever remain associated, have been the chief factors in the still further expansion of laboratory facilities.

In the professional as well as the lay mind the word laboratory is usually associated with study and investigation, with the discovery of new facts or with the rectification or overthrow of old ones. Not infrequently, however, we find that the work of the laboratory is looked upon as a kind of modernized alchemy, and the results expected from it are in accord with this conception.

When we turn to the actual operations of the laboratory devoted to sanitary science, and endeavor to summarize the work undertaken there, we find different classes and grades, some approaching our ideal of laboratory occupation, others far removed from it and approaching closely executive work. Many laboratories have sprung into existence only because of a practical necessity. They are the diagnostic and analytic laboratories, serving directly the practical health officer in the control of the various agencies that tend toward disease. On the other hand, laboratories devoted solely to investigation in special departments of sanitary science are still rare. But everywhere an effort is being made to turn at least a fraction of the available energy toward the solution of problems continually arising in the routine work of bacteriological and chemical analysis, in order that from time to time we may give the results of this very routine work a truer or at least a more rational interpretation.

In making this effort several difficulties are encountered. In the routine work of the laboratory, which deals with so much and such varied material, and which constitutes probably four-fifths of the work exacted of laboratories devoted to public health, there is opportunity given for fine inductive reasoning whose results put to the test of experiment may yield very valuable results. Unfortunately, however, either the time for the careful study of the accumulating statistics and facts is wanting, or else the physicians served by the laboratory neglect to furnish the desired data and render the bulk of the material on hand almost worthless.

Another difficulty arises from the close relation between the laboratory worker in sanitary science and

the public. Leaving aside as well known the frequently discouraging encroachments of politics upon the functions and functionaries of the laboratory, there is danger that the genuine scientist may be misunderstood, undervalued and eventually driven out entirely. The history of science convincingly shows that the most far-reaching discoveries are least appreciated at the time of their promulgation, and the same holds true in a lesser degree for the results of investigations of lesser value. As regards some of the disadvantages of science serving the people through their representatives I have already spoken recently, and I need not dilate upon them at this time. They are inherent in the nature of things and cannot be altered. Another problem which confronts us is the disposition of funds at our disposal, in such a manner as will conduce to the best interests of the subject to which we are devoting ourselves. We must choose those lines of work, if there be any choice at all, which will yield useful results of a high order, and in this choice we may often be in conflict with our employers, because science tends to look more for the remote, practice for the immediate results.

These are undoubtedly some of the considerations which have been of influence in bringing us together as a section of this association. We realize, furthermore, that even the individual laboratory guided and conducted along the most approved lines cannot but gain by association with others, and that the inductions reached by one laboratory may be put to the test by this association of many laboratories. We, individually, stand especially in need of encouragement, sympathy and appreciation, without which the solitary efforts of the investigator are likely to wither or remain undeveloped. Here among men of kindred thought, that lack of appreciation of individual effort, for which we cannot blame the world at large, should be amply compensated.

I have already classified our work as consisting of investigation, and routine work created by investigation. Let us briefly examine these two kinds of work, so intimately associated with one another. Of the two I unhesitatingly put the investigation first, as the soil on which the practical work may properly develop and bear fruit. We, as a body, need above all things to emphasize the importance of research and the desirability of having proper provisions made for it. The diagnostic, analytic and executive work we know will continue to flourish, and it may eventually conceal and obscure entirely the soil on which it lives, and which needs continual enriching and tilling in order that there may be fruit as well as foliage.

Let me define a little more minutely what the relation of research to practical sanitary work may be conceived to be. When we are conducting experiments in the laboratory we are studying a certain number of known or controllable interacting factors in order to learn the result of their action. The highest kind of experimental work deals with the largest number of such factors, either by eliminating them from or bringing them into the problem. The true test of the accuracy of such experimental work is the successful repetition of it by competent men, leading to the same unequivocal results. It follows that whenever uncontrollable factors or such as escape our analysis are present, our results will vary and lack final scientific value. When in the study of public health problems we pass beyond the confines of the laboratory,

¹ Introductory address of the chairman at the opening of the second annual meeting of the Section in Bacteriology and Chemistry of the American Public Health Association, Indianapolis, October 22, 1900.

we enter a quite different field, because we are likely to encounter so many buried links in the chain of causation, and so many known elements which cannot be controlled or eliminated. Hence the larger study of nature's problems must appeal to the laboratory for aid in disentangling the interwoven lines of force which enter into the making of disease. To the undefined factors we, as laboratory workers, must turn for our subjects of study ever and again. We must bring them together with those we have studied, and thus, by gradually enlarging our sphere of experiment, we slowly but steadily approach the real conditions, those that present themselves in the everyday life of the community and the State. The nearer we approach this limit, the more applicable and hence the more useful our work becomes, either by establishing new, positive facts, or by destroying current but false beliefs.

This steadily progressive march of the analysis of phenomena of health and disease from simple to complex is, however, not always maintained. Much laboratory work is like the movement of a crab, backwards, a continual disavowal of conclusions deemed well established for a time. The difficulty lies less in the perversity of the experimenter than in the perversity of his environment. He is forced by circumstances to take up problems, not in the order in which they seem to him most accessible to solution, but in the order in which they happen to occur in the world he is serving. He is set down in a clearing in the forest with his instruments of precision, and directed to survey it in its relation to landmarks to him inaccessible and invisible.

Again, the work thrust upon us through the accidents of the world at large must be attended to promptly if at all, because the very material under observation is changing and will not suffer delay, or else because the pressure from without is too great. Hence our work is likely to be fragmentary and unfinished, and to have that flavor of the practical which does not commend itself to more academically placed brethren. However, work done with some practical end in view may be fully as scientific in its spirit, method and outcome, and as valuable to the progress of science as any of the traditional work of college or university. Whoever unearths a few consecutive links of the phenomena of cause and effect is entitled to the world's gratitude, be these links near one end of the chain or the other. In all things nature has applied the same principles and displayed the same degree of ingenuity, and where can it be said has she exercised more of it than in the ever-shifting battleground of the infectious diseases where the cunning of two different orders of living beings is exerted not only to protect themselves but to find a breach in the other's armor?

The peculiar situation of the public health laboratory as I have outlined it should make the investigator very cautious concerning the conclusions he may publish and maintain. Conservatism is of the utmost importance since all new facts applied to everyday life tend to disarrange to a greater or less degree existing relations. It is always safe to underestimate our inferences, and safer still to draw conclusions only when all doubts are silent. The publication of experiments need not be deferred, even if they do not point to a definite outcome, since they may help and stimulate others to carry the proof farther. In our relation

to those whose duty it is to formulate and enforce rules for the protection of the public health and who depend upon us for sound, unbiased advice at critical times, we should always clearly state the limitations governing our work. If the conditions of the problem presented conform to those in our experiment then we can predict a certain result, but if there are additional variable factors which we have not included in our study then our information cannot be final. Just here the opportunity for research on the part of the practical sanitarian enters. By unearthing and defining the new and variable elements in the larger practical problem and transferring them to the laboratory for consideration his work may become of inestimable value to sanitary science.

The need for continued investigation both within and without the laboratory is thus only too obvious, and before leaving this theme I yield to the temptation of illustrating it from the general problem of the etiology of infectious diseases, to which I have given more or less attention. This problem demands the services of bacteriology, or more broadly, of microbiology and of pathology. In the domain of bacteriology we are just emerging from the rather onesided and superficial study of bacteria and their gross physiological characters, and beginning to realize that the character of an infectious disease is due to the host as well as to the parasite, and that the interaction of the two organizations causes modifications in both. We are thus confronted by conditions whose complexity was not anticipated ten or fifteen years ago. We have learned, among other things, to recognize quite a host of micro-organisms which have the power to produce pathological conditions but which are evidently secondary to other agencies. It has been the custom to denominate as secondary those bacteria which follow in the wake of other pathogenic forms, and which lead to various complications of the primary disease, and which are frequently the immediate cause of death. But there is evidence that perhaps all pathogenic microbes are in a sense secondary, in so far as their invasion is permitted only by morbid conditions largely undefinable at present; some of these may resolve themselves into the effects of other micro-organisms not at present known or under suspicion, others may be due to changes in our food and environment influencing the physiological mechanisms. Our investigations must therefore go back of the specific micro-organisms to more primary agencies or conditions, for prevention begins as far back as the scientific analysis of pathogenic influences can reach. In the meantime applied hygiene must try to suppress with every possible means those causes actually in sight, be they primary or secondary, in order to interrupt the chain of agencies leading to disease. The practical benefit to be derived from the most profound study of etiology resides in the fact that the farther we go back of the immediate causes of disease the more easily and economically can they be controlled, and the more weapons we are able to furnish the sanitarian from which to choose in his combat with disease. Among the problems which are today clamoring for attention I may mention all those that group themselves about the conception of immunity, the toxins, antitoxins and bactericidal forces, the variations of pathogenic bacteria, and the interrelation of human and animal infections. There is ample opportunity for both bacteriologist and pathologist to exercise in this restricted

field the highest degree of scientific acumen and sagacity in the application of physical, chemical and biological methods to the study of disease.

Passing to the routine tasks of the public health laboratory, we have before us the problem of methods and procedures to which this section has for the time being committed itself. We wish to learn how we can most thoroughly and successfully do these tasks and at the same time force them to disgorge, as it were, facts new to science; how we can so homogenize our processes that those valuable inductions to which I have referred can be reached by a utilization of material from all laboratories. We also wish to learn how we can congeal our methods and yet have them alive and progressive.

To the investigator, methods are ever changing with the objects of research, because the method to him is simply a path to the result. Whenever the latter has been attained, the path is abandoned and another laid out towards some other goal. The history of science is a witness to the fact that the most commanding geniuses have always created new methods rather than use those of their contemporaries or predecessors. The reason is obvious. Every discovery of a new fact demands a new method, or at least a profound modification of existing ones. Discoveries are now and then accidental, and may rest on errors in the application of existing methods. From this point of view methods and procedures are of very high significance in science. They are in effect the embodiment of the various factors which determine the result, and they approach the nearer to the actual processes of nature the greater the number of controllable elements which enter into the problem. With the attainment of certain results and their practical application for the differentiation and classification of facts, there comes the necessity for the simplifying and perfecting of methods for the use of that large and growing army of workers engaged upon the diagnostic and analytic tasks of our laboratories, upon whose industry and faithfulness we must depend for the routine performance of work demanded by the public health. They must follow the beaten path, and we must make it as short and direct as possible.

The essential value of such methods from which uncertain factors have been largely eliminated resides in the accumulation of data of more or less uniform character. These may become of great value in leading to new theories and inferences when the numerous data are subjected to careful comparative study. To demonstrate the truth of the new theories evolved, new methods may be needed. We may illustrate our statement by drawing upon some simple and familiar facts obtainable by a study of the fermentative capacities of bacteria. The examination of a large series of closely related colon forms has shown that those which fail to act upon lactose and saccharose belong to the distinctly pathogenic or invasive forms. The inference which may be drawn is that in the acquisition of parasitic habits the fermentative action upon these sugars is not brought into play and the function gradually lost. To prove this inference it would be necessary to modify a colon form by passages through animals. For only by such an experiment can we effectually banish certain other inferences which rise up to cloud our convictions, such as the view that bacillus coli is not the direct ancestor of

the pathogenic group, but that both are derivatives of an ancestral form and that the existing colon forms are no longer modifiable into the invasive types. Here a new class of experiments should enter with new methods to test the inferences obtained by the horizontal application of a certain method and a summation of the results. Unless we are content to have our science build itself up on hypotheses or theories until it becomes topheavy, we must continually devise new experiments to test them. The relative merit of the statistical and the experimental method in disclosing truth of a higher order need not detain us here. They are both essential and they supplement one another.

In the formulation of methods for general use we must continually bear in mind certain tendencies which are likely to take possession of us. In the first place, we must be charitable towards work done with other methods, although, it must be confessed, it is often difficult to steer between the rejection of such results, occasionally embodying the germ of new and highly original facts, and the acceptance of work done slovenly and in defiance of accredited methods. The so-called schools in pure and applied science are largely built upon methods of work. Some fifteen years ago we were familiar with the Pasteur and the Koch school of bacteriology, now things of the past, because the respective technique has been made universal. All that can be said of such schools is that their value is temporary and their continued recognition harmful.

Crystallized methods are thus both a safeguard and a danger. They guide us and make our results homogeneous. They may also petrify our modes of thought if we too slavishly adhere to them. We must, in short, bear in mind that all codification of procedures and methods is too much like the fencing in of our ignorance. While the thought that it has been well secured and that it cannot escape may be of great comfort and a means of relaxation to us, it may not advance science or increase its utility. Lastly, codified methods may stifle opportunity for discovery by being too top-heavy and hence by occupying too much time. The truly sagacious enquirer, however, soon knows where to throw out ballast so as not to encumber his journey too much.

In the choice of methods we should therefore clearly define to ourselves our purpose. If we are seeking the solution of new problems we must create new ways and means. If we are making collective investigations to secure and broaden the basis of accepted facts, our technique must be both uniform and detailed. But the duty of this laboratory section consists not only in codifying methods, but also in continually examining and testing new devices and processes. Methods will forever remain in a state of flux and all that we can do is to see that the flow is uniform and rapid and that the assimilation or rejection of what is encountered on the way is fairly complete.

It is reported in the *Journal of the American Medical Association* that Francis Schlatter, the "divine healer," while on a recent visit to McKeesport, Pa., applied to the mayor for permission to hold outdoor meetings in the public square to preach divine cure, but was refused.

Original Articles.

FEEDING IN TYPHOID FEVER, WITH A REPORT OF CASES.

BY GEORGE W. MOORHOUSE, M.D.,
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At a meeting of the Cleveland Medical Society, held December 8, 1899, the writer presented a paper¹ with the above heading detailing the experience of the Lakeside Hospital for a period of eight months in the use of a more generous diet in the treatment of typhoid fever than is the usual practice. During that time there were 40 available cases out of a total in the hospital of 57 individuals with typhoid fever. Five of the cases died, a mortality of 8.8% ; death was due in 2 cases to toxemia, and in 3 to perforation, and all of these had been kept, from the time of entrance to death, on milk diet. There were no deaths in the series of 35 who were fed early. There was a total of 11 relapses in 57 individuals, or 19%.

In seventeen months of the writer's service in this hospital, March 1, 1899, to July 31, 1900, 150 individuals with typhoid fever have been discharged from the hospital, including the 57 individuals of the first report, and it is the purpose of this paper to consider the effect of early feeding in typhoid fever on the basis of this experience.

In addition to precautions designed to prevent the spread of the disease to other patients and to the attendants, the general treatment and management of cases of typhoid may be very briefly told. Their mouths and throats are kept clean by the use of sprays and mouth washes, and they are guarded so far as is possible from unnecessary exertion. The temperature is taken every three or four hours, and when above 102.5° F. a tub bath is given. The initial temperature of the bath is 85° F., and this is reduced in proportion to the temperature of the patient, but not usually below 68° F. An initial dose of calomel is given to about one-half the cases ; later, enemata are relied upon to relieve constipation until well along in convalescence, except that in the service of one of the visiting physicians calomel in doses of $\frac{1}{5}$ grain three times daily, combined, if this does not prove effectual, with podophyllin, usually in the dose of $\frac{1}{16}$ grain, is not infrequently employed. In another service the use of some of the commoner mild laxatives in case of a sudden exacerbation of temperature in convalescence, or even during the latter part of defervescence in case of constipation, has been frequent. For tympanites turpentine stupes and enemata with turpentine were used with satisfaction ; in the same condition an emulsion of turpentine was given to a few patients, but with so little apparent good effect that its use was not extensive. Other than the above there has been very little medication unless stimulation seemed necessary. Alcohol, usually in the form of whiskey, was the stimulant most frequently used, and it is probable that a large proportion of all patients who were sick enough to demand any considerable number of baths received some alcohol in the course of the disease. Strychnia takes second place in the list of stimulants. Next to strychnia strong coffee was a not infrequent order, 4 ounces every four hours, and in a certain class of cases, particularly those with well-marked

apathy, it gave very striking and gratifying results. Digitalis was used in one or two desperate cases. In patients with profound toxemia, infusions of salt solution were used a few times, and this is a procedure that deserves, in the opinion of the writer, a more thorough trial than it has yet been given. As the general condition of the patient improved after entrance, frequent inquiries were made as to the return of the appetite, and when that was noted, soft typhoid diet was ordered, usually at once without direct reference to the temperature. With a return of the appetite, however, the temperature was almost invariably falling. At times a patient might be hungry very shortly after complaining of severe abdominal pain, or after having had a hemorrhage from the bowel, or while the temperature was still very high, and in such cases the feeding would very likely be withheld for a time. In the original paper, I say : " Furthermore the appetite and not the temperature has been made the guide to the continuance and to the increase of the diet once begun, and a number of patients went through an entire relapse without any decrease in the diet, the appetite holding good during the entire time." This statement is true to a great extent in the entire series, although the writer has, a little more frequently than before, ordered the patient back on to a milk or other liquid diet on the occurrence of a rise of temperature, to see what effect it might have on the subsequent course of the fever. This procedure, however, has in no case seemed to cut it short in any way. On the other hand, in cases with persistent anorexia, associated with a falling temperature, the visiting physicians have manifested a disposition to tempt the appetite of the patient by ordering the larger variety of the soft typhoid diet.

As to sitting up, the general rule was that the patient must have been for 10 days with a normal temperature, and, in view of the tendency of a typhoid's temperature to become subnormal after the febrile period has passed and to remain so for a considerable length of time, a normal temperature with reference to the first propping up in bed was interpreted as one which never reached a higher level than 98.6° F. In case the temperature varied within practically normal limits, but frequently reached 99° or 99.5° F., the first bedrest was postponed for a time, usually to the end of the second week of such temperature.

In December, after the first eight months' experience, a series of typhoid diets was adopted at the Lakeside Hospital, for the purpose of simplifying the orders for patients with typhoid fever, and as an aid in making their care uniform throughout the hospital. The diets adopted are as follows :

Milk diet. — The standard for a milk diet shall be 8 ounces every two hours, subject to special directions as to night feedings. Watch stools for undigested milk. Report and record failure to take full amount.

Liquid typhoid diet. — In twenty-four hours : Milk, 8 ounces four times ; milk, 6 ounces with tea or coffee, $\frac{1}{2}$ to 1 ounce twice ; albumin water, 8 ounces twice ; beef tea, 8 ounces once ; malted milk, 8 ounces once ; chicken broth and barley water, each 3 ounces once ; beef juice and barley water, each 3 ounces once. Those liquids which are to be given only once in twenty-four hours may be replaced by equivalent amounts of any of the following : Broths, milk-whey, slip, junket, strained soups or gruels.

¹ Cleveland Journal of Medicine, vol. v., No. 2, February, 1900.

Soft typhoid diet. — Add to the liquid or milk diet: (1) Ice cream, well-cooked rice (boiled), broths may be thickened with it; (2) soft boiled or poached egg on soft toast, blanc mange and milk puddings, calf's foot and other gelatine jellies; (3) gruels, crackers or bread softened in milk or broths, macaroni, finely minced and scraped meats. The increase in diet to be very gradual, one addition the first day, two the second, etc., scraped beef on the fourth or fifth day.

Typhoid convalescent diet. — Add to anything already given the following in about the order mentioned. Soft parts of oysters, a tender sweetbread, chop, squab,² game (small),² chicken, fish, cutlet, steak, rare roast beef. Mealy baked potato may be given with any of the meats.

Full typhoid diet. — Six A. M., milk; 8 A. M., breakfast, a cereal with cream and a small amount of sugar if desired, milk with tea or coffee, egg on toast, bread or toast with butter if desired; 10 A. M., bread and butter, with gruel or milk, or broth with egg; 11.30 A. M., dinner, soup which may be thickened, some meat, as chop, or cutlet, or fish, or steak, or roast beef, or the soft parts of oysters, or sweetbreads,² or squab,² or small game,² mealy baked potato, or rice, or macaroni, or spaghetti, with a simple dessert, as ice cream, or blanc mange, or milk pudding; 2 to 3 P. M., like 10 A. M.; 4 to 4.30 P. M., supper, creamed chicken, or a bit of cold meat, as chicken or roast beef, bread, and milk flavored with tea or coffee; 6 P. M., cocoa or gruel or broth. At night, milk two to four times.

These directions are furnished with the diet lists. Any change from a less to a more generous diet must be gradual. The between-meal feedings of liquids are important as limiting the amount of solid food taken at one time, their importance increasing in proportion to the earliness of the order for the generous diet.

The writer does not claim the merit of originality for the above diets and, except for the greater certainty that he will be understood in the article, would not report them. The liquid typhoid diet and the soft typhoid diet are modelled on the lines of diets he was acquainted with in his medical service at the Massachusetts General Hospital in Boston. The full typhoid diet is an adaptation to conditions prevailing with us of the diet used by Dr. Bushuyev³ and while it may seem that the meals recur with great frequency, one or two feedings used by that observer have been omitted from this schedule.

The standard liquid diet has been milk, for Dr. Fitz's⁴ study of the subject seems to show that the mortality on a milk diet is somewhat less than that on other liquid diet. On the relatively rare occasions when milk was very repugnant to the patient the liquid typhoid diet was ordered, and still more rarely milk was wholly omitted from the bill of fare. In such cases the change to a more liberal diet was made as promptly as possible. Full typhoid diet was added to this list for the sake of completeness at the time of the adoption of the other typhoid diets, and in view of its possible use in case any of the physicians to the hospital should desire to begin the use of solids at a very early stage of the disease: furthermore it was

designed as a possible variant to the convalescent typhoid diet. Its use has not been extensive.

During seventeen months from March 1, 1899, to July 31, 1900, 150 cases of typhoid fever have been discharged from the Lakeside Hospital. Of this number 33 are not reported, while 117 are reported. With regard to the cases not reported, 3 were given soft diet so late that they may be said to have been on a liquid diet for the usual length of time. In 5 cases the diagnosis is not absolutely assured; in all of these the course of the fever while the patients were under observation in the hospital was mild and short, and with one exception the Widal reaction was never obtained. Had the reaction been obtained in the 4 cases which did not show it they would be considered certain though mild cases of typhoid fever. The case in which it was obtained had been a soldier during the Spanish-American War, and while in camp in the United States had been sick with "malaria," and it was impossible to decide with any certainty from the history given for the previous illness that it had not been typhoid. While in the hospital he had a slight fever and dysenteric evacuations of the bowels. The subsequent history of another doubtful case is known and the length of time which elapsed before the patient fully recovered her normal strength makes the diagnosis of typhoid very probable. Either from a continuance of the liquid diet to the usual time in convalescence, or on account of such a departure from the routine procedure as regards diet here described, 11 private cases are not included in the report of feeding. One case became dissatisfied and was discharged against advice a few days after entrance on a milk diet. One case while still on a milk diet perforated, was operated upon and recovered. Twelve cases died before any change from milk, 8 of toxemia and 4 of perforation; ⁵ 1 case, to be mentioned in detail below, was changed from milk to soft diet before the temperature was normal, had a relapse, was again put on milk diet, nine days later perforation, operation, death.

One hundred and seventeen cases were given soft typhoid diet before or very shortly after the temperature became normal.

The report in the first paper considered only one change of diet to each patient fed early. When, however, we consider the second orders of soft diet for those patients who, on account of a return of the fever, were put back on milk diet, and each increase in diet ordered early in convalescence, we have a much larger number of diet changes upon which to base our conclusions. The following statements show the sequences to diet orders, except those from a more to a less liberal diet, and are 174 in number or, excluding those twice counted, 159.

CLASS Ia. Feeding on normal⁶ temperature, followed by slight irregularities of temperature, 5 cases:

Soft	diet on second day of normal temperature, 2 cases.
"	" fourth " " " 1 case.
Convalescent	" first " " " 1 case. ⁷
"	" second " " " 1 case. ⁸

⁵ One gave no Widal reaction on repeated trials. An autopsy, however, demonstrated the correctness of the clinical diagnosis.

⁶ With reference to feeding, any day's temperature is considered normal when its highest rise is 99° F. or below, provided that the temperature of previous days give reasonable assurance that it will not go above that point.

⁷ In this case the greatest rise, to 100° F., occurred after bedrest.

⁸ Temperature (sub)normal eleven days before a relapse; relapse-like rise of seven days' duration occurred ten days after feeding was begun; patient did not seem sick; spleen palpable for the first time in the illness.

² Used only for private ward patients.

³ See *Thayer in Progressive Medicine*, vol. i.

⁴ Typhoid Fever at the Massachusetts General Hospital during the Past Seventy-eight Years, *Boston Medical and Surgical Journal*, vol. cxli, No. 21.

CLASS Ib. Feeding on normal temperature; no subsequent rise, 39 cases :

Soft diet on first day of normal temperature	5 cases.
" " second " " " "	5 "
" " third " " " "	1 case.
" " fourth " " " "	4 cases.
" " fifth " " " "	3 "
" " seventh " " " "	1 case.
" " eighth " " " "	1 "
" " ninth " " " "	1 "
Convalescent diet on second day of normal temperature	2 cases.
" " third " " " "	4 "
" " fourth " " " "	3 "
" " fifth " " " "	2 "
" " sixth " " " "	2 "
" " seventh " " " "	1 case.
" " eighth " " " "	2 cases.
" " tenth " " " "	1 case.
House " fifth " " "	1 "

CLASS IIa. Feeding before normal temperature, followed by relapse-like rise of temperature, 21 cases :

	Cases.	Duration.
Soft diet, relapse (?) begins at once	4	8, 11, 13 and 14 days.
" " " in 2 days	1	15 ⁹
" " " " 4 " "	1	27
" " " " 7 " "	2	10 and 10
" " " " 8 " "	1	5
" " " " 9 " "	1	11(b) ¹⁰
" " " " 10 " "	1	10 ¹¹
" " " " 11 " "	2	4 (b), 21 (b)
" " " " 12 " "	1	10 (b) ¹²
" " " " 15 " "	1	3 (b)
" " " " 17 " "	1	13 (b)
" " " " 21 " "	1	8 (b)
Convalescent diet, relapse (?) begins at once	1	16 days.
" " " in 11 days	1	7 (b)
" " " " 20 " "	1	7 (b)
Full " " " at once	1	17

CLASS IIb. Feeding followed by slight or irregular fever not thought to be relapse, 13 cases.

	Cases.
Irregular temperature subsequent to feeding is continuous with similar temperature previously	12
Irregularity occurs after ten days of normal temperature and is associated with anemia and bedrest	1

CLASS IIc. Defervescence apparently unaffected by food, 84 cases :

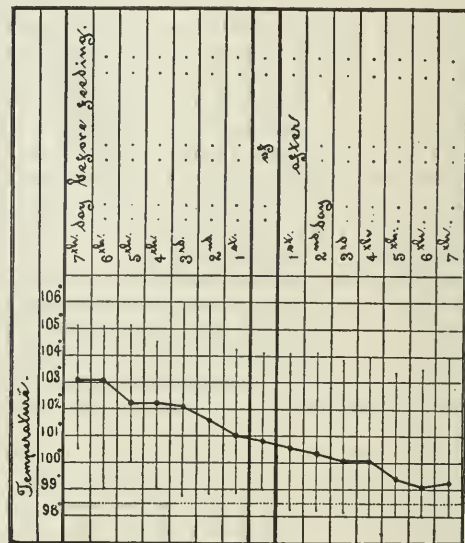
	Cases.
Soft diet, lysis undisturbed	60
" " " until increase of diet 7 days after	1
" " " " " 27 " "	1
" " " " " 42 " "	1 (b)
" " " 8 days, relapse (?) of 5 days' duration	1
" " " 9 " " 11 " "	1
" " " 16 " " 10 " "	1
" " " 11 " " 4 " "	1
" " " 11 " " 22 " "	1 (b)
" " " 12 " " 10 " "	1
" " " 15 " " 3 " "	1
" " " 17 " " 13 " "	1
" " " 21 " " 8 " "	1
" " " 14 " " then irregular temperature	1 ¹³
" " " 22 " " " "	1 ¹⁴
Convalescent diet, lysis undisturbed	6
" " " 11 days, followed by relapse (?) of 7 days' duration	1 (b)
Convalescent diet, lysis undisturbed, 20 days, followed by relapse (?) of 7 days' duration	1 ¹⁵
House diet, lysis undisturbed	2

CLASS IIId. Defervescence apparently hastened by feeding, 11 cases.

I have frequently been asked regarding the degree of fever present when these patients were first fed. This interesting question is answered as to the patients who were fed before the temperature became normal

in the following chart, which shows the average¹⁶ highest temperature on the day of feeding and for seven days preceding and following that event. It also indicates the extreme range of highest temperature for the same day in the vertical line. None but the highest temperatures for the day are considered. The highest point in the line shows the highest temperature for the day of that patient whose temperature registered the highest, the lowest point of the line shows the highest temperature of the day for the patient whose temperature registered the lowest.

The total number of deaths in the series was 13. All were on a milk diet at the time of death, but 1 had been put on soft diet on the twenty-sixth day of the disease, with a very moderate appetite and a temperature which ranged from 99° to 101.5° F. His next day's temperature did not rise above 100.5° F. and in the morning touched normal. From that point on the temperature gradually ascended. On the fifth



day of soft diet the notes say that the appetite was good, an increase in the appetite coincident with the increasing elevation of temperature. On the evening of the sixth day of the feeding the temperature was 102.8° F.; the next morning, the seventh day of the feeding and the thirty-third of the disease, his temperature was 100° F.; the appetite remained good to fair, but he was ordered back onto milk diet; for the succeeding nine days his temperature remained quite steadily high. Nine days after the order for soft typhoid diet had been changed to one for milk he perforated, was operated upon, but did not recover. In the remaining 11 cases death occurred in from seven to fifteen days from the time of entrance while still on a milk diet. Thirteen deaths in 150 cases gives a mortality of 8.67%. What the mortality of this series would have been had they been limited to a milk diet for from seven to ten days after the temperature had reached normal, as they should have been to conform to the teaching of the usually ae-

¹⁶ Average is used throughout this paper as the more familiar and convenient term. In no instance, however, is it the average which is used, but the mean which varies a little from the average, and is usually considered the more reliable and significant unit for the expression of the range of any series of values. The mean in this case is that temperature which has an equal number of temperatures lower and an equal number higher than itself.

⁹ Relapse continued to perforation.
¹⁰ Certain cases are twice counted as to their behavior subsequent to a single diet order; all such are marked (b) in the place where they were thought *less* properly to belong.
¹¹ Elevation of temperature continued to discharge of patient "against advice," before the completion of defervescence.
¹² Elevation of temperature associated with phlebitis.
¹³ Patient unruly, got out of bed.
¹⁴ Irregular temperature, associated with anemia and bedrest.
¹⁵ Discharged "against advice," before defervescence was completed.

cepted authorities, it is impossible to conjecture, nor have we here any series kept uniformly on milk diet with which to compare these results.

It is possible, however, to find a moderate amount of evidence in the literature of typhoid which bears on this question. In 1897 Dr. Shattuck¹⁷ reported that, from 1886 to 1893, he had had under his care at the Massachusetts General Hospital, 233 cases of typhoid fever treated with a milk diet, with a mortality of 10%, and that from 1893 to 1897, 147 had been treated with a more liberal diet, with a mortality of 8.1%. Dr. R. H. Fitz¹⁸ in a very interesting article on typhoid fever at the same hospital for the past seventy-eight years, covering the whole period during which typhoid fever has been differentiated from typhus in this country, gives later figures on the same subject. According to this article, Dr. Shattuck's mortality from 1893 to 1898 was 11.3%, as compared with that of 15.1% among patients using largely a milk diet.

The most interesting experience in the liberal feeding of typhoid patients which has come to my notice is that of a Russian army surgeon. An abstract of the original report is given by Thayer in his article on typhoid fever in the first volume of "Progressive Medicine." The entire number of patients with typhoid fever entering the hospital with which Dr. Bushuyev was connected, 154 in all, were divided, as equally as possible, between him and a colleague. The patients of the latter, 74 in number, received the treatment common in that hospital, and this included as to diet two litres of milk and one or two soft boiled eggs in the day. Dr. Bushuyev's patients, 80 in number, at entrance were put upon a liberal diet, very similar to the one described earlier under the name of "full typhoid diet." In a small number of cases he was unable to get the patient to take solid food, and when this was the case he was put on a milk diet, and Dr. Bushuyev called it forced feeding. The forced feeding was discontinued as soon as possible. The statistical results are interesting, but Dr. Bushuyev does not profess to be able to draw any very positive conclusions from so small a number of cases. The general mortality was 10% on the liberal, and 12.1% on the milk diet. The average duration of the fever after entrance was 18.9 days for those liberally fed, and 22.3 days for those on milk.¹⁹ The average stay in the hospital was forty-two days for those liberally fed, and 49.2 for the others; this represents a gain to the hospital of one year, two hundred and eleven days for a single patient. Of the patients liberally fed only 8.3% were discharged incapable of duty, but of those who were kept on a milk diet 15.4% were so discharged. Of the patients who died, the average day of death was the twenty-eighth of the disease for the patients liberally fed and the twenty-sixth for those on milk.

The objection of those who fear to give solid food early to patients with typhoid fever on account of its supposed liability to cause either hemorrhage or perforation seems to be that the food by mechanical irritation may in some way cause either one or the other of these serious accidents. In no case in the 117 given soft

diet, most of them when the temperature had still a considerable daily range, as may be seen by reference to the chart, did we have intestinal hemorrhage as a sequel. The only case in which intestinal perforation was a sequel to feeding has been described at length above and it is hard to see how anything in the list of "soft typhoid diet" could mechanically have caused perforation of the intestine nine days after the return to milk diet.

The status of the question of the relation of feeding to relapse is quite different, and is one not altogether easy to settle. In this series the writer will report 30 relapse-like rises of temperature, 9 before and 21 after feeding, a total of 20% of relapses to 150 patients, or 18% of relapse after feeding in the 117 fed early. Either 18 or 20% of relapse is a somewhat higher proportion than the highest usually reported, and is about twice as high as the percentages most commonly reported. The writer feels confident that he has included among the cases of relapse a considerable number that would not have been so classified by others. There are several reasons for this belief. Osler²⁰ says that "a relapse is a repetition, sometimes only a summary of the original attack, and that two of the three important symptoms — step-like temperature at onset, roseola and enlarged spleen — should be present to determine the diagnosis of a relapse." The records on these cases are not in all respects satisfactory, in that negative examinations have not always been recorded; however, in 6 of the cases in which it is stated that a relapse occurred after feeding there is some indication, positive or nearly so, that in the relapse the spleen was increased in size as compared with the days just previous to the relapse; in about the same number we are able to say that there is no discoverable increase in size of the spleen or fresh eruption of the rose rash. About the remainder the writer is unable to state with positiveness in view of the silence of the histories on the points in question, but in many, possibly in a majority, of these cases, negative examinations were made but not recorded. In the matter of the temperature we are not in doubt; all had the step-like elevation of temperature. In the table, when speaking of the duration of a relapse, the time is counted as including the first day on which the temperature reached 99° F. in its rise, when that took place from a normal level, to the last day on which it reached the same point; on this most generous basis of counting the duration of a relapse we have them of only five, four and three days' duration. Another reason why it seems probable that rises of temperature which have not usually been called relapse are here included is that in all but one or two cases they have seemed very mild. There has been one death in relapse and this, in the 30 instances which have been called relapse, is a mortality of 3.3%. Hare²¹ reports from the literature a mortality of 9.1% in 252 cases of relapse.

There are some other interesting questions which may be considered with reference to the possible relation between feeding and relapse which will be very little affected by the possible incorrectness in the diagnosis of the condition, provided only that the same considerations have determined in each instance whether a given rise of temperature shall or shall not be called a relapse, and this is the case. It is probably

¹⁷ Diet in Typhoid Fever. *Journal of the American Medical Association*, vol. xlix, p. 51, 1897.

¹⁸ Typhoid Fever at the Massachusetts General Hospital during the Past Seventy-eight Years, *Boston Medical and Surgical Journal*, vol. cxli, No. 21.

¹⁹ The average duration of the fever after entrance in our series was eighteen to nineteen days.

²⁰ *Practice of Medicine*.

²¹ *Medical Complications and Sequelae of Typhoid Fever*.

true that the usual arguments against early feeding in typhoid fever, so far as they refer to the occurrence of a relapse, would lead one to believe that if feeding in the manner detailed is a cause of relapse and is therefore "improper feeding" such relapse is to be expected immediately upon the issuance of the order for the more generous diet. The chart, which shows the average highest temperatures in the patients who were fed before normal temperature on the day of the first feeding, and for one week before and one week after that time, a total of fifteen days, indicates very clearly that feeding does not interrupt the defervescence.

The important features in these diet lists are two, the articles permitted, and the directions for the increase in diet, ensuring the gradualness of any increase from a less to a more generous diet level, but the new level was fully reached in the average case in about four to five days, whether it was a change from milk to soft or from soft to convalescent diet. There were in the entire number fed 117, 159 orders increasing the diet at a stage of the disease early enough to make it seem advisable to report them, and in only 10 of these cases, 6.3% of all instances of increase of diet, was there any irregularity of temperature which could have been called a relapse within a period of seven days from the time of the increase in the diet; 11 more, or 6.9%, had the step-like rise of temperature in from eight to twenty-one days after the order increasing the diet, a total of 13.1% of relapse at any period after increase of diet, while no such change occurred in 138, the remaining instances.

The average stay in the hospital on a milk diet has been ten days; the average time elapsing from the first order increasing the diet to an order for the patient to be propped up in bed with a bedrest was eighteen days. These two events divide the first twenty-eight days of the average patient's stay in the hospital into two convenient periods. In the first 9 relapses occurred, and in the second there were 21. Since "the true relapse usually sets in after complete defervescence,"²² and since the defervescence is not completed until after the end of the first period, it would scarcely need the fact of feeding at the beginning of the second period to explain the greater number of relapses taking place in it.

There are certain items of interest which have been observed in the course of treatment of these cases which do not lend themselves to statistical statement. There has been no trouble in patients with typhoid fever receiving food surreptitiously. They are kept in wards with patients suffering from other diseases, but neither from their mates in the ward nor from their friends do they receive food not allowed, and this with only ordinary watchfulness on the part of the nurses. Complications may or may not influence perceptibly the temperature of a patient with typhoid fever. Phlebitis often does; in 2 cases with marked phlebitis there has been a step-like rise of the temperature, coinciding in the onset with the occurrence of the phlebitis, resembling in every way the temperature of a relapse, and these cases have been counted as relapses although no enlargement of the spleen and no fresh eruption of the rose rash was detected. Menstruation has, in one or two instances, apparently caused a rise of temperature in convalescence, but has frequently failed to produce any dis-

turbance. Earlier in the paper the fact that at the apparent completion of defervescence the temperature at times fails to become (sub)normal, but ranges almost indefinitely at from 97° to 99° or even 99.5° F was mentioned. This is so uniformly the case with patients who are unruly and cannot be induced to lie quietly in bed, but jump around, prop themselves up on their elbows, etc., that we are confident that restlessness is a very certain cause for such irregularities in temperature. In the same connection it may be interesting to note that a patient who has had the subnormal temperature that is to be expected in convalescence will have a temperature that goes up to 99° F or higher when he first gets up. Ordinarily one looks upon this as a return of the temperature to the normal range, but in such cases the quieter a patient is kept the lower will be the temperature, and the true cause of the greater range is probably to be found in exertion in advance of complete recovery of strength. The greatest instability of temperature seems to be found in patients with the most considerable degree of post-typhoidal anemia and the poorest general condition. There have been three or four patients in the series who have entered much below par, and while gaining on generous diet, have not gained as the majority of patients do; in these cases we have been confronted by an elevation of temperature every time the patients have been allowed to sit up, and when they have been sent back to bed again the temperature has dropped to subnormal at once. In general the condition of patients who are being fed is very satisfactory, they begin to put on flesh at once, and show a continuous gain in strength and spirits as well as in flesh. It is possible that patients fed a little less early would be more manageable, for these feel so very well that it is often hard to keep them quiet. A fair proportion of all the cases have been heard from since discharge, and they usually report themselves as having returned to their ordinary employment shortly after discharge, and as never having felt better, the inference being that as regards recovery of normal condition liberal feeding is a distinct advantage, and I think that I may make this statement as voicing the impressions of the visiting staff.

The conclusion that a more generous diet in typhoid fever is advisable will be made or rejected after a consideration of its effects upon mortality, upon the general condition of the patient both during the progress of the disease and after his discharge from the care of the physician, and furthermore as to whether it increases the chances of hemorrhage, perforation, or relapse. Whatever information is given on these points by this series of 150 cases of typhoid fever treated in the course of seventeen months is here presented for your consideration.

The writer wishes to thank the visiting physicians to the hospital for the opportunity to feed these patients early, as well as for permission to report the cases.

A CITY PLAGUE LABORATORY. — The New York City Board of Health, at a recent meeting, awarded a contract for the building of the laboratory for the study of the bubonic plague on the Willard Parker Hospital grounds. The cost of the building will be \$19,893. The laboratory is to be built in three months. — *Medical Record*.

²² Practice of Medicine.

THE CO-OPERATION OF THE MEDICAL AND LEGAL PROFESSIONS.¹

BY GEORGE A. SANDERSON, ESQ., BOSTON.

"Of law there can be no loss acknowledged than that her seat is in the bosom of God, her voice the harmony of the world. All things in heaven and earth do her homage—the very least as feeling her care; the greatest as not exempted from her power."

This definition of law by Hooker is comprehensive enough to include all the professions.

The law as it is practised today is the outgrowth of human experience. The rights which it enforces and the wrongs which it redresses were based in the first instance on expediency, and they have in time become a system of principles. The development has been usually in line with moral principles, although the law does not undertake to enforce every moral obligation as a legal duty.

The problems of the physician as well as his daily occupation lie almost wholly outside the range of the lawyer's experience. It is not often that a physician is in a position in his profession where he cannot do the work in hand without the assistance of an attorney, but the lawyer constantly has work to do which it is impossible for him to accomplish without the assistance of the medical expert. It is here that the two professions most often and most closely meet. The points of contact are so many and so important that a knowledge of medical jurisprudence, which has been defined to be "the application of every branch of medicine to the purposes of the law," becomes almost indispensable.

The purpose of the Massachusetts Medico-Legal Society should be, in part at least, that the legal aspects of the physician's work may be emphasized, and that the medical and legal professions may be brought into closer relations with each other.

The complete dependence of the courts and attorneys on the physician's knowledge is illustrated in the most important trials known to our State courts, namely, trials for murder. I doubt if a murder case is ever tried or can be properly tried without the testimony of one or more men specially trained and skilled in medicine.

In *Commonwealth vs. Rogers*, the defendant was indicted in 1843 for the murder of Charles Lincoln, Jr., warden of the State Prison. The defence was insanity. Chief Justice Shaw, one of the most eminent of the men who have held judicial position in this Commonwealth, defined certain tests of insanity. "A man is not to be excused from responsibility if he has capacity and reason sufficient to enable him to distinguish between right and wrong as to the particular act he is then doing, a knowledge and consciousness that the act he is doing is wrong and criminal, and will subject him to punishment. In order to be responsible, he must have sufficient power of memory to recollect the relation in which he stands to others, and in which others stand to him; that the act he is doing is contrary to the plain dictates of justice and right, injurious to others and a violation of the dictates of duty."

The court also said that an insane delusion will be an excuse for a criminal act if it "is such that the person under its influence has a real and firm belief of some fact, not true in itself, but which if it were true would excuse his act."

This case has a special interest for medical men, because the chief justice discussed the question of medical evidence. He said: "In general, it is the opinion of the jury which is to govern, and this is to be formed upon the proof of facts laid before them. But some questions lie beyond the scope of the observation and experience of men in general, but are quite within the observation and experience of those whose peculiar pursuits and profession have brought that class of facts frequently and habitually under their consideration. . . . A familiar instance of the application of this principle occurs very often in cases of homicide when, upon certain facts being testified to by other witnesses, medical persons are asked whether in their opinion a particular wound described would be an adequate cause, or whether such wound was, in their opinion, the actual cause of the death in the particular case. Such question is commonly asked without objection; and the judicial proof of the fact of killing often depends wholly or mainly upon such testimony of opinion. It is upon this ground that the opinions of witnesses who have long been conversant with insanity in its various forms, and who have had the care and superintendence of insane persons, are received as competent evidence, even though they have not had opportunity to examine the particular patient, and observe the symptoms and indications of disease at the time of its supposed existence. It is designed to aid the judgment of the jury in regard to the influence and effect of certain facts which lie out of the observation and experience of persons in general. And such opinions, when they come from persons of great experience, and in whose correctness and sobriety of judgment just confidence can be had, are of great weight and deserve the respectful consideration of a jury. But the opinion of a medical man of small experience, or of one who has crude and visionary notions, or who has some favorite theory to support, is entitled to very little consideration. The value of such testimony will depend mainly upon the experience, fidelity and impartiality of the witness who gives it."

The chief justice further said: "One caution in regard to this point it is proper to give. Even where the medical or other professional witnesses have attended the whole trial and heard the testimony of the other witnesses as to the facts and circumstances of the case, they are not to judge of the credit of the witnesses or of the truth of the facts testified by others. It is for the jury to decide whether such facts are satisfactorily proved. And the proper question to be put to the professional witness is this: 'If the symptoms and indications testified to by other witnesses are proved, and if the jury are satisfied of the truth of them, whether, in their opinion, the party was insane, and what was the nature and character of that insanity, what state of mind did they indicate, and what they would expect would be the conduct of such a person in any supposed circumstances?'"

The case of the *Commonwealth vs. Lorenzo W. Barnes*, tried in Middlesex in May, 1897, illustrates how several distinct lines of medical inquiry may be involved in one case. Barnes was charged with the murder of John Deane by striking him with an axe at Maynard, on December 17, 1896. Mr. Deane was left alone in his house by his daughters, who went to work in the morning of the day of the murder. They returned in the evening and found their father dead in

¹ Read before the Massachusetts Medico-Legal Society, October 3, 1900.

a pool of blood on the kitchen floor. Two cuts with an axe had been made in the head and neck, one of which severed the spinal cord. No one had seen the murder committed, and no one had been seen going to or from the house.

Late in the afternoon of the day of the murder, about twilight, Barnes asked for a ride into Maynard from a short distance outside the town. He was on the road which led from Mr. Deane's house, and was some distance from it. He visited a bar room and washed his hands. He bought a new pair of boots and threw his old ones over a bridge. These boots remained on the ice of the river until the next day, when they were taken by one of the witnesses and given, with Barnes's other clothing and the axe, to Professor Wood for examination. He was able to point out many spots on the boots, trousers and coat worn by Barnes that were consistent with being human blood; and he also showed by the shape and appearance of many of the spots the direction from which the blood had come and something of the force with which it hit the object.

He was able to testify from investigations that an invariable rule is that in pear-shaped blood stains the stem of the pear is away from the source from which the blood comes; that the bulk of the blood in a stain is at the farther point from the source except in cases where the blood impinges upon a smooth surface, and then the force of gravitation will carry the bulk of the blood to the lower portion of the stain.

The blood stains on the boots were explained so fully that they made a very important part of the evidence. The direction from which the blood must have come and its distribution on the boots were consistent with results which would be expected if the boots were worn by the man who struck Mr. Deane with the axe.

The professor was able also to testify that some of the blood marks on the axe handle were finger-print marks. There was another matter along this line which was to be developed, namely, to take impressions of the hands of Barnes and, comparing them with the finger prints on the axe, to prove that the hand of Barnes must have made the marks upon the axe. The results of this experiment could not be known before the trial, because it seemed better not to take an impression of Barnes's hands while he was in jail awaiting trial. I understand that the impressions were obtained with Barnes's consent after the verdict, but I do not know what conclusions, if any, Professor Wood has reached in the matter.

The medical examiner gave in great detail the condition of the body, its position in the room when he arrived, as well as many important facts about the table, stove, axe, chairs and blood stains in the room. He, of course, stated the results of his autopsy, giving the condition and appearance of the different organs of the body, the exact nature and extent of the wounds in the head and neck, and the cause of death. A model made or procured by him showing the place of the wounds greatly assisted the jury in understanding his statements.

The case was also interesting and important because of the issue of insanity that was raised and tried. Two experts on insanity were called by the defendant and four by the Commonwealth. The claim was made by the defence that the defendant received a sunstroke when three years old, which caused

a lesion of the brain, and that he had always been weak mentally since that time. The defendant was lame in one leg, and it was claimed that the lameness was caused by the sunstroke. It was said to be an interference with the nervous structure which showed itself in the leg which was supplied by those nervous connections.

The position of the experts for the defence was not that the defendant could not understand the difference between right and wrong, but that his responsibility was of a limited kind. One purpose of this evidence was to show that the defendant's guilty conduct after the murder had no significance, because of his deficient mental condition. Another was that if he committed the crime, he had not mind enough to form that deliberate premeditation which is required in murder in the first degree.

The experts for the Commonwealth testified that in their opinion the lameness was caused by spinal paralysis.

They all testified that they had examined the defendant; that he could distinguish between right and wrong, and that he did not seem to have any irresistible impulses or delusion.

The defendant was convicted of murder in the first degree. An effort was made to have the sentence commuted to life imprisonment by the governor, based principally upon the ground of Barnes's mental condition. The governor appointed other experts in mental diseases, who examined the defendant and the evidence, and made report to him. The sentence was not commuted, and Barnes was hanged at East Cambridge on March 4, 1898.

In the case of *Commonwealth vs. Barrett*, tried in Middlesex in 1894, there was opportunity for special investigation into powder marks, and Dr. Mead's interesting account of the experiments which he performed with powder in connection with that case is contained in a published pamphlet which must have been read by many of you.

Each important criminal case seems to present some unsolved problem in medical jurisprudence, the solution of which must depend largely upon the medical witness.

The time of our civil courts which try cases with juries is largely taken up with tort cases, in which damages are claimed for physical injuries. In almost every case physicians testify on each side. The conflict of evidence between the physicians is usually great, both as to their observations of the symptoms and as to their opinions of the nature and extent of the injury. This class of cases cannot be properly tried without medical evidence. The facts to be established are outside the range of the jury's observations and knowledge. They must rely for the most important evidence bearing on the question of damages upon the testimony of the physician. It would be in the interest of obtaining proper verdicts if the best medical witnesses could be obtained to testify in these cases. But many times the best men will not attend court, because the waste of time is so great and such attendance makes a serious interruption in their regular work. The best experts deserve and demand for their time so large a compensation that the poor man cannot afford to employ them. Irresponsible witnesses often mean verdicts out of all proportion to the injury. It is not unusual that the court sets aside or reduces the findings of the jury.

The most apparent objections to the present methods of trying these cases are, (1) the great waste of time on the part of the physician; (2) the tendency to have in these cases incompetent and irresponsible experts, who enter the case without expectation of pay unless their side wins, and (3) the improbability of the award of proper damages either by a court or jury, even when the present system is working under the best conditions.

It is well known that the courts are assisted in reaching just conclusions in many civil cases, outside of this class of torts, by the appointment of masters, auditors, referees, or commissioners. This system saves the time of the court. It does not deprive a party of his right to a trial by the court or jury after the report of the master or other person appointed, but it does result in the settlement of many cases upon the finding of the master or auditor, and it tends to prevent either excessive or insufficient damages in the cases that afterwards go to the court.

If the court could in the same way refer to some physician of known ability and standing cases in which a medical question is involved for his investigation, either by personal observation or the taking of testimony or both, and for his findings of fact to be reported to the court, there would be a closer correspondence than exists today between the facts and the damages awarded in this class of cases. If a case thus investigated should afterwards go to a jury, the report of the physician to whom it had been referred might be given the same weight as is given to an auditor's report; namely, it would be *prima facie* evidence of the facts therein found. In other words, the facts so found would be decisive of that part of the case unless rebutted and controlled by other evidence.

If such a system should be introduced and adopted, matters of detail, such as whether the governor and council should appoint a number of physicians to whom cases could be referred, or whether some system of civil service rules should apply to their appointment, or whether the judge should be left free to select such competent physician as he should think best, could be determined. The demand for some such system as this has sometimes been recognized by judges and attorneys in referring cases to physicians to fix the damages, or to investigate and report the facts.

In the case of *Copson vs. N. Y., N. H. & H. R. R.*, heard in 1898 by a single justice of the Superior Court without a jury, the claim was made that the injury to the plaintiff had caused a permanent condition of imbecility. The judge, after hearing the evidence, arranged that the plaintiff should be sent to an asylum to be constantly for some months under the supervision of a competent specialist in mental diseases. The judge delayed his finding as to the amount of damages to be awarded until he had received the report of this specialist.

In the case of *Robbins vs. Fitchburg R. R.*, tried in 1894, the judge of the Superior Court ruled that on the evidence the plaintiff could not recover, and ordered the jury to find a verdict for the defendant. The full court decided that this ruling was erroneous, and that the question of liability should have been left to the jury. The case then being in order for trial by jury, the counsel for the parties agreed to leave the amount of the damages to the two physicians in the

case, one of whom had been employed by the plaintiff and one by the defendant.

Another class of cases in which a medical tribunal would save the time and increase the effectiveness of our courts is that in which questions of sanity or mental and moral responsibility are involved. In most cases of committal to an insane asylum there is no contest, and the court simply accepts and acts upon the opinion of the physician. In all such cases it would be as well if the certificate of the physician could be used as evidence, and the expert be saved the trouble of attending court in the matter.

One of our best specialists on insanity said recently that physicians of standing in this specialty generally agree upon the essential facts, and also in their opinions, after they have made a thorough investigation of a case, and that he hoped the time would soon come when the certificates of such experts stating their opinions and reasons would be received as evidence.

A more comprehensive plan for dealing with cases of insanity would be to establish a court or board of physicians, with power to try questions of insanity, and to commit those who were found to be *non compos mentis*. Such a court might be given authority to investigate and pass upon questions of sanity which arise in cases in any court, their decision to be evidence if the case should go to trial before a jury.

Some such system would undoubtedly prevent the defence of insanity in most cases where this tribunal, after investigation, found the party sane. It would be a great convenience in criminal cases in which the question of sanity is raised if the case could be referred at once to such a court or board for its investigation and finding. Courts having probate jurisdiction and civil courts generally would often call upon such a tribunal to investigate the questions which it would be especially qualified to answer correctly. This plan would not prevent the trial of the issue of sanity before a jury in criminal cases in which the defendant still desired to make the defence of insanity after the finding of this new tribunal that he was sane. In such case he would have a right to try this issue, and the witnesses on this question would be obliged to attend court and testify because of the constitutional provision which gives the person charged with crime the right to meet witnesses against him face to face.

I believe, however, that in the years to come there will be many improvements in our procedure in courts and in our methods of finding facts; that this improvement must be brought about by abolishing antiquated and circuitous methods and rules of evidence that prevent rather than assist in reaching the truth, and introducing more simple, more direct, more natural methods, excluding as far as possible all chance of error. It is because the medical man should decide medical questions and is most likely to decide correctly that the suggestions herein made seem to be in the line of progress.

Meanwhile we must make the best of existing conditions, and whether we have reforms in our methods of procedure or not, the demands upon the lawyer to know something of the medical side of the law, and the demands upon the physician to know something of the legal side of medicine must be met.

The physician cannot tell at the beginning of any day's work that he may not be obliged to qualify in court to testify to the medical facts connected with

some case which he treats that day, and he would be expected to know not only what is necessary for a proper treatment of the case medically, but also what is required by the law for proper treatment in court of the medical side of the case.

If the physician knows what is required and permitted as evidence in court, he can note many facts which would otherwise go unnoted. It is often true that we see only what we are looking for, and it is only when we know what is evidence that we can look most intelligently for it. The medical examiner usually has a good working knowledge of proper evidence and I doubt not that every prosecuting officer in the State would say that the community is indebted to our medical examiners for their ability, their fairness, their thoroughness, and their care in making note of every point which may assist in arriving at the truth. It is often true that the medical examiner is the most important witness in our most important cases, and that his care in observing and stating facts has many times prevented a miscarriage of justice. His work requires him to be a specialist in many branches of medicine.

But the whole case has not been stated when we say that medical jurisprudence is a matter of great importance to both professions. A more significant fact than that to the man who wants to know what should be done now is that every branch of medical jurisprudence is *growing* in importance and becoming a more essential part of our judicial system. The phenomenal growth of tort cases has been accomplished within a few years, and this class of cases must continue to increase with our greater industrial and commercial development.

The increase in the number of inmates of our insane asylums is ample evidence that this branch of medical jurisprudence must be constantly occupying a larger place in our courts.

The laws to regulate health and prevent the spread of disease must be greatly multiplied and systematized, as our population grows in the large centres, and our latest census returns almost alarm us with the great growth of all our cities. The increase of population must bring with it an increase of crime, although for some reason, and undoubtedly a temporary one, for the last one or two years there seems to have been a falling off in crimes and criminal prosecutions.

The embarrassment of the physician who is unable to meet the demands of a case in which he is called to testify is only exceeded by that of the attorney who knows little of the medical aspects of his case and little of the bearings of the medical testimony which he is required to present. His examination is likely to lead only to a confusion in the minds of the jury like that which exists in his own mind.

Notwithstanding the great change in the medical and legal courses in our universities, still it would seem that the importance of courses in medical jurisprudence has not been emphasized in either the school of medicine or the school of law. The neglect of this subject, in view of the increasing demand for the physician in court and the corresponding growing necessity that the attorney be able to properly present the medical testimony in a case, cannot be justified nor long excused.

If this subject is to be given its proper place in the training schools and among the members of both pro-

fessions, it can most effectually be brought about by this organization, which stands between and unites the two.

May the time soon come when it shall be true not only that the physician shall know everything about his special branch of medicine and the lawyer shall know everything about his special branch of the law, but also when it shall be true that each shall know something of the whole range of medical jurisprudence.

CRIMINAL NEGLIGENCE; REPORT OF A CASE.¹

BY A. W. BUCK, M.D., FALL RIVER, MASS.

THE choice of this subject is the result of experience not alone in the case to be reported, but from the impression, very firmly fixed, that in spite of maternal affection, which is an almost unailing attribute of a mother, no matter how destitute or depraved, there still are cases where one's suspicions must be aroused that the neglect, though apparently due largely to ignorance, is in some degree wilful. Especially is this true where illegitimate children are concerned. The industrial insurance companies recognize the lack of care which these unwelcome guests receive in the majority of cases, and refuse to accept them as risks under the age of five years. Frequently enough we are called to certify as to the cause of death where it is evident that ignorance and wilful persistence in unfortunate methods has brought about the untoward result, where intended kindness has in reality been murderous. To such cases I do not refer, but to those in which the motive is apparently relief from a wearisome burden.

Infanticide has a harsh, barbaric sound, but I believe deaths sometimes assigned to natural causes could justly be attributed to the neglect (semiwilful, if it may be so called) of the mother, who, worn out and discouraged in the struggle to provide for herself and her offspring, is willing to yield the babe to the forces ever waiting for its destruction.

So far as I know, we do not have today in Massachusetts to any great extent the unhygienic "baby farms," which have at times appeared as most potent factors in carrying out the Malthusian theory. On the contrary, the summer home and hospital for sick and poor children have reduced the infant mortality to an appreciable extent. Frequently, however, we find the babe of a few weeks, whose mother must work ten hours of the day, consigned to the care of a neighbor whose only interest is to collect the dollar a week which is paid for the board of the little one.

It is difficult, almost impossible, to say just where negligence approaches criminality. Inquiry reveals more than autopsies can affirm. Starvation may be due to disease. Emaciation occurs in spite of the most carefully prepared diet. Cleanliness is a relative term among infants of the poor. The most anxious mother does not succeed in preventing sores unless she can intelligently devote all her time to her sick babe. Bruises are common to all children able to seek for them. These things will not prove lack of ordinary care, and one must seek further. The failure to provide medical attendance may be but an expression of the mother's lack of confidence in the

¹ Read before the Massachusetts Medico-Legal Society, October 3, 1900.

efficacy of medicine or the skill of the physician. These things combined may nevertheless be of value in determining the intent of the mother. And it is the intent, the motive, which the law recognizes as of prime importance.

The case I wish to report is that of a child aged seven months. The mother was a woman of twenty-five who was working in a cheap hotel as helper in the kitchen. She claimed to have been married five years. Her husband, however, had left her three years before, though she claimed he had been to visit her about a year and a half before the present time. The babe had been for six weeks at the Seaside Home, and though in a forlorn condition on its admission, had gained sufficiently to be thought ready to be discharged from the hospital. The mother was notified, but failed to call for it. During the six weeks of the child's stay at the home she had never been to see it, though opportunities were frequent. Repeated requests had no effect. Then the babe was taken by the overseers of the poor to the almshouse, where it remained two weeks. Our pauper methods, however, do not provide for maintaining a child in the poorhouse while its parent or parents remain outside. This mother, then, who was now supporting a child two years old, was told that she must either declare herself destitute and join her younger babe in the almshouse, or she must support it herself outside. And being summoned before the officers at the police station she declared herself able and willing to provide for both children.

As before stated, she was working at a cheap hotel, and this was within a stone's throw of the office of the overseers of the poor and the city physician. Evidently fearing that the proprietor might object to the presence of two infants, she said nothing of the younger child, but took it to her room, which was poorly lighted and ventilated. There for sixteen days the child was kept, never was taken from the room, no one was told of its existence. The mother manifested marked indifference as to the loss of the babe. She acknowledged that it had been sick for two weeks, but had not thought it necessary to send for a doctor. She knew the method of applying for the city physician, and had previously had him for the other child. She said that she had fed the younger child with milk when it would take food. She had given it soothing syrup when it cried. In the room there was a bottle labelled "soothing syrup," and a man who worked in the hotel said that he had been out for medicine (soothing syrup) several times. This he had supposed was for the two-year-old child. These facts were ascertained after noting the unusually filthy and neglected appearance of the body of the infant, and as a result an autopsy was held September 14th, forty-four hours after death.

The body was that of a male child twenty-five inches in length. It was extremely emaciated. Rigor mortis was present. The buttocks and genitals were red and inflamed. Vermin were present in the sores on the buttocks. The oral mucous membrane was apparently normal. Almost complete absence of subcutaneous fat; skin dry and shrivelled; face pale and wrinkled. Heart and lungs were normal, though all the organs were markedly anemic. Stomach empty save for small amount of white, slimy deposit which was accepted as milk; bowels distended with gas, the walls thin and friable; the small intestine empty for

its entire length; no signs of any inflammatory condition; large intestine also empty, but descending colon and rectum showed slightly inflamed mucous membrane which was everywhere else very pale. Gall bladder was full. Kidneys, spleen, liver and pancreas appeared normal. Brain was normal.

So far as could be ascertained from the autopsy, death had resulted from starvation, but the slight indications of colitis were sufficient to raise a possible doubt as to whether the starvation was due to disease or to the restraint of proper food. The mother was held by the district court on the charge of manslaughter, but she was not indicted by the grand jury.

Reese says that although starvation "is rarely the cause of homicidal death, it should always be remembered that the law does not require the absolute deprivation of food to be proved, but only the necessary quantity and quality to be withheld, provided this has been done with an evil intent." It is important to know that the evidence of organic disease does not disprove that criminal starvation may have been the cause of death. This because the defence set up is invariably that admitting the cause of death, it was the result of disease and not of malice on the part of the one accused. Tidy quotes the statement of Hippocrates that "The old bear want of nourishment best; those who have attained the middle period of life the next in degree; those who have just arrived at puberty are less able to endure it; but that of all ages, childhood is the least capable of enduring hunger." It takes very little to kill an infant by refusing it the breast or giving it insufficient or improper food.

The burden of proof that the fatal result has been the outcome of wilful neglect on the part of the one having the care of a helpless child may at times not be light. The points particularly to be observed in these cases are those usually indicative of starvation. In chronic cases the body is invariably shrunken and greatly emaciated. A contracted state of stomach and bladder, a shrunken and transparent condition of intestines and omentum, with a more or less atrophied, but otherwise healthy condition of the viscus, appear to be the prominent post-mortem symptoms. In acute starvation, however, one may find a considerable layer of fat, as in the case of the Welsh fasting girl.

Clinical Department.

THREE CASES OF GUNSHOT WOUNDS.

BY PASSED ASSISTANT SURGEON A. FARENHOLT, U. S. NAVY.

CASE I. M. M. N., apprentice second class, U. S. Navy, age sixteen and one-half years, was shot through the head at Kabalition Island, P. I., September 2, 1899. The wound was made by a Spanish Mauser, calibre 8 millimetres, ball, and the distance from muzzle to head was but 2 feet. Death occurred in about two hours after the receipt of injury, and the following conditions were observed at necropsy: The posterior, or wound of entrance, was situated a little above the centre of right parietal bone, the anterior, 9 centimetres above nasion in median line of frontal bone; both wounds admitted little finger only to first joint. No staining of powder grains. Exophthalmos of left eye, pupils equal and moderately contracted. Slight movement of bones under scalp.

Coronal suture patent; fractures from posterior to anterior opening, and about 8 centimetres beyond each; several small fractures from posterior wound in right parietal bone. Calvarium removed; brain substance found disintegrated along path of bullet, and into surrounding tissues through a diameter of 5 centimetres. Injury chiefly to right hemisphere except near anterior wound, where left was found injured; much blood clot and oozing from path of bullet. Surfaces of both hemispheres injected, base apparently undisturbed.

This case is interesting in showing that a modern, high-power bullet, passing through a bony cavity at very short range, may not cause a "ragged and enlarged opening" at the wound of exit, as we are so often reminded it does at somewhat greater ranges.

These two wounds were identical in size and character, admitting the little finger only to the first joint, and although fractures radiated from their bony parts, there was no movement in their immediate vicinity.

The so-called explosive effect was, however, apparent, the calvarium being extensively fractured and movable in places, and besides the complete disintegration of brain substance along the path of the bullet, that organ showed clearly by the marked injection and hemorrhage the severe pressure, hydrodynamic, to which it had been subjected.

CASE II. A. H., landsman, U. S. Navy, age twenty-two years, was wounded near Iloilo, P. I., October 6, 1899. He was probably shot by a 45-calibre Remington ball, the wound involving both thoracic and abdominal cavities. The patient lived, perfectly conscious, suffering only moderate pain, but paralyzed below the twelfth dorsal vertebra, for nine hours. The following conditions were found after death: Wound of entrance in axillary line at eighth rib, and that of exit 2 inches to right of median line of back and opposite the last dorsal vertebra. On section the abdomen and pleural sac of left side were found to contain considerable blood. Bullet in entering had gouged away a portion of eighth rib, left axillary line, and immediately perforated diaphragm without injury to lung; continuing, it lacerated the upper portion of spleen near its centre, and then entered the stomach at about the centre of the greater curvature. Emerging in the lesser curvature it lacerated extensively the head of the pancreas, impinged upon and glanced backward from the eleventh dorsal vertebra, fractured its body, transverse, articular and spinous processes with those of the adjoining vertebrae, opened the spinal canal, lacerated the cord and emerged as noted. The wound of entrance in this case was round and clear cut, being $1\frac{1}{2}$ centimetres in diameter, while that of exit was gouged out and ragged and fully $2\frac{1}{2}$ centimetres across.

CASE III. In the same engagement F. A., apprentice, U. S. Navy, age eighteen years, was wounded by a Mauser ball, which passed directly through the body just below the brim of the pelvis. When seen several hours later patient was in fair condition, very little shock. It was decided, after consultation, not to operate, and the patient rallied well, notwithstanding the obvious fact that the rectum had been perforated, and continued to improve during the subsequent ten days, exhibiting no signs of peritonitis or hemorrhage. Suddenly, on the night of the eleventh day, a severe hemorrhage from the posterior wound occurred, from which he reacted

but partially under transfusion, only to succumb a few hours later to another uncontrollable hemorrhage.

The following is the report of the necropsy: The wound of entrance was on the right side through the body of the pubes, just external to the pubic spine; it was of a drilled nature and but slightly larger than the 8-millimetre ball itself. The wound of exit was on the same side, 3 centimetres internal from a point midway on a line from the posterior superior spine of the ilium to the tuber ischii, the ball passing out through the greater sacrosciatic foramen. The latter wound was $1\frac{1}{2}$ centimetres in diameter and rather ragged. The rectum was perforated laterally with considerable loss of substance; the peritoneal cavity was not involved. A cavity, corresponding to the path of the bullet, was filled with blood clots and feces and walled off above by thickened peritoneum which was adherent to the abdominal parietes. The bladder was displaced to the left and bound down by adhesions; the caput coli, ascending colon and sigmoid flexure were surrounded by adhesions, binding them to the abdominal walls and to adjacent structures. The cause of death was secondary hemorrhage from branches of the internal iliac artery. Wound was received at distance of about 70 yards.

Medical Progress.

RECENT PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

(Concluded from No. 19, p. 479.)

OXYBUTYRIC ACID AND ITS RELATION TO DIABETIC COMA.

ACETONE and diacetic acid receive attention far beyond their due in the study of diabetes, and oxybutyric acid, though next to sugar in importance, is overlooked. The amount of acetone and diacetic acid seldom exceeds 10 grammes per day even in the severest cases of diabetes, while that of oxybutyric acid may reach 20 or 30 grammes, and in coma has risen to 160 grammes in the twenty-four hours. Oxybutyric acid has been neglected because its estimation is difficult. It is to be hoped that Dr. Magnus-Levy, who has devoted so much of his time during the last three years to its study, will be able to offer a more simple and accurate method for its isolation than now exists. It is from his first publication of 90 pages on oxybutyric acid that the following partial résumé has been made.

The growth of our knowledge regarding B-oxybutyric acid has gone on in an exceptionally logical manner. In 1880 Hallervorden discovered a marked increase in the excretion of ammonia in diabetes. This amounted to six to eight times the quantity excreted by normal individuals on the same diet. Since the urine was always acid, he believed the increase in ammonia was chiefly due to an increase in the output of inorganic acids in the form of ammonia salts. Stadelmann investigated this point in 1883, and found it was the organic acids, not the inorganic, which were responsible for this excess. He was also able to show that the organic acid in question was one that yielded, on decomposition, crotonic acid. One year later Minkowski succeeded in isolating the original acid in pure form, and characterized it as B-oxybutyric acid. Si-

multaneously E. Kütz discovered it in another manner.

But even before the true nature of the acid was known, Stadelmann recognized its importance in the pathology of diabetes, and especially in its relation to diabetic coma. Patients died of coma in whose urine he found large amounts of the acid, and their symptoms resembled the phenomena in rabbits which Walter in 1877 had produced experimentally by acid poisoning. Since it had been already shown that in human beings there was an excess of acids in the body in diabetes, Stadelmann advanced the conclusion that diabetic coma was an acid intoxication and consequently recommended the treatment of the same with large doses of alkalis. His suggestion was adopted, but we now know that the amount of alkalis given was entirely too small.

B-oxybutyric acid occurs in nearly all severe cases of diabetes. It has also been found in small amounts in scurvy, in the urine of starving insane patients, in that of cancer patients dying with coma, and in the urine of individuals living on an exclusive meat and fat diet. In one of Nannyn's cases it was found five years before coma caused the death of the patient. B-oxybutyric acid is the mother substance of diacetic acid and acetone and when given experimentally is either wholly oxidized, while these bodies appear in its stead in the urine, or if large amounts are given it may appear coincidentally with them. The connection between the three is seen by their graphic formulae.

B-oxybutyric acid	$\begin{array}{l} \text{CH}_3 \\ | \\ \text{CHOH} \\ | \\ \text{CH}_2\text{COOH} \end{array}$
Diacetic acid	$\begin{array}{l} \text{CH}_3 \\ | \\ \text{CO} \\ | \\ \text{CH}_2\text{COOH} \end{array}$
Acetone	$\begin{array}{l} \text{CH}_3 \\ | \\ \text{CO} \\ | \\ \text{CH}_3 \end{array}$

B-oxybutyric acid does not possess a specific toxic action any more than other of the higher fatty acids, for example, palmitic, stearic, etc., nor can one give enough of it by the mouth to produce coma. Its action in the body is purely due to its acid qualities.

Injections of .9 gramme HCl per kilo body weight are necessary to cause death from acid intoxication in a rabbit. As the molecular weight of B-oxybutyric acid is nearly three times as great, 2.6 grammes B-oxybutyric acid per kilo body weight would be necessary to produce this same result. And if one worked by analogy, to cause an acid intoxication or "air hunger" in a man of 60 kilos (132 pounds) at least 160 grammes of B-oxybutyric acid would be required. If 160 grammes are necessary to produce a fatal result in a healthy individual with normal alkalinity of the blood, still less would be necessary in a diabetic, the alkalinity of whose blood is already lowered.

Now the alkalinity of the blood of coma patients is diminished, and it is interesting to compare the alkalinity of the blood under such conditions with the normal values. Magnus-Levy did this, and found a lowering of alkalinity which if produced wholly by B-oxybutyric acid would require .57 gramme per 100 cubic centimetres blood, or as serum is of lower alkalinity, it might be estimated as .3 gramme or 3 grammes B-oxybutyric acid per kilo. For the individual of 60 kilos (132 pounds) this would amount to 180 grammes, which approximates closely to the

weight of B-oxybutyric acid we found by our calculations above was required to produce acid intoxication. Though in a way this settled the question that there was sufficient acid in the bodies of coma patients to account for the coma, it did not directly demonstrate the acid. Moreover, up to this time no such amounts have been found in a diabetic. With the purpose of accomplishing this task Magnus-Levy undertook an "inquiry into the amounts of B-oxybutyric acid produced by the diabetic before and during coma." To do this he was obliged to determine both the amount secreted in the urine and that retained in the system, for only in this way could one secure a clear idea of the relations of the acid to coma.

Magnus-Levy succeeded in his undertaking, and was able to show that even more B-oxybutyric acid was formed per kilo body weight in one of his diabetic patients than was necessary to produce an acid intoxication in a rabbit. The patient was a boy of thirteen, who weighed 32 kilos, and in addition to his diabetes had nephritis with ascites. On the 5th and 6th of July, and again on the 2d and 3d of August, he went into diabetic coma, but lived through both attacks, taking 210 grammes bicarbonate of soda during the day. On the 10th and 11th of August signs of coma again appeared, but yielded to 160 grammes of the soda. As a rule he took 40 grammes daily, but during the coma 210 and 200, and in the next three following days 90, 80 and 60 respectively. The urine remained acid for the whole time. His diet consisted of 40 to 80 grammes carbohydrates in bread and 60 to 80 grammes in milk, or a total of 100 to 160 grammes per day. On days free from coma the acid (B-oxybutyric and diacetic combined) varied between 35 and 60 grammes. On coma days and the three days following it reached 74, 110, 157, 88 and 99 grammes. In five normal days the total amount was 200 to 250 grammes; in five coma days 528 grammes, that is, 300 grammes more than on previous days. The day following the coma the amount of acid was the highest. But for a boy of 30 kilos, theoretically 80 to 150 grammes of acid would be enough to cause coma, yet here we have 157 grammes.

This then establishes what has been suspected since Stadelmann's first work, namely, that diabetic coma is an acid intoxication. But the diabetic does not die of the acid excreted in the neutralized condition in the urine, but of that which remains in the body. So Magnus-Levy analyzed different portions of the body of diabetic patients, and determined the amount of acid which they contained. Calculating from his results the amount for the whole body, the sum total of acids reached 100 grammes.

Patients may live for several years with the production of B-oxybutyric and diacetic acids going on constantly. This is possible because the alkalis of the food and the ordinary store of alkalis in the body neutralize these acids. But the surplus of such alkalis in the body is limited and amounts only to 82 grammes for an individual of 50 kilos. But nature can get around this obstacle for a time because in the metabolism of albumin she can form ammonia and this helps the other bases to neutralize the acid. Indeed the most ready approximate method of estimating the B-oxybutyric acid is by determining the ammonia in the urine, since it has been found empirically that every gramme secreted in the twenty-

four hours over one gramme has probably been formed to neutralize the B-oxybutyric acid. As each gramme of ammonia can neutralize 6.12 grammes of the acid, it is a simple matter to get a rough estimate of the total amount produced, providing the patient is taking no other alkalies.

The indications for treatment of the acidosis (acid intoxication) of diabetic patients are plain. Prevent the onset of coma by the administration of alkalies; in coma combat the acidosis by enormous doses — 200 grammes or more — of the same.

I. *Prevention of onset.* — If a patient is forming considerable acid in the body, and this may be concluded if Gerhard's ferric-chloride reaction for diacetic acid is strong, the diet should only be very gradually changed from one rich in carbohydrates to one exclusively composed of albumin and fat. Such a gradual alteration is necessary, because a sudden change from a free to a strict diet favors coma in three ways: (1) The results of the metabolism of the larger amount of proteid food directly increase the acids in the body; (2) the exclusion of vegetables lowers the ordinary supply of alkalies, and (3) in a normal person as well as in a diabetic the exclusion of carbohydrates increases the amount of acids produced in the system.

A further precaution should be taken at such times, namely, the prevention of increased acidity by the administration of soda. By such a treatment the dangers are averted, and so considerably that Naunyn says that since he has systematically employed this method he has not lost a case during the transition to an exclusively animal diet.

If patients are forming much acid, they feel better when they are taking alkalies, and if no alkali is taken depressive disturbances often occur which lead directly to coma. The longest duration of life after the demonstration of B-oxybutyric acid in the urine has been without the alkaline treatment three years. Naunyn's case, T., who took the alkalies daily, lived six years.

How much bicarbonate of soda is to be given? This depends on the ferric-chloride reaction and the acidity of the urine. Usually 3 heaping teaspoonfuls (30 grammes) daily are sufficient to cause a disappearance of the Burgundy red color. Often much more is required; occasionally after very large doses the urine still remains acid.

II. *Treatment of coma.* — Following the general advice of Professor Naunyn and Dr. Magnus-Levy, I insert the following suggestions:

Overcome the acid intoxication at once, before the system is weakened by it. This is best done by giving intravenously on the approach of the earliest symptoms 3 pints of a 3% solution of bicarbonate of soda dissolved in normal salt solution. In 12 hours, notwithstanding improvement in the patient, repeat the same. In the meantime give 1 teaspoonful (5 grammes) of the soda by mouth every hour. Thus one gives intravenously 90 grammes and by the mouth 120 grammes on the first day. Even if the patient comes out of the coma and feels well, continue the alkalies in somewhat smaller doses for the succeeding days, bearing in mind that the production of acid is constantly going on. The diet during this time is unavoidably reduced to milk and egg-nogs, as the patient cares for nothing else. Under such treatment a few cases have recovered from coma, among them that of Magnus-Levy.

Reports of Societies.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.

FRED E. JONES, M.D., SECRETARY.

MEETING of October 3, 1900, DR. JULIAN A. MEAD in the chair.

GEORGE A. SANDERSON, Esq., read a paper on

THE CO-OPERATION OF THE MEDICAL AND LEGAL PROFESSIONS.¹

THE PRESIDENT: Gentlemen, you have listened to this very interesting paper by Mr. Sanderson which he has kindly brought here and read to us. I hope we shall have a full discussion, and I am sure that Mr. Sanderson will be glad to answer any questions that may have troubled you, both on this general subject that he has discussed or any particular subject that may occur to you. The paper is now open for discussion.

DR. HOUGH: In these cases of suits for damages for personal injuries that are so common, I think the one element that has impressed me as of the greatest importance is the speedy settlement of the cases in one way or another. It is, I think, the general rule that the law's delays are extremely detrimental to the patient. Not that the patient, as a rule, tries to stay sick or lame or feeble as long as possible, but because there is something in the nature of the human mind that does retard recovery as long as a suit for damages is pending, and, so far as the speedy recovery of the patient is concerned, a settlement of the suit is quite as important in many cases as skilful treatment.

Perhaps that is taking an extreme view, but I want to impress upon you what I think is so important in those cases. It has been my fortune a good many times to have the opportunity to examine patients in these cases in conjunction with the physician representing the other party to a suit, and I am happy to say that almost without exception the medical gentlemen are able to agree as to the facts, and agree as to the probable outcome. The differences, if any, have been minor differences, in nearly every case where the physicians for the two sides have been able to meet and examine the patient and discuss the case. The greatest difficulty that I find is that the lawyer on each side considers the medical expert whom he employs as an assistant counsel in the case as retained for the purpose of bringing out, not the truth, the whole truth and nothing but the truth, but only that part of the truth which shall be an assistance to his side of the case. And the lawyers impress that upon the physicians to such an extent as to make it difficult for the best intentioned man to have that eye for the truth, the whole truth and nothing but the truth, which every one of us wishes to have in these cases.

DR. ADAMS: I have listened with great interest to Mr. Sanderson's paper. It seems to me he covers all the points, and I do not feel as though I could add anything to it or say anything of assistance in the discussion.

DR. HARTWELL: Mr. President, I am sure we can profit by what our essayist has said in relation to questions that come before the medical profession. There is a question that is constantly before them,

¹ See page 499 of the Journal.

that will not down, and that is the question of what shall be done with expert medical testimony. You will remember, Mr. President, in a very able paper presented by Dr. Irish, of Lowell, a few years ago, he stated that the whole matter depended upon the character and ability of the expert himself, and that reference to a court of justice composed of medical experts, or any other manner of disposition by the judge of the court, was secondary to that. I feel, as Dr. Hough has stated it, that there is a very strong tendency at the present time to leave these matters out to some medical man appointed by the defendant's and by the plaintiff's attending physician, and it is, I think, for reasons which are plain. The defendant feels — and this refers particularly to actions of tort in the case of our railway companies, perhaps — that he is not properly represented by the jury; a jury capable of being influenced very largely, and mixed up, if I may use the term, by the medical experts on the different sides, and by the attorneys when they come before the jury with a summing up of such testimony. It is left to twelve men who know very little about medical subjects, and I believe Mr. Sanderson has touched upon a very important elucidation, that it can be or should be left to the court to appoint those who may investigate.

One of our most celebrated experts in mental diseases in Massachusetts told me the other day of a tort case, in which a certain railway company in the State was the defendant, that was left out to him. He has had the patient two or three months now under his supervision, boarding in a private family near his home, and, with the consent of both parties, is trying to get at the exact truth, and will make a report to the judge in the case.

It seems to me, Mr. President, where cases cannot be decided between the defendant's physician and the plaintiff's family physician, that if the court can have power to give more authority to the expert than he has at present, that will place the matter where it will be more satisfactory to the parties involved. I believe there is a good deal in what Dr. Irish said, however. We have a law compelling all medical men practising in the State to be educated in medical matters, and I believe that a very great deal depends upon the honesty and integrity and capacity in medical subjects of the expert in question.

DR. DRAPER: Mr. President, I have nothing to say except to thank Mr. Sanderson, the reader, for his very acceptable method of meeting matters which for many years, and at present, have been not so acceptable as they ought to be. It seems to me that he has touched a way to which we, as physicians, can all give our ardent approval, and, if need be, our help toward getting the matter out of the rut in which so long it has been. The trouble, as we all know, is that, under present methods, partisanship is not only common but inevitable. I do not care how conscientious a man may be who is employed as an expert. From the very beginning of his employment, from the very moment when the lawyer comes to him to ask if he will take the case, his conscience is necessarily laid one side and partisanship has the right of way with him. He cannot help it. It is unconscious, it is inevitable. To meet that sort of thing, the suggestion made by Mr. Sanderson seems to me a very pertinent one and a very acceptable one.

I do not know that I have anything further to say,

Mr. President, except a single word of gratification that the essayist, himself representing the legal profession, appears to indicate that the legal profession is having its eyes opened a little bit to the very unsatisfactory way in which experts are employed by them out of and in the court; and if, in the future, these cases, in actions of tort where injuries are in question, where physical conditions are to be decided, can be left out to physicians as masters or as auditors, then we shall have taken a direct step toward results which I am sure we shall all approve.

DR. PRESBURY: Mr. President, we have all been taught that it is good to hear the other side. We have had an opportunity today, as between the lawyer and the physician, again to hear the other side; and I am gratified at being able to call your attention to the fact that today it doesn't altogether appear that all the faults in medical expert work are the faults of the medical side. I think we have had a very just and fair presentation of the difficulties and the faults, and a good and honest suggestion of what may prove a way out of our difficulties. We are all of us troubled, as physicians, with this system of advocacy which has been mentioned by all who have spoken before me, and our desire, I am sure, is to have that put one side, in order that we may, by whomever employed, seek wholly the truth and state wholly the truth. The reader, when he said that it was well that the medical men themselves should be the ones to pass upon medical subjects, because they were the ones best qualified, really touched the keynote of our whole existence. Without that there would have been no medical examiner. The whole idea in the work of the medical examiner was to put the investigation of certain unexplained deaths into the hands of men who had special qualifications for the investigation of such matters, and I think unknowingly he probably hit the real cause of our existence and the essence of our being. It is for us, then, if that is the cause of our being, so to conduct our work as to justify the plan which has made our existence possible. I am very much pleased with the paper that has been read. I think it is good for us to hear a statement of facts from lawyers as well as from physicians, and particularly gratifying to hear them so kindly and pleasantly made as in the paper of today.

DR. ABBOTT: I have been much pleased with the clear method in which this paper has been presented, and I hope it is a sort of harbinger of something better to come as years go on. There is one case I call to mind which is an illustration of just this difficulty, and that occurred some twenty years ago at least. It was the case of the Smith Paper Company's dam on the Housatonic River. I think the number of medical experts called in that case was larger than has appeared in any other trial in the State or in New England. There must have been forty or fifty. The question was whether that dam should come down or not in consequence of the flats above it having produced malaria in that region. What was remarkable about the matter was that no one then knew anything about the cause of malaria. Those gentlemen went on the stand and they testified just according to which side they were paid for, and nothing came of the trial. The dam stands there now. It is only within the past ten years that light has begun to come to us upon this subject, and we do know now something about the causes of malaria; but that is only one of the instances

showing a radical wrong in the present method of trials along this line.

DR. BROWN: I do not know that I can add anything more. One thought occurred to me, however, during the reading of the paper, when reference was made to the disagreement of experts so often, and that point is this: that we, as medical examiners, at least, should never let it appear before the eyes of a jury that we are partisans, however hard the attorney on either side may try to make it appear so. I know several times I have had the question asked me by the attorney, "You are a witness on the other side of this case?" and I take pleasure in replying, "No, sir, I am a witness for the Commonwealth, to tell the truth, the whole truth, and nothing but the truth. I am here to testify in behalf of one side just as much as the other." I try to make it a point to impress the jury that I am not a partisan, and I try to impress upon myself that I will not be a partisan in a case, and I think we should all take that moral ground, and not allow ourselves to be partisans in a case, not to go in with any premeditated view, anything more than to get at the right and truth in the matter.

DR. ADAMS: Mr. President, a curious case comes to my mind, from my own experience, with regard to the lawyers. We have been talking, in what has been said, about the prejudice with which the doctor goes on the stand. It is certain that the lawyer that employs them expects the doctors to give evidence on their side, and I had a curious example of that once.

A friend of mine was a lawyer of some distinction, and he had a case which he was bringing for various riparian owners, of which he was one, to recover damages for the building of a dam. Now, without asking my opinion about it, he summoned me as a witness, and it so happened that my testimony, the moment I began to give it, was entirely against him. His case was, I feel sure, an unjust one. But, however that may be, it is certain that my testimony went entirely against him; and the result was that after I had returned from giving my testimony he said to me in the hearing of the court and loud enough for anybody to hear, "The witness on the stand has knocked our testimony all to pieces." I thought that a most extraordinary exhibition of partisanship, and the feeling with which he entered upon it when he put me on the stand was that I was certain to testify in his favor, assuming that a doctor who was summoned by him—his doctor—must necessarily testify for him, without having previously asked me what my testimony would be; showing that lawyers certainly enter upon cases of that sort, where they summon medical testimony with the idea that the physician is to testify for them whether it is the truth or not.

THE PRESIDENT: Mr. Sanderson, have you any desire to say anything in closing this discussion?

MR. SANDERSON: I think I have had my turn.

THE PRESIDENT: Then unless some gentleman has something to say we will consider the discussion at an end.

DR. F. E. JONES moved that a vote of thanks be given to Mr. Sanderson for his very interesting paper.

THE PRESIDENT: I am very glad, gentlemen, to put that motion, because I personally have enjoyed the paper very much, and I know this society will profit by it.

The motion was put and unanimously carried.

DR. A. W. BUCK read a paper on

CRIMINAL NEGLIGENCE; REPORT OF A CASE.²

THE PRESIDENT: This paper by Dr. Buck is now open for discussion, gentlemen. I think Dr. Abbott once wrote a very instructive paper on infanticide in the early days of this society.

DR. ABBOTT: It was an allied subject—still birth.

DR. HARTWELL: I would like to know if the soothing syrup used was Mrs. W's?

DR. BUCK: Yes, it was. I expressed my wrath.

DR. HARTWELL: Some twelve years ago the legislature passed an act authorizing the State Board of Health to investigate the use and abuse of opium in the State of Massachusetts. In the report made at that time I think you will find Mrs. W's soothing syrup was put down as a morphine simple syrup. I presume he considered that as a factor possibly in the infanticide in this case.

THE PRESIDENT: Has any other gentleman anything to say on this subject? If not, we will consider the discussion at an end.

Recent Literature.

Elements of Clinical Bacteriology. For Physicians and Students. By DR. ERNST LEVY, Professor in the University of Strasburg, I. E., and DR. FELIX KLEMPERER, Privat Dozent in the University of Strasburg, I. E. Authorized translation by AUGUSTUS A. ESHNER, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic, Physician to the Philadelphia Hospital, etc. Second enlarged and revised edition. Philadelphia: W. B. Saunders & Co. 1900.

The aim of this book is to present what is known concerning bacteria and the lower organized forms of life, with special reference to the bearing of such knowledge upon clinical medicine. It also has an appendix dealing with the bacteria of the air, soil and water, together with a section on the subject of disinfection.

It is a book for the library rather than for the laboratory and should be useful to physicians. The contents of the book justify the good reputation of the authors as bacteriologists.

Saunders' Question Compend. Essentials of Histology. By LOUIS LEROY, B.S., M.D., Professor of Histology and Pathology in Vanderbilt University, etc. Arranged with questions following each chapter. Seventy-two illustrations. Philadelphia: W. B. Saunders & Co. 1900.

This, even for a quiz compend, is a small book, comprising with an index but 231 pages. It is profusely illustrated with diagrammatic cuts for the most part, and treats in a necessarily brief way of the various structures of which the body is composed. Although we do not in general approve this method of gaining knowledge, we are quite ready to admit that such a compend may at times serve as a useful guide.

² See page 502 of the Journal.

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Medical and Surgical Journal.

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INTRADURAL INJECTIONS OF COCAINE FOR
 SURGICAL ANESTHESIA.

THE recent widespread interest in surgical anesthesia by the intradural injections of cocaine, first aroused by the work of Bier in 1898, and again by the extensive demonstrations made by Tuffier and others at the International Congress of Surgery at Paris this summer, has resulted in another of those curious reminders that there is nothing new under the sun, namely, the recognition that the method was practised and published by an American, Dr. J. Leonard Corning, of New York, in 1885. At that time the procedure of lumbar puncture for obtaining the spinal fluid for diagnostic purposes had not been published by Quincke, and the facility with which fluid could be withdrawn from or introduced directly into the spinal canal was not known. Corning found by experimental work on animals that the injection of a 2% solution of cocaine into the subdural space in the lumbar region produced anesthesia of the lower extremities, the anesthetic probably reaching the subarachnoid space and cord by means of the free communication between the two by the veins and lymphatics. In the human subject also, he produced anesthesia sufficient to allow the painless passage of a urethral sound by injecting a 3% solution of cocaine hydrochlorate into the space between the spinous processes of the eleventh and twelfth dorsal vertebrae. In his original article, published in the *New York Medical Journal* for October 31, 1885, he made the following statement, interesting in the light of recent developments: "Whether the method will ever find an application as a substitute for etherization in genito-urinary or other branches of surgery, further experience alone can show. Be the destiny of the observation what it may, it has seemed to me on the whole worth recording." Now that the intradural cocainization is being in some quarters extensively practised, this record gives Dr. Corning the position of pioneer in this method of local anesthesia, as he is acknowledged to have been in the discovery that anesthesia in the distribution of a nerve

could be produced by cocainization of its trunk, and that constriction by elastic ligature of a cocainized member prolongs and intensifies the action of the drug.

Important steps in rendering practicable the methods of local anesthesia by cocaine injections were the discovery by Schleich and others that by thorough infiltration of the tissues with the fluid solutions as weak as 1 to 1,000, or even 1 to 10,000, of the drug could be employed, thus avoiding the danger of cocaine intoxication, and making possible the performance of extensive operations under local anesthesia. The demonstration of the fact that the tissues of the body, excepting the skin and mucous membranes and the nerve trunks, were themselves anesthetic and could be surgically handled without pain, provided the skin were infiltrated (Schleich) and the nerve trunks cocainized (Corning) has rendered possible the excellent elaboration of the application of local anesthesia to herniotomy published by Cushing. Latterly the researches of Bier, in 1898, demonstrating the practicability of surgical anesthesia by intradural injections through a lumbar puncture, followed by the demonstrations by Tuffier, by his pupils alluded to above, have resulted in considerable activity in the practice of this method, which was briefly discussed in our editorial of August 23d.

Since then numerous articles embodying the personal experiences with the method of certain surgeons in this country, and describing the technique, have appeared in the journals. Fowler, in the *Philadelphia Medical Journal* for November 3d, reports the successful performance of such major pelvic operations as hysterectomy, and even operations upon the gall bladder, and the resection of ribs for empyema, the anesthesia extending as high as the fourth rib. Fowler reports forty-two cases with no mortality and no serious after effects, but concludes from his experience that the method could not be applied in abdominal sections for inflammatory conditions of the peritoneum, as the manipulations of the inflamed peritoneum always caused marked pain. He remarks that this is unfortunate, since it is in this class of cases that the surgeon most often wishes to dispense with ether and chloroform.

A review of the experience of Fowler, Matas (Goldan and others who have employed this method in this country shows much in its favor, and on the whole, when it is carefully used, comparatively little against it. It certainly should be employed only in carefully selected cases, and the technique must be scrupulously carried out. Owing to the greater danger of poisoning resulting from the direct conduction of the drug to important nervous centres by the cerebrospinal fluid, great care must be taken with the dosage. The method should not be employed in cases where the older and safer methods of purely local anesthesia will suffice.

The use of the method will always be limited to a comparatively small field by reason of the fact that it

is applicable only to the lower portions of the body and the lower extremities, and that unconsciousness as well as anesthesia is desired by the vast majority of patients, as well as surgeons, during major operative procedures.

In the rare cases in which, owing to pulmonary or renal complications, general anesthesia is dangerous, this method may find a useful place, by securing the painless performance of major operations upon the trunk and lower extremities.

In the excitement attending the exploitation of a new method, it is well for the profession to remember that the dangers attending the bringing of cocaine in direct contact with the central nervous system are sufficient to contraindicate its use in cases which it is known may take ether with perfect safety, and that the new method can be, in fairness to the patients, employed upon cases in which ether would be dangerous or in which the patient so earnestly desires local anesthesia as to prefer to take the risk. The practice of this new and comparatively untried method upon routine cases as they come to the surgeon, which seems to be the present habit in some quarters, cannot be too strongly condemned. Even if due conservatism be practised in the use of the method, we shall soon acquire experience enough to judge of its value. It is emphatically a case where the advantages to be gained do not justify great risks. For in major surgery any method of local anesthesia to deserve extensive practice must possess very definite advantages to compensate for the disadvantage of consciousness on the part of the patient.

The older methods of local anesthesia will suffice for the majority even of major surgical procedures where ether is contraindicated, and, as simpler and safer, should be adopted where possible.

In a certain small number of carefully selected cases, in operations upon the trunk and lower extremities, the new method will probably prove of occasional value.

"The ideal anesthetic," says Keen, and his words are worth remembering, "is not one which abolishes sensation, leaving consciousness intact, but one which will abolish consciousness and sensation without the slightest danger to life."

PRIZES AS A STIMULUS TO RESEARCH.

As is now generally known, a prize of \$200, known as the "Craig Colony Prize for Original Research in Epilepsy," has been offered for several years by Dr. Frederick Peterson, president of the Board of Managers. It may not be so generally known, however, that for two years no prize has been awarded, because of the poor quality of the essays presented in competition. This year, in fact, but one essay was submitted. The committee in charge of the matter make the following statement of the reason for this anomalous state of affairs, as they see it: "In view of the fertility of the field, or the constantly increas-

ing number of investigators and of the present perfected facilities of research, your committee believes that the prize having failed to attract more meritorious contributions is to be explained by its not having been sufficiently called to the attention of original workers. It would recommend, therefore, that for the ensuing year no pains be spared to have the existence of the Craig Colony Prize made known to all qualified to compete for it."

We are inclined to think the foregoing is not the essential reason for the lack of interest in competing for this or any other prize. As a matter of fact there are already far too many money prizes offered on a great variety of subjects connected more or less directly with medicine. It is perfectly clear that as such rewards for original research multiply, the credit attaching to the successful competition becomes proportionately less. The prize essayist is no longer looked upon as necessarily a man of distinguished attainment, and as a perfectly natural consequence we find fewer really able men competing. This brings us to the other point, that it too often happens that the men who compete for prizes do so in great measure from mercenary motives. The money is, and is intended to be, a temptation; of that there can be no question. The moment this is acknowledged, research becomes a means and not an end in itself, and thereby loses at once in dignity.

We are convinced that the present situation with regard to prizes is bad and constantly growing worse. The experience which the Craig Colony Committee has just had could no doubt be paralleled in many other instances if all the facts were known. Even the money is apparently no longer attracting competition. It is very much to be hoped that the near future may see a tendency toward a more worthy conception of the significance and proper rewards of scientific research, and dispense with prizes which are doing much more to cultivate a mercenary spirit than to develop true research. As regards the particular prize which we have happened to take as a text for these remarks, we can only say that in our opinion the study of epilepsy is not being promoted by its existence. While quite ready to spread the knowledge of the existence of such a prize as far as lies in our power, we cannot help wishing that the money might be devoted to some other more useful purpose connected with the important work which the Craig Colony is doing.

MEDICAL NOTES.

FILTHY STREETS AND DIPHtherIA IN PHILADELPHIA. — An inspection of the streets in the sections of the city where diphtheria is most prevalent, according to the *Medical News*, has shown some of them to be horribly filthy in spite of the efforts of the Board of Health to guard against such insanitary conditions. The paved streets are kept in good condition, but the unpaved streets and alleys are not. The

superintendent of street cleaning states that the latter do not come under his jurisdiction. The cases of diphtheria during the last week number 120.

ANOTHER PROPOSED HOSPITAL FOR TUBERCULOSIS.—The *New York Medical Journal* states that Dr. Louis Bazet, a member of the San Francisco Board of Health, has entered upon a vigorous campaign for the establishment of a separate hospital in San Francisco for the care of patients suffering from tuberculosis.

PLAGUE AT ALEXANDRIA, EGYPT.—Two new cases of plague are reported from Alexandria, Egypt.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, November 14, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 148, scarlatina 33, measles 18, typhoid fever 19.

WOMEN DIPSOMANIACS.—A complaint has been entered, and a test case heard in the Supreme Court regarding the commitment of women dipsomaniacs to insane hospitals, on the ground that such commitments under the existing statute are in violation of the United States Constitution. It was contended by counsel for the complainant that while men are given an opportunity to be heard before being committed, women are deprived of that privilege. The complainant was committed on an allegation and complaint that she was an habitual drunkard. The court made the commitment after hearing expert witnesses.

HARVARD VETERINARY SCHOOL AND HOSPITAL TO BE CLOSED.—The corporation of Harvard University has voted to close its Veterinary School and Hospital permanently June 1, 1901.

NEW YORK.

A DECISION REGARDING THE RIGHT OF RESIDENTS OF HOSPITALS TO VOTE.—Writs of habeas corpus and certiorari obtained on behalf of Dr. Albert Sellenings, of the house staff of Bellevue Hospital, and of two trained nurses and two hired helpers at that institution, who had been held by Magistrate Deuel on the charge of having illegally registered, inasmuch as they gave their place of residence as Bellevue Hospital, were sustained by Justice Andrews in the Supreme Court on November 5th. The cases were in the nature of test cases, and affected 143 voters from Bellevue Hospital and 413 in other city institutions. The result of the decision was that the persons objected to had the right to vote. It had been claimed that under Article II of the State Constitution such persons did not have the right. In the course of his opinion Justice Andrews said: "I am at a loss to understand how either of these classes of persons is disqualified from voting by reason of the provision of the Constitution quoted. The term, 'kept' as there used means 'supported,' and as used in the Constitution evidently refers to paupers, pa-

tients, and other persons who are maintained at the expense of the public. It cannot be truthfully said that the physicians, hired helpers, or pupil nurses are supported by the public. The physicians render most valuable services to the patients in the hospital, and are allowed to lodge and eat there, not as a matter of charity, but as a matter of convenience and almost of necessity, owing to the nature of the duties which they are at all times called on to perform." Then, having spoken in a similar way of the relations of the hired helpers and nurses, he ordered the discharge of the prisoners.

ANOTHER DEATH UNDER CHRISTIAN SCIENCE TREATMENT.—On the night of November 5th, Coroner's Physician Wuest, of Brooklyn, made an autopsy upon the body of Mrs. Augusta Hubbell, of Kingston Avenue, in that borough, who had died that day, and found that her death was due to appendicitis and peritonitis. She had been attended for a considerable time by two Christian Scientists, but on the morning that she died Dr. Herman Street was called in by the patient's husband. He saw at once that the case was hopeless, and while he did all that was possible under the circumstances, refused to assume any responsibility. He very properly declined to make out a death certificate, and called the coroner's attention to the matter. Dr. Street expressed the opinion that the patient's life might have been saved if she had received proper treatment.

DEATH FROM CHLOROFORM ANESTHESIA.—A boy nine years old died at the Polyclinic Hospital on November 8th from the effects of chloroform, which was being given for the removal of a diseased gland in the axilla. The operation, which had not as yet been begun, was to have been performed by Dr. John A. Wyeth. The hospital surgeons were entirely exonerated by Dr. Philip F. O'Hanlon, coroner's physician, who made the autopsy in the case. The patient was the subject of septicemia, and he found the entire glandular system involved to an extent which could not have been suspected during life, but which in reality rendered the use of any anesthetic more than ordinarily risky.

APPOINTMENTS AT THE COLLEGE OF PHYSICIANS AND SURGEONS.—At the monthly meeting of the Trustees of Columbia University held November 5th, the following appointments in the Medical Department (the College of Physicians and Surgeons) were announced: Prof. Edwin B. Cragin, secretary of the Faculty of Medicine; Dr. Charles E. Banker, assistant in normal histology; Dr. Carleton P. Flint, assistant demonstrator of anatomy.

OLDEST VOTERS IN NEW YORK.—The two oldest voters in New York State at the recent election were Joseph La Bonté, a French Canadian living in Ogdensburg, St. Lawrence County, who is one hundred and one years old, and George Olley, of Wilna, Jefferson County, who will be one hundred and three next Christmas Day.

SCHOOLS CLOSED ON ACCOUNT OF DIPHThERIA.—On November 8th the public schools of Lyons, N. Y., were closed by direction of Health Officer Veeder to prevent the spread of diphtheria. Within ten days there were two deaths from the disease in the town, and a number of serious cases were reported.

Miscellany.

BIAS IN CLINICAL MEDICINE.

UNDER this heading Dr. Judson S. Bury, of Manchester, according to the *Lancet*, has recently delivered an address before the Medical Society of University College, London. After describing the errors into which a diagnostician is likely to fall, through poor equipment or one-sided training, he concludes as follows: "A patient was not an automatic machine into which a penny could be dropped to pull out a particular disease ready for treatment. On the contrary, the organs by which he moved and lived were composed of living tissues which had a past history and a future development, both of which required consideration before the case could be properly grappled with. The thoughtful qualified man began to find out that he must study other things than mere medicine to acquire that knowledge of humanity so essential to a just appreciation of the many ills to which flesh was heir. The man who got into the habit of regarding every patient as merely a "case" and who ignored the look of icebleness or of distress, or the expression of anguish, and thought only of physical examination, was not well equipped for the diagnosis of obscure disease—he became a machine which was totally unable to unravel the complicated problem of human pathology. Three things were essential for the preventive treatment of the disorder known as bias—namely, care, doubt and truth, and if one thing helped more than another to avoid the pitfalls of bias and of hurried unscientific work, it was that practitioners should put themselves in sympathy with their patients and that they should care for them in the way that Dr. James Jackson, the hero of Oliver Wendell Holmes, cared for his patients. Jackson would have it that to cure a patient was simply to care for him. Such devotion was only to be looked for in the man who gave himself wholly to medicine, the noblest of arts, which the gods of ancient religions did not disdain to practise and to teach."

GENERAL REMARKS ON THE GUNSHOT WOUNDS OF 1898 AND 1899.

THE following extract from the forthcoming annual report of the Surgeon-General of the United States Army, now in press, will interest many surgeons and certainly all those who have followed recent discussions on gunshot injuries:

Of the 4,919 men injured by gunshot during the years 1898 and 1899, 586 were killed and 4,333 were wounded and received into the field and other hospitals. The killed constituted 11.9% of those struck, the wounded 88.1%. In other words, 1 man was killed for every 7.4 wounded. The Mauser bul-

let must therefore be regarded as less deadly than the larger missile used during the Civil War. The medical and surgical history of the Civil War shows the following casualties:

	Killed.	Wounded.
United States troops	59,860	280,040
Confederate troops	51,425	227,871
Total	111,285	507,911

In percentages the casualties were: Killed 17.97; wounded 82.03, or 1 man killed to every 4.56 wounded. The relative proportion of killed was therefore considerably larger during the Civil War than during our recent experiences. It is to be noted also that many of the wounds of the past two years were made by missiles of large calibre. Of those reported in 1899, 471 were specially stated as having been caused by the Remington bullet of calibre .45. It is safe to say that had the whole number of wounds received been inflicted by the smaller Mauser or Krag-Jorgensen bullet the percentage of immediately fatal wounds would have been materially lessened.

The less deadly character of the injuries inflicted by the modern bullet is manifested also when we exclude the killed and regard only those wounds which came under the care of the surgeons. Of these, during the two years, there were 4,333, and 259 of the patients, or 6% of the whole number, died. The corresponding percentage from the records of the Civil War was 14.3. Table C in Part I of the medical volume of the "Medical and Surgical History of the War of the Rebellion," shows that among the white troops of the army there were borne on the reports of sick and wounded 230,018 gunshot wounds, of which 32,907, or 14.3%, proved fatal. The marked reduction of the ratio of killed to wounded may be placed to the credit of the small-calibre bullet; but the lessened mortality among the cases which came into hospital may not wholly be attributed to the humane character of the wounds inflicted by this missile. Due credit must be given to the improved surgical methods of the present day. Wounds of any region of the body may be taken in comparison and the result will always be found to show a decided lessening in the percentage of cases ending fatally among those of the past two years, as compared with those of the Civil War. Take, for instance, gunshot wounds of the femur. During the Civil War surgeons in the field hospitals regarded a fractured femur as a serious menace to life, the danger from which was believed to be materially lessened by an immediate amputation. The field hospital surgical work after a battle consisted in great part of amputations, excisions and resections. Of 6,576 fractures of the femur, 2,923 cases were treated by primary amputation, 186 by resection, and the remaining 3,467 by conservative or expectant measures, this conservative action being due in many cases to a want of favorable conditions for the performance of primary operations. The limb was promptly amputated in 44.4% of these gunshot fractures.

On the other hand, during the past two years 82 cases of gunshot fracture of the femur were reported, 6 of which were treated by primary amputation and 2 by resection, the remaining 74 cases being treated by conservative methods, not because the conditions were not favorable for the performance of primary operations, but because of a conviction that under present methods of treatment the limb could be preserved without adding materially to the danger to life. The

limb was lost through surgical intervention in only 7.3% of the cases.

Not only limbs but lives were saved by the surgical practice of the past two years. In the 82 gunshot fractures of the femur the upper third was involved in 32, of which 5 were fatal, the middle third in 27, of which 3 were fatal, and the lower third in 23, of which 1 was fatal. The mortality varied from 4.3% of the cases in which the lower third was fractured to 15.6% of the cases in which the upper third was the site of the injury, whereas the corresponding percentages of fatal cases during the Civil War were respectively 42.8% and 49.7%. The whole of the lessened mortality in these serious fractures may be credited to the protection given to the wound by the first-aid dressing and to the care exercised in the subsequent aseptic treatment of the fractured limb.

In penetrating wounds of the thorax the rate of mortality fell from 62.6% during the Civil War to 27.8% during the years 1898 and 1899. The Civil War reports show 8,403 cases in which the results were determined; 5,260 deaths occurred among the number. The reports for the later years, as already stated, show 198 cases, of which 55 were fatal.

There were during the Civil War 3,475 penetrating wounds of the abdomen in which the ultimate results were determined; 3,031 of these, or 87.2% of the total, proved fatal. During the years 1898 and 1899 116 cases, 81 fatal, were recorded, the fatal cases constituting 70% of the total. Of 10 cases in which laparotomy was performed, 9 were fatal.

The alteration in the percentages of mortality in fractures of the cranium is less marked than in wounds of other parts of the body. Of 4,243 cases of cranial fracture during the Civil War, 2,514, or 59.2%, were fatal. In 1898 and 1899 68 cases were recorded, with 37 deaths, the latter forming 54.4% of the whole number.

THE ELEVATOR DISEASE.

The *London News* is responsible for the following warning, which we believe may have a element of truth: "It looks as though people with weak hearts had, after all, better climb ten flights of stairs than effect the ascent by means of the lift. This convenient institution is becoming ubiquitous. We soar up to the topmost story of the sky-scraping flat, we descend through geological strata to the twopenny tube by its assistance. We thought we were thereby saving our vital energies and lengthening our lives. The doctors seem to hold another opinion. Lift attendants have died sudden deaths; people with weak hearts have noticed ominous sensations when in the elevator. We are told the sudden transition from the heavier air at the foot to the lighter air at the top is extremely trying to the constitution. Even millionaires and bishops and aldermen are now voluntarily tramping up stairs and avoiding the swifter but insidious route. In fact, a new disease has swung into our ken, 'lift-man's heart.' We have all of us been risking this malady without knowing it. It is true most people have experienced the singular sensation of internal collapse when the lift floor sinks beneath the feet, but none of us suspected the results might be so serious. Every new notion for health and comfort seems to bring its particular Nemesis."

METEOROLOGICAL RECORD

For the week ending November 3d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...28	30.21	52	53	51	97	97	97	N.	N.	14	10	R.	O.	.43
M...29	30.06	52	55	49	100	91	96	N.	S.W.	8	3	G.	O.	
T...30	30.19	51	55	47	99	86	88	N.W.	N.	4	50	O.	O.	
W...31	30.53	46	48	44	75	79	77	N.	S.	16	8	O.	O.	
T...1	30.32	55	66	44	79	87	83	S.	S.	6	10	O.	O.	
F...2	30.20	62	73	52	85	83	84	S.W.	W.	9	8	O.	O.	
S...3	30.25	50	53	46	76	87	82	N.	N.	8	14	O.	O.	

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Indicates trace of rainfall. ☉☉☉ Mean for week

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOVEMBER 3, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York	3,654,594	1082	342	20.43	14.49	3.24	2.07	2.61	
Chicago	1,693,575	—	—	—	—	—	—	—	
Philadelphia	1,293,497	—	—	—	—	—	—	—	
St. Louis	575,238	—	—	—	—	—	—	—	
Baltimore	508,957	168	46	24.78	11.80	4.81	4.81	2.95	
Cleveland	381,768	—	—	—	—	—	—	—	
Cincinnati	325,902	—	—	—	—	—	—	—	
Pittsburg	321,616	—	—	—	—	—	—	—	
Washington	277,000	—	—	—	—	—	—	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	56	18	23.14	5.34	5.34	.54	1.08	
Nashville	87,754	—	—	—	—	—	—	—	
Boston	560,892	186	49	24.84	15.66	3.78	2.70	4.32	
Worcester	115,231	30	12	13.33	6.66	3.33	—	3.33	
Fall River	106,591	29	12	55.20	6.90	44.85	3.45	—	
Cambridge	95,185	17	5	29.40	11.76	—	17.64	5.88	
Lowell	98,611	25	9	28.00	4.00	4.00	—	12.00	
New Bedford	74,943	24	12	33.28	4.16	16.64	—	—	
Lynn	69,769	19	4	21.04	—	—	10.52	—	
Somerville	67,863	9	4	33.33	—	—	11.11	11.11	
Lawrence	60,937	13	6	31.76	—	15.38	—	—	
Springfield	60,085	21	8	14.28	23.80	4.76	—	4.76	
Holyoke	45,623	—	—	—	—	—	—	—	
Brockton	40,299	4	2	25.00	—	—	—	—	
Haverhill	38,714	7	—	14.23	—	—	—	—	
Salem	38,583	5	1	60.00	—	—	20.00	—	
Malden	38,321	10	1	10.00	—	—	—	—	
Chelsea	35,022	10	2	10.00	—	—	—	10.00	
Glocester	32,285	4	—	—	—	—	—	—	
Fitchburg	31,648	6	2	16.66	—	—	—	16.66	
Newton	31,224	10	5	30.00	20.00	—	—	20.00	
Everett	31,167	4	1	25.00	25.00	—	—	25.00	
Taunton	28,891	4	—	25.00	—	—	—	—	
Quincy	25,653	9	2	44.44	—	—	11.11	11.11	
Pittsfield	24,226	—	—	—	—	—	—	—	
Waltham	23,281	8	2	12.50	—	—	—	12.50	
North Adams	22,196	6	3	33.33	—	16.66	16.66	—	
Brookline	20,225	—	—	—	—	—	—	—	
Chicopee	18,790	1	—	—	—	—	—	—	
Medford	17,869	9	6	33.33	22.22	—	—	11.11	
Melrose	15,411	3	—	—	—	—	—	—	
Newburyport	15,157	6	—	16.66	16.66	—	16.66	—	

Deaths reported 1,792; under five years of age 556; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 418, acute lung diseases 232, consumption 202, diarrheal diseases 90, diphtheria and croup 60, typhoid fever 47, whooping cough 9, cerebrospinal meningitis 7, scarlet fever 2, measles 1.

From whooping cough New York 5, Baltimore 2, Boston and Medford 1 each. From cerebrospinal meningitis New York and Boston 2 each, Baltimore, Worcester and Lowell 1 each. From scarlet fever Boston and Lynn 1 each. From measles New York 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending October 20th, the death rate was 17.1. Deaths reported 3,815; acute diseases of the respiratory organs (London) 182, diarrhea 197, diphtheria 85, fever 71, whooping cough 43, measles 37, scarlet fever 35.

The death rates ranged from 10.4 in Halifax to 28.6 in Gateshead; Birmingham 19.0, Bradford 14.3, Cardiff 10.7, Derby 12.6, Hull 17.9, Leeds 16.7, Liverpool 21.9, London 15.8, Manchester 22.3, Newcastle-on-Tyne 18.2, Nottingham 20.2, Portsmouth 17.4, Sheffield 22.7, Sunderland 21.2, West Ham 15.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 10, 1900.

J. C. BOYD, medical inspector, detached from the "New York" when out of commission and ordered to the "Kearsarge."

E. S. BOGERT, JR., passed assistant surgeon, detached from the "New York" when out of commission and ordered to the "Massachusetts."

M. S. ELLIOTT, passed assistant surgeon, detached from Naval Station, Port Royal, and to duty on the "Annapolis" when placed in commission.

W. M. CARTON, assistant surgeon, detached from the "Massachusetts" and ordered to the "Indiana."

J. ST. J. BUTLER, assistant surgeon, appointed assistant surgeon from October 26, 1900.

J. M. MOORE, passed assistant surgeon, ordered to Naval Station, Port Royal.

E. M. SHIPP, passed assistant surgeon, detached from Norfolk Hospital and ordered to the "Michigan."

H. D. WILSON, passed assistant surgeon, detached from the "Michigan" and ordered to Naval Hospital, Norfolk, Va.

L. W. SPATLING, passed assistant surgeon, detached from Yokohama Hospital and ordered to Naval Station, Cavite, P. I.

S. DOUGLASS, pharmacist, ordered to additional duty on the "Massasoit."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOVEMBER 8, 1900.

CARMICHAEL, D. A., surgeon. Granted leave of absence for thirty days from October 23d. November 7, 1900.

MAGRUDER, G. M., surgeon. Granted leave of absence for seven days from November 17th. November 8, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Natchez and Jackson, Miss., on special temporary duty. November 7, 1900.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for two days. November 3, 1900. Granted leave of absence for five days, on account of sickness. November 8, 1900.

FOSTER, M. H., assistant surgeon. To proceed to Seattle and Tacoma, Washington., on special temporary duty. November 3, 1900.

GIBSON, R. H., hospital steward. Granted leave of absence for thirty days from December 7th. November 7, 1900.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, November 19, 1900, at 8 P. M. At 8 o'clock: Dr. J. L. Morse, "Leucocyte Count in Serous Pleurisy."

At 8.15 o'clock: Dr. G. G. Sears will read a paper entitled "Pericarditis with Effusion."

HENRY F. HEWES, M.D., Secretary.

THE CRAIG COLONY PRIZE FOR ORIGINAL RESEARCH IN EPILEPSY.

Dr. Frederick Peterson, president of the Board of Managers of the Craig Colony for Epileptics at Sonyea, N. Y., offers a prize of \$200 for the best original unpublished contribution to the pathology and treatment of epilepsy. Originality is the main condition. All manuscript should be submitted in English. The prize is open to universal competition. Each essay must be accompanied by a sealed envelope, containing the name and address of the author and bearing upon the outside a motto or device, which is to be inscribed also upon the essay. All papers received will be submitted to a committee, consisting of three members of the New York Neurological Society, and the award will be made upon its recommendation at the annual meeting of the Board of Managers of the Craig Colony, October 8, 1901.

Manuscripts should be sent to Dr. Frederick Peterson, 4 West 50th St., New York City, on or before September 30, 1901. The successful essay becomes the property of the Craig Colony and will be published in its annual report.

BOOKS AND PAMPHLETS RECEIVED.

Eleventh Report of the State Board of Health of the State of Maine for the Two Years ending December 31, 1899. 1898-99.

Transactions of the Medical Society of the State of West Virginia, held at Morgantown, May 9, 10 and 11, 1900. Instituted April 10, 1867.

Ringworm in the Light of Recent Research, Pathology, Treatment, Prophylaxis. By Malcolm Morris. Illustrated. London, etc.: Cassell & Co., Ltd. 1900.

Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army. Authors and Subjects. Second series. Vol. V. Enamel-Fyuner. Washington. 1900.

A Handbook of the Diseases of the Eye and their Treatment. By Heury R. Swanzy, A.M., M.B., F.R.C.S.I. Seventh edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

The Australasian Medical Directory and Handbook. Edited and compiled by Ludwig Bruck. Fifth edition. Sydney: L. Bruck, Medical Publisher. London: Ballière, Tindall & Cox. 1900.

Obstetrics: A Manual for Students and Practitioners. By David James Evans, M.D. Series edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

A Textbook of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D. Fourth edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1900.

The Theory and Practice of Hygiene (Notter and Firth). By J. Lane Notter, M.A., M.D. (Dub.), and W. H. Horrocks, M.B., B.Sc. (Lond.). Second edition. Philadelphia: P. Blakiston's Son & Co. 1900.

A Textbook of Pathology. By Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania, etc. Third edition, revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1900.

Tropical Diseases: A Manual of the Diseases of Warm Climates. By Patrick Manson, C.M.G., M.D., LL.D. (Aberd.). Revised and enlarged edition. Illustrated. London, New York, etc.: Cassell & Co., Ltd. 1900.

Eye, Ear, Nose and Throat: A Manual for Students and Practitioners. By William Lincoln Ballenger, M.D., and A. G. Wippert, M.D. Series edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia: Lea Brothers & Co.

Saunders' Pocket Medical Formulary, with an Appendix containing Formulæ and Doses for Hypodermic Medication, Poisons and their Antidotes, etc. By William M. Powell, M.D. Sixth edition, thoroughly revised. Philadelphia: W. B. Saunders & Co. 1900.

The Practice of Medicine: A Textbook for Practitioners and Students, with Special Reference to Diagnosis and Treatment. By James Tyson, M.D. Second edition, revised and in parts rewritten. With 127 illustrations. Philadelphia: P. Blakiston's Son & Co. 1900.

Essentials of Histology. By Louis Leroy, B.S., M.D., Professor of Histology and Pathology in Vanderbilt University, Medical and Dental Departments, etc. Arranged with questions following each chapter. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

Diseases of the Throat, Nose and Ear: A Clinical Manual for Students and Practitioners. By P. McBride, M.D., F.R.C.P. (Edin.). Third edition, revised and partly rewritten. Illustrated. Edinburgh and London: Young J. Pentland. Philadelphia: P. Blakiston's Son & Co. 1900.

The Art of Breathing as the Basis of Tone Production: A Book Indispensable to Singers, Elocutionists, Educators, Lawyers, Preachers, and to All Others Desirous of having a Pleasant Voice and Good Health. By Leo Kofler, Organist and Choirmaster of St. Paul's Chapel, New York. Fifth revised edition. New York, Milwaukee and London: Edgar S. Werner Publishing and Supply Co.

Uric Acid as a Factor in the Causation of Disease: A Contribution to the Pathology of High Blood Pressure, Headache, Epilepsy, Mental Diseases, Paroxysmal Hemoglobinuria and Anemia, Bright's Disease, Diabetes, Gout, Rheumatism and other Disorders. By Alexander Haig, M.A., M.D. (Oxon.), F.R.C.P. Fifth edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

A Manual of Materia Medica and Pharmacology: Comprising all Organic and Inorganic Drugs which are and have been Official in the United States Pharmacopœia, together with Important Allied Species and Useful Synthetics, especially designed for Students of Pharmacy and Medicine, as well as for Druggists, Pharmacists and Physicians. By David M. R. Culbreth, Ph.G., M.D. Second edition, enlarged and revised. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

Original Articles.

DIPHTHERIA BACILLI IN HEALTHY THROATS AND NOSES, WITH REPORT OF CASES.¹

BY FRANCIS P. DENNY, M.D., BROOKLINE, MASS.,

Assistant in Bacteriology, Harvard Medical School; Bacteriologist of the Brookline Board of Health.

The occurrence of virulent Klebs-Löffler bacilli in the throats of healthy individuals who have never shown any symptoms of diphtheria has given rise to much misunderstanding. It has led many to doubt the value of the diagnosis of diphtheria based on bacteriological examinations, and it has even been used as an argument against the Klebs-Löffler bacillus being the specific organism of the disease. It has given rise to many perplexing questions for boards of health. Many incorrect statements in regard to the significance and frequency of these cases are in circulation among the laity, as well as among the profession.

With our present knowledge the occurrence of these cases can be satisfactorily explained, and they are in no way inconsistent with the generally accepted theories of the disease. It is very desirable that there should be a better understanding of these cases among general practitioners that they may aid the boards of health in detecting these individuals and give their moral support in securing their isolation.

The question of the frequency of diphtheria bacilli in healthy throats is important because of the prevalent belief that there are *many* healthy individuals in any community who have the bacilli in their throats. It is therefore felt that these cases cannot be a great source of danger and that it is unjust to insist on the isolation of the few who are by chance discovered. This belief is supported by most of the reports of cultures from healthy throats which are found in the literature.

Kober¹ in a review of all the reports which he could collect found that 7% of all healthy persons who had *not* been exposed to diphtheria had Klebs-Löffler bacilli in their throats, while among those who had been exposed 18.8 were positive. Kober's own investigations showed only .83% positive among the non-exposed and 8% among the exposed. The cultures which are reported later in this paper show an even lower percentage of positive cases.

The high percentages found in the literature are partly to be explained by the fact that many of the cultures reported were made from individuals living in institutions or in crowded tenements of our large cities. The hygienic conditions under which the individuals are living appear to stand in close relation to the frequency of these cases.

Another reason for the high percentages is that in many of the reports no distinction has been made between those individuals with virulent and those with non-virulent bacilli. It seems probable that in certain localities non-virulent forms of the bacilli are much more frequently found than in others. These non-virulent forms which morphologically are identical with true Klebs-Löffler bacilli may differ only in the absence of virulence, or they may show slight variations in growth on certain media, the most important of which is the failure to produce acid in sugar

bouillon. Persons with non-virulent bacilli are probably not a source of danger. No one has ever succeeded in experimentally raising the virulence of bacilli when it has been entirely absent.

Diphtheria bacilli are most frequently found in healthy persons who have been exposed to the disease. Under these circumstances the bacilli are usually virulent. As cultures will seldom be made except from individuals known to have been exposed, the bacilli found in cultures from healthy throats are usually virulent. It is always well, however, to test the virulence of the bacilli found in those who have shown no symptoms.

The percentage of positive cases among those exposed depends largely on the hygienic conditions under which the individuals are living and also on the degree of exposure, which in any large series of cases cannot be accurately measured. The conditions of institution life seem especially to favor their occurrence.

It is now very generally believed that virulent bacilli may multiply in the throats and noses of certain persons without producing symptoms because these persons have a natural immunity from the disease. The bacilli multiply in their throats without producing symptoms just as they multiply in the throats of those convalescing from diphtheria. During convalescence the individual has a temporary immunity due to the accumulation of antitoxin in the blood during the acute stage. The antitoxin prevents the further development of the disease, although virulent bacilli continue to multiply in the throat. It seems probable that the natural immunity which certain individuals seem to possess is also due in part at least to the antitoxic property of their blood, for Wasserman and others have found antitoxin in the blood of individuals who have never had diphtheria.

Wasserman² obtained blood from different persons by cupping, and inoculated diphtheria toxins in guinea pigs together with small amounts of the human serum so obtained. He found that one or two cubic centimetres of the blood of certain persons was capable of protecting a guinea pig against several times the fatal dose of toxins. The blood of some persons did not have this protective power. Abel,³ Orłowski,⁴ Loos,⁵ and Passini⁶ have confirmed these observations of Wasserman.

In view of the fact that certain individuals have a natural immunity from the disease due to the presence of antitoxin in their blood, it is no more surprising that virulent bacilli should multiply in their throats without producing symptoms than it is that the bacilli should continue to multiply in the throats of those convalescing from diphtheria: the one has a *natural*, the other an *acquired* immunity.

The number of bacilli which may be present in the throat of a healthy person varies greatly. In some of the cultures which I have examined there have been only a few; in others they have been present in almost pure culture. As a rule, they are less than during the acute stage of diphtheria, corresponding in the number of bacilli present to mild or convalescent cases.

To what an extent are healthy individuals with virulent bacilli in their throats a source of danger? We know the Klebs-Löffler bacillus to be the specific organism of the disease. The virulence of the bacilli being the same, an individual is a source of danger in

¹ Read in part at the meeting of the Norfolk District Medical Society, January 30, 1900.

proportion to the number of bacilli which are given off from him. In an acute case of diphtheria when the child is coughing and gagging and the secretions are profuse the bacilli will be disseminated more than they are in the mild or convalescent cases. Still from the mild cases, and equally from healthy individuals, there is abundant opportunity for the bacilli to be disseminated. In coughing and sneezing and even, according to Pflügger, in speaking, the bacilli are scattered abroad. They leave the mouth on towels, handkerchiefs, forks and spoons, drinking cups, etc.

Cases have been reported by Park⁷ and others where the infection can be traced almost with certainty to individuals who have shown no symptoms. Many outbreaks of diphtheria in children's institutions which have persisted for a long time, despite the fact that all the sick children were promptly isolated and the rooms disinfected, have been quickly stamped out when the healthy children's throats were tested and those with the bacilli were isolated. There can be no question that *healthy individuals with virulent bacilli in their throats can give the disease.*

In our search for these cases it is not practicable to make cultures from every healthy individual. We can, however, make cultures from those who are most likely to have virulent bacilli in their throats and those are persons who have been exposed to diphtheria. It is especially desirable that physicians should make cultures from the well members of a family where there has been delay in isolating a case of diphtheria or where the isolation has not been thorough. The poorer the hygienic conditions under which the family are living and the more crowded the rooms the greater the need of making cultures. In institutions also where there have been diphtheria cases it is especially important that cultures should be made.

In examining a healthy person for the presence of the bacilli, cultures should be made from both throat and nose, as the bacilli may be present in the nose, while a culture from the throat is negative.

The giving of immunizing doses of antitoxin to all the well members of a household does not take away the need of making cultures. On the contrary, it is more important to make them under those circumstances. Antitoxin prevents the development of symptoms, but it does not prevent the bacilli multiplying in the throat. Already at the time the antitoxin is given the throat may be infected. The immunity conferred to persons otherwise susceptible prevents the development of symptoms which would lead one to regard these persons as infections. I believe that it often happens that immunized individuals with abundant bacilli in their throats are allowed their freedom, when if no antitoxin had been given, symptoms would have appeared which would have led to their prompt isolation. To a certain extent, therefore, the giving of immunizing doses of antitoxin when not controlled by cultures may favor the spread of diphtheria.

The making of cultures from healthy individuals who have been exposed is especially important when these individuals, by their occupation or habits, are likely to spread the disease; such are school children, persons who handle articles of food, milkmen, servants and nurses.

Nurses who have been taking care of diphtheria patients not infrequently have bacilli in their throats, although not developing the disease themselves. Rit-

ter,⁸ in cultures from 18 nurses who had been caring for diphtheria patients, found Klebs-Löffler bacilli in 2. Washburn and Hopwood⁹ found 2 nurses with the bacilli among 6 from whom they made cultures. The danger from a careful trained nurse is not so much that the bacilli from the case she has been nursing are clinging to her person or clothing, but that the bacilli may be multiplying in her throat, where they may persist for weeks. It is customary to allow a nurse seven days for quarantine before taking another case. Personally, I should prefer to have a nurse two days after leaving a diphtheria case, from whose throat a negative culture had been obtained, than one after two weeks without any bacteriological examination.

Another reason for making cultures from healthy individuals is to determine the source of infection of diphtheria. When a number of cases appear simultaneously among individuals associated together—for instance, in a family or in a schoolroom—and the connection with another case of diphtheria cannot be made out, one should always suspect that there is some individual with whom these cases have been in contact who is carrying the bacilli in his throat. Cultures should be at once made from those persons by whom the patients might have been infected. Often suspicion will point to a single individual as the one most likely to have the bacilli, or, again, it may be necessary to make cultures from a large number of individuals to find the source of infection.

Cultures from 285 healthy individuals were sent to the Brookline Board of Health Laboratory during the past year. The cultures from only 7 showed the presence of diphtheria bacilli. For the information about these cultures I have been dependent largely upon the cards which were filled out and sent in by the physicians who made the cultures. I am also indebted to many of the physicians for information about the cases which has been given orally. With only these data it has been impossible to determine how many of the cases have been exposed, or to measure in any way the degree of exposure. It appears, however, that in a few of the cases only has the exposure been very great; in many it was very slight, and in the larger number only suspected.

These figures, therefore, are of no value as representing the frequency of the bacilli in those who have been exposed to diphtheria. They do show how seldom the bacilli are found where there is not great exposure in persons living in a suburban community under good hygienic conditions. If we exclude the cultures from 50 persons which were made in connection with two outbreaks of diphtheria, where the exposure had been considerable, and among whom 6 positive cases were found, we have cultures from 235 healthy individuals with only 1 positive case (about .43%).

Of these 235 healthy persons, 216 were children, 19 were adults. A large part of them were of the well-to-do class. Most of those of the poorer class from whom cultures were made were living in two and three family tenement houses with air on at least three sides, where the conditions are very much better than they are in any large city. The low percentage of positive cases is to be explained

by the good hygienic surroundings under which the persons were living.

Of the 7 positive cases, 4 were among 38 adults from whom cultures were made by Dr. Chase in connection with an outbreak of diphtheria believed to be due to infected milk. These cases have been reported by Dr. Chase,¹⁰ but as they illustrate very well how infection may be spread by healthy individuals, I shall refer to them briefly.

In October, 1899, 2 children in a milkman's family were taken sick with diphtheria and were sent to the hospital. Realizing that others in the same house who were handling the milk might have diphtheria bacilli in their throats, and that the milk might so be infected, Dr. Chase made cultures from all the well members of the milkman's household. All were negative at that time. About three weeks later a number of cases of diphtheria began to appear among the milkman's customers. Cultures were again made from the well members of the household, and 3 healthy men were found to have the bacilli. Two of these men did the milking. The bacilli in their throats were very abundant, and were shown to be virulent by the inoculation of guinea pigs. In 4 families among the milkman's 8 Brookline customers, there were 12 cases of diphtheria; at least 6 cases occurred among his customers outside of Brookline. Dr. Chase has shown very clearly that these 18 persons were infected through the milk by the bacilli from the 2 healthy milkers. A fourth healthy man with the bacilli in his throat was found by Dr. Chase among 31 adults who were known to have been exposed by drinking the infected milk.

The 3 other positive cases were discovered among 174 healthy children in the public schools, from whom cultures were made by the school inspectors. During the recent epidemic, culture outfits have been kept at all the schools. When a school child has been taken sick with diphtheria the inspectors have made cultures from those children who have been sitting nearest the child. When more than 1 case has occurred in a room cultures have been made from all the children in that room. The cultures have been made under such circumstances with the double object of determining, if possible, the source of infection of the diphtheria cases, as well as to see if there might not be some who had the bacilli in their throats as the result of exposure.

Two of the 7 cases were found in a room in one of the primary schools in which there was a small outbreak. On September 24, 1899, 3 children who had adjoining seats in the room were taken sick with diphtheria. The fact that the 3 became ill simultaneously made it seem probable that they had all been infected from some other child in the room. Accordingly, cultures were made from all the children, and it was found that 2 children sitting in seats adjoining the 3 sick children had positive cultures. Both were perfectly healthy. In 1 there was a doubtful history of a slight nasal discharge. It seemed probable that this child had infected the other 4 children sitting near it. The seventh positive case was a school child in whose throat the bacilli were by chance discovered, although as far as known there had been no connection with any case of diphtheria.

The virulence of 2 of the 7 cases was tested with positive results. Four of the cases were in such close

relation with cases of diphtheria that at the time it did not seem necessary to test the virulence, although for the sake of the record it is much to be regretted that it was not done in all. In the seventh case the bacilli were so few that I did not succeed in isolating them in pure culture. In all of the 7 cases the bacilli were found to be present on more than one day.

The remainder of the cultures which I have to report were from 190 healthy boys in the Parental School in West Roxbury. It is a municipal school for truants. The age of the boys is ten to fourteen years. During the week beginning March 5, 1900, 10 of the 200 boys in the school were taken sick with sore throat, and cultures showed the presence of Klebs-Löffler bacilli. Four of the boys only had membrane. On March 10th and 11th cultures were made for me by Dr. Sleeper, the house physician, from the throats and noses of the 190 healthy boys. The cultures were examined by Dr. Hill at the Boston Board of Health Laboratory. Sixteen of the 190 cultures were positive. The occurrence of this number of positive cases in such an institution is a common experience. These cases are of interest, however, on account of their distribution in the school and the unusual opportunity which was given to determine what are the conditions of institution life which favor the occurrence of diphtheria bacilli in healthy throats.

The 200 boys live in three large new buildings. The cases of diphtheria were quite evenly divided in the three, but of the 16 healthy boys with the bacilli, 15 were living in one of the buildings. Investigations were therefore made to determine what were the conditions under which the boys in this building were living which were not present in the other two.

The boys in the different buildings are of the same age and of the same social class. They are together in the same day school. They do the same sort of work, and lead the same regular life. They have the same food, but have their meals in their own buildings. The only difference appeared to be in the building in which they lived.

Two of the buildings accommodate only 40 boys each. The hygienic conditions in these two buildings are exceptionally good. Each boy has his own separate sleeping room, measuring 10 x 6½ x 9 feet. A window, and an open door leading into a large, airy corridor, give excellent ventilation. The living rooms for day use are large, well ventilated and sunny. Hygienically these two buildings would compare very favorably with the dormitories of most of our large private boarding schools. Among the 80 boys in these two buildings there were 5 cases of diphtheria, or one-half of all the cases that occurred. But among the 75 healthy boys there was only 1 who had bacilli.

Most of the remaining 120 boys live in the third building, which is larger than either of the other two. Here, instead of single rooms, there are large open dormitories in which the boys sleep. Thirty-five boys slept in each of two rooms measuring 40 x 30 x 12½ feet. There were 18 boys in a room proportionately smaller. The remaining 32 boys were scattered about in smaller rooms in the school. The large rooms were high studded and well ventilated. The cubic air space per boy was only one-fifth less than in the buildings with the single rooms, and much larger than the boys would have in their own homes. The living

rooms in the third building were considerably smaller than those in the other two, in proportion to the number of boys. All the buildings are kept exceedingly clean. The plumbing in all is new and in good condition. The boys in the third building appeared to be in as good physical condition as those in the other two.

Among these 120 boys there were 5 cases of diphtheria—2 with membrane and 3 with simple sore throat. Fifteen of the 115 well boys had positive cultures. The virulence of three of these cultures was tested. Two of them were virulent and the third appeared to be non-virulent.

The only difference which could be discovered in the conditions under which the boys were living which would explain the occurrence of the larger number of positive cases is that in the first two buildings the boys have separate sleeping rooms, while in the third building a large number of boys are sleeping together in the same room. The living together of a large number of individuals breathing the same air seems to be the condition of institution life which predisposes to the occurrence of these cases.

It might be supposed that the larger number of positive cultures in the third building could be explained by the greater exposure which must occur where persons are living together in such close contact. If that were so, however, one would expect that there would have been a greater number of diphtheria cases in that building, while in reality there were proportionately fewer.

Evidently the boys in all three buildings had been exposed. One is therefore led to conclude that the bacilli becoming lodged in the mucous membranes of the boys living in the single rooms found the conditions favorable for their growth only in those who were susceptible. In those who had a natural immunity—in other words, in those whose blood possessed antitoxic properties—the conditions were not favorable and the bacilli did not multiply. On the other hand, in the third building, where large numbers of the boys were sleeping together, the bacilli found the conditions favorable for their growth in many of those who were naturally immune. Whether the more favorable conditions for the growth of the bacilli were the result of local changes in the boys' throats, I was unable to determine. On inspection no difference could be noted between the appearance of the boys' throats in the different buildings, or in their general physical condition. Enlarged tonsils were exceedingly common throughout the school, but not more so in one building than in the others.

There is not time now to consider the question of what action boards of health should take in regard to these cases. I can only say that it has been the policy of the Brookline Board to isolate all of those in whose throats virulent bacilli are found. It is believed that no other course can be consistently followed. The local condition of the patient's throat or his constitutional symptoms are of no significance to boards of health. The only criterion of the disease from the point of view of the public health is the presence of the bacilli.

To briefly sum up the principal points which should be emphasized:

(1) Diphtheria bacilli are seldom found in the throats of those who have not been exposed to diphtheria.

(2) The bacilli are more frequently found in those who have been exposed, especially in persons living under poor hygienic conditions or in institutions.

(3) The conditions of institution life which favor the growth of the bacilli in healthy throats are the living together of a large number of persons in a limited air space.

(4) Healthy individuals with virulent bacilli in their throats can spread the disease. They are just as dangerous as mild or convalescent cases of diphtheria, and ought, therefore, to be detected and isolated.

(5) Cultures ought to be made among those who have been exposed to diphtheria: (a) By physicians among the members of a family who have been exposed; (b) by inspectors in the schools; (c) by health officers under any circumstances when they think the disease is being or may be spread by such individuals.

In concluding I wish to express my thanks to Dr. G. S. C. Badger for his help in examining the Brookline cultures, to Dr. Hill for his reports of the cultures from the Parental School, and to Dr. Sleeper, the house physician at the school.

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CHRONIC DIFFUSE INTERSTITIAL NEPHRITIS.¹

BY CHARLES J. ENEBUSKE, M.D., BOSTON.

MY reason for addressing you upon this subject is that for a number of years I have had under treatment many patients who have complained of fatigue, diminished working capacity and nervousness, and who have sought my help particularly because they have thought that massage and movements should do them good. In several of these cases I have observed a trace of albumin, small hyaline casts, high-tension pulse and accentuated aortic second sound.

Two of these cases have later developed as typical cases of chronic diffuse interstitial nephritis, and died in uremic symptoms. Some of the cases, after improving during treatment, have passed from my observation. One has recovered functionally and one has recovered entirely. The last one, a single woman of thirty, nursed her mother, who was in the last stages of chronic diffuse interstitial nephritis. During the last weeks of her mother's life, the daughter complained of increasing weakness, and thought that she should give out. On examination I found her anemic, with high-tension pulse, loud accentuation of aortic second, and cardiac dullness extending from right border of sternum to mammillary line. I advised her to take rest, which she could not get; I regulated her diet as in a case of chronic Bright's disease, and prescribed tincture of chloride of iron, which she took

¹ Read before the Clinical Section of the Suffolk District Medical Society, October 17, 1900.

without relief. After her mother's death and after some weeks of rest, I examined her again. She felt strong as usual and there was nothing abnormal about her pulse or heart sounds, and the urine was negative. One year later she was well and strong.

The cases referred to serve to illustrate the uncertainty of diagnosing this disease from signs found at one examination alone, and I wish in addition to bring out some therapeutic points.

The multitude of synonymous denominations of this disease testifies to the variety of attempts that have been made to classify and interpret the renal diseases. Some of these names are derived from etiological considerations, others from clinical manifestations, still others from the gross appearance of the organ, or from the microscopic changes found at the examination of the organ "post mortem." Such names are cirrhosis of the kidney, gouty kidney, contracted kidney, granular kidney, small red kidney, granular atrophy of the kidney, chronic desquamative nephritis, renal sclerosis. Only two varieties of the disease are generally recognized, namely, the genuine inflammatory cirrhotic kidney and the degenerative cirrhotic kidney, of which the former is an independent primary disease, the latter a sequel to arteriosclerosis. It may be added that certain authorities admit and others deny a third variety of the disease, namely, those cases which start as smooth cirrhotic kidney, and in their further development contract into the kidney of chronic diffuse interstitial nephritis. Both forms are characterized clinically by insidious onset and slow development, and anatomically they are marked by atrophy of the parenchyma of the organ, secondary to the formation of new connective tissue, ending with a more or less complete destruction of all the anatomical elements of the organ.

Pathological anatomy; gross appearance. — The kidney is small; the weight is sometimes only one ounce each. The capsule is thickened, adherent, the surface irregular, "granular," puckered. The organ is either red, hyperemic (more developed form) or anemic, pale, gray. There are small cysts, containing clear, transparent liquid. The cortex is thin. The pyramids are shorter, redder than normal, the pelvis is wider. The small arteries stand out prominently. In cases associated with gout there are seen deposits of urates of soda as white lines through the medullary portion. The granular elevations correspond to the portions of the cortex which remain healthy; the sunken portions represent the atrophied parts, replaced by connective tissue. The gross appearance is the same in the two varieties of the disease.

Microscopical changes. — Connective tissue is widely distributed, especially in the cortex between the medullary rays and about the veins, less between the pyramids. It begins as a round-cell infiltration in the intertubular tissue and about the tufts. This becomes fibrillated, contracts, and gradually destroys both tubes and tufts. The Bowman's capsules are thickened and compressed by the surrounding new connective tissue. The vasa afferentia are narrowed, the glomeruli atrophy, the capillary epithelium is loosened, that covering the tufts is desquamated, the tufts undergo hyaline degeneration and do not transmit fluid; there is only slight change in the capsular epithelium. In areas free from connective tissue some tufts appear normal, but their cells are increased and the Bowman's cap-

sules are thickened. The changed tufts excrete albuminous urine, which packs together the desquamated epithelium, carrying the granular debris with it.

The tubal cells in the connective-tissue areas are atrophied or replaced by cuboidal cells. Some tubes are denuded, others have cells with granular or fatty change. Many tubes are greatly dilated by being plugged with granular debris in the portions which are constricted by connective tissue. The degeneration of renal epithelium is much less widespread than in the parenchymatous nephritis. There are large areas of normal tubes even in advanced disease, which accounts for the slowness in the development of the disease. Many tubes are collapsed and obliterated by connective tissue. Many contain casts and granular debris, but fewer than in the parenchymatous form.

There is an advanced sclerosis of the vessels. The adventitia is thickened; the intima with inflammatory growth (endarteritis obliterans). The media is thickened by increase of connective tissue, while the muscular fibres are atrophied. The capillaries are obstructed and finally obliterated.

Heart. — The heart is hypertrophied in a marked degree, and sometimes with considerable secondary dilatation. There are atheromatous and calcareous changes along the aorta.

There is a difference between the degenerative cirrhotic and the genuine inflammatory form. The former shows characteristic changes in the small and medium sized arteries of the kidney, and thereby the circulation through the kidneys is impeded. This leads to degeneration of the renal epithelium by insufficient nutrition. It atrophies and new connective tissue develops in its place. Consequently the arterial changes are primary.

In the genuine inflammatory kidney, on the other hand, the primary changes are in the glomeruli.

From both forms the secondary cirrhotic kidney is distinguished by larger size, only moderate adherence of the capsule, the coarseness of the granulations (that is, the surface slightly uneven), and the reddish color mottled with gray patches.

Etiology. — It occurs most frequently in the latter half of life, more frequently in males than in females, but the earlier period of life is not exempt. It is rare in childhood; a few congenital cases are reported. The following are generally recognized causes: Chronic gout; the fibroid diathesis; alcohol in excess, particularly the stronger kinds; excessive eating; too little or too severe exercises; worry and strain, physical as well as mental; chronic lead poisoning; articular rheumatism, acute and chronic; chronic endocarditis; syphilis; urethral stricture; pyelitis; senility. The toxins of the staphylococcus pyogenes and probably the toxic products of numerous pathogenic bacteria may also be causes, according to recent observations. Acute gout is not recognized as a cause, although the chronic is in marked degree.

Symptoms. — The patients complain of general muscular weakness, lassitude, impaired power of application, irritability of temper, fretfulness, deceptive memory, sleeplessness, impairment of the sexual sphere, occipital headache, and sense of pressure in the head, pain in the back of the neck.

Urine. — There is increased amount of urine; the patient has to leave the bed during the night to pass water. The amount of nightly urine generally ex-

ceeds that passed in the daytime. The twenty-four hours' amount may reach 3,000-6,000 cubic centimetres. It is clear, with little or no sediment. Specific gravity 1.006-1.012; acid; albumin is generally present in small quantities (about $\frac{1}{10}$ %). Sometimes albumin is absent for a few days or part of a day. Urea is at first normal, later diminished. There are a few casts, usually small hyaline. A few lymph cells are generally found, but no blood corpuscles unless an acute attack supervenes.

The cardiac dulness is increased both to the left and to the right. There is increased arterial tension, with firm pulse, forcible apex beat and the aortic second sound accentuated, with a ringing quality, even years before the hypertrophy is demonstrable. Later the apex beat is displaced to the left and is of increased force.

So long as the hypertrophy maintains arterial tension and regulates the urinary secretion, the condition is good, but when the heart muscle degenerates, dilatation and cardiac insufficiency set in. Then the pulse loses its tension, becomes smaller, more frequent and irregular. In this condition the patient is much influenced by slight physical exercises, and dyspnea and palpitation are easily produced. At this stage mild bronchitis, congestion of the lower lobes or spots of lobular pneumonia may appear. Edema may appear first at the ankles, later more generally, but is usually slight. Many theories are advanced to explain the development of the hypertrophy of the heart and they are significant not alone from a pathological point of view, but also with reference to the practical therapeutics of the disease. The weight of opinions is on the side of Cohnheim's theory that the increased local resistance in the kidney causes the hypertrophy. In general appearance the patient presents a pale, yellowish face, the expression is weary and listless, the eyelids are slightly swollen, the temporal arteries are tortuous, the skin dry, with little tendency to perspiration, and if the skin is scratched, the stripes remain.

There may be a variety of gastric symptoms: Anorexia, nausea, vomiting, diarrhea.

The eyes may be affected, exhibiting yellowish-white spots, small inflammatory exudates and minute hemorrhages. A variety of cerebral symptoms may occur.

(1) *Motor disturbances.* — Convulsions, tremors, localized contractions.

(2) *Psychical disturbances.* — Delirium, hallucinations, vertigo, coma, melancholia.

(3) *Sensory disturbances.* — Deafness, blindness, hemiopia.

(4) *Respiratory.* — Dyspnea, Cheyne-Stokes respiration, laryngeal spasm.

(5) *Thermic.* — Hypothermia or hyperthermia.

Even when cirrhotic kidney is fully developed, the symptoms may remain mild for many years. The danger is always present that some accidental complication or gradual exhaustion may precipitate uremic symptoms. The involvement of the normal portion of the kidney in an acute nephritis from overwork, exposure, or various influences, is very dangerous. The various ways in which the symptoms combine in the individual cases have led to the recognition of certain more or less defined clinical groups.

(1) *Cardiac.* — The sufferers are generally gouty persons. The cardiac changes appear early and at the autopsy renal sclerosis is revealed (a large proportion of all cases of renal sclerosis).

(2) *Cerebral.* — These are characterized by intense headaches, vertigo, numbness, formication, temporary paresis of a single limb.

(3) *Gastro-intestinal.* — Persistent nausea, vomiting and profuse diarrhea are the leading symptoms in these cases.

(4) *Progressive weakness.* — The leading symptom of the cases under this group is gradually increasing weakness and exhaustion. They are often regarded as cases of neurasthenia, anemia, or senility, and are not recognized as renal sclerosis until later in their development.

The complications of this malady may be numerous, as the following enumeration shows: Scrofulinous pleurisy, inflammation of the serous membranes generally, chronic bronchitis, catarrhal pneumonia, lobar pneumonia, neuroretinitis, or retinal hemorrhage, hemorrhage from the mucous and serous surfaces and in the substance of the organs, and edema glottidis.

Diagnosis. — Not many years ago, if the examination of a patient had revealed a pulse of high tension, an increased area of cardiac dulness, the second aortic sound accentuated, with a ringing quality, the urine of low specific gravity and large amount, with a trace of albumin and some few hyaline or fine granular casts, it would have been justifiable to make the diagnosis of chronic interstitial nephritis.

Reliable observations of a more recent date have made necessary the exercise of more reserve in drawing conclusions from the signs mentioned. It is recognized that a slight amount of albumin and an occasional cast may occur without a renal lesion being demonstrable after continuous observation of the case. On the other hand, the early stage of interstitial nephritis is not always associated with the appearance of albumin and casts. The high-tension pulse and the accentuated aortic second sound have been found to exist apparently as a mere function of years from the early middle age in a number of instances without any demonstrable renal lesion. The dislocated apex beat and increased cardiac dulness area may be an expression of idiopathic hypertrophy of the heart without renal disease.

The diagnosis of this malady cannot be made with certainty from any formula of symptoms and signs. It requires repeated examinations during a sufficient length of time to establish the persistency of the signs mentioned, often with intervening periods of absence of albumin and apparent health, and these facts must be balanced in view of the etiology and the history of insidious onset and slow, progressive development.

If the patient is examined for the first time when symptoms of disturbed compensation are developed, the diagnosis is difficult because the urine is not then characteristic of contracted kidney, but is scanty, darker, richer in albumin, and the condition can scarcely be differentiated from primary heart lesion with secondary congested kidney, particularly if arteriosclerosis exist at the same time. If the first examination is made during sudden uremia or after apoplectic seizure, the condition is with difficulty differentiated from other acute cerebral affections.

Chronic diffuse interstitial nephritis with acute exacerbation is differentiated from acute nephritis by a consideration of the history of the case, especially the first day of onset. In the chronic form the general appearance suggests longer illness. In the acute nephritis the urine is of higher specific gravity and

usually contains blood. In the chronic form there is evidence of hypertrophy of the heart, high arterial tension and retinitis albuminurica.

Chronic interstitial nephritis is differentiated from secondary cirrhotic kidney by a consideration of the etiology, and the fact that the cardiac hypertrophy and the vascular changes are less marked in the secondary cirrhotic kidney. The urine is smaller in amount, of darker color, of higher specific gravity, with more albumin and more cell elements.

Prognosis.—It is generally admitted that the fibrous tissue, once developed, extends until by its contraction the organ is destroyed. In the early stages of the disease, and under good regimen, the patient may live for many years without any apparent disturbance. When the heart fails, weakness, dyspnea and dropsy will appear, amenable to treatment at first, but increasing later in spite of the best care. Severe edema appearing late in the disease indicates a failing heart, and is a serious symptom. Uremic intoxication is a constant danger. It appears late in the disease and is fatal in many cases. Even with severe symptoms (Cheyne-Stokes respiration, persistent vomiting and edema) the patient may live for months.

Drs. Richard C. Cabot and Franklin W. White have found from the Massachusetts General Hospital records that out of 304 cases 17 have completely recovered, and that the average duration of 332 cases was nineteen months. Cases of eight to ten years' duration are not unusual, and cases are recorded of over fourteen years' and up to twenty to twenty-nine years' duration.

Treatment.—The two leading indications are to avoid irritation of the kidney and to avoid overwork of the heart so as to keep off cardiac insufficiency as long as possible. To this end the diet must be adapted to the condition of the individual case. Overeating, like other overexertion, must be precluded. Generally both starches and nitrogenous foods must be restricted and fats given generously, but there is some ground for the theory that an unusually rich nitrogenous diet is required to protect the organism from the loss of nitrogen, when much albumin is excreted, and that such increase in the nitrogenous food does not influence the amount of albumin that escapes through the kidneys. The skin must be kept active by tepid baths and the bowels regulated.

Physical overwork and mental worry should be excluded as far as possible, but moderate exercise and outdoor recreation and rest encouraged. According to most observers, a dry, equable climate is preferable, but actual test must decide in the individual case in which climate the patient "eats well, sleeps well, and feels well" (Delafield).

It is not proven that medication has any influence over the development of connective tissue and the contraction of the kidney, but mercury, iodide of potassium and in anemic cases iodide of iron may be tried.

There is great diversity in the observations as to the effect of iron preparations in this disease. Special symptoms must be treated as they arise. Iodide of potassium, nitroglycerin and chloral hydrate are important for their effect in reducing too high arterial tension and dilating the arteries.

If spasmodic dyspnea arises, the indication is to dilate the arteries and to stimulate the heart. If

disturbance of compensation appears, the indications for the treatment are the same as in chronic heart disease. Headache, vomiting, hemiplegia, convulsion, coma, require such means as diuresis, sweating, purging and blood letting. Massage, resisted movements and passive movements in some form or another are indicated in the various phases of this malady.

In the early stages before special symptoms have developed, but the patient is distressed by sense of fatigue and impaired strength and working capacity, much can be done to relieve the condition and increase the strength by massage and movement, in conjunction with proper regimen in other respects. By a systematic course of gymnastics may be ascertained the proper limits of exertion in the individual case and those limits widened in some measure. It is important that the patient should be made convinced of the fact that such forms of exertion as running and jumping are entirely out of the question, and that the ordinary rate of steps in walking must be reduced from, say, 100 or 120 in a minute to perhaps 50 or 60; that straining on defecation is dangerous; that walking uphill or upstairs is safe only if proper limits are observed, and that the determination of these limits cannot be safely trusted to subjective sensations alone.

Certain experiences from the administration of gymnastics to cardiac cases are worthy of consideration in this connection. It is generally found that simple exercises are less exciting to a delicate heart than exercises that are complex and difficult to learn, even though the latter be not violent or vigorous. Generally exercises which involve action chiefly from the muscles of the lower extremities are more easily borne at a time when the condition precludes a corresponding amount of exertion involving the muscles of the upper arm which have one attachment to the thorax. Gymnastic movements which shift localization from one group of muscles to another in a progressive succession are most beneficial.

Later on, when the compensation is weak, when occasional attacks of dyspnea and precordial oppression appear, or even when the compensation is failing, so long as there is recuperative power behind, much can be done by movement and massage to re-establish compensation and postpone the symptoms.

The leading indication in the early stage is to dilate the arteries and reduce the tension when it is too high. Later, when the compensation is failing, the indications are: (1) To increase the systolic stroke of the heart; (2) to relieve the venous hyperemia of the abdominal organs and the lungs, when such exists, and (3) to relieve the edema.

Experience gathered from the administration of exercises in Swedish medical gymnasia and in the Nauheim and Oertel Institutions has taught methods to meet these indications in recuperative cases. Contra-indications to these methods are advanced arteriosclerosis, aneurism and grave aortic lesions. The details of the methods are scarcely capable of simple description and satisfactory formulation. In general it may be said that:

(1) Dilatation of the small arteries and reduction of too high arterial tension can be obtained in many instances by kneading and stroking of the muscles of the extremities with slow strokes and gentle but rather deep pressure.

(2) Increase of the strength of the systolic stroke

is obtained in many instances by simple movement of the joints of the extremities with gentle resistance, provided that the exertion is limited to that which the recuperative force of the heart can respond to.

(3) Edema is relieved by centripetal strokings with gradually increasing pressure.

(4) The resistive movement must be given while the patient is in a restful horizontal attitude or half reclining.

(5) Passive movement must be attempted with caution in persons who have not good muscular control, because otherwise the effort of the patient to inhibit co-operative or resistive action either fails, or is so great an exertion in itself that the effect of a vigorous active movement is obtained instead of the passive one which is attempted.

In writing this paper the works of the following authors have been consulted :

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and JOURNAL articles of the last five years, by the following writers : Drs. W. T. Councilman, Richard C. Cabot, Franklin W. White, Arthur K. Stone, C. A. Herter, Arthur R. Elliot, James Tyson, A. Lawrence Mason, I. N. Danforth, Frank Billings, J. N. Brownlow, Charles A. Tuttle, Rose Bradford and Andrew H. Whitridge.

A NEW SPINAL JACKET.

BY EDWARD A. TRACY, M.D., BOSTON.

THE jacket herein described is termed new, inasmuch as its technique is for the first time presented to the profession ; but it has been, however, employed in the orthopedic practice of the writer during the past five years. The writer can, therefore, present it to the profession as an instrument of tried efficiency that merits employment in suitable spinal cases.

The distinguishing features of this spinal jacket are its lightness, cleanliness, rigidity, and durability. It is much lighter than either a plaster-of-Paris or a leather jacket. It is more cleanly than either, because it is freely ventilated and permits of thorough washing. Its rigidity is that of board when required, and yet it has resiliency. Its durability is demonstrated by the fact that the writer has had patients wearing jackets for two years with their efficiency unimpaired.

The basic material of this spinal jacket is wood-plastic splint material, described by the writer in a paper entitled "A Brief Splint Technology for Surgeons," contributed to the first Pan-American Medical Congress, at Washington, 1893. This material serves admirably in the splinting of injured joints and broken bones ;¹ for such uses the manipulation of it is so simple as to require no special instructions to one possessing a modicum of mechanical ability ; but when used in the construction of a spinal jacket the technique is of necessity more complicated and requires more careful description and study.

¹ See paper entitled, A Safe and Quick Method of Joint and Bone Fixation, in the Boston Medical and Surgical Journal of August 31, 1899.

There are two ways of moulding the jacket ; one, directly upon the body of the patient, the other, upon a plaster-of-Paris cast. The former method is practicable in those cases where the body curves are not too various and compound. The latter method, moulding the jacket on a plaster cast of the patient's trunk, is advised. The making of the cast is not difficult. Apply roller plaster-of-Paris bandages over a tightly fitting undershirt until a plaster jacket encircles the patient's body. After allowing this to harden for twenty minutes it should be cut carefully down the middle of the front, sprung apart, and removed. It is then to be placed upon the floor, and carefully brought together again so that it has the shape it had while on the patient. A string can be applied so as to cause it to maintain this shape. The inside of this plaster jacket should be well greased with lard ; this prevents the plaster of Paris when poured into it from adhering to the plaster jacket. Plaster of Paris mixed with water to the consistency of molasses is poured into the jacket and forms the cast. In making the cast it is found useful to place a piece of timber $2\frac{1}{2}' \times 3'' \times 4''$ as an upright in the jacket, and to pour the plaster of Paris around it. This timber upright serves as a support for the cast when using it to mould upon it the jacket. The piece of timber used should be moist, otherwise it will absorb moisture from the cast, swell, and split the cast, — not, however, a serious mishap.

The cast having been completed, the jacket should be moulded upon it in the manner described below. The jacket is made principally from four pieces of wood-plastic material, the back piece, the front piece and two side pieces. The back piece extends from the upper border of the cast to the lower border and overlaps the sides of the cast. In the back piece are two incisions on each side directed towards the middle line — these incisions allowing the material to mould over the various curves in the cast. Each side piece extends from the upper to the lower border of the cast and from a point an inch and a half away from the anterior superior spine of the ilium (towards the middle line of the front of the body) to near the middle line of the back ; the side pieces thus overlap the back piece. Two incisions are likewise made in each side piece, in a direction from the back towards the anterior border of each piece. These permit of the perfect moulding of the material upon the cast.

The back piece and the side pieces having been cut and moistened are bandaged in their correct relative positions over the cast and allowed to dry thereon. After drying, they are carefully removed and a layer of glue having been placed between the side pieces and the back piece where they overlap, they are re-applied to the cast, and bandaged upon it till the glue dries. The back piece and the two side pieces glued together form what may be termed the foundation of the jacket. It is now a well-fitting brace or back splint. This brace is covered carefully with cotton cloth, which is glued upon it, inside and outside. Holes are carefully punched into the jacket about two inches apart, and so placed as not to weaken it. These holes are three-eighths of an inch in diameter and permit of excellent ventilation. The jacket can be on the cast when the holes are being punched. The brace is now to be coated with a material that is impervious to moisture. The writer has used two such materials ; one, a solution of gutta percha in car-

bon bisulphide; the other, a solution of celluloid in acetone. The latter is preferable.

The brace portion of the jacket having been finished, the front portion should be moulded upon the cast, so as to overlap the sides about an inch. The front piece is moulded over the cast, after incising the upper half of it in the median line; this permits an overlapping of the upper portion, and causes the upper part to press on the upper chest with any chosen degree of pressure. This pressure appears to the writer to be an important advantage in maintaining a correct position of the spine. The front piece should then be treated in a similar manner to the brace portion, to provide for its ventilation and protection from moisture. It should then be attached by a leather hinge to one side of the brace; strips of leather with eyelets for lacings should be attached to the other side of the front piece and of the brace portion, thus completing the spinal jacket.

SOME OBSERVATIONS ON RENAL CASTS.

BY WALTER E. TOBIE, M.D., PORTLAND, ME.

In making a systematic microscopic examination of urine, one cannot fail to be impressed with the frequent existence of casts, and that, too, in many instances, without a co-existing albuminuria. So closely has the presence of casts become associated with albuminuria that it is far from the universal practice to submit the urine to a microscopic examination unless albumin has been found; and it is only since the centrifuge has come into more general use that the significance of each has begun to be better understood. The advantage of securing the sediment from a freshly voided urine unaffected by fermentative changes is too apparent to require defence. It is noticeable that by so doing hyaline casts are found in many instances where neither clinical history nor chemical examination would seem to point to their presence. The custom of obtaining urinary sediments by allowing the urine to stand for twelve to twenty-four hours in a conical glass has given fair results; but the urine necessarily undergoes bacterial and chemical changes, and it seems not unreasonable to believe that structures so delicate as hyaline casts may by these changes become disintegrated or so altered as to be difficult or impossible of detection. Certainly there is no good reason for believing kidney disease to be increasing to the alarming extent that microscopic examination of urine might imply. The increase is apparent and depends upon better and more systematic urinary examination.

The three theories of cast formation are that they result from the disintegration of renal cells, from a morbid secretion of these cells, or from a leakage of serum albumin into the tubules. All of these theories imply some structural kidney change, temporary or permanent, and we might then expect to find with casts always a greater or less amount of albumin. This, I am convinced, is not the case, notwithstanding the view of many, who contend that casts are never found in urine unless it contains albumin or has recently contained it. Testing for minute traces of albumin is difficult, uncertain and unsatisfactory, as is evidenced by the great number of test solutions and methods of testing, and the opinion is quite general

that an amount of albumin too small to be detected by the boiling or nitric acid contact test is too small to have any clinical importance. Taurer's potassiummercuric iodide test is capable of detecting the most minute trace of albumin. It is oversensitive and valuable, therefore, as a negative test to prove not the presence of albumin, but its absence. Such a non-albuminous urine may contain casts, and, I believe, this condition is much more common than it is possible to ascertain, because urinary examinations are made, as a rule, in general practice only when there are indications pointing to disease of the urinary organs or passages.

From the analysis that I have made in the laboratory of Dr. Alfred King, I have taken two hundred in regular order, without any attempt at selection as regards season of the year, age of the patients, or their diseases. The results as regards albumin and casts are as follows:

Urine containing neither albumin nor casts	109
" " albumin without casts	29
" " " with casts	35
" " casts without albumin	27

It will be seen that the cases of albumin with casts were rather more frequent than either alone. In making these tests, every effort was made to detect minute traces of albumin. Had this not been done, the proportion of cases where casts occurred without albumin would have been very materially increased. The cases of albumin without casts were almost invariably due to blood or pus from the genito-urinary passages.

I have mentioned three influences which might affect a series of urinary examinations as regards casts, the first being the season. This has a bearing only to the extent that diseases affecting the kidneys are more common at certain seasons, notably, the winter and early spring. Age is a decidedly important factor. Although it has long been taught that the kidneys in old age undergo a change comparable to that of cirrhotic kidney, it is not generally appreciated how common this condition is, nor how early in life the change may begin. Repeated examinations of urine from patients between fifty and sixty, certainly far from senile, show the presence of hyaline casts in many instances. Inasmuch as they may be present for many years without symptoms pointing to their existence, these questions naturally suggest themselves. Is the mere presence of hyaline casts necessarily a grave omen? May not the disease be checked or even of itself cease to advance? May they not be present in urine from kidneys whose excreting functions are practically normal?

The occurrence of casts with chronic constitutional diseases is extremely common, but the influences determining their formation are not altogether apparent. Thus in the constitutional disturbance accompanying carcinoma I found, while a house doctor at the Maine General Hospital, that hyaline casts were very common and that the urine was almost invariably free from albumin. This observation became so strikingly frequent that I was led to believe that some relation existed between the carcinoma and the production of casts, and that it resulted from some impairment of nutrition or from poisonous products occurring in the cancer formation. It was noticed, also, that in many of these cases the administration of ether caused no noticeable disturbance of the kidney functions.

Considering the importance attached to kidney disease by life insurance companies, the means employed by their examiners for detecting the same are surprisingly lax, since a microscopic examination is not part of the routine. While I should question very much the advisability of making the presence of casts a standard for refusal, it certainly should constitute a reason for a more searching examination regarding the eliminating functions of the kidneys. I believe that insurance companies will yet issue endowment policies knowingly to applicants whose urine contains casts, even as they have done so for many years unknowingly.

Medical Progress.

PROGRESS IN PATHOLOGY.

BY JAMES H. WRIGHT, M.D., BOSTON,
Director of the Clinico-Pathological Laboratory of the Massachusetts General Hospital.

GUNSHOT WOUNDS AND TETANUS.

THE great frequency of tetanus, following wounds from blank cartridges, is well known. H. Gideon Wells¹ has made a study of the blank cartridges on the market with the object of determining whether tetanus spores were present in them or not. Upon inquiry he found that the blank cartridges on the market were manufactured by five different firms in this country and in Canada, and samples of each of these were obtained for examination. In all about 200 cartridges were examined, but in none of them were tetanus bacilli found.

The method of examination was as follows: (1) The wads, powder and shells were first heated to 85° C. for forty-five minutes and then cultures on glucose agar and other media were made. Cultures were also made without the preliminary heating. (2) A series of animal inoculations of guinea pigs and mice were made, in various series, with wads and powder and with agar and bouillon cultures, both with and without heating. Ultimately for the examination of a large number of cartridges the following plan was adopted. Wads from ten cartridges were broken up into fine pieces and placed in bouillon sufficient to cover them; the fluid was then heated to from 80° to 85° C. for forty-five minutes and grown for one week under anaërobic conditions. The cultures were then inoculated into mice and guinea pigs, and also examined microscopically. Agar cultures were made in deep stabs. The bouillon cultures were covered with paraffine, after a previous boiling. The tissues were then placed in sealed jars with pyrogallic acid.

Cartridge wads were also inserted in the muscular tissue of animals and allowed to remain there for three days to two weeks. They were then removed, or inoculated into other animals, or cultivated anaërobically. These experiments all gave negative results. Microscopical examination of the cartridge wads showed them to be made of wood pulp.

THE NEW FORMATION OF ELASTIC FIBRES IN THE STROMA OF MALIGNANT TUMORS.

The invention of a selective stain for elastic fibres by Weigert has enabled histologists to recognize elas-

tic tissue with a facility which was not possible a few years ago.

It is of considerable histological interest to know whether, in the newly-formed tissue of malignant tumors, elastic fibres are produced as well as white fibrous tissue. The following workers have investigated this question with the aid of Weigert's staining method, with the following results:

H. U. Williams² finds, (1) when the stroma of carcinoma is itself of new formation it is usually free from elastic fibres; (2) newly-formed elastic fibres may occur in the stroma, though rarely, and they are likely to be fine in quality and small in number; (3) the tumors in which newly-formed elastic fibres occurred either contained a large amount of connective-tissue stroma, or the newly-formed fibres were in connection with pre-existing elastic elements of the original parts.

W. C. White³ comes to practically the same conclusions from his study of the subject.

Alice Hamilton,⁴ on the other hand, finds in certain soft epithelial tumors, with relatively small amount of stroma, a rich growth of elastic fibres. Thus, in adenocarcinoma of the uterus, stomach and mammary gland the stroma in many instances consisted largely of such fibres and very seldom were they altogether wanting. In fibrosarcoma, and alveolar sarcoma also, good evidence was obtained of a new formation of elastic fibres, but in subcutaneous fibromata and in a myofibroma of the uterus new-formed elastic fibres were much less numerous than might be expected. In scirrhous carcinomata of the pancreas, mammary gland and liver undoubted evidence of new formation of elastic fibres was obtained.

THE ORIGIN OF SIMPLE CYSTS OF THE OVARY.

At the present time the generally accepted view as to the origin of these cysts is that they are of the nature of retention cysts of the Graafian follicles. This view, probably, is due to the observations of Rokitsky, who claimed to have found ova in some of these cysts. Other observers, however, think that some of them, at least, are new growths. Von Kahl- den,⁵ in a needlessly long and verbose paper without a summary, has submitted the question of the origin of these cysts to a careful examination. He studied cystic ovaries from 19 cases in adult women of varying ages. His conclusions are that these cysts are not derived from Graafian follicles, but arise from solid or tubular ingrowths of the germinal epithelium. His conclusions are based upon (1) the observations of these ingrowths of epithelium; (2) the absence of ova in the smallest of the cysts; (3) the occurrence of cysts in ovaries long after the formation of ova has ceased; (4) the absence of any tendency to form ova, except in 1 case. In this case, however, many ova-like bodies were formed, but never reaching the normal size; (5) the difficulty of explaining these cysts as retention cysts, in view of the fact that they are always superficial, that they have thin walls and that there is no apparent mechanical reason why, if they are retention cysts of Graafian follicles, they should not rupture as readily as the Graafian follicle itself.

² Contributions to the Science of Medicine, Dedicated by his Pupils to William Henry Welch, upon the Twenty-fifth Anniversary of his Doctorate.

³ Bulletin of the Johns Hopkins Hospital, September, 1900.

⁴ The Journal of Experimental Medicine, vol. v, No. 2, October 25, 1900.

⁵ Ziegler's Beiträge, 1900, xxvii, 1.

¹ Philadelphia Medical Journal, June 16, 1900.

According to these observations of von Kalden, the simple cysts of the ovary seem to develop in much the same way as do the Graafian follicles from the germinal epithelium, and these cysts might, in consequence, be regarded as the result of abnormal efforts upon the part of the ovary to form Graafian follicles.

ACUTE AND CHRONIC GONORRHEAL CYSTITIS.

Hugh H. Young⁶ reports these cases. In the first case the gonococcus was found in pure culture in the urine. In the second case the gonococcus was found in the urine in association with the bacillus coli communis. The urine was collected by aspiration of the bladder under strict aseptic precautions.

In reviewing the literature of gonorrhoeal cystitis, Young was able to find only 7 other cases in which the gonococcus had been demonstrated in the urine. In his opinion, this small number of cases by no means represents the frequency of gonococcus infection of the bladder. The principal reasons for this belief are, (1) The difficulty of obtaining urine by aspiration, owing to the acuteness of the inflammation which causes the contraction of the bladder, so that it is difficult to penetrate it with the aspirating needle; (2) because the gonococci will not grow in the urine unless it contains a considerable amount of albumin. In 1 case of gonorrhoea in which there was no cystitis the aspirated urine showed large numbers of gonococci. It thus seems probable that in the production of cystitis the gonococcus is only one of several factors in the process.

In the same paper Young also reports a number of instances in which the gonococcus was found in pure culture in subcutaneous abscesses. These abscesses developed either in the region of the urethra or in the subcutaneous tissue following operations for tenosynovitis or arthritis. For the cultivation of the organism Young recommends a mixture of hydrocele or ascitic fluid and nutrient agar-agar.

ACNE VULGARIS.

Dr. T. Caspar Gilchrist⁷ has arrived at some interesting results from a bacteriological study of this subject. He has examined bacteriologically 96 pustules from 55 patients. In cover-glass preparations from every one of these 96 pustules he found a special bacillus. He obtained cultures of this bacillus in 11 instances. In 31 instances the white staphylococcus of Welch was also present in the pustules. The bacillus found in these cases was short and thick and in cultures often occurred in long forms which, in some instances, showed branching. The bacillus grew in the ordinary culture media. In the original glycerin agar cultures from the pustules growth could only be obtained when considerable quantities of the pus in clumps were placed upon the surface of the culture media. Transplantations from the original cultures were only successful when masses of the growth were used for transplanation, without spreading the same over the surface of the medium. These peculiarities of the bacillus suggest to the reviewer that this organism would probably grow much better under anaërobic conditions. Dr. Gilchrist seems not to have tried anaërobic methods of cultivation.

The bacillus was found to be pathogenic for animals. Experiments on a guinea pig and on two mice showed that it was capable of giving rise to local supuration and a general infection. This organism is probably identical with that seen by Unna in acne pustules. Unna, however, never cultivated it. The branching of the organism was only observed in the cultures and in the local lesions of one of the experimental animals. The fact that it does branch would indicate that it should not be regarded as a bacillus, but as a streptothrix. The author, however, prefers to call it a bacillus, by analogy with the bacillus tuberculosis and the bacillus diphtherie, which, likewise, are known to be capable of branching.

In light of these results of Gilchrist, acne vulgaris is due to an infection with a specific organism. The generally accepted view, that this disease is due to infection with the ordinary pus organisms, is thus shown to be erroneous. Such infection with pus organisms is to be regarded merely as a secondary one.

A NEW PATHOGENIC MOULD.

Ophüls and Mollit⁸ report an interesting case in which the clinical diagnosis was septicæmia.

At the autopsy the following principal lesions were found: Abscesses and pneumonic consolidations of the lungs, encapsulated empyema, suppurative foci in kidneys, liver and spleen, purulent otitis and periostitis of the frontal bone and of the upper part of the left tibia, purulent arthritis in various joints, necroses and abscesses in various lymphatic glands. In the pus from a variety of situations, there were found peculiar spherical parasitic organisms of variable size up to 30 micra in diameter. In some of the lesions these were not associated with bacteria and were apparently the only infecting agent in the process. These bodies appeared not to be possessed of motility. The larger forms acquired a capsule, while the protoplasm broke up into one hundred or more spore-like bodies, which are highly refractile.

Attempts to cultivate this organism resulted in the growth of a mould, composed of a mycelium. By inoculations of this mould into guinea pigs and rabbits suppurative foci in various organs were produced, in which the same spherical parasitic bodies were found in pure culture in variable numbers, but no mycelium. By study of these spherical bodies in bouillon, under special conditions, it was found that mycelium developed from them.

The observations of the authors seem to establish pretty clearly that the infecting organism in this case has thus two stages in its life history which are very unlike one another. The authors suggest that the spherical form of this organism may be identical with the protozoan described by a few others under the name of coccidioides immitis pyogenes or other names. The botanical classification of this organism, as well as a number of organisms apparently more or less closely related to it, is extremely uncertain.

THE ETIOLOGY OF TROPICAL DYSENTERY.

Simon Flexner⁹ considers that there are two forms of tropical dysentery, one due to bacterial infection, the other due to the ameba coli.

From a number of cases of acute tropical dysentery in soldiers in Manila he was able to isolate a bacillus

⁶ Contributions to the Science of Medicine, Dedicated by his Pupils to William Henry Welch, upon the Twenty-fifth Anniversary of his Doctorate.

⁷ Loc. cit.

⁸ Philadelphia Medical Journal, vol. 7, No. 26.

⁹ Middleton Goldsmith Lecture, Bulletin of the Johns Hopkins Hospital, October, 1900.

which was apparently identical with the bacillus described by Shiga in the epidemic dysentery of Japan. This bacillus has a certain resemblance to the bacillus of typhoid fever, but is not identical with that organism. It gave the Widal reaction with the blood serum of the patients from which it was isolated.

Flexner also isolated this same bacillus from a case of chronic dysentery contracted during the Spanish War in Puerto Rico.

THE TYPHOID BACILLUS AND ROSE SPOTS.

Mark W. Richardson¹⁰ has cultivated the typhoid bacillus from the rose spots in 5 out of 6 cases in typhoid fever. In all of the positive cases the Widal reaction did not appear until six days, on the average, after the date of demonstration of the bacilli in the rose spots.

The method of cultivation was essentially that of Neufeld, who diluted the blood from the rose spots with a comparatively large amount of bouillon, thus avoiding the bactericidal action of the blood on the bacilli. By this means Neufeld¹¹ cultivated the typhoid bacillus from the rose spots in 13 out of 14 cases. Neufeld also found that in 7 out of a series of 8 cases the Widal reaction did not appear until, on the average, six days after the finding of the bacilli in the spots.

Curschmann¹² also recently obtained positive cultures of the rose spots in 14 out of 20 cases.

These results show conclusively that the typhoid bacillus invades the circulation early in the disease.

A RARE ENDOTHELIOMA.

Joseph Sailer¹³ describes a neoplasm involving the wall of the left superior pulmonary vein and occluding the lumen of the same. This neoplasm, on microscopical examination, proved to consist, essentially, of proliferated endothelial cells separated into groups or alveoli by connective-tissue stroma. The occlusion of the vein had resulted in atelectasis of the superior lobe of the left lung. That this atelectasis had occurred during adult life was shown by the presence of carbon pigment in the collapsed pulmonary tissue. Sailer gives an elaborate discussion of the nomenclature of tumors originating from lymphatic and blood vessels. He calls the present tumor a primary endothelioma.

COSTOCHONDRAL OSTEOMYELITIS.

Harvey Cushing¹⁴ reports this case, following a probable typhoid fever, from which a peculiar bacillus was isolated. This bacillus was found to have a close relationship to the bacilli of the hog cholera group. This group of bacilli manifest peculiarities which are found both in the typhoid bacillus and in the bacilli of the colon group. The patient's blood serum produced the Widal clump reaction with the bacillus, but did not do so with the typhoid bacillus. The bacillus did not give the clump reaction with the serum of typhoid fever cases. The bacillus in this case may be regarded either as a typhoid bacillus which has undergone modifications during its long res-

idence in the human tissues, or the bacillus may be regarded as a secondary invader from the intestinal canal that made its entrance during the course of the typhoid fever. Cushing seems to be inclined to adopt the latter view on account of the great variety of organisms, more or less closely related to this bacillus, that are to be found in the intestinal canal.

PLAGUE BACILLI IN SPUTUM.

Recovery from the pneumonic form of the bubonic plague has been an exceedingly rare event. The observation of 3 cases of recovery from this form of disease has enabled Gotschlich¹⁵ to study the question of the duration of the persistence of the bacilli in the sputum. In the first case virulent bacilli were found in the sputum up to the seventy-sixth day, and forty-eight days after complete defervescence, and forty-eight days after the patient had left the bed. In the second case the bacilli were found up to the thirty-fifth day of the disease, and six days after the patient had left the bed. In the third case the bacilli were present up to the thirty-third day after defervescence, and nineteen days after the patient had been up and about and had felt completely well.

Dr. Métin, at Oporto,¹⁶ has also studied the virulence of the sputum of plague convalescents. He finds, contrary to Gotschlich, that the virulence of the bacilli contained therein diminish rapidly from the end of the first week, so that after the ninth day the injection of sputum into guinea pigs is no longer fatal.

BACTERIA IN ACUTE RHEUMATISM.

F. J. Poynton and Alexander Paine¹⁷ report that in 9 cases of acute rheumatism they have met with a peculiar micrococcus. This was found in the pericardial fluid, in vegetations on the heart valves, in a rheumatic nodule on the elbow, on the tonsils, and in the urine. In 2 cases it was found in the blood during life.

The organism is a small micrococcus, occurring in pairs and chains. It grows best under anaerobic conditions, in a mixture of milk and bouillon, rendered slightly acid with lactic acid. It was found to be pathogenic for rabbits, producing polyarthritis, bursitis, tenosynovitis, pericarditis, "valvulitis," pleuritis, pneumonia, fatty degeneration of the myocardium, and other lesions.

THE KOCH-WEEKS BACILLUS IN CONJUNCTIVITIS.

The bacillus described by Koch in the epidemic conjunctivitis of Egypt in the eighties, and some years later described by Weeks in the epidemic conjunctivitis in New York, known as "pink eye," has recently received renewed attention.

Kamen,¹⁸ about a year ago, reported finding this bacillus in a small epidemic of conjunctivitis among soldiers, and more recently R. Hoffman¹⁹ has met with a number of instances of conjunctivitis, in which he also has found it. The bacillus is very small and is frequently included inside the leukocytes. In its morphology and cultural peculiarities it has a great resemblance to the bacillus of influenza. The conjunctivitis caused by it has, in some instances, a ten-

¹⁰ Journal of the Boston Society of Medical Sciences, January 16, 1900; Philadelphia Medical Journal, vol. v, No. 9, March 3, 1900.

¹¹ Zeitschr. f. Hyg., xxx, 3, S. 439.

¹² Münch. med. Woch., 1899, No. 28.

¹³ Contributions from the William Pepper Laboratory of Clinical Medicine.

¹⁴ Bulletin of the Johns Hopkins Hospital, July, August, 1900.

¹⁵ Zeitschr. f. Hyg. u. Infektionskrankh., Bd. xxxii, p. 402.

¹⁶ H. D. Giddings: Health Reports U. S. Marine-Hospital Service.

¹⁷ The Lancet, September 22 and 29, 1900.

¹⁸ Centrbl. f. Bakt. u. Parasitenk., Bd. xxv, S. 401, 1899.

¹⁹ Zeitschr. f. Hyg., Bd. xxxiii, S. 109.

dency to run a chronic course with thickening and cellular infiltration of the conjunctiva.

Hoffman succeeded in producing a typical conjunctivitis in a colleague by inoculation of the conjunctiva with a pure culture of the bacillus.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, October 17, 1900,
DR. H. F. VICKERY in the chair.

DR. H. S. POMEROY described

AN IMPROVEMENT IN INSTRUMENT AND METHOD FOR REMOVING SUPERFLUOUS HAIR BY THE ELECTRIC METHOD.

I feel that some apology is due you for taking any of your time for a matter about which so few of you will feel any specially active interest. When I first began to take out hairs by electricity, some thirteen or fourteen years ago, the very first thing that was impressed upon my mind by my instructor, a Boston physician who had been taking them out for some time, was that I must be very particular about my needle, that it must be a very sharp one, and I was instructed always to apply this test: take a little wad of cotton, fold it tightly and see if the needle would pass through without objection. I was instructed to use steel needles. I have found that steel needles are largely a delusion and a snare, wear out and break, that the points are uncertain, and I find that a sharp point is very unwilling to follow the course of the follicle beside the hair to reach the papilla at the bottom, and I did as most of us do when we find difficulties in modes of procedure—we experiment. I soon made up my mind that a blunt needle was the thing to use and I began to use my needles more and more blunt and finally settled on one made of platinum. Now it is the custom of a good many to have a quantity of needles—six, eight, ten or twelve—on hand. I used to do that myself. As an illustration of what can be done by one needle, I will say that the particular needle in this holder I have used six or seven years, and the only point about it I am very particular about is that it shall be very blunt. Being blunt it will follow the course of a follicle as a finger is pushed into the finger of a glove, and it is curious how this works in some instances. A few days ago I was doing an operation with this needle on one of the large hairs on the chin. The needle fell in of its own weight about half the distance down the papilla and stopped; I then turned it at an angle of 45° and it slipped in to the bottom. That was one of the cases in which the course of the follicle is not straight, but turns an angle of perhaps one-half to two-thirds of a right angle in its course. If I had had a sharp needle the point would have gone through the sheath of the follicle and out, and not at or near the papilla, and I could not have got the hair out.

The second point I want to speak of is that this needle is insulated. Prof. P. S. Hayes, who wrote a

little book of about 125 pages on "Electricity and Facial Blemishes," speaks very decidedly on this point, that it is not possible to insulate a needle need for removing hairs by electrolysis and gives as his reason that the canal is so small that it would not be possible to have the needle sheathed in anything that would be a non-conductor and yet get it in. He seems to assume that it is no use to have any insulation unless your needle is insulated almost to the point, leaving just the least bit of the point exposed. I experimented some time on insulation because I found with all the care I could use I sometimes got rather bad scars and at length I hit some three years ago, I think, on this device. I had a very small cylinder of hard rubber bored by Colman & Shurtleff, with one of the drills they use for boring out needles used for hypodermic purposes, and then this little tube, which was of hard rubber, was slipped over the needle when it was a little hot and shrunken. I have used that particular one with that insulation on for three years. The needle is bare for about the depth of the largest hair follicle. The depths vary from perhaps $\frac{1}{32}$ inch to a large $\frac{1}{4}$ inch. I have compromised just a little and the needle is left bare perhaps $\frac{1}{8}$ inch. The insulation comes a little below what would be the surface, and by rotating the needle a little and crowding—the tissues are elastic and will give—that part of the needle that is insulated enters the opening of the follicle for perhaps $\frac{1}{4}$ inch or less, but enough to hold the part of the needle that is bare away from direct contact with the true skin. It might seem *a priori* that that would not accomplish much, but as a matter of fact it does. Since I have got this insulation I have had almost no trouble with scars. I had a little trouble which came up in a way that rather surprised me. In one case I found a great deal of the tissue destroyed, and finally I found the trouble was this: The work was being done on the lip near the nose, where there is the greatest sensitiveness of any place on the face, and the patient was high-strung and sensitive and suffering very much, and the result was that she perspired very freely, and before I realized it the skin at that point was bathed in perspiration and the perspiration settled down and extended outside, so that I was working in a little water bath and the destruction of tissue reached quite a distance. That is the only instance I have had in three years, and that would not happen again, because I should be forewarned and forearmed. The length of needle in this holder is the most that is ever needed; I have only a few times had to urge the needle a little to get it to the papilla. Sometimes I go a little beyond the papilla. I think it is better to urge this needle than have the trouble of three or four needles, though if I were going to have three or four I should possibly have one that had the bare part of the needle a trifle longer than this and then the others graded down to one that is exposed $\frac{1}{32}$ inch.

There are a good many hairs that worry the ladies and they want them out, and yet they are very fine and the opening to the follicle is very small, and sometimes, unless you have a very strong light and conditions unusually favorable, it is very difficult to enter with the needle, and the attempt annoys the patient, and hurts very much more than it does to go directly into the follicle. I tried the experiment of putting this needle into a hair follicle at the back of the wrist without cocaine or other anesthetic and

crowding the insulated part down into the mouth of the follicle so that it was in perfect condition for working, and have done it repeatedly with scarcely any pain at all. That was when the electricity was not passing; that makes a good deal of difference, and of course it is very important that you should get into the follicle, because if you do not it is almost impossible to destroy the papilla. If a little to one side and you have a very strong current, as you would get from twelve or fifteen cells and leave it to an exposure of thirty to forty-five seconds, you might possibly destroy the papilla without being actually inside of the range of the follicle. I found it difficult to work with a glass. But I thought if I had one that was at hand in position so that I could use it at the moment of getting the point of the needle started it would be a good deal of help and I devised this. It is cut down from one of the little glasses used by watchmakers. The rim is deep enough so that you get the right focal length when it is screwed into the eye like a monocle. I had this cut down and remounted at an angle and it is on a little slide, and it also pulls off if you do not care to use it. It helps me very much about getting the point of the needle started properly. I tested it in this way: I had a cut of something that represented a surface that was mottled, and the mottlings were so fine that with the naked eye it was scarcely possible to distinguish that it was not a surface evenly brushed over. With this little lens I found I could easily plant the tip of the needle in the centre of one of the clear spaces, these spaces being a good deal smaller than the opening to a follicle.

It seems to me that the blunt end, and the platinum for the substance of the needle, and the compromise of insulating in this way, and the little magnifying glass added, make quite a little assistance in some of the difficulties and pitfalls of removing hair by electricity. I have at least found them so, and thinking that possibly some of the members might like to see it, I brought it in. I thank you for your attention.

DR. C. J. ENEBUSKE read a paper entitled

CHRONIC DIFFUSE INTERSTITIAL NEPHRITIS.¹

DR. PUTNAM: I should like to ask if Dr. Enebuske has tried the method I saw recommended by Dr. Jacobi, of New York, of giving massage under the surface of water in cases of arteriosclerosis? It was desired, I suppose, to get the dilatation of small vessels.

DR. ENEBUSKE: No, sir; I have not tried it.

DR. POMEROY: I am very much interested in this paper. I have only a word to say. There are 2 cases I call to mind which are somewhat interesting perhaps, one from the fact that the patient is known to have lived almost twenty years, probably twenty-one or twenty-two years after the disease set in. The disease was first diagnosed by one of my brethren in November, 1880, and was then apparently very far advanced. She was an unmarried lady of about forty-nine years and it was not supposed she would live more than a few months. She was under the care of this physician about five years, and then, he withdrawing from general practice, she came to me and was under my care nearly fifteen years. During about nineteen years of the time that the case was under observation the patient on the whole apparently improved from year to year. There was not very much im-

provement to notice after the first few years, but still a little. She seemed a little more available for society and such philanthropic work as she did to amuse herself until a short time before the close, when the disease took a rather bad turn and she came to Boston to have me give her a thorough looking over. I found that the disease had within a few months made a decided advance and told her friends she probably would not live very long; she died in about six weeks.

The other case is a little amusing, if a case of chronic interstitial nephritis can ever be said to be amusing. The patient is a man about sixty-five years of age, who came to me for treatment about five years ago and after a few months thought he was a great deal better and was not willing to come to my office for more treatment, and for some years now I have seen the patient only about three or four times a year. He does very much like alcohol, and before he came under my care was in the habit of using it a great deal. I took that away from him, of course, and got great credit from the family for doing it. About once in three or four months, on the average, the habit will creep on; he will commence with a glass of beer and soon get to something else and finally send for me. I take away the alcohol, put him to bed for a few days, and then perhaps several months will elapse before he sends for me again, meantime being able to attend to his business as usual.

DR. PUTNAM: I should like to ask if in the cases Dr. Enebuske found to improve so much he could explain the rationale of the improvement through the treatment by exercises, etc.; whether it was accomplished through the general invigoration or improvement in the circulation or in what way.

DR. ENEBUSKE: The case which I mentioned I do not feel sure how to interpret, but my impression has been that it was not at all a case of chronic interstitial nephritis and I mentioned it because I think it illustrates the impossibility of diagnosing a case of chronic interstitial nephritis from the signs found at one examination, because at one moment of time the symptoms are such that one would seem to be justified in making that diagnosis, but the development of the case does not bear out the diagnosis. She recovered after three weeks' rest and one year afterwards was still better. My impression was that it was only the case of a woman under the combined influence of more work than her strength was good for and much mental depression, sometimes doing work involving a great deal of muscular effort, and I thought of the case as one of acute strain of the heart and that might account for all the symptoms. However, I do not make this diagnosis. I have no conclusive theory about it. There are several members of the family who have had chronic interstitial nephritis, judging from the family histories; it is a rheumatic family and it might well be that this woman is going to develop later in life symptoms in the direction of chronic interstitial nephritis. However, at this time there was nothing serious at all; it was simply under the influence of certain circumstances in which she was living that all the symptoms developed, and they passed off very readily without any treatment at all.

DR. MORSE: Dr. Enebuske's paper suggests one or two points to me. The first one is the importance of being continually on the lookout for the combination of high-tension pulse, enlarged left ventricle and accentuated second aortic sound. It seems to me that

¹ See page 518 of the Journal.

the profession at large is hardly enough on the watch for this combination of signs and that when they see it do not recognize its pathogenic significance. Of course what it means is increased arterial tension. That increased arterial tension may or may not be associated with interstitial nephritis.

Then it seemed to me on simply thinking over the cases of interstitial nephritis which I have had without looking them up, that the importance of cardiac failure and dilatation of the left ventricle is not so great as it would seem from Dr. Enebuske's paper. It seems to me it is not the usual terminal process.

Then the point Dr. Enebuske has made that one examination of the urine is not sufficient to make a diagnosis of interstitial nephritis is important. The albumin and casts must be persistent to warrant the diagnosis.

Another point which he made, and which was rather new to me until Dr. Ogden called it to my attention a short time ago, is the relation of the night and day urine, much more being passed in the night than in the day, even when the total amount is not much increased.

DR. VICKERY: It has seemed to me that the time when we can do these patients the most good is very early in the course of their disease, and vigilance is rewarded in that respect. Of late I have had a series of cases in which the urine was apparently all right until a microscopic examination was made, and I have examined such a urine today passed by a man who is pretty well advanced in arteriosclerosis and there was no albumin by nitric-acid test and the faintest possible cloud by acetic acid with a specific gravity of perhaps 1.018, and yet the man is really quite far advanced. And I have in mind another man, a prominent professional man of this city; his pulse is not of high tension and his heart is not enlarged and sometimes there is no albumin in his urine at all, yet I have never failed to find casts in his urine. He came to me because of very obstinate headache. I do not know whether that has any connection—probably it does not—I rather think his headaches belong to the class of migraine. These are men whose nervous systems are strained a great deal, who accomplish a great deal of important work with their brain.

Another one of the same sort I have had is a politician who had a very close and finally successful contest. His urine was an innocent looking thing until you found casts in it. Many of these cases may be temporary and due to some slight irritation, but it seems to me that if we are vigilant in making a careful examination of all the cardiac factors that have been pointed out and also of the urine, that we shall make the prognosis of kidney troubles better than it is now. It has improved within ten years.

DR. PUTNAM: I cannot claim to have kept myself absolutely well posted on the literature of the subject, but I have been quite interested in it, and I should like to ask if there is not a fairly definite distinction to be drawn between the cases of arteriosclerosis with nephritis and those without. Of course they run into each other and either may become complicated with the other, but I have supposed that in cases such as Dr. Vickery has just spoken of, where the specific gravity of the urine remained fairly high, indicating a good quantity of urea presumably, there might be a very marked degree of arteriosclerosis and that it was that which caused the retinal hemorrhages and

cerebral hemorrhages, small and large, so that the patient might die without his kidneys even becoming seriously affected. I supposed that was especially common with young and middle-aged persons. I dare say the distinction is not so sharply drawn as I had supposed.

DR. VICKERY: I think there are cases in which the process either in the arteries of the brain or in the coronary arteries far outstrips in rapidity that which affects the kidney, so that the man does not live long enough to have a very bad kidney. Then, of course, a nephritis may exist entirely independent of an arteriosclerosis, as was pointed out; but my impression is that such a case from the purely pathological standpoint would show some signs in the kidney. The only difference is with regard to treatment of the patient. Perhaps it puts you on the right track if you find these morphological elements in the urine. Certainly I have seen them in cases where the heart was not enlarged and the pulse not of high tension, nor rigid, and yet casts steadily present with an infinitesimal amount of albumin.

I think in this region the adjective "diffuse" is reserved for a kidney which has more of a degenerative character, with a good deal of fat and a good deal of albumin in the urine.

DR. OGDEN: I would endorse what Dr. Vickery has just said in regard to the nomenclature, that is, that the term "chronic diffuse nephritis" is ordinarily applied to the condition where there is a decided amount of parenchymatous change, a large quantity of albumin and a large amount of fat.

There is one point in connection with the albumin that seems to me to be important. I have seen many cases of interstitial nephritis from the laboratory side largely, and I have yet to find a case where the urine did not contain the slightest possible trace or more of albumin. Of course, there may be cases of this disease where the urine does not contain albumin, but I have never happened to see them. With the changes in the kidney and the morphological elements in the sediment, it seems to me that albumin should be a constituent of the urine under those circumstances. In such urines the amount of albumin is exceedingly slight; so is the number of casts very small.

The quantity of urine is of the greatest importance in diagnosis from the urinary point of view, and especially in connection with chronic interstitial nephritis. The day and night quantities, that is, from 7 A. M. to 7 P. M., and 7 P. M. to 7 A. M., should be collected and measured separately. In perhaps 95% of the cases of interstitial nephritis the night quantity will exceed that of the day and sometimes to the extent of three or four times that of the day. Usually, however, the quantity is about twice as much at night as in the day; this fact accounts for the necessity for getting up at night to pass the urine, which, as we all know, is an old sign of chronic interstitial nephritis.

DR. ENEBUSKE spoke of the rarity of the disease in children. I think that is rather a mistaken idea, because it really is not so very uncommon. It is, however, uncommon for the diagnosis of an interstitial nephritis to be made very early in childhood, because the urine cannot be accurately collected, the minute amounts of albumin do not attract attention, and the importance of the small number of casts is not correctly determined at that time. One of the most marked cases of interstitial nephritis I ever saw was

in a child of seven years; that case was diagnosed as diabetes insipidus during life. The patient was passing very large daily quantities of urine—6,000 to 8,000 cubic centimetres—and there were tremendous thirst, marked emaciation, and insomnia. The urea, chlorine and phosphates were all very high. This girl of seven, although emaciated, was eliminating over 40 grammes of urea, more than 12 grammes of chlorine, and a high amount of phosphoric acid. At the autopsy two years later the kidneys were found to be very small and perfectly typical of chronic interstitial nephritis.

SUFFOLK DISTRICT MEDICAL SOCIETY. SEMI-CENTENNIAL ANNIVERSARY.

HOWARD A. LOTHROP, M.D., SECRETARY.

ADDRESSES BY DRs. B. JOY JEFFRIES, A. T. CABOT, J. C. WHITE, D. W. CHEEVER, J. C. WARREN, GEO. B. SHATTUCK, H. L. BURRELL.

REGULAR meeting, Saturday, April 28, 1900, Dr. HERBERT L. BURRELL in the chair.

DR. BURRELL: This meeting has been arranged to commemorate the founding of the society fifty years ago. The committee appointed to arrange the programme for this evening has secured for us the speakers whom you have seen announced, and I will ask Dr. B. Joy Jeffries to give the first address.

DR. JEFFRIES: April 25, 1849, at the Masonic Temple, was held an adjourned meeting of the Fellows of the Massachusetts Medical Society, for Suffolk District, including Chelsea. Dr. John Ware in the chair. Dr. George Hayward for the committee appointed at a previous meeting, "for the purpose of considering the expediency of forming a district medical society," reported the following resolution: "That it is expedient to form a district medical society for Suffolk, and that measures be taken to carry this resolution into effect at as early a period as is possible." The resolution was unanimously adopted.

The committee said in their report, "It is perhaps hardly necessary for the committee to state advantages which they believe would result from a measure that would unite more closely the members of the parent society residing in this district. It could not fail, in their opinion, to promote harmony and good feeling among them. It would enable them to act with more concert, and consequently give them, by a harmonious action, a greater degree of weight and influence in the society at large than they now possess. By bringing the fellows of the society residing in this district more frequently together and thus giving a better opportunity than they now enjoy for an exchange of views and opinions on topics of common interest, it would tend to break down the jealousy and ill feeling that too often exist among the members of our profession."

At a special meeting of the Councillors of the Massachusetts Medical Society, May 29, 1849, it was voted: "That permission be given to the fellows residing in Suffolk County to form a district society." Nine had been previously formed. Worcester and Essex South, June 7, 1804; Berkshire, October 7, 1807; Hampshire, October 5, 1831; Bristol South, April 3, 1839; Barnstable and Hampden, May 28,

1840; Essex North, October 6, 1841; Middlesex North, October 2, 1844; Suffolk, May 29, 1849; Bristol North, May 31, 1849; Middlesex East, October 2, 1850, and semicentennial next October; Middlesex South, Plymouth and Norfolk, October 2, 1850, and May 8th, semicentennial; Franklin, May 27, 1851; Worcester, May 25, 1858; Norfolk South, October 1, 1884; Suffolk tenth, eight since formed, making eighteen districts at present.

Monday, September 17, 1849, at a meeting of the Fellows of the Massachusetts Medical Society residing in Boston and Chelsea, Dr. Z. B. Adams in the chair, it was voted: "To accept the charter granted by the Councillors of the Massachusetts Medical Society." At a subsequent meeting held September 24, 1849, the following gentlemen were elected as officers for the current year: John Jeffries, President; Samuel Cabot, Jr., Vice President; E. Whitney Blake, Secretary; Ephraim Buck, Treasurer; Wm. E. Coale, Librarian; Z. B. Adams and N. B. Shurtleff, Committee of Supervision. Certain by-laws were then passed.

SUFFOLK DISTRICT MEDICAL SOCIETY:—This society has recently been organized in Boston, and seems to have been considered by many gentlemen to embrace the essentials of the Boston Medical Association. In fact at a meeting of the District Society, on Monday, October 1st, it was announced that the venerable association was defunct, when some, having a larger share of attachment than others for old institutions, thought it a very strange affair—indeed quite revolutionary—for a new society that had been in existence but a single week to declare another one, embracing nearly 300 members, extinct, without asking leave of anybody. The Boston Association had never been civilly asked to die, and it was, therefore, concluded to reflect a little and through a committee ascertain what the new Suffolk District Medical Society could, would and might do.

Dr. Jeffries, the president of the new society, is an excellent presiding officer. He is patient, courteous, candid and strictly just. When the society is fairly organized, and its order of duty and business defined, we have no doubt it will be found a useful one. May it live a thousand years.—*Medical Journal*, October 10, 1849.

Medical communications and questions soon began to be presented to the society by others than its members.

The Suffolk District Medical Society held its second meeting for medical communications, Saturday, November 24, 1849. Dr. John Ware read two letters, addressed to him by Dr. Webber, of Charlestown, N. H., one containing some observations in vegetable physiology, and broaching the theory that the potato is sometimes viviparous.

Dr. Webber was a college classmate of the president, H. U., 1815; I have the letter, and Professor Goodale's reply to me on reading it.

It should be mentioned that a donation was made by Dr. Jeffries, the president, which was duly "deposited." A cup of coffee and a suitable accompaniment of cake added to the well being of the physical as did the other exercises to that of the intellectual man.—*Boston Medical and Surgical Journal*, December 5, 1849.

Such donations were followed by some subsequent presidents, till probably the increase in numbers of fellows naturally prevented.

The medical communications meetings continued through the winter of 1849 and 1850. In the *Boston Medical and Surgical Journal* of April 24, 1850, there is a notice as follows:

SUFFOLK DISTRICT MEDICAL SOCIETY. — The annual address before the society will be delivered by the president, Dr. Jeffries, at the Masonic Temple, on Saturday evening, April 27th, at half-past seven. The profession generally are cordially invited to be present.

May 8th, the JOURNAL says :

The anniversary address before the Suffolk District Medical Society was delivered by the president, Dr. John Jeffries, on Saturday, April 27th, at the Masonic Temple in this city. The public generally were invited to be present on the occasion, and the profound attention which was given to the eloquence of the lecturer bespoke their admiration and appreciation. The learned doctor's theme was "The Relation of Medical Men to the Public."

Am I perhaps the only one here who was present on that occasion, peculiar in its being the first anniversary, and still more so, in that the public at large were invited, and appreciated what they heard? If so, may I indulge in a few moments of remembrance, as I hope some fellows now present will do of this evening when our *centennial* celebration occurs.

Fifty years ago last evening a Latin School boy could have been seen crossing the Common from Beacon Hill to the Masonic Temple, now raised up as Stearns's store on the corner of Tremont Street and Temple Place. He was led by curiosity, to hear what the "doctor" had to say. The lad found the hall filled with the ladies and gentlemen of Boston, and much too shy to seat himself amongst them, stood in the rear and peered over the high backs of the seats. The impression of the scene is as clear today as then, and vividly recalled by reading the printed address half a century afterwards.

Now, why our society was formed, and its aims and success will perhaps be best understood by reading a few sentences from a copy, which substantiates the committee's report. The lecturer said :

Once more has this principle of association been brought into action by the formation of the Suffolk District Medical Society, whose commencement we are assembled to celebrate. The parent society's members were too widely spread to avail themselves of frequent meetings for medical improvement or social intercourse. Feeling its weakness in this respect, it now *requires*, by its new code of by-laws, what it formerly permitted or advised: the formation of subordinate societies in every part of the State, which should reach, in their action, everything which has relation to medical character. The other societies, of which mention has been made, although right in kind, are all limited in extent, not embracing the whole body of physicians in this locality; besides, as they do not owe allegiance to the general society, they are not so well calculated in their isolated operation to influence so powerfully the general medical interest.

Again, there is among the junior members of the profession an amount of intelligence and activity which should, by no means, be permitted to lie dormant. There has been nothing more remarkable, in the few monthly meetings of this society, than the talent and information evinced by the younger members. It is not only just and proper that an opportunity should be afforded them to present their claims for distinguished abilities, but also that the way should be open for them to contribute their proportion to the general fund of knowledge, and to receive the fruits of experience which it is the duty of the older to distribute.

The frequent interchange of friendly feelings is as essential to the comfort of the physician as is the interchange of professional opinion for his improvement. In this way, this society is calculated to do much good. It cannot be but that some asperities will arise between those who are aspirants for the same objects, and where much is heard, and little seen, of rivals in the pursuit of alluence or fame,

these asperities may ripen into animosities. But where frequent and free intercourse is enjoyed, especially under circumstances which bring out the kindly affections, the rough points are rubbed off, and a smooth and more polished surface appears beneath.

Again, it is desirable that there should be something before the public eye which portrays the doings of so important a part of the community as the medical profession; some point at which they should occasionally meet for mutual observation. May it not well be in the operations and public meetings of this society, whose transactions are published, and whose doors are annually opened, as on this occasion, to the observation of an enlightened and a scrutinizing public? The more closely the attention of the community is turned towards the medical profession, the better for the interests of that body.

It is very evident that there was no chance for every young medical man to show what he had done and could do. Joining the Massachusetts Medical Society did not help him in this *in our city*. The Suffolk District Society gave him the opportunity, and it was availed of at once, as it has always been since. It was an enforced recognition of the younger generation of medical men.

The brightest boy and man I ever knew was Col. Charles Russell Lowell, my Latin schoolmate and first scholar in our Harvard Class of '54. Only four years after the time we are now recalling tonight, on Commencement Day, was given to him as orator, this theme: "The Respect of the Old Due to the Young." I have never forgotten the scene and the talk and feeling which followed. It was the commencement of a new era in Harvard College, to be remembered. I recall it here and now, as Kipling says, "lest we forget."

It can be well understood what an amount of committee work was required to carry out the formation of the society under the then conditions of natural opposition from the existing medical organizations, namely, the Boston Medical Association, the Medical Improvement Society and the Society for Medical Observation.

A large part of the various committees' work was done in the same office where our present committee met once to arrange this evening's programme. The Latin School boy did not properly appreciate those meetings, as they generally came at a time of the day when he was likely to be helped in his lessons, so that now he remembers the meetings better than the lessons. There was, however, an impression made upon his mind, never to be effaced, and which, perhaps unconsciously, contributed in no small degree in determining his choice of his father's and grandfather's profession. It was the very cordial and pleasant way in which the doctors greeted each other when coming together; a friendly *camaraderie* which he met with when he later entered the profession, and which he trusts will always exist, as it does amongst us met here tonight.

DR. A. T. CABOT: This society was founded fifty years ago by men desirous to promote the advancement of medical learning. There were other medical clubs then existing whose membership was limited and somewhat narrowed, perhaps, by social lines, but the Suffolk District Society was open to any man, and later to any woman, in this community, who was able to pass the examinations for the State society. It was started as a thoroughly democratic institution, and

its success has vindicated the judgment of its founders, and is another triumph for the American spirit which inscribes "free to all" over its temples of learning. With open doors we have gone on through the first half century of our existence, growing and expanding until finally the interests represented among us became too wide to be held confined in one body, and by a sort of fissiparous process the society divided into the special sections in which its scientific work is now done.

Our growth has followed natural lines of evolution. The sections which really filled a need have gone on and prospered, while those which were established in subjects that did not awaken great interest or that were adequately provided for elsewhere, have fallen into disuse. At present, general surgery, general medicine, obstetrics and gynecological surgery are provided for in sections of this society. Medical subjects of a purely scientific interest are more properly presented to the Society for the Medical Sciences, and, thanks to Dr. Ernst, that society has become wide in scope and opens its doors to all earnest workers.

There are other societies, of which the Medical Improvement and the Obstetrical will at once occur to you all, and also smaller clubs, in which opportunity is given for the discussion of medical questions of all sorts. Boston is thus richly provided with opportunity for the fullest interchange of medical ideas.

Not the least of the benefits that this society owes to its founders is that they chose the middle of the nineteenth century for its birth. These fifty years that it has lived have seen no halting in the onward progress of scientific medicine. Discovery has followed discovery so closely that the medical horizon has been kept bright by the constant rise of new and ever more wonderful luminaries. The free interchange of thought at our meetings has helped to keep us all in step with these advances and to open our eyes to the ways pointed out by distant investigators. It has been a happy time for all who love their art. Expansion may be a dangerous policy for a nation. There are those who think it so. But I never heard it doubted that constant widening growth was the best evidence of health in a human mind, or in a science which is the product of the aggregate human mind.

It is a great and constantly growing branch on the tree of knowledge which represents medical thought. In order that this branch may be healthy it must be supported by roots that are fast in the solid ground of fact. The growth of medicine has of late been largely at the root. The scientific laboratory investigation, which has been going on the world over, has been deepening and strengthening our hold in the substantial strata of observed facts which underlie and hold up our medical speculations and beliefs. No theory is allowed to stand which cannot show the ground in which it is firmly rooted. It is in just such societies as this that by free discussion the unsupported theories are lopped off, and the strength which was being wasted in them is turned into more promising channels.

In order that a society like this shall do its best work, it is important that a habit of discussion shall be cultivated. It happens too often, I think, in our medical gatherings that a man reads a carefully prepared paper which is listened to with interest perhaps, but which excites little or no comment. This is a depressing condition of things for the writer, who has usually many interesting side lights to throw on his

subject which he could not bring within the limits of his paper, but which might well be brought out in the discussion.

The specialization which has led the Suffolk District Society to divide into sections has done much to promote freedom of discussion; for in these section meetings the members are all interested in the subjects that are brought forward, and, therefore, capable of judging ideas that are advanced.

The most modern methods of medical teaching educate our young men into habits of analysis and criticism, and thus greatly add to their after usefulness in the medical community. Men so educated bring an interest and an aptitude for discussion to our medical meetings.

If the signs are rightly read, we are entering our second half century with brighter prospects than those surrounding the birth of the society. Medical activity is everywhere at high pressure. Frequent discoveries reward patient investigation and work. In large centres like Boston the number of competent practitioners and scientific workers increases in a constantly accelerating progression. Let us see to it that the amount and importance of our medical work grows in like proportion.

DR. WHITE: It has been suggested that I say something to you about the part played by former members of this society in the advancement of natural science in this community and country. It was a very important part. Fifty years ago I was a student at Harvard College, where Agassiz was just beginning to attract students of natural history to the Lawrence Scientific School, and to popularize its study by lectures delivered at the Lowell Institute and in other parts of the country. But before his day there were two most accomplished masters and teachers there, who had received their early training in the study of medicine: Drs. Jeffries, Wyman and Asa Gray. The fascinating instruction given by the former, especially, had without doubt a powerful influence upon many students, then and subsequently in the selection of medicine and the natural sciences for their future professions.

Before the date above given and for some time afterwards the study of natural history in all its branches in the United States was almost exclusively confined to physicians, who mostly in the busy life of the practitioner found time to make independent investigations, and without the aid of existing books on the subject, to collect material for and publish books of great merit in all departments of natural science. They were the principal founders, too, of the Boston Society of Natural History, now established in the building adjoining this hall, which has done so much for the development of and instruction in this field of study amongst us.

Permit me to mention briefly some of our deceased members who have rendered such great service to American science.

Dr. John C. Warren, senior, 1803,¹ was one of the earliest students of natural history in this community, and a generous patron. He established an extensive museum, then one of the most valuable collections in the country, and became president of the Boston Society of Natural History.

¹ The date annexed to the names is that of their membership in the Massachusetts Medical Society.

That all-accomplished man and skilled practitioner, Jacob Bigelow, 1813, was one of the earliest students of the botany of the northern portions of this continent. His "Flora Bostoniensis" was a most interesting treatise on the plants of this region, and his large illustrated work on "Medical Botany" was a great storehouse of information concerning the therapeutical properties of our native flora.

Thaddeus W. Harris, M.D., 1820, subsequently librarian of Harvard College, was an enthusiastic student of entomology. His treatise on "Insects Injurious to Vegetation" was the standard authority for half a century.

David Humphreys Storer, 1829, was one of the most conspicuous members of this band of naturalist-physicians. He was an active ichthyologist for thirty years, and his State report on the fishes of Massachusetts in 1839, with the subsequent more extensive publications on the subject, bear witness to his zeal and labors for science in addition to those demanded by an extensive practice and his duties as teacher.

Augustus A. Gould, 1832, was another physician of the same type. His reputation as a conchologist was world wide, and his publications in this field were numerous.

Amos Binney, M.D., 1826, was also a well-known student of *Mollusca*.

Charles Pickering, M.D., 1826, became a cyclopedia of knowledge connected with unexplored nooks in natural history in all parts of the globe.

Charles T. Jackson, 1833, was not only a chemist, but one of the pioneer students of the mineralogy and geology of North America.

Thomas M. Brewer, 1838, was an excellent field ornithologist, and an extensive contributor to the literature of oölogy.

Samuel Cabot, 1843, was also an ardent student of birds throughout his life and made valuable observations and collections in Central America.

Dr. Henry Bryant, 1847, was an active and critical ornithologist, and a most generous benefactor of our Natural History Society, having bought for it one of the largest collections of birds in Europe. Although not an active practitioner, he rendered valuable professional services to our armies during the Civil War.

This bare list of our deceased brothers, who played so distinguished a part in the development of our early knowledge in the many branches of natural science, recalls how devoted students they were both of nature and disease. In these days the same earnest class of physicians, leaving such studies to the professional naturalists who have succeeded them find ample scope for this spirit of research in directions more intimately connected with scientific medicine, as pathological histology, bacteriology, hygiene, and the like, and here, too, their labors bear a rich reward to mankind.

I listened lately with interest to a discussion in a medical society upon new methods of teaching medicine. Wonder was expressed by a distinguished master in education that physicians taught under former methods, those who have passed away within our memory, and the living of the passing generation, could have learned so much as they knew and know. Consider the men whose lives as successful practitioners, as unsurpassed teachers, as renowned students of natural science, I have recalled to your recollection.

They found their early inspiration for research, their trained powers of observation, their methods of investigation in their medical studies under the old system thus slightly characterized. They had not the advantages of prolonged terms of school instruction, of laboratories, or concentration of drill in systematic succession, but they learned medicine under the more personal direction of the experienced practitioner either in the city school and hospital, or under the direct guidance of the shrewd country doctor in the office and by the bedside of the private patient. That schooling and its fruits have been tried. It made the great physicians, teachers, naturalists of the passing century. The results of the education of the future have not yet been proved. Let us trust that it may make as admirable practitioners and as accomplished men.

DR. CHEEVER: Of the fifty years of the Suffolk District Medical Society I have passed forty-two years, in practice, in Boston. During this period 136 members of this society whom I have known personally have died.

The electric car and the telephone have replaced largely the doctor's chaise, and the need of a central office, easily seen and passed by all men. The division of our society into working sections has been one of our greatest advances. Sulphuric ether, the clinical thermometer, the germ theory of disease and anti-sepsis have revolutionized surgery and remodelled medicine. Increasing numbers and higher education have rendered competition keener, while specialties have largely broken up family practice.

The age of professional advancement has increased. When I was a medical student, of seven professors two were 50 years old, two were 40 years old and three were 38 years. In the Harvard School today two are over 60 years of age, thirteen are over 50 years, thirteen are over 40 years and three below 40 years. A similar change has taken place in the two large hospitals. At the Massachusetts General Hospital then, 45, 43, 40, 34 years were the ages; now, 60, 54 and over 45 years. At the City Hospital then, 59, 42, 38 and 33 years; now, 66, 50, and over 40 years. This increasing age prevails in all the minor positions and appointments.

Among the greater changes are the following: A registration law has been in force several years; and, even more important, the medical examiner has replaced the coroner; a State Board of Health has established a sanitary reputation, envied throughout our country. We have now in Massachusetts one doctor to between 500 and 750 inhabitants. Formerly it was considered that 1,000 persons were needed to secure a living for one doctor.

It is hard, perhaps impossible, for any generation to realize the changed status of the young physician of today. He must learn it for himself. The enthusiasm of youth will lead him, and its elasticity will enable him to adapt himself to his changed surroundings. His scientific training is far higher; may his professional sincerity and purity and honor keep pace with it! And I believe they will.

DR. WARREN: I have very little to say in a formal way. I thought over a few incidents and names during the past century which possibly may be interesting to the members of the society, and what remarks

I have to make are of very desultory character, not quite on the plane of those who have preceded me.

I have been in the habit of looking at this past century as composed of three periods from the point of view of the generations of medical men who made up the century. They each occupy a period of about one-third of a century overlapping into the succeeding period. At the beginning of the century there was a group of men who had obtained their education in this part of the world. They form the first faculty of the Medical Department of Harvard University, one of the first teaching bodies, second, I think, in the United States, following the University of Pennsylvania, which was the first. The pupils of these men were young men just about graduating when the century opened and they were not satisfied with the modest education they received at that time, and I think we might say it was about that period that the fashion was set which has been maintained throughout the century, of having men go to the other side of the water to finish their medical education. The place where they went at that time was Great Britain, just as in the middle of the century it was France, and later in the century it was Germany, and, as I hope, in the coming century the current will turn in this direction. Dr. John C. Warren, my grandfather, was one of the pioneers in going to Europe to obtain his education. He was there probably at the time, certainly very soon after, the Royal College of Surgeons of London, whose centenary is to be celebrated in July, was founded. He studied not only in London, but in Edinburgh under Bell and under Cline, and under Sir Astley Cooper in London. That set of men were about closing their career at the time we are referring to this evening. They were retiring and a second set of men were beginning to come forward. Dr. Jeffries, the president, might have represented some of the younger ones of the first set and Dr. Cabot, the vice president, the second set, an active body of men, giving an impetus to medicine which was distinctly felt at this period of the century and which was emphasized perhaps by the great discovery of anesthesia and also by a tendency to organization and to improvements in the methods of instruction. These men were succeeded by the older men present this evening, who wind up the century.

There are some little points in connection with the period in which this society was founded which I thought possibly might be interesting. I was able to gather some data from the life of Dr. Warren, and therefore I speak about him more than others, because it was more accessible to me. Dr. John C. Warren was retiring from active practice at about that time. He resigned his professorship in 1847. I notice in his biography allusion to a subject which is the forerunner of the modern study of cerebral localization — phrenology. Spurzheim came over to this country in the early part of the century. He was associated with Gall, and he gave lectures here on the subject of phrenology or craniognomy, as it was called at that time. He died in 1832, and at this period of which I speak, 1847, his collection was purchased by Dr. Warren and placed in the museum of the Medical College. It was a collection of some five or six hundred specimens of casts of heads and crania intended to illustrate the development of the brain and it was thought of interest and worthy of preservation as calling attention to the finer points in its anatomy.

Spurzheim endeavored of course to locate the functions of the brain with more accuracy than the data of that time justified, but it gave an impetus to scientific study which finally blossomed out into the modern science of cerebral localization.

There was a great deal of progress about the middle of the century. Cochituate water was introduced in 1848 into Boston, and largely through the influence of the physicians. It was also about this time, if I am not mistaken, that the cemetery at Mt. Auburn was founded, perhaps a little later than this, by Dr. Jacob Bigelow, and the sanitary condition of the city thus further improved. It was an interesting fact that the last visitation of epidemic cholera was the year following the introduction of water, that is, before the water probably had been generally brought into use, in June, 1849, and since then there has hardly been a case of cholera in this city. Gas was first introduced into Boston at about this period, and I base my knowledge of that fact upon the circumstance that the old house numbered 6 Park Street in which I lived, into which my father moved in 1845, was the first private dwelling into which gas was introduced, and there was a notice at the time in the papers of the fact.

The American Medical Association was founded in 1845, and it was in 1850 that the meeting was held in Boston. Dr. Warren was elected president of the association that year, and the following year the association met in Cincinnati, and as president he gave his address in that year. It was on the "Progress of Surgery," and the three principal facts that he thought important to dwell upon were the reintroduction of the microscope, lithotripsy and tenotomy. He alluded to the microscope of the old observers, and intimated that it had gone out of use for a long period, and was about being introduced again, more particularly for the study of medicine. Some of the old microscopes that Professor Ernst has shown in his interesting lecture on "The Development of the Microscope" were made about that period. I gave to Dr. Ernst an old microscope of Chevallier's make, which was evidently made in the forties, and was the first of a series which I had in my possession which have been imported from time to time since. I think the earlier observers with the microscope in medicine did their work shortly previous to this time in Europe. The second point to which he alluded was lithotripsy. The only way, of course, previous to the introduction of lithotripsy by Civiale was by cutting for the stone. I remember seeing Civiale when, a boy about ten, I was taken by my father to his country place in Paris, and recall a very benevolent and courteous old gentleman, who was looked upon then, throughout the world, as a great authority on the subject of calculi, and his method was considered justly as a great advance in surgery at that time. The only other topic the president had to mention in his address worthy of note was tenotomy. Tenotomy was really the pioneer of anti-septic surgery. Its great merit in that day was the possibility of using the knife without causing suppuration.

I myself personally am able to recall only little of that period. I do have a few dim recollections of those early times. More particularly there comes back to me the meeting of the American Medical Association in New York in 1853, when I went on there with my father. The meeting was graven deeply on my memory owing to the frightful accident that oc-

curred to the party returning. The bridge at Norwalk was open and the train, going at full speed, went into the space and was wrecked in the river, and some sixty lives lost. A number of physicians of this vicinity were in the train. Dr. Pierson, the grandfather of the present Dr. Pierson, of Salem, was killed. Dr. Lamb, of Lowell, was severely injured. Dr. J. Mason Warren, my father, I think was injured, though there was no recognizable trauma, in a way from which he never fully recovered.

These are some of the points which I have hastily gathered together which I thought would possibly be of some interest to the society. I think the true meaning of the foundation of this society lies in the fact that there was at the middle of this century a period of restlessness which found vent in organization, and which was worked out afterwards by the great development of the profession in this country. As Dr. Cabot has said, we have the great advantage over many other countries in being familiar with what they are doing besides with what we are doing ourselves, and I fully believe that this half century of active work will bring about its reward, and that we are now probably on the eve of having the world turn to us for study and for instruction.

DR. GEORGE B. SHATTUCK: After what you have already heard I feel more inclined to give you a little account of the trials of one who has been asked to address you tonight upon the aims, objects, aspirations and duties of the Suffolk District Medical Society than to attempt to give you any further history of that society itself. Your representative, Dr. Jeffries, when he came to see me some little time ago and suggested that I should be one of those who should attempt to say something to you this evening, observed, I think, that I was somewhat distraught between the appreciation of the honor and the consciousness of personal inability, and he proceeded to encourage me somewhat thus: "You will naturally of course be one of the last speakers [laughter], and it is a very desirable position to occupy, because, if you don't know anything yourself, you will have the advantage of being able to pick up something from what you have heard from the preceding speakers." (Laughter.) In fact, he led me to believe that my position would be somewhat that of the bee let loose in a garden just after the flowers have blossomed. (Laughter.) At the present moment, gentlemen, I feel more like the flowers which have been visited by the bee. (Laughter.) However, allow me to continue a little with the history of your speaker's efforts: having undertaken to say something to you, I thought it my duty to equip myself in some manner and I naturally, with my knowledge of its worth, turned to that present help in time of trouble, that repository of everything that a well-regulated medical man ought to know — you immediately see that I mean the *Boston Medical and Surgical Journal* (laughter) — and I thought I would look over its pages and see what the aims, objects and duties of the Suffolk District Society had been, or it had been proposed that they should be. In order to do that more advantageously I abstracted from the Boston Medical Library the volumes containing the history of that society during the first two or three years, hoping I should thus have this history all to myself, but in this justifiably selfish scheme already suspected, I had been frustrated before this evening came. Although

not being fully conscious of the extent of my failure to engineer a corner on the past records of this society, I was still prepared to give you an account of the *jeunesse orange* of this society, one incident of which our friend Dr. Jeffries has described — I have it all written down in my pocket — where this society in its extremely lusty youth attempted to do away entirely with another society, the Boston Medical Society, but was restrained happily in time, a time that preceded by only a few months another melancholy event in Boston's medical circles. After that the society got into some trouble by attempting to try its members for doing things which it did not approve of, but just as it found out that the Boston Medical Society was prepared to arrange the question of fees, it also found out then, I think, that the parent society, the Massachusetts Medical Society, had the function of trying the members, so it gave this up also and then evidently settled down to its genuine duties of discussing medical subjects and drinking coffee and eating cake, which it did regularly.

In looking over those first two or three years, I remember some of the subjects which are interesting which came up for discussion. Among other things I remember coming across the report of two different cases of ovarian cyst by two different distinguished surgeons of the time. One of them we may speak of as a natural operation for ovarian cyst. The lady fell down and the cyst was ruptured; a large amount of fluid was discharged from the bowels and the patient recovered. The other case we may speak of as an artificial ovariectomy. The patient, a young woman, had a very large ovarian cyst, as it is called; the operation was performed, and I noted the subsequent remarks that "owing to a broken constitution and the unfavorable character of the weather the patient died." (Laughter.) I notice among other subjects that were discussed in those first two or three years, one was the discoloration of the skin after the internal use of nitrate of silver in epilepsy; another was an account of the methods for preparing cod-liver oil and for selecting the best livers; another was a discussion of the best preparations of opium, and I notice that McMunn's elixir was spoken of as one of the very best and most recent and the methods for preparing it were specified; and then there was a paper, and I should judge a very good one, on the necessity not only for vaccination, but revaccination. And then I noticed, I think it was December 4, 1850, a few paragraphs to this effect: Dr. Bowditch related the case of a child who had a large amount of water in the right chest and who suffered from successive paroxysms of dyspnea, during one of which he died, and Dr. Bowditch added: "I then made up my mind if I ever had another such case I would open the chest."

There were various committees appointed. They seemed rather fond of appointing committees. They appointed fully as many as we do now, and I should judge that fully as much was effected. I dare say their committees would accomplish as much today as ours with reference to dust and asphalt and adjustable furniture for schools. One committee was appointed to report upon doing away with Latin nomenclature for written prescriptions, and to suggest a simpler method for written prescriptions. There was a committee appointed to report on the subject of criminal abortions and another to report upon cholera, and there were a variety of other subjects which they

took up. I also notice that there were a number of rather apologetic statements with reference to the want of a large attendance at the meetings (laughter) and speculations as to what would be the best methods to pursue in order to foment a more earnest attendance at the meetings, and that reminded me singularly of what I have happened to see going on within the last year or two with reference to other societies at the present time. At least human nature does not change; we may know more or we may know less, but men are the same and whether it is a new society that wants to become active or an old society that has become inactive and is in danger of dissolution, these same processes are going on among us. And still, whether the new society is active or the old society less so, I believe unquestionably that there is a very large amount of extremely good medical work done in our societies all through the year; and, year in and year out, and at the present time, certainly there is a sufficiently large number of medical societies. Nobody can complain, as they seemed disposed to complain at the time this society was founded, — nobody can complain that there is not a whereabouts for him to go where he may discuss with his confrères subjects of medical interest, or that he may not be able to take his choice between societies more or less aristocratic or democratic, more or less ascetic or otherwise. We have societies that have no meretricious adjuvants in the way of cake, coffee, beer and cigars, and others that offer those facilities for improved medical thought. (Laughter.)

Mr. President, I feel the truth of what your representative said to me when he encouraged me to come and say a few words to you. I think the position of those who speak last is an extremely honorable one. In fact, I cannot help comparing it to the position of the Old Guard at Waterloo, or the Black Watch or the Gordon Highlanders; those are the men who are always called in to disperse the meeting at the critical moment, and give a *coup de grace* to the proceedings. I shall rely upon you, Mr. President, to give the *coup de grace*, with full confidence it will be well done. But I regret that I am unable to make that comparison between the first president of this society and the last, with reference to their both being always courteous, always candid, always patient, and above all, always just. I had intended to make such a comparison, but I cannot. (Laughter.) I had also expected to close my remarks by wishing this society, in the language of my predecessor, Dr. Jerome Van Crowninshield Smith, editor of the *Medical Journal*, and Mayor of Boston, that it might live one thousand years, fifty of which have already passed, my wish being by just so much less audacious than his, but that wish I am unable to indulge in on account of our friend Dr. Jeffries, who has rifled the sweets of the flower garden. (Applause.)

DR. BURRELL: The Suffolk District Medical Society is indebted to the gentlemen who have addressed us this evening for presenting to us so vividly the beginnings of this society and the state of the medical profession in this community half a century ago. The progress that has been made is great and its contemplation should serve as an inspiration to us all. It is a proud heritage that has been given us by the Warrens, the Bowditches, the Bigelows, the Jacksons, the Shattucks and others.

Many of us are apt to think that a golden age has passed, but to me the future is full of suggestive possibilities. The great advance that has occurred in surgery, and which is coming in medicine, from the application of scientific methods has made many of us forget the history of medicine. The pressure of modern life makes the immediate present oppressive and does not give us an opportunity for contemplation and for a close analysis of the past which is so instructive. Youth is ever impatient with the conservatism of old age, and old age of necessity clings closely to that which is known and which is proven. As a profession we are passing through a volcanic period of activity in which traditions are swept away by iconoclasts who do not replace that which is known by absolute facts.

A healthy scepticism is needful in any body of men, but great and abrupt changes, while often attended by ultimate benefit, are, like war, destructive of peace and harmony. In surgery we are in danger of believing that asepsis can solve all and that the teachings of the past are no longer of value. In medicine an intelligent empiricism is being swept away by seductive laboratory exactness.

It hardly seems possible, gentlemen, that we should make the same advance in the next half century that has been made in the past, but one has only to look a bit into the future and read the signs of the times, to see here and there suggestive possibilities springing up of, for example, municipal sanitation, rational therapeutics, causation of cancer, advances from physiological chemistry, which suggest great and broad advance for the future.

One other word: It has been said, and with some truth, that there is danger of medicine becoming a trade. There have been and always will be members in the profession who have adopted and will adopt commercial methods, but we should look well to the future and protect most zealously the profession of medicine. The great questions of medical charity, of the establishment of hospitals, the relations of specialties to general medicine, the relation of laboratory men to the profession of medicine and medical education, should all excite our interest and engage our attention. And, gentlemen, in honor of the founders of this society, who zealously worked for suffering humanity, may I ask you to stand fast to the high standard which they established.

Recent Literature.

Laboratory Directions for Beginners in Bacteriology.

An Introduction to Practical Bacteriology for Students and Practitioners of Comparative and of Human Medicine. By VERANUS A. MOORE, B.S., M.D., Professor of Comparative Pathology and Bacteriology, New York State Veterinary College, and of Bacteriology, Cornell University Medical College, Ithaca, N. Y. Second edition, enlarged and revised. Boston: Ginn & Co. 1900.

The title of this book sufficiently indicates its contents. It is designed to be used as an aid in class work in elementary bacteriology. To the independent worker in the laboratory it will be of little value.

THE BOSTON
Medical and Surgical Journal.

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NEWSPAPER MEDICINE.

RENEWED attention has of late been directed to the ever-present evil of exploiting medical matters in the daily press for the edification of ignorant readers. It goes without saying that not all papers descend to this method of exciting a morbid interest, but that some persistently continue in the practice is quite reason enough for calling out a general protest.

Reference to the *Philadelphia Medical Journal* for November 10th will show how futile Dr. W. W. Keen's efforts have been to prevent the garbled publication of his public operative work. Dr. Keen has published in full the correspondence between himself and a Philadelphia daily paper, which he does not mention by name. The circumstances were briefly as follows: Reports of one of his clinics had appeared in several of the papers entirely without his knowledge. He immediately wrote letters of protest to the editors of the principal papers, stating his position in the matter, that inasmuch as no pains are taken to exclude persons from such clinics, who come under the guise of medical students, it is quite impossible to be protected against designing reporters. He therefore requested that the editors should comply with his wish that no more such reports should appear. The result of this letter was satisfactory in all but one instance. In this one case Dr. Keen received an evasive letter, stating their desire to publish news accurately, and that to further this end they would be pleased to send a good reporter for a personal interview. To this Dr. Keen replied that his position had been entirely misinterpreted, that it was not the fact that the newspaper account was inaccurate, but that he objected to *any* report whatever bearing on professional matters. This letter was sent to the city editor with the urgent request that his wishes therein expressed be respected. Five days later a flagrant report of the old material appeared in the paper, rendered attractive to readers by illustrations, which, however, did not represent Dr. Keen's clinic. Dr. Keen now appealed to the proprietor of the paper, briefly stating the facts in the case.

The matter has temporarily ended with the following extraordinary statement, again from the city editor, that "future stories with which your (Dr. Keen's) name is connected will not appear until you have had the opportunity to make such statement in reference thereto as you may desire." To this Dr. Keen again replied: "You still misunderstand my objection. I do not wish any 'future stories with which my name is connected' to appear in the —."

We quote this experience merely as an example of what is continually happening in some form. Not long since, for example, an outrageous and wholly inaccurate report appeared in one of the Boston Sunday papers describing one of our best known hospitals for the insane, with the introduction of various photographic reproductions which further misrepresented the wholly erroneous statements in the text. The reputation of this particular hospital renders it quite able to ignore such attempts to pry into its management, a fact which naturally in no way alters the principle involved. The publication from time to time of the details of surgical operations done by eminent men is another instance in point, as, for example, in Dr. Keen's case. It is often said that certain men at least connive at this practice, an opinion which Dr. Keen's candid communication does much to controvert. It is clear that if a reporter be sufficiently unscrupulous and pertinacious he can always accomplish his end, of which the least important attribute is accuracy. That a physician is in fact wholly helpless in the matter is again shown by the fact that often when an interview is entirely declined, an account is subsequently published as coming from the physician. In a recent discussion on this subject a physician of high standing, whose work keeps him much in the public eye, asserted that he had on several occasions been represented in the daily press as expressing opinions in a given case which he had absolutely declined to discuss with the reporter. There is, however, a word to be said in justification, or at least in explanation, of the reporter's position in the matter. It must be remembered that a reporter is merely a servant of his paper, that the continuance of his connection with it depends upon his obedience, that if he be told to do some impossible or unreasonable piece of work, he is expected to do it, or at least to draw upon his imagination when his facts fail. Dr. Keen's correspondence brings out the true inwardness of the matter, showing, as it does, that the ultimate responsibility in every case must lie with the management of the paper concerned. This brings us to the vital question of the possibility of redress for this perfectly apparent evil. There is, to our mind, no immediate redress possible. The law has no jurisdiction in the matter and the attempt at greater secrecy in the performance, for example, of surgical operations would unquestionably increase rather than diminish the ardor of the enterprising disseminators of news. If the editorial staff and the management of a paper have reached such a depth of degradation that they are quite willing to publish bare-

faced lies to increase its circulation, it is clear that argument and moral suasion will be of small avail. We must go deeper, and if possible influence public opinion to such an extent that it will no longer tolerate such publications, and above all, as a profession, we must refrain from every suspicion of the desire for publicity in the conduct of our professional affairs. Were this completely done it is probable that the people at large would so far discount sensational newspaper reports that they would forthwith lose their interest. The more firmly established the ethics of the profession becomes in this particular the less probable will be its exposure to the caprice even of the most unscrupulous editor.

THE UNITED STATES TAX ON LEGACIES TO EDUCATIONAL, CHARITABLE AND RELIGIOUS ORGANIZATIONS.

MANY of our readers are probably aware that certain provisions of the War Revenue Act of 1898 lay a United States tax on legacies to educational, charitable and religious organizations. This tax rate was on a sliding scale, increasing up to 15 per cent. on estates of \$1,000,000 and upwards. When first collected the tax on legacies was levied at the rate fixed for the entire estate. The Supreme Court, however, has ruled that this was an improper interpretation of the provisions of the act, and that the legacy tax should be in a ratio to the amount of the legacy and not to the total amount of the estate. This mitigates in a measure the hardships imposed by an unfortunate and, it may safely be said, unwise provision. The country does not need the money, and the educational, charitable and religious organizations from which it is filched do. It is a most undemocratic form of taxation. It is our boast in this country that the individual citizen provides, and provides most generously, for the foundation and support of such organizations, whereas elsewhere they are, as a rule, dependent on the State. It indeed seems monstrous that under such conditions the State should prey upon the thoughtful testamentary dispositions made by its prosperous and enlightened citizens for their less fortunate fellows, and all the more monstrous when it is plain that the State does not require the money thus taken.

The next session of Congress will be devoted in part to the reduction of taxation under the War Revenue Act of 1898. The provisions to which we here refer should be repealed.

At the last meeting of the Congress of American Physicians and Surgeons in May at Washington, a committee, consisting of Drs. Frederick C. Shattuck, Abraham Jacobi and William H. Welch, was appointed with full powers to urge upon Congress such a repeal. A petition has been introduced in the Senate by Senator Lodge, and a copy is in the hands of the Hon. Sereno Payne, Chairman of the Committee on Ways and Means of the House. The Committee

of the Congress of American Physicians and Surgeons has issued a circular urging all their fellow members of that congress to exert their utmost influence with any members of the Congress of the United States to promote such a repeal. We desire to avail ourselves of this opportunity to make the same request of all members of the medical profession whom we can reach.

The only argument against such a repeal which has come to our attention proceeded from a venerable senator, now deceased, from a border Southern State, who stated with a somewhat brutal frankness that as there were practically no such legacies made to such organizations in his State, he considered this method of raising money for the expenses of the General Government a good one. About that same time the representative of at least one most deserving and useful institution in this senator's own State was seeking to raise funds in New England.

We should hope that this matter only requires that general attention should be directed to it to secure prompt and satisfactory action.

MEDICAL NOTES.

THE RECENT GALVESTON STORM.—The *Texas Medical Journal* devotes a considerable space in its October number to a consideration of the great storm of September which destroyed a large part of Galveston, Texas. The article is embellished with a number of photographic reproductions, which give the reader a vivid idea of the general devastation effected by the storm. It is a matter of interest that no physician was killed, in spite of the fact that the loss of life is estimated at 6,000.

REGISTRATION OF TUBERCULOSIS IN PHILADELPHIA.—A resolution recommending to the Bureau of Health the compulsory registration of tuberculosis has been adopted by the Philadelphia County Medical Society. This action is said to be the result of a paper advocating the registration of tuberculosis read by Dr. Hermann M. Biggs, of the Department of Health of New York.

PRECAUTIONS AGAINST DISEASE IN GREECE.—It is reported that the Greek health officers are requiring that the personal baggage of travellers, when unaccompanied by their owners, must, on arrival at any port in Greece, be accompanied by a certificate of origin, or a certificate from the health authorities of the port from which the baggage was shipped to Greece.

INCREASE OF CARCINOMA.—According to the *Philadelphia Medical Journal*, increase of carcinoma is engaging attention in Hamburg. In 1872 there was 1 case in 1,396; in 1898, in 1,022. An interesting point is that the mortality of males is increasing and bids fair to soon equal that of females.

BUBONIC PLAGUE IN CAPE COLONY, SOUTH AFRICA.—An outbreak of bubonic plague is reported

among the natives of Szinyoka, near King William's Town. Precautions are being taken to prevent the spread of the disease among the whites.

GLASGOW FREE OF PLAGUE. — A cablegram from U. S. Surgeon Thomas, at Glasgow, announces that the city is now declared free from plague.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, November 21, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 169, scarlatina 29, measles 24, typhoid fever 16.

BOSTON MORTALITY REPORT. — The number of deaths reported to the Board of Health for the week ending November 17th was 190, as against 201 the corresponding week last year, showing a decrease of 11 deaths, and making the death rate for the week 17.67. The deaths from consumption were 26, pneumonia 19, whooping cough none, heart disease 10, bronchitis 3, marasmus 11. There were 15 deaths from violent causes. The number of children who died under one year was 35, under five years 60, persons more than sixty 33; deaths in public institutions 73.

ADDITION TO VINCENT MEMORIAL HOSPITAL. — A new building adjoining the one which has now been in use for about ten years is to be opened this week for the reception of patients. This extension of the work of the hospital will necessitate increased resources for its proper maintenance, which, it is hoped, may be forthcoming. It may not be generally known that Mrs. Vincent did not herself leave money to start the hospital. It was started by a friend, who gave \$1,000 as a memorial to Mrs. Vincent.

A CENTENARIAN. — Mr. John Knights, of Concord, N. H., died November 14th, at the reputed age of one hundred years and ten months. He was born in England, and became a United States citizen in 1835. He is said to have voted seventeen times for President, his latest choice being McKinley.

NEW YORK.

RELATION OF TUBERCULOSIS TO THE TENEMENT HOUSE PROBLEM. — The first public hearing by the State Tenement House Commission created by the last legislature was held in New York on November 16th, when the subject under discussion was "The Relation of Tuberculosis to the Tenement House Problem." Among those who spoke were Dr. Pryor, of Buffalo, and Drs. H. M. Biggs and S. A. Knopf, of New York. Dr. Pryor said that the two distinctive tenement house diseases were tuberculosis and rickets, and that in almost every tenement house in large cities there was at least 1 case of consumption. In speaking of remedies for the present conditions he said that at least 600 cubic feet of air should be allowed for each adult and that no rooms without sunlight should be occupied. Dr. Biggs stated that in one block on the East Side 144 out of 1,000 persons, and

in another 318 out of 2,000 persons, had died from consumption in the last four years. In regard to remedies, he thought it an error to make landlords build very expensive houses for poor people. The cost was ultimately borne by the tenants and that meant overcrowding. The chances of death from fire in a tenement house were infinitely less than the chances of death from consumption. He had no doubt that tuberculosis could be stamped out, for the reason that the disease was transmitted only by germs contained in sputa. Carpets and wall paper should therefore be prohibited in tenement houses. Dr. Knopf urged the desirability of having breathing places for the inhabitants on the roofs of tenement houses.

IMPROVEMENT OF MILK SUPPLY. — In response to the call of a special committee of the Medical Society of the County of New York, consisting of Drs. H. D. Chapin, A. Jacobi, J. E. Winters and W. Lester Carr, a meeting was held on November 16th, at the Academy of Medicine, to discuss informally the improvement of the milk supply of New York. The plan proposed by Dr. Chapin, the chairman, included the services of a competent bacteriologist, who should examine the milk furnished by such dealers as desired such examination, and on finding it up to the required standard issue a certificate to that effect. Such milk would always command a good price. The trouble often met with in the milk, he said, did not rest with the city dealers, but with the dairy farms, and it was the idea of the committee that when milk was found of inferior quality the dealer should insist on the managers of the farms correcting the difficulty. The proposed plan was now being followed in Buffalo and in Newark, N. J., and was working well. He also read a set of rules proposed for the guidance of dairymen in the care of cows, with precautions to be observed in milking. The meeting was attended by most of the prominent milk dealers of the city, and a number of them took part in the discussion. One of them made the statement that quantities of "embalmed" milk were sold in New York every day, and another exhibited circulars advertising "freezine" and "iceine," formaldehyde compounds which it was claimed would preserve milk for several days and which would "defy detection."

MORTALITY STATISTICS. — The Board of Health's reports show a slight reduction in the death rate of October (17.54) over that of September (18.46). This mortality indicates a satisfactory condition of the public health and about the same number of deaths as in October, 1899, when the death rate was 17.28. In the last week of the month the death rate declined to 16.39, the lowest figure reached since the first week in June last. The weekly average of deaths from scarlet fever and measles was only 2.5 and 2 respectively, and in the last week of the month, for the first time in the history of the Greater New York, not a single death was reported from the former disease. The weekly average of

deaths from diarrheal diseases declined from 149.75 in September to 51 in October, and of deaths from this class in children under five, from 135.25 to 44.5. The weekly average of deaths from whooping cough declined from 7.75 to 5.25, while that from typhoid fever remained the same, 24. On the other hand, the weekly average of deaths from diphtheria increased from 19.25 to 30.7; that from phthisis, from 129.75 to 169.25; that from pneumonia, from 82.75 to 122.5, and that from bronchitis, from 16 to 26.35. During the four weeks ending November 3rd, there were 172 deaths from cancer, a weekly average of 43.

ACUTE TRAUMATIC MALIGNANCY. — At the last meeting of the Medical Association of the Greater City of New York, Dr. Wm. B. Coley, in a paper on "Acute Traumatic Malignancy," reported a case of sarcoma ensuing upon trauma which ran its course in a remarkably brief period of time. In January, 1900, the patient, who was twenty-eight years old, received an injury to the right testicle, which was followed by a large swelling. When Dr. Coley first saw him, in February, he had already been tapped twice for supposed hydrocele. He made the diagnosis of hematocele, with possible sarcoma, and operated, when the growth was found to be a round-celled sarcoma. Later the patient was admitted to Dr. B. Farquhar Curtis's service at Bellevue Hospital, suffering from an abdominal tumor as large as a man's head and connected with the kidney, and he died on April 18th, only about three months after the injury to the testicle was received.

PARTIAL LOSS BY FIRE OF BUILDING OF CORNELL VETERINARY SCHOOL. — The main building of the Veterinary School of Cornell University, at Ithaca, was partially destroyed by fire on November 13th. The laboratory apparatus destroyed was valued at \$10,000 and the total loss by the fire was \$30,000, which is reported to be fully covered by insurance. At a special meeting of the Executive Committee of the Board of Trustees, held the same day, it was determined to construct a temporary roof over what remained of the Veterinary College, and, after some other hasty repairs, it was expected that the classes could be resumed on November 19th. It is stated that Prof. S. H. Gage and Assistant Prof. B. F. Kingsbury are heavy individual losers by the fire, the latter having lost the entire manuscript of a new textbook.

RECOVERY OF DAMAGES AGAINST A HOTEL KEEPER. — On November 13th the Court of Appeals affirmed the judgment of the lower court in the action of Sarah Lawson against William Eggleston, a hotel keeper in Dayton, Cattaraugus County. Mrs. Lawson recovered \$1,000 damages for injuries sustained by a gunshot wound inflicted by her husband and for the loss of means of support by reason of her husband having shot and killed himself. She alleged that the damages were caused while he was in an intoxicated and delirious condition which was brought about through the use of liquor sold to her husband by the defendant.

PASTEUR PREVENTIVE TREATMENT TO BE FURNISHED GRATIS. — It is announced that the Board of Health is to furnish gratis the Pasteur preventive treatment to victims of dogs believed to have rabies; and a special laboratory for the purpose will be established at the Willard Parker Hospital. According to Dr. H. M. Biggs, chief of the Bureau of Bacteriology, there have been 8 or 9 deaths from hydrophobia during the past year, a number greatly exceeding the mortality of previous years. Usually there have been only 2 or 3 deaths annually from the disease.

Miscellany.

SUICIDE AND HOMICIDE, U. S. ARMY, 1888-1897, 1898 AND 1899.

THE tabulations of the cases of suicide and homicide which occurred in the army during the years 1898 and 1899 are compared in the annual report of Surgeon-General Sternberg, now in press, with the cases which occurred during the ten years 1888-1897. Contrary to the general anticipation, it is found that there were among the troops during the past two years relatively fewer homicides than during the years of the previous decade, and that the mean annual ratio of suicides per thousand men was about two and one-half times greater during the decade of peaceful garrison life than during the recent period of active military service. The following figures show the rates for these years:

Year.	Mean strength.	Suicides.		Homicides.	
		Number.	Ratio per thousand.	Number.	Ratio per thousand.
1888	26,739	8	.30	5	.19
1889	27,206	21	.77	5	.18
1890	26,684	16	.60	7	.26
1891	26,460	22	.83	8	.30
1892	26,861	22	.82	5	.19
1893	27,659	22	.80	5	.18
1894	27,674	18	.65	10	.36
1895	27,326	19	.70	1	.04
1896	27,183	12	.44	4	.15
1897	27,374	10	.37	5	.18
Mean of decade.	27,116	17	.63	5.5	.20
1898	147,795	38	.26	19	.13
1899	105,546	30	.28	23	.22

RESOLUTIONS OF NEW YORK PATHOLOGICAL SOCIETY ON THE DEATH OF LEWIS ALBERT SAYRE, M.D.

IN the death of Dr. Lewis Albert Sayre the New York Pathological Society loses the last of the members who brought it into existence. The first meeting of the society was held in Dr. Sayre's office on June 14, 1844, Drs. George A. Peters and Middleton Goldsmith participating in the formation of the new society. Dr. Sayre kept his interest in the society alive, occasionally attending its meetings, until the end of his professional activity. It is with a special sense of loss that the society sees fade from its list of

active members this illustrious name, enrolled at its first meeting, when "the oldest pathological society in the world," as he was fond of saying, was created.

The New York Pathological Society now records upon its minutes the death of Dr. Lewis Albert Sayre, and adopts the following resolution:

Resolved, That the sympathy of the New York Pathological Society be extended to the family of Dr. Sayre in their bereavement, and that the above testimony be published in the current medical periodicals.

(Signed) W. P. NORTHROP, M.D.,
 JAMES EWING, M.D.,
 E. K. DUNHAM, M.D., } *Committee.*

Obituary.

DR. HENRY D. NOYES.

DR. HENRY DRURY NOYES, one of the most eminent oculists of New York, died at Mount Washington, Mass., on November 12th. He had been in failing health for some time, and had not returned to the city after the summer vacation. He was born in New York in 1832, and was graduated from the College of Physicians and Surgeons in 1855. He early devoted himself to the specialty in which he achieved such marked distinction. At the time of his death he was surgeon to the New York Eye and Ear Infirmary, and was professor of ophthalmology in the University and Bellevue Hospital Medical College, a position which he had previously held in the Bellevue College for many years before the consolidation of the two schools. He was also an ex-president of the New York Ophthalmological Society. Aside from his professional attainments, Dr. Noyes was widely known and very highly esteemed in the community.

Correspondence.

KIRKES' PHYSIOLOGY: A REPLY.

NEW YORK, November 16, 1900.

MR. EDITOR:—My attention has been called to the review of "Kirkes' Physiology" in your issue of November 8, 1900, and the reviewer's note which accompanies it. As certain charges have been brought which are not in accord with facts which the reviewer himself could have verified by referring to earlier editions, I ask that in simple justice you will grant me space for reply.

For errors of proof reading or failure in any instance to bring the text up to date, I have no excuses. But I must deny the implication that the present American edition is a compilation from a recent English edition, and the definite charges that figures have been "lifted bodily" from the English edition, and that I have pirated any portions of the text.

The reviewer will find the figures of blood crystals, which he charges me with "lifting," in the thirteenth edition, (1892), page 145 (published by Wm. Wood & Co.), which edition bears only the names of Mr. Harris and Dr. Baker on the title page. Moreover, he will find the similarities of text, of which he complains, between the present American and English editions to obtain also between the thirteenth American and the latest English editions.

It would have been fairer if the reviewer had confined himself to the field of legitimate criticism, or, transgressing that, at least had made sure of his facts before bringing such offensive charges.

Respectfully yours,
 WARREN COLEMAN, M.D.

METEOROLOGICAL RECORD

For the week ending November 10th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 P. M.	
S...4	30.09	47	52	42	92	79	86	N.	S.E.	6	5	C.	F.
M...5	29.77	50	56	44	85	68	76	N.E.	W.	3	12	F.	O.
T...6	30.01	49	56	42	66	60	63	W.	W.	12	8	C.	O.
W...7	30.07	51	60	42	61	84	72	S.	S.E.	7	12	C.	C.
T...8	29.73	58	65	51	88	88	88	S.	N.E.	15	4	F.	O.
F...9	29.20	45	55	35	97	74	86	E.	W.	24	33	F.	F.
S...10	29.86	41	46	36	83	79	81	S.W.	W.	16	14	C.	C.

* O., cloudy; C., clear; F., fair; G., fog; H., haze; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOVEMBER 10, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup
New York	3,654,594	1088	311	24.03	14.22	2.61	2.43	3.06
Chicago	1,698,575	—	—	—	—	—	—	—
Philadelphia	1,293,697	369	116	20.52	9.99	.54	1.35	6.75
St. Louis	575,238	—	—	—	—	—	—	—
Baltimore	508,957	190	54	24.91	7.42	2.12	5.53	2.12
Cleveland	381,768	—	—	—	—	—	—	—
Cincinnati	325,902	—	—	—	—	—	—	—
Pittsburg	321,616	82	24	30.75	8.61	6.15	11.07	4.92
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	55	18	21.84	5.46	10.92	5.46	—
Nashville	87,754	—	—	—	—	—	—	—
Boston	560,892	208	79	28.40	12.96	6.72	2.40	5.76
Worcester	115,231	40	16	17.50	7.50	5.00	—	5.00
Fall River	106,591	32	12	28.17	12.52	9.39	—	—
Cambridge	95,185	30	7	43.29	—	6.66	—	6.66
Lowell	98,611	22	9	8.30	12.43	—	—	—
New Bedford	74,943	28	9	17.85	17.85	—	3.57	—
Lynn	69,769	10	1	—	—	—	—	—
Somerville	67,863	17	1	30.00	10.00	—	—	—
Lawrence	60,937	17	11	11.76	17.64	5.88	—	—
Springfield	60,065	16	7	18.75	12.50	—	—	—
Holyoke	45,623	—	—	—	—	—	—	—
Brockton	40,299	6	—	16.66	—	—	—	—
Haverhill	38,714	6	—	33.33	16.66	—	—	—
Salem	38,583	10	—	20.00	20.00	10.00	—	—
Malden	38,321	6	—	33.33	—	—	16.66	—
Chelsea	35,022	11	—	9.09	—	—	—	—
Gloucester	32,285	—	—	—	—	—	—	—
Fitchburg	31,648	2	—	50.00	—	—	—	—
Newton	31,224	4	—	25.00	—	—	—	—
Everett	31,167	6	—	50.00	16.66	—	—	—
Taunton	28,891	12	—	8.33	—	8.33	—	33.33
Quincy	25,653	6	—	16.66	—	16.66	—	—
Pittsfield	24,226	—	—	—	—	—	—	—
Waltham	23,283	4	1	50.00	—	—	—	—
North Adams	22,196	12	2	33.33	16.66	—	—	—
Brookline	20,225	—	—	—	—	—	—	—
Chicopee	18,790	—	—	—	—	—	—	—
Medford	17,869	1	1	—	—	—	—	—
Melrose	15,411	—	—	—	—	—	—	—
Newburyport	15,157	5	—	—	20.00	—	—	—

Deaths reported 2,281; under five years of age 699; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 554, consumption 291, acute lung diseases 274, diphtheria and croup 88, diarrheal diseases 72, typhoid fever 62, whooping cough 14, scarlet fever 14, cerebrospinal meningitis 9, erysipelas 2, measles 2.

From whooping cough New York 7, Philadelphia and Pittsburg 3 each, Boston 1. From scarlet fever Boston 5, New York 4, Philadelphia, Worcester, Somerville, Lawrence and North Adams 1 each. From cerebrospinal meningitis New York 6.

New Bedford 2, Boston 1. From erysipelas New York and Baltimore 1 each. From measles Boston and Worcester 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending November 3d, the death rate was 17.6. Deaths reported 3,908; acute diseases of the respiratory organs (London) 268, diarrhea 121, diphtheria 94, fever 81, measles 49, whooping cough 44, scarlet fever 36.

The death rates ranged from 9.1 in Norwich to 25.5 in Salford: Birmingham 20.9, Bradford 15.0, Cardiff 15.4, Gateshead 22.4, Huddersfield 15.0, Leeds 16.6, Liverpool 23.4, London 16.7, Manchester 22.4, Newcastle-on-Tyne 20.7, Nottingham 18.0, Portsmouth 15.5, Sheffield 21.2, Swansea 15.3, West Ham 15.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 17, 1900.

C. H. WHITE, medical director, placed on the retired list of the navy from November 19, 1900, having reached the age of sixty-two years.

R. S. BLAKEMAN, passed assistant surgeon, detached from the "Pensacola" and ordered to Naval Hospital, Mare Island, Cal., for treatment.

C. S. BUTLER, assistant surgeon, ordered to the "Independence."

W. A. MCCLURG, surgeon, ordered to additional duty on the "Yankee."

W. M. GARTON, assistant surgeon, detached from the "Indiana" and ordered home to wait orders.

A. R. ALFRED, passed assistant surgeon, detached from the "Castine" and ordered to the "Culgoa."

M. K. JOHNSON, passed assistant surgeon, detached from the "Celtic" and ordered to the "Brutus."

H. C. CURL, assistant surgeon, detached from the "Culgoa" and ordered to the "Castine."

E. DAVIS, assistant surgeon, detached from the Cavite Naval Station and ordered to the "Brutus."

W. L. BELL, assistant surgeon, detached from duty at Guam and ordered to the "Celtic."

B. L. WRIGHT, assistant surgeon, detached from the Naval Hospital, Cavite, and ordered to the Naval Hospital, Yokohama, for treatment.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOVEMBER 15, 1900.

CARTER, H. R., surgeon. Granted leave of absence for fifteen days from November 16th, on account of sickness. November 10, 1900.

STONER, J. B., passed assistant surgeon. To report at Washington, D. C., for special temporary duty. November 13, 1900.

GREENE, J. B., passed assistant surgeon. To proceed to Bremen, Germany, for special temporary duty. November 13, 1900.

MONCURE, J. A., acting assistant surgeon. Granted leave of absence for thirty days from December 15th. November 14, 1900.

SCHLAAR, W. F., hospital steward. To report to acting director of hygienic laboratory for duty. November 9, 1900.

SCOTT, E. B., hospital steward. Granted one day's extension of leave of absence. November 12, 1900.

MASON, M. R., hospital steward. To proceed to San Francisco, Cal., and report to medical officer in command for duty and assignment to quarters. November 12, 1900.

RYDER, L. W., hospital steward. Relieved from duty in the hygienic laboratory and directed to report to medical officer in command at Washington, D. C., for duty. November 9, 1900.

BOARD CONVENED.

Board convened to meet at Washington, D. C., Tuesday, November 13, 1900, for the examination of Assistant Surgeon L. E. COFER, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon PRESTON H. BAILHACHE, chairman; Surgeon G. T. VAUGHAN and Surgeon H. D. GEDDINGS, recorder.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The regular meeting of the society will be held at the Medical Library, 19 Boylston Place, on Monday, November 26th, at 8.15 P. M.

Papers: Dr. F. B. Lund will read a paper entitled "Acute Hemorrhagic Pancreatitis; Its Surgical Treatment, with a Report of Six Cases."

Dr. H. G. Beyer, U. S. Navy, will present a paper entitled "Experiment and Experience with the Rifle." This paper will be illustrated with lantern slides.

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

ST. LOUIS ACADEMY OF MEDICAL AND SURGICAL SCIENCES.—At the last meeting of the St. Louis Academy of Medical and

Surgical Sciences, Dr. Emery Lanphear was elected president, and Dr. O. L. Suggett, secretary, for 1901.

BOOKS AND PAMPHLETS RECEIVED.

Clinique Chirurgicale, Hôpital Necker. Par M. Mauclair.

The Digestive Power of Pepsin. By Benjamin T. Fairchild, New York. Reprint.

Biennial Report of the Department of Health of the City of Chicago for the Years 1897-1898.

The Materia Medica of Pichi. By Noah E. Aronstan, M.D., Ph.G., Detroit, Mich. Reprint. 1900.

Methods in the Diagnosis of Diseases of the Stomach. By Charles D. Aaron, M.D., Detroit. Reprint. 1900.

Two Unusual Cases of Surgery of the Trachea. By W. S. Jones, M.D., and W. W. Keen, M.D., Philadelphia. Reprint. 1899.

Report of the Surgeon-General of U. S. Navy, Chief of the Bureau of Medicine and Surgery, to the Secretary of the Navy. 1900.

The Surgical Use of Celluloid Thread. By W. W. Keen, M.D., LL.D., Philadelphia, and Randle C. Rosenberger, M.D. Reprint. 1900.

The Need of Hospitals and Training Schools for Colored People of the South. By Daniel H. Williams, M.D., Chicago, Ill. Reprint.

A Manual of Hygiene and Sanitation. By Seneca Egbert, A.M., M.D. Second edition, enlarged and thoroughly revised. Illustrated. Philadelphia: Lea Brothers & Co. 1900.

Diseases of the Tongue. By Henry T. Butlin, F.R.C.S., D.C.L., and Walter G. Spencer, M.S., M.B. (Lond.), F.R.C.S. Illustrated. London, New York, etc.: Cassell & Co., Ltd. 1900.

Cancer of the Stomach: A Clinical Study. By William Osler, M.D., and Thomas McCrae, M.B. (Tor.), of the Johns Hopkins Hospital, Baltimore. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

A Manual of Syphilis and the Venereal Diseases. By James Nevins Hyde, A.M., M.D., and Frank Hugh Montgomery, M.D. Second edition, revised and enlarged. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

The Surgical Treatment of Congenital and Pathological Disfigurements of the Face. Abstract of the Mütter Lectures of the College of Physicians of Philadelphia for 1900. By John B. Roberts, A.M., M.D. Philadelphia. 1900.

Rhinology, Laryngology and Otolary and their Significance in General Medicine. By E. P. Friedrich, M.D. (Leipzig). Authorized translation from German edited by H. Holbrook Curtis, M.D. Philadelphia: W. B. Saunders & Co. 1900.

The Care of the Consumptive: A Consideration of the Scientific Use of Natural Therapeutic Agencies in the Prevention and Cure of Consumption; Together with a Chapter on Colorado as a Resort for Invalids. By Charles Fox Gardner, M.D. New York and London: G. P. Putnam's Sons. The Knickerbocker Press. 1900.

Acute Yellow Atrophy of the Liver. Seven Brief Medical Papers: Floating Spleen. Fatty Cirrhosis of the Liver. Amyloid Degeneration of the Kidney. Typhoid Fever with Complications. Diagnosis in the Light of a Necropsy. Empyema. Infectious Diseases. By Stephen Smith Burt, A.M., M.D. Reprints. 1900.

A Manual of Chemistry, Inorganic and Organic, with an Introduction to the Study of Chemistry. By Arthur P. Luff, M.D., B.Sc. (Lond.), F.R.C.P., F.I.C., and Frederic James M. Page, B.Sc. (Lond.), F.I.C., Associate of the Royal School of Mines. Illustrated. London, Paris, New York and Melbourne: Cassell & Co., Ltd. 1900.

A Textbook of Histology, including Microscopic Technic. By A. A. Böhm, M.D., and M. von Davidoff, M.D., of the Anatomical Institute in Munich. Edited with extensive additions by G. Carl Huber, M.D., Junior Professor of Anatomy and Director of Histological Laboratory, University of Michigan. Authorized translation from second revised German edition by Herbert H. Cushing, M.D. Illustrated. Philadelphia: W. B. Saunders & Co. 1900.

A Case of Appendicitis in which the Appendix became Permanently Soldered to the Bladder, like a Third Ureter, Producing a Urinary Fecal Fistula. Report of a Case of Resection of the Liver for the Removal of a Neoplasm, with a Table of Seventy-six Cases of Resection of the Liver for Hepatic Tumors. Surgical Treatment of Perforation of the Bowel in Typhoid Fever, with a Table of 158 Cases. I. A Bullet in the Popliteal Space. II. A Case of Dilated Esophagus; Two Cases Showing the Value of the X-rays and at the Same Time that in the First Case they were Misleading. The President's Address delivered at the Fifty-first Annual Meeting of the American Medical Association, held at Atlantic City, N. J., June 5-8, 1900. The Ideal Physician. By W. W. Keen, M.D., LL.D., Philadelphia. Reprints. 1898, 1899, 1900.

Original Articles.

ACUTE HEMORRHAGIC PANCREATITIS, ITS SURGICAL TREATMENT, WITH REPORT OF SIX CASES.

BY F. B. LUND, M.D., BOSTON.

During the little more than a decade which has elapsed since Fitz, in his classical monograph on "Pancreatitis" (Middleton-Goldsmith Lecture for 1889),¹ first adequately described the disease and classified its various manifestations into three forms, the hemorrhagic, the suppurative, and the gangrenous types, considerable attention has been devoted to it, both by clinicians and pathologists. Many interesting results have been attained by their assiduous labors, which will be but briefly noticed here, as it is the surgical aspects of the disease which the writer desires especially to consider. The deep situation of the pancreas in the abdomen, and its close anatomical relations to important organs of digestion and assimilation, and the main trunks of their arterial, venous and nervous supply, render its acute inflammatory affections of especial interest and proportionate difficulty, both from the point of view of medicine and surgery. From a medical standpoint the treatment of its acute inflammatory conditions can only be supportive and symptomatic. The possibilities and limitations of the surgical treatment of these affections it is the object of this paper to attempt to illustrate, as far as possible, by 6 cases taken from the personal experience of the writer, and of Drs. John C. Munro and W. P. Bolles, who have kindly placed 4 cases at the writer's disposal.

Case I, of Dr. J. C. Munro, was successfully operated upon in his private practice. As but 4 previous cases of recovery after operation have been recorded this case is of particular interest and value.

Case II, operated upon by the writer, in which the operation was performed as an emergency in the presence of signs of pneumonia, at the base of the left lung, and in which the patient lived eight weeks, coming successfully through a pneumonia, and finally succumbing to hemorrhage from an intestinal ulcer, also presents many points of interest concerning the surgical treatment of this disease.

Ten years ago Dr. Fitz saw the surgeon's opportunity in these cases in the drainage of the parapancreatic abscess which follows the hemorrhagic process, and is often associated with necrosis of the pancreas. A review of Cases I and II, which were both operated upon in the presence of a tumor consisting of blood clot and necrotic fat, on account of the progressive increase in the severity of the symptoms, would indicate that if lives are to be saved in the more severe forms of the disease, it will be too late to wait for necrosis and sequestration of the pancreas with abscess before operating.

Case IV is here in point. In this case, two weeks after the onset of the disease, the entire pancreas was necrotic, and areas of fat necrosis extended throughout the abdomen. Another argument in favor of early operation is the impossibility of absolute diagnosis. The surgeon is confronted with an acute epigastric peritonitis. It is not impossible in more or less typical cases to make a diagnosis, but in other cases it will be impossible, absolutely, to exclude perforating gastric ulcer, perforation of a gall duct, or duodenal ul-

cer. The presence of tumor some time after either of these conditions may be explained by the formation of a localized abscess in the lesser peritoneal cavity. It is impossible to exclude perforating gastric ulcer on account of the absence of a history of hematemesis, as was suggested by Dr. Fitz in his paper, for we now know that many cases of gastric ulcer have gone on to perforation without ever presenting the symptom of hematemesis, local tenderness, or any other symptom on which an absolute diagnosis could be made. These conditions present emergencies requiring immediate operation, delay involving spreading of peritonitis, burrowing of pus in the retroperitoneal space and other grave accidents, so that unless they can be excluded, exploration is imperative. If, therefore, we can show that in the alternative of acute pancreatitis with hemorrhage and fat necrosis, operation is also imperative, we have established the advisability of operating upon all cases of acute epigastric peritonitis not attended by such marked shock as to render the operation dangerous to life. In Case II the patient's general condition and the presence of a beginning pneumonia in the left lung rendered the question of operation a very serious one, and indicated the employment of local anesthesia, if possible. Yet in this case a rapid clearing out and packing of the cavity with gauze gave the patient immediate comfort, and distinctly benefited her condition for four days. Then she successfully went through a pneumonia, lived eight weeks after the operation, and in case the abscess had pointed, as it commonly does, in the lumbar region, and not perforated the diaphragm, would probably have been successfully drained and cured.

It must not be lost sight of that probably many mild cases of pancreatitis or peripancreatitis attended by less degrees of hemorrhage and by fat necrosis recover spontaneously by absorption and perhaps cicatrization. In the cases which have been reported as successfully operated upon by Osler² and Manges,³ the operation consisted in simply opening the abdomen, making a diagnosis of the presence of hemorrhage and fat necrosis and sewing the abdomen up tight.

If either of these cases, as did the case of Thayer and Finney or Cases I and II of this paper, had gone on to necrosis and sequestration of portions of the pancreas, and abscess formation, it is fair to assume that the history would have been different, and that further operation for evacuation and drainage of the abscesses would have been necessary to save life.

It seems probable that the cases that go on to gangrene of the whole or part of the pancreas and parapancreatic abscess are those which may be classed as of the second grade of severity: the most severe cases proving immediately fatal from hemorrhage and shock, those of the second grade, marked by severe symptoms at first, but going on to parapancreatic abscess and gangrene of the pancreas, and the milder cases recovering.

The symptoms of pancreatitis are described by Fitz as consisting of "sudden, severe, often intense, epigastric pain without obvious cause, in most instances followed by nausea, vomiting, sensitiveness and tympanitic swelling of the epigastrium. There are prostration, often extreme, frequent collapse, low fever, and a feeble pulse. Obstinate constipation

is the rule, but diarrhea sometimes occurs. If the case does not end fatally in a few days, recovery is possible, or the recurrence of the symptoms in a milder form takes place, and the characteristics of subacute peritonitis are developed." The presence of the tumor in the epigastrium was noted in 4 of the cases reported in this paper, though in most of them the presence of the stomach or intestine in front of the tumor rendered it tympanitic on percussion. In Case II the tumor, consisting of blood clot and necrotic tissue, presented against the anterior abdominal wall.

Etiology and pathology.—Acute pancreatitis has been considered rare in women, and of 41 cases collected by Körte⁵ in 1898, only 4 were women. Of the 6 cases reported in this paper, 5 were women. Three of the 5 women were extremely fat. In none was a history of alcoholic excess obtained. The ages ranged from thirty to fifty years. The presence of gall stones in the gall bladder and ducts was noted in 4 of the cases. In these cases it is impossible to say whether the previous attacks of epigastric pain and vomiting were due to milder attacks of pancreatitis or to gall stones. The presence of gall stones in a considerable number of cases of pancreatitis points to obstruction of the duct of Wirsung or abrasion of the walls of the ductus communis choledochus, with possible infection of the head of the pancreas, by which the duct is practically surrounded during the latter part of its course, as possible causes of the disease.

The presence of fat necrosis was noted in all the cases. The relation of fat necrosis to pancreatic hemorrhage and inflammation have been the subject of a great deal of study of late years. The most notable recent contributions to our knowledge of this process are those published by Flexner⁶ and Williams.⁷ Flexner regards the fat necrosis as the effect of the fat-splitting ferment of the pancreatic fluid, which in some way escapes from the duct into the surrounding tissues. The fat tissues immediately surrounding the pancreas are at first affected, but in acute or long-continued cases the process may extend all over the abdomen, or even to the pericardial fat. Fat necroses are not found in all cases of acute pancreatic disease, and have been noted during laparotomies for various abdominal conditions where no evidence of pancreatitis was found, but they are present in the vast majority of cases of acute pancreatic disease, and their presence is generally considered pathognomonic. They accompany especially the hemorrhagic form, and Flexner, in his experimental work, found disintegration of pancreatic tissue to be one of the results of free hemorrhage. He regards the necrosis of the fat tissue, as well as of the pancreatic tissue, as results of the escape of pancreatic secretion, due in its turn to the degeneration resulting from hemorrhage. Hemorrhage is to be regarded as one of the effects of inflammation of the gland, and when excessive, both in clinical and experimental cases, dominates the picture. The necrosis of fat and pancreatic tissue resulting from the hemorrhage may in time form foci for the action of micro-organisms and still further spread the process. The entrance of the micro-organisms responsible for the primary inflammation and hemorrhage probably takes place through the ducts.

It cannot be regarded as definitely settled that the

escape of pancreatic fluid is always the cause of pancreatitis in the human subject. In Case II of this paper, the autopsy showed a practically normal pancreas, having areas of fat necrosis extending in among the acini from the periphery, and no distention, inflammation, or other abnormality of the pancreatic duct or its branches. The pancreas removed after death in Case III also showed a process apparently extending inward from the periphery, and no discoverable abnormality of the ducts.

CLINICAL HISTORIES.

A brief account of the 6 cases upon which this paper is based, and résumé of the points which they illustrate, may well precede the deductions on the surgery of the pancreas, with which the paper will conclude.

CASE I. Summary.—Acute pancreatitis with fat necrosis. History of previous attacks. Operation one month after onset. Median laparotomy and lumbar incision for drainage. Immediate improvement. Second operation for drainage of pus pockets through lumbar incision five weeks later. Recovery.

Clinical History.

[From Notes of Drs. J. C. Munro and Henry Jackson.]

Mrs. S., age thirty-six, was seen by Dr. Henry Jackson, in consultation with Dr. Flanders, on March 4, 1899. As a girl, she had various symptoms suggestive of hysteria or a highly neurotic condition. Two years previously she had had three attacks of pain in the epigastrium, running through to the back; this pain she described as boring in character; accompanied by vomiting, but not by jaundice. Three weeks before she was seen by Dr. Jackson she had had an attack of severe pain in the epigastrium and left hypochondrium, relieved only by morphine, and accompanied by vomiting. No interference with the action of the bowels. The vomiting persisted for one week. She had

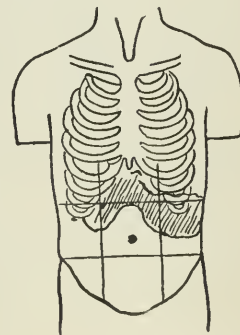


FIG. 1.

had moderate fever since the beginning of the attack, and a pulse 90 to 100.

On March 7th the woman was seen by Dr. J. C. Munro, from whose notes the following account is abstracted:

Physical examination showed a very corpulent woman suffering from pain, general abdominal tenderness and spasm, especially marked in both hypochondria and epigastrium. Tumor, as in shaded portion of Fig. 1, especially in left renal region and hypochondrium and over gall bladder. Leucocytosis. Pulse 120. Urine negative.

Diagnosis.—Probable rupture of gall duct with retroperitoneal abscess. Pancreatitis, and possibly abscess or tumor of kidney complicating gall stones, were considered.

Operation, March 8th. A long median incision was

made through the very thick abdominal walls in the epigastrium. The omentum, which was lightly adherent to the abdominal parietes, contained nodules of fat necrosis, which were also noted on the parietal peritoneum. On freeing the omentum, the pancreas was found swollen in the median line, and on the left enlarged so as to form a tumor, which felt hard and nodular. The finger was pushed into the tumor in various directions, in the hope of finding pus. The patient's condition at this time became alarming; the pulse rose to 180, and she became cyanotic. There was moderate bleeding from the fresh adhesions about the pancreas. An opening was made in the left lumbar region, using the finger as a guide, and the anterior wound closed with deep sutures of silkworm gut. Through the lumbar opening the tumor was broken up by pushing the finger in various directions, and a nodule removed, together with some omentum and fat necrosis. The wound was packed with iodoform gauze around a glass drainage tube, and a baked gauze dressing applied. The patient was in very poor condition at the close of the operation and was stimulated freely. During the night she rallied somewhat, though vomiting continually. At 10 A. M. on March 9th, the vomiting ceased, and the bowels moved. During the next few days her condition steadily improved. On March 12th, on removal of the gauze drains, there was a free greenish discharge, with fine fat globules.

On March 20th there was still considerable greenish discharge from the lumbar wound; the anterior wound had healed by first intention. There was no albumin nor sugar in the urine. The patient continued to improve, the wound discharging freely until April 8th, one month after the operation, when a rise of temperature to 103° took place, with vomiting and prostration. On the next four days the temperature ran between 101° and 105°, and the patient was nervous, restless and discouraged. On April 11th tenderness and a tumor were noted in the left renal region. While probing the sinus the probe passed through a thin wall into a cavity, with evacuation of several ounces of sweet, greenish pus of molasses odor, containing particles of broken-down pancreas and fat necrosis.

On April 15th, under ether, the sinus was enlarged and its posterior wall broken through, admitting the finger into several pockets containing greenish, sweet-smelling pus. These pockets reached to the median line, downwards along the posterior abdominal wall for 2½ inches, and upwards along the latter for 5½ inches, passing behind the stomach towards the epigastrium. A counter opening on a level with the floor of the pockets was made posteriorly in the left lumbar region and drainage with rubber tubes and gauze wicks was provided.

Following this operation there was a very free discharge from the sinuses. Subsequently this discharge became fecal, and was noted to contain certain particles of food eaten the day before it appeared in the discharge. This discharge ceased in about ten days and the patient steadily improved and went on to complete recovery, leaving the house for a ride on July 10, 1899. Her health ever since has been excellent.

Remarks.—This case is notable for the absence of pancreatic hemorrhage found at the operation. The location of the tumor and the presence of the fat necrosis, however, establish the diagnosis of pancreatitis. The serious condition of the patient at the primary operation emphasizes the necessity of rapid operating and simple procedures in these cases. The provision for lumbar drainage undoubtedly played a most important part in bringing about ultimate recovery, for the retroperitoneal pus pockets at the second operation were successfully drained through the lumbar incision, and it is difficult to see how this could have been accomplished otherwise, though Thayer's case recovered after drainage of the abscess through a median epigastric incision. It is probable in the lat-

ter case that the pus was confined to the lesser peritoneal cavity, and had not burrowed to any extent in the retroperitoneal space. Körte¹ in 1899 called attention to the importance of lumbar incision in retroperitoneal pocketing of the pus in necrosis of the pancreas with abscess formation, and describes 3 cases operated upon through a lumbar incision, with 2 recoveries. In this case lumbar drainage was provided at the primary operation, owing to the fact that the tumor extended into the left lumbar region, and this provision was later undoubtedly the means of saving the patient after abscess formation. The continued good health of the patient after the operation would show that there had not been sufficient destruction of pancreatic tissue to permanently interfere with its functions.

CASE II. Summary.—Acute hemorrhagic pancreatitis. Operation one week after onset. Evacuation through median and right lateral incision of blood and necrotic fat. Relief of symptoms followed by rise of pulse, temperature and respiration, with cyanosis. Dulness and râles over bases of both lungs. Exploratory incision in left lumbar region. Death eight weeks after operation from hemorrhage from erosion of an artery in wall of splenic flexure. Autopsy. Abscess in lesser peritoneal cavity, perforating diaphragm above spleen. No retroperitoneal or lumbar pockets. Perforating ulcer of splenic flexure of colon, with hemorrhage from an eroded artery. Perforating ulcer of jejunum.

Clinical History.

[Abstract from Hospital Record.]

N. G., thirty, single, dressmaker. Entered the City Hospital July 26, 1900. Service of Dr. H. W. Cushing. Three years ago had "indigestion" for about a year, followed by attack like present, but less severe; associated with abdominal pain, running into left shoulder; fever; vomiting. No jaundice; bowels regular; sick in bed two weeks. Has been well since. Gaining in weight. One week ago woke up with abdominal pain and vomiting. Says she was not feverish. No chill then or since. Pain

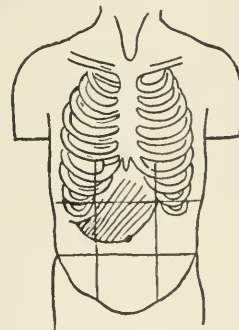


FIG. 2.

was crampy, and not localized. Vomitus bitter; no blood. Bowels moved with enemata and laxatives; dejecta just after onset were very light colored; since then dark; no blood noted. Vomited day after onset, but not since. Two days after onset, abdomen was distended and tender. Urine has been high-colored, never bloody. Since onset there has been shortness of breath, and deep breath has been painful. No cough or expectoration. Pain has remained about the same since onset; some pain in left shoulder.

Physical Examination.—Corpulent. Pupils equal and

react. Scleræ yellow. Tongue fairly clean. Temperature 100.8°; pulse 128; respiration 40. Heart's action somewhat irregular. Aortic second sound occasionally reduplicates. The first pulmonic is replaced by a soft murmur; pulmonic second not accented.

Lungs.—Fine moist râles in right back and axilla. On left back, near angle of scapula, there is dulness, diminished bronchovesicular respiration; increased voice sounds; fine crackling râles.

Liver.—Dulness begins at fifth space.

Abdomen.—There is muscular spasm and tenderness in the upper abdomen, especially on left. A firm, smooth, resistant mass is felt occupying the epigastrium, mostly to the right of the median line and extending down to level of umbilicus, where edge of mass is apparently felt. (Fig. 2.) Percussion note is tympanitic over this mass. There is slight distention. No free fluid could be demonstrated. No tenderness in lower abdomen. There is slight pitting of the ankles.

July 27th. Seen in consultation by Drs. Post and Jackson, who advised operation at once. The diagnosis was an abscess or inflammatory tumor in epigastrium, due to pancreatitis or localized abscess from perforating gastric ulcer.

Operation., by the writer, under local anesthesia with 1-1000 cocaine solution. Incision 5 inches long, median line above umbilicus. On entering the abdomen a tumor was felt just to the right of the median line, adherent by light fresh adhesions to the abdominal wall. Tumor could be felt to fluctuate. The patient was then etherized to the primary stage, and a second incision made just outside the outer border of the right rectus muscle. Finger was passed into the centre of the tumor, which was found to consist of necrotic tissue and blood clot. A considerable amount of blood clot was scooped out, and the cavity freely irrigated from one incision to the other. The finger reached the region of the pancreas. Gauze packing was attempted, but profuse hemorrhage required immediate removal, and repacking of the cavity, which controlled the bleeding. Incisions partially closed with silkworm gut. Patient stood operation very well.

July 28th. Fairly comfortable night. No vomiting. No cough. Bowels moved this morning. Pulse 148, respiration 52. In the evening was slightly distended, and complained of pain in lower abdomen. Analysis of urine. Albumin, slightest possible trace. Few blood globules. Hyaline and fine granular casts.

July 29th. General condition improved. Pulse 124. Respiration 40. Bowels moved freely. First dressing done; gauze soaked with bloody discharge, odorless; no evidence of suppuration.

Pathological report: Probably hemorrhagic pancreatitis or peripancreatitis, with fat necrosis.

July 31st. All wicks removed, except one in each incision. Considerable dark liquid blood followed removal of packing from lateral incision; quickly stopped. Wounds irrigated with salt solution. New wicks inserted.

August 1st. Remaining wicks removed. Irrigated from one incision through to other. Rubber drainage tubes applied. Discharge less. Continues to improve.

August 4th. Pulse 124, temperature 101°, respiration 35. There is a free discharge of brownish, thick turbid fluid, with numerous shreds from both incisions; odorless. Wound irrigated and dressed twice daily. Patient complains of some pain in left hypochondrium. Takes nourishment well and is receiving free stimulation. Oxygen when required for cyanosis.

August 6th. Twice since last date has had periods of delirium and unconsciousness with rapid pulse and respiration. This morning respiration is labored; patient cyanotic; tracheal râles. Temperature 101°, pulse 140, respiration 50. Signs of consolidation remain in the left lower lobe, coarse râles in both chests. In left lumbar region there is tenderness, slight bulging and dulness. On account of these signs an exploratory incision was made under cocaine in the left lumbar region. No pus was found in the retroperitoneal space; incision was packed.

August 13th. Condition rather better. Color good.

Temperature 99.8°, pulse 124, respiration 36. Discharge from abdominal incision is more free, and consists of a thick brownish material with numerous sloughs. Lumbar incisions clean and healing.

August 20th. Several large masses of sloughing tissue were washed out today.

Pathologist's report: Necrotic fat tissue with considerable hemorrhage.

August 24th. Pulse and respirations continue elevated; no cyanosis. No expectoration. Signs continue in left lower lobe. Today there is biliary fluid on the dressing. A piece of bowel in the lower angle of the right incision has perforated, allowing the escape of intestinal contents. Closed with Lembert sutures.

August 28th. Attempt to close fistulous opening unsuccessful and a second one has appeared just above the first. Discharge from incisions is diminishing in amount.

September 3rd. Tube omitted from median incision. Lumbar incision healed. Third incision presents deep sinus above, and two openings in exposed knuckle of gut below. Discharge is less in amount, stained with bile, and mixed with intestinal contents which escape from the fistulæ. General condition slightly improved.

September 5th. There is some digestion of the skin about the intestinal fistulæ.

September 10th. Patient appeared as well as usual this morning. Temperature 99°, pulse 120, respiration 44. Binder had just been unpinned preparatory to dressing, when blood was noted gushing from incision in right side. Patient was quickly blanched. Active bleeding stopped quickly. As soon as preparation could be made light ether was given; incision enlarged, and cavity packed with gauze. Foot of bed elevated. Salt infusion and stimulants were given subcutaneously. Patient reacted somewhat, but pulse gradually failed, and patient died at 1.45 P.M., eight weeks and three days after the operation.

Autopsy.—Dr. Steensland, three hours post mortem.

Body of a well-developed, very well-nourished woman, thirty years old. Healed operation incision in epigastric region in median line, and one in left lumbar region. Longitudinal incision 12 centimetres long in epigastric region to right of median line.

Peritoneal cavity: Extensive, firm, fibrous adhesions about the two epigastric incisions, involving chiefly the omentum between the transverse colon and the pyloric end of the stomach. From the skin incision a passage leads into the lesser peritoneal cavity. The walls of this passage and of the lesser peritoneal cavity have a dirty blackish appearance. The lower lobe of the left lung is firmly adherent to the parietal and diaphragmatic pleura. When these are separate, a hole in the diaphragm 6 centimetres in diameter, surrounded by blackish necrotic borders, is revealed. Through this is projecting a perfectly free blackish mass, about the size and shape of a normal pancreas. It probably passed up into the pleural cavity after the adhesions of the lung to the diaphragm were separated. On section it is blackish in color, and shows a few grayish markings, suggesting the lobulation of pancreatic tissue. The mass is soft, and of a somewhat pasty consistence. The cavity contains no fresh blood clot. The spleen is completely concealed by firm adhesions. When the splenic flexure of the colon is separated from its relation with the lesser peritoneal cavity its external surface appears blackish necrotic, and a hole in the wall 1 centimetre in diameter with blackish necrotic borders is found.

In the region of the operation incision over an area 4 centimetres in diameter the same blackish appearance of the external surface is seen. The wall is here much thinned, leaving practically nothing but mucosa. The pancreas is concealed by the same blackish discoloration. The left border of the liver is bound to the anterior wall of the stomach by firm fibrous adhesions. The general peritoneal surface is smooth and glistening, presenting no evidence of inflammation. Numerous fat necroses in the tissue surrounding the lesser peritoneal cavity, the largest 6 centimetres in diameter. Some are considerably harder than the surrounding fat.

Pleural cavities.—Upper lobe of left lung free. Few fairly firm fibrous adhesions over lateral and posterior surfaces of middle and lower lobes of right lung.

Lungs.—On section lower part of left lung darker in color than surrounding tissue, lax and apparently collapsed. Upper portion of left lung and all of right lung, pink and downy. No nodules at apices. On section some color presented. Mucosa of bronchi pale. Bronchial lymph nodes not enlarged.

Spleen.—On section, pale red, soft. Lymph nodules distinct, trabeculae indistinct. Considerable increase of pulp.

Gastro-intestinal tract.—Mucosa, except as described above, pale. Small intestine contains little bile-stained fluid material, with no evidence of blood. Transverse colon contains 50 grammes of fresh blood clot. Perforating ulcer of splenic flexure and another of upper part of jejunum.

Pancreas.—Probe readily introduced into pancreatic duct, which passes through the centre of practically the whole length of the pancreatic tissue. Mucosa of duct smooth and pale. Its orifice is in common with the bile duct. Pancreas extends from the duodenum to spleen and adrenal. It is apparently slightly smaller than normal. Pancreatic tissue is lax. On section color is more yellowish than normal, and the lobular markings are somewhat indistinct. In the intestinal tissue are a few fat necroses, the largest 5 millimetres in diameter.

Liver.—Weight, 1 280 grammes. Very pale, smooth and of normal consistency. On section very pale, lobular markings distinct. Gall-bladder filled with small gall stones and a small amount of normal appearing bile. Mucosa normal. Mucosa of common bile duct pale. No gall stones present.

Microscopic.—Subsequent careful examination by Drs. F. B. Mallory and H. C. Lowe of the mass so closely resembling necrotic pancreas projecting through the diaphragm showed that it consisted of nothing more than necrotic fat tissue.

Anatomical diagnosis.—Hemorrhagic peripancreatitis; fat necroses of pancreas; general subperitoneal fat necroses; necrotic mass in lesser peritoneal cavity (fat necrosis); aperture connecting left pleura and lesser peritoneal cavity; atelectasis of left lung; hemorrhage into colon; localized chronic adhesive peritonitis; cholelithiasis; perforating ulcer of splenic flexure of colon; perforating ulcer of upper part of jejunum.

Remarks.—This case presents many points of interest, and though resulting fatally, there can be no doubt that life was prolonged by the operation, and might have been saved had the abscess extended into the left lumbar region instead of perforating the diaphragm into the pleura.

The patient's condition on entering the hospital was so bad that a very grave prognosis was given, and, on account of the condition at the base of the left lung, it was decided to dispense with general anesthesia. When, owing to the necessity for a second incision and extensive manipulation, ether had to be given, the operation was performed as rapidly as possible, and on account of a really alarming hemorrhage the cavity had to be rapidly stuffed with gauze. A fatal prognosis was given immediately after the operation. The course of the abscess upward through the diaphragm points to an early infection extending probably to the left pleura, and perhaps accounting for the signs which were noted at entrance over the lower left back. The walling off of this process may have accounted for the process thought to be a pneumonia which followed the operation. If the lower left pleura had been drained by resecting a rib it is possible that the result might have been different. Pock-eting was expected, and looked for in the left lum-

bar region, but naturally not found. The abscess cavity lay well up under the diaphragm, and the mass of necrotic tissue extended through the hole in the diaphragm above the spleen.

The fact that enough nearly normal pancreas was left at the time of the autopsy to raise a doubt whether the disease was not almost entirely a peripancreatitis, with no permanent injury to the pancreas other than an extension inward from its periphery of a few areas of fat necrosis, would indicate that in case of recovery there would have been no permanent interference with the functions of the pancreas. The presence of gall stones in the case is noteworthy. The fact that the mass found at autopsy projecting through the diaphragm, and thought at first to be sloughing pancreatic tissue, proved on careful microscopic examination to be nothing more than necrotic fat tissue, points to the case having been one of peripancreatitis rather than pancreatitis. The normal condition of the ducts renders it difficult to account for the disease by the escape of pancreatic fluid. The discovery that this mass so closely resembling necrotic pancreas was really necrotic fat tissue casts a doubt on the reported cases in which patients have recovered after passing a necrotic pancreas by rectum. (Trafoyer, quoted by Chiari.) May not the so-called necrotic pancreas have been merely a mass of necrotic fat?

CASE III. Summary.—Acute hemorrhagic peripancreatitis. On fourth day, operation, in spite of severe prostration, on account of symptoms of epigastric peritonitis. Pancreas dark in color and surrounded by areas of fat necrosis. Incision and gauze drainage. Gall bladder and ducts noted to be full of stones. Death three and one-half hours after operation. Pancreas removed after death. Duct of Wirsung and central portion of pancreas normal. The connective tissue surrounding the pancreas infiltrated with blood. Areas of fat necrosis numerous over the surface of the pancreas, and diminishing rapidly toward the central portion, which was normal in appearance.

Clinical History.

[Abstract from Hospital Record.]

M. W., age thirty-one, housewife. Entered July 11, 1900, at 11 P. M.; service of Dr. H. W. Cushing. Has had three attacks which patient says were "similar to present," the first five years ago, the second eight months ago, the third three months ago. No one of these attacks ever so severe as present. Previous attacks were associated with abdominal pain, vomiting and fever; in one attack at least patient was jaundiced. (Patient too sick to give an accurate account of symptoms.) In interval, since last attack, has been well; able to eat anything; bowels regular; no pain.

The present attack began on July 6th, in the afternoon, with sudden, sharp pain, which started in the back, between the shoulders, and ran round to the epigastrium. Feverish, but no chill. No vomiting. Bowels moved naturally. The next two days was more comfortable; slept fairly well; went to a dispensary for treatment. On July 9th pain became much more severe. Fever continued. No chill. Vomited twice. Bowels moved a number of times following castor oil. Vomitus yellow and bitter. Dejecta loose, brownish, not particularly offensive; not bloody. Unable to sleep on account of pain. No cough; no pain in chest. Yesterday pain continued. Vomited once. Bowels moved once. Abdomen began to distend. Motions of breathing became painful. Obligated to lie on back, as every motion aggravated the pain. Today symptoms have continued. Distention has increased, but there has been no nausea or vomiting. Bowels have not moved

today, but patient has passed gas. Frequent eructations also of gas. Pain is a dull ache in back and abdomen. Not localized in any particular spot at any time, but in upper rather than in lower abdomen. Very restless; unable to sleep; mouth dry. Urine has been darker than normal, but not bloody; passed normally. Has noted no yellowness as in previous attack.

Corpulent; face dusky; eyes bright; pupils equally contracted. Tongue dry, with white coat. Whole surface of body covered with cold sweat. Hands and feet cold. Pulse 128, weak; temperature 101.4°, respiration 38, shallow. Slight yellowness of conjunctivæ. Heart sounds weak; no murmurs. Lungs negative. No edema of ankles. Abdomen markedly distended; generally tender, especially in epigastrium and left hypochondrium. Marked spasm in these regions. Slight tenderness and spasm over rest of abdomen. Distinct resistance in epigastrium as of a prominent tumor, which was tympanitic, as was the rest of the abdomen. Operation under cocaine proposed, but refused. Ether was therefore given at 3.30 A. M., July 12th. Operation by the writer. Incision 5 inches long, median line, above umbilicus. General peritoneal cavity normal. Transverse colon greatly distended. On tearing through transverse mesocolon, at the bottom of the lesser peritoneal cavity, there was felt the much thickened pancreas. Seen to be dark in color, and studded with areas of fat necrosis. A small amount of turbid fluid lay in the bottom of the cavity. Gall bladder and ducts contained a large number of small gall stones. On account of the serious condition of the patient nothing further was done than to insert rubber tube and three strips of gauze down to necrotic pancreas. Incision partly closed with silk. Patient left table in great shock. Duration of operation fifteen to twenty minutes. During and after operation, free stimulation by brandy, strychnia, atropine, digitalis and salt solution. Patient rallied slightly, but the pulse gradually failed, and she died three and one-half hours after the operation.

Remarks.—This case was operated upon for the reason that the symptoms suggested a general peritonitis, beginning in the epigastrium, and incision, irrigation and drainage in this event were thought to give a possible chance to the patient.

The operation showed that the prostration of the patient was not due, as thought probable, to a general peritonitis, but to a pancreatitis. This marked tendency to collapse and shock in this disease has been explained by various writers as due to the close relation of the organ to the solar plexus.

The result of the examination of the pancreas agreed with that of the autopsy on Case II, as showing that the case was a peripancreatitis rather than a pancreatitis, so to speak, and indicating that if recovery had taken place the pancreas would not have been sufficiently damaged to interfere seriously with its functions.

CASE IV. *Summary.*—Acute hemorrhagic pancreatitis in a male thirty-seven years of age, who had had previous attacks of epigastric pain. Seen by surgeon, Dr. W. P. Bolles, two weeks after onset of attack. Operation contraindicated by poor condition of patient. Death on third day after admission to hospital.

Autopsy.—Hemorrhagic pancreatitis with necrosis of pancreas and abscess in lesser peritoneal cavity. Extensive disseminated necrosis of subperitoneal fat. Cholelithiasis.

Clinical History.

[From Hospital Record.]

G. L. S., age thirty-seven, married, book-keeper, was admitted to the service of Dr. W. P. Bolles, on January 11, 1899. Four months before entrance had an attack of

gastric pain, vomiting and jaundice, lasting five days. Two months later a similar attack, lasting one week. Two weeks before entrance the present attack began with a dull ache in the right hypochondrium and vomiting, with prostration. After a week the pain and vomiting ceased, but retching continued. During the five days preceding his entrance he had two chills.

Physical examination.—Well developed, rather than thin. Abdomen somewhat distended and tympanitic, except for slight dullness in the flanks. Temperature 103.2°, pulse 124, weak. Slight tenderness to pressure in the right hypochondrium. The upper border of the liver was slightly higher than normal, and the lower border, though somewhat masked by tympany, was apparently somewhat lower than normal. The facial expression was dull and apathetic, and the patient looked very sick. On January 12th the bowels moved freely without cathartics. The patient was dull and slightly delirious at times. Movements semi-solid in consistency. He was seen by Drs. Jackson, Thorndike and the writer in consultation, and operation advised against, owing to the weakness of the patient. After a fairly comfortable night with slight fall in temperature the patient had a severe chill, followed by collapse, requiring free stimulation, on January 13th, the second day after entrance. He did not rally under stimulation, sank into coma, and died at 11 P. M. The diagnosis in this case lay between abscess of the liver and pancreatitis, inclining to the former. At no time during the patient's stay in the hospital was his condition good enough to permit of operation.

At the autopsy by Dr. F. B. Mallory, on making the first incision there were found small, yellow, opaque areas in the fat tissue of the abdominal wall just beneath the peritoneum. Similar spots from 1 to 4 or 5 centimetres in diameter were found all over the surface of the great omentum. They were slightly raised above the surrounding fat tissue, more or less circular in outline, with edges usually irregular. Similar areas were found in enormous numbers in the fat tissue beneath the lining peritoneum, everywhere in the abdominal cavity, being especially numerous in the mesentery. The lesser peritoneal cavity was found to be much distended, and filled with clotted blood and hemorrhagic fluid, almost a litre in quantity. At the bottom of the lesser peritoneal cavity was a dark, reddish-brown, friable mass, all that remained of the pancreas. The cavity had extended beyond the ordinary limits of the lesser peritoneal cavity on the left side over the kidney and apparently ruptured into the general peritoneal cavity, a reddish-gray fluid oozing up on carefully drawing up the coils of small intestine on the right side. In the general peritoneal cavity was a small amount of reddish-yellow exudate, most abundant in the pelvis. On opening the duodenum there was a thin place in the wall below the pylorus, at which point the contents of the lesser peritoneal cavity seemed just on the point of breaking into the duodenum.

The papilla of the common bile duct appeared normal, and no obstruction of any sort could be found in or near it. The gall bladder contained numerous small gall stones. The pancreas seemed to be destroyed right up to the wall of the duodenum. The fat capsule of the left kidney formed a part of the wall of the lesser peritoneal cavity. Yellowish areas, similar to those already described, were found throughout this fat tissue, both in front of and behind the kidneys. In the fat tissue on the left side below the kidney, along the outer border of the psoas muscle, was a great mass of necrotic fat. At the middle of the seventh rib on the right side and along the lower border of the tenth rib beneath the costal pleura were areas of necrosis.

Anatomical diagnosis.—Necrosis of pancreas with hemorrhage; acute peritonitis; cholelithiasis.

Remarks.—In this case the only one in the series in a male patient, we have the presence of gall stones and a history of previous attacks. In the two weeks which elapsed before the patient entered the hospital, necrosis of the entire pancreas with diffusion of

patches of fat necrosis over the entire peritoneal cavity and extensive suppuration in and about the lesser peritoneal cavity had occurred.

It does not seem impossible that if operation had been performed early, after the primary shock of the beginning of the attack, perhaps, but before the process had become so extensive, and if adequate drainage had been provided and maintained, a fatal issue might have been averted. Certainly if operation is to be of avail in these cases it must be performed before the process has become as extensive as it had in this case when he first came under observation.

CASE V. Summary. — Localized necrosis of pancreas with fat necrosis. Exploratory laparotomy on third day of disease. Diagnosis of appendicitis or epigastric peritonitis of unknown origin. Evacuation and drainage of small abscess of the pancreas. Death on third day after operation. No autopsy.

Clinical History.

[Abstract from Hospital Record.]

K. T., age forty-five, a widow, was admitted to the service of Dr. H. W. Cushing on April 20, 1899. Her previous history showed that she had had eight normal deliveries and suffered from a hernia. During the last six years she had had repeated attacks of abdominal pain, constipation and vomiting, lasting several days. Two days before entrance she was seized with severe abdominal pain and vomiting. The second day of the attack the pain had become more on the right side, and the vomiting was severe and continuous; the abdomen became tender and she had a chill.

On entrance she was found to be fairly well nourished, sick and apathetic in appearance. The temperature was 99° and pulse 100. Tongue slightly coated. Constant vomiting of greenish material. Abdomen distended and generally tender, though this symptom was most marked in the region of the gall bladder and the left iliac fossa. There was muscular spasm on deep pressure. No tumor was made out. Vaginal and rectal examinations were negative. The following night the bowels were moved by an enema, and considerable gas was passed. On April 21st, the third day of the attack, there was slight tenderness over the entire right side of the abdomen, most marked over the region of the appendix. There was also marked tenderness in the epigastrium, and percussion in this region showed a tympanitic area suggesting a dilated stomach. The patient was seen in consultation by Dr. C. F. Withington, and operation advised. Exploratory laparotomy was performed by Dr. J. C. Munro. Through a short median incision below the umbilicus the appendix was found apparently somewhat thickened, lying high, under the border of the liver, slightly adherent. It was ligated and removed. Then a careful examination of all the intestines was made for constriction, during which a smooth tumor, pulsating with the aorta, was found in the position of the head of the pancreas. An incision was then made in the epigastrium, by which the adherent colon was accidentally opened, and closed at once with silk. Then the omentum and intestines were packed off to allow a view of the posterior peritoneum and a gray diphtheritic patch found on the peritoneum over the tumor, which was punctured with a director, allowing the escape of a little sero-purulent material and fat necrosis. A cavity in the pancreas the size of an English walnut, which lay beneath this patch, was curetted and drained with a glass tube. The epigastric wound was packed with gauze around the tube and the other wounds sutured. The operation was well borne. Free stimulation and cathartics were the line of treatment after the operation, and the following day the patient's condition made marked improvement, and the bowels moved. The second day after operation vomiting began, and the general condition grew worse. Death occurred at noon of the third day following the operation.

Cultures from the abdomen at the time of the operation were sterile. Examination of the material removed from the cavity in the pancreas showed fat necrosis.

Remarks. — This case is interesting as presenting grave symptoms depending on a localized necrosis rather than a general inflammation of the pancreas. It is unfortunate that no autopsy was obtained, as much light might have been thrown on the condition of the pancreas and surrounding organs.

CASE VI. Summary. — Pancreatitis. Severe attack with marked prostration. Prodromal symptoms for three days. Operation on fifth day, for symptoms suggesting a general peritonitis. Death on the operating table. Imperfect autopsy showed peritoneum studded with areas of fat necrosis.

W. N. M., fifty, married, housewife, was admitted to the City Hospital, service of Dr. H. W. Cushing, May 4, 1898. Eight days before entrance she began to suffer from indigestion and heartburn. Five days before entrance was suddenly seized with intense pain in the region of the gall bladder, which lasted several hours, and required three-quarters of a grain of morphia. She vomited several times. After the subsidence of the pain tenderness remained, but gradual improvement took place till the day before entrance, when the pain returned, attended by vomiting and prostration. Today the prostration has increased and fecal vomiting begun.

Physical examination. — General distention of abdomen, and slight general tenderness, without marked spasm. The face is anxious, pulse rapid, but of fair strength. Slight edema of legs. Urine normal. Dr. Munro operated under ether. The patient took ether badly; became cyanotic, with constant fecal vomiting. An incision 4 inches long was made through the anterior abdominal wall, and exploration begun, when the patient suddenly collapsed and died, in spite of energetic stimulation, etc.

A hasty examination after death showed a mild general peritonitis, and the parietal peritoneum and mesentery were found studded with fine white dots. Fresh adhesions were found everywhere. Several of the white dots were removed, and on microscopic examination reported by Dr. F. B. Mallory to show fat necrosis.

GENERAL SUMMARY.

Six cases of pancreatitis in patients between thirty and fifty years of age, 5 of them women and 4 having also gall stones.

Definite diagnosis was made in no case, the diagnosis being approximated three times (Cases I, II and IV). Operation in 5 cases. One recovery. One death two months after operation from inadequate drainage. Two deaths from shock. Operation declined by surgeon in the single non-operated case owing to poor condition of patient.

VARIETIES OF THE DISEASE.

Cases II and III should be properly classified as peripancreatitis; Case IV, as necrosis of the entire pancreas, which followed undoubtedly upon a hemorrhagic pancreatitis. Case V was a localized necrosis of the pancreas resulting in abscess.

REMARKS ON DIAGNOSIS,

as illustrated by the 3 cases seen by the writer, Cases II, III and V:

(1) In differentiating from perforating gastric ulcer we find the pain not quite so sharp, and the tenderness on light pressure not so acute. Moderate tenderness on deep pressure has characterized the cases of pancreatitis; acute pain on light pressure, the cases of perforating gastric ulcer.

(2) The sensation of fulness, as of a tumor in the epigastrium overlain by the stomach, has been noted in all the cases observed by the writer, and in Case I observed by Dr. Munro. In Cases I and II a tumor could be definitely delimited.

(3) Muscular spasm was not so marked in these cases as in perforating gastric ulcer or acute appendicitis. In both perforating gastric ulcer and pancreatitis we have localized epigastric tenderness and spasm, but both more marked in the former than the latter condition. This comparison is based on the personal observation of 4 cases of perforating gastric ulcer verified by operation, which have been observed by the writer in the last eighteen months.

An absolute diagnosis is generally impossible. The diagnosis narrows down to an acute peritonitis originating in the epigastrium, which, from whatever cause, demands exploration of the abdomen.

CONCLUSION AS TO THE SURGERY OF PANCREATITIS.

Milder cases of acute pancreatitis or peripancreatitis recover both with and without operative intervention. Severe cases require operation, which should be performed early, for the following reasons: (1) Because the primary hemorrhage in itself (Flexner) leads to necrosis and disintegration of gland tissue, and the hemorrhage may be stopped and further necrosis both of fat and gland tissue prevented by gauze packing and adequate drainage. (Cases I and II.) (2) Because the patient is in far better condition to withstand an operation early in the disease than later when weakened by suppuration in the lesser peritoneal cavity, and necrosis of much fat and gland tissue.

A certain class of cases in which the primary shock is so severe as to render operation out of the question must be excepted from the operative cases.

The mortality from pancreatitis will undoubtedly be high, but there is reason to hope that with early operation and adequate provision for lumbar drainage it may be considerably diminished.

REMARKS ON TECHNIQUE.

As the diagnosis must, in a large percentage, be tentative, the first or exploratory incision should be made in the median line above the umbilicus. This incision may, in severe cases, be made with advantage under local anesthesia. On account of the weak condition of most of the patients rapid operating is essential. The great omentum must be traversed to reach the lesser peritoneal cavity. Masses of blood clot and necrotic fat should be rapidly evacuated. Further hemorrhages may be stopped by gauze packing. It will be generally impracticable to search for bleeding points.

Where the mass of blood clot or the abscess cavity has extended into the left lumbar region, adequate drainage must be provided by a lumbar incision made on the finger passed into the cavity. This dependent lumbar drainage is probably the most important step of the operation, since in the majority of cases it will probably not be possible to drain successfully through a median incision, as was done by Finney in Thayer's case. In case symptoms at the base of the left pleural cavity point to pocketing of pus above the spleen, the subphrenic space should be drained by resecting the tenth or eleventh rib in the posterior axillary line. The pleural cavity will be opened, but will be probably walled off by adhesions. At any

rate, drainage of this pocket is essential, in order to avoid perforation of the diaphragm by the abscess, which happened in Case II. Drainage of the sub-diaphragmatic space above the spleen would probably have saved this patient, as the upper part of the pleural cavity was walled off. Careful diagnosis, rapid operating and careful nursing will be necessary to save these cases, as the proximity of the inflammatory process to the solar plexus, the diaphragm, heart, lungs, stomach and duodenum, together with the deep situation of the pancreas, all contribute to make its inflammation so dangerous and difficult as to tax to the utmost the art and skill of the surgeon.

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OBSERVATIONS UPON THE SYMPTOMS AND TREATMENT OF HYPERACIDITY OF THE STOMACH.¹

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THE study of the diseases of the stomach has convinced practically all observers that a common cause of disturbance of function and of symptoms in these maladies is a disorder in the secretions of the organ.

Variation from the normal in the secretions, usually an excess or diminution in the quantity of the secreted hydrochloric acid, is a common associate of these disorders. Thus of 300 cases of gastric disorder in my clinic, 159, or 53%, had an abnormality in this respect.

This abnormality may be in some cases an associate, perhaps a result, of distinguishable organic lesions of the stomach, as ulcer, cancer, chronic gastritis, motor insufficiency. It may be the only abnormality among the physical signs discoverable by our methods of examination, existing as the evident and only apparent first cause for symptoms. In both sets of cases it may be a secondary condition and may have no influence in the production of symptoms. Thus we see individuals with marked diminution in the hydrochloric acid secretion leading healthy lives without symptoms of gastric disturbance, the digestive function being sufficiently performed by the intestines. In a considerable number of cases, however, these abnormalities in acidity, whether primary or secondary, have apparently a distinct influence upon the functions of the organ and upon the production of symptoms.

Evidence of this connection between chemical ab-

¹ Read before the Boston Society for Medical Improvement, October 29, 1900.

normalities and symptoms is seen in all varieties of disorder of secretion, but is most marked in that class of cases in which the acid secretion is increased, the cases of hyperacidity, or hyperchlorhydria. Here, especially in the cases in which the excessive acidity is the only abnormal physical sign discoverable, the cases of uncomplicated hyperacidity, this influence of the acid excess upon function and upon the production of symptoms can readily be studied.

During the last two years I have had the opportunity to study 58 cases of this uncomplicated hyperchlorhydria. The symptoms and symptomatologies in these cases were as follows: The most constant symptom was distress. If we include pain, burning sensation, nausea and a sense of unrest under this heading, we may say that distress was present in practically all cases. A large majority of cases described the distress as a sense of uneasiness in the stomach as if the food did not sit comfortably, or as a sense of emptiness. In the more severe cases the distress was spoken of as cramp-like pain or a burning sensation spreading over the whole epigastric and sternal regions. The distress appeared within thirty minutes of ingestion in 21 cases. In several it occurred immediately upon ingestion. In 37 cases it occurred from one to three hours after food, in most of these in the third or fourth hour. The next symptom in point of frequency was the raising of gas or the desire to raise gas. This occurred in 50 cases. As a rule it came with the distress. Heartburn occurred in 25 cases. Pyrosis, or raising of acid contents or fluid into the mouth, occurred in 20 cases. As a rule this occurred one to three hours after ingestion of food. Vomiting occurred as a regular or occasional symptom in 17 cases. In some the vomiting occurred with the other symptoms, soon or late after food. In some it occurred in the morning before food. Regurgitation was often described as vomiting and the diagnosis of this symptom necessitated careful questioning. Relief of symptoms by food was a characteristic of 30 cases, practically all cases in which the symptoms appeared long after ingestion of food.

In addition to these symptoms, which were drawn from the experience of the patient, it was possible to obtain a further most important characteristic of these cases by experiment, the characteristic of relief of symptoms by ingestion of an alkali. This characteristic was present in a large majority of the cases. Of 48 cases in which the experiment was tried, this symptom was present in 45. It was constant in all the cases in which symptoms occurred as late as one hour after food.

In addition to the above local symptoms, several of a general nature were frequent associates of the cases. Of these, two, headache and nervousness, were such frequent associates and disappeared so regularly with the relief of the gastric condition that it seemed probable that they, like the local symptoms, might be resultants of the hyperacidity. The headache was as a rule frontal, occurring during the forenoon, often disappearing as the day wore on.

The combinations of symptoms or symptomatologies in the cases varied as much as the symptoms. The most striking symptomatology which occurred in any number of cases was the following: Distress, pain or a sense of unrest coming on two hours or so after eating, associated with some eructation of gas and heartburn and occasional raising of acid contents

into the mouth; relief of symptoms by ingestion of food or an alkali. This is the so-called typical symptomatology of hyperacidity of the stomach. It occurred in 16 of my cases.

The combination of distress, eructation of gas, heartburn, occurring within a half hour after food, and relief of symptoms by alkali, occurred in 5 cases. Pyrosis occurred in 4 of these.

In the 33 remaining cases the symptomatology consisted of distress plus eructation of gas or desire to raise gas, with relief of symptoms by soda. In 14 of these cases the symptoms were within one hour, in 19 later. Relief of symptoms by food occurred in all these latter cases.

This review of the symptoms of these cases of hyperacidity brings out some interesting facts in connection with the diagnosis and understanding of this condition. It shows, in the first place, that the combinations of subjective symptoms or symptomatologies which are associated with this single cause in these cases of hyperacidity are far from uniform, and that they are in a majority of the cases not diagnostic or even suggestive of the underlying condition. That is, they are not such as would help us to determine in our case whether we were dealing with hyperacidity or with one of several other affections of the stomach. For the combined symptoms of distress and eructations of gas which formed the whole symptomatology of over half the cases are, as a careful study of other gastric disorders has proven to me, the symptoms of a majority of all affections of the stomach from whatever cause.² As to whether the symptomatology in these cases of hyperacidity is ever diagnostic, I should say that it was so in about one-fourth of the cases. The combination of symptoms, distress occurring from one to three hours after meals, associated with heartburn and pyrosis, relief of symptoms by ingestion of food and by alkalies, is when found in its entirety very suggestive if not absolutely diagnostic.

This is the typical symptomatology of hyperacidity given in most textbooks. It is, as you see, but an occasional associate of the disorder, occurring in but 16 of my cases. Where it is proved to be present by experience with the case, not merely by the history of the patient in reply to your questions, it may be taken as diagnostic of hyperacidity (not of course necessarily of uncomplicated hyperacidity) to the extent of warranting treatment upon the lines of this diagnosis. The occurrence of such a symptomatology in any other affection is certainly extremely rare. The combination of symptoms which occurred in the cases remaining after the exclusion of these 16 typical cases and the 33 cases with the symptomatology common to a majority of all cases of gastric disorder, distress, heartburn, pyrosis, occurring soon after food, relief by soda, is strongly suggestive of hyperacidity, but not as much so as the first group. It is more common in hyperacidity than in other conditions, but does occur fairly often in hypoacidity and hypomotility cases.

Certain of the separate symptoms have some diagnostic importance, but less than that of these symptomatologies or combinations of them. Distress is of course a symptom common to all stomach disorders. In a majority of cases of gastric disease it occurs soon after ingestion of food. Distress occurring long after

² Howes: A Study of the Nature and Significance of Symptoms in Disorders of the Stomach, Boston Medical Journal, May 17, 1900.

food is, however, found in cases of hypoaclidity and hypomotility as well as in hyperacidity. The distress of hyperacidity is more apt to be described as a distinct pain or a gnawing sensation than is that of other affections. Eructation of gas is common to all gastric affections. Heartburn is more common in hyperacidity than in other conditions, but may occur in some people with normal or low acidity. Pyrosis is uncommon save in hyperacidity and is a very suggestive sign. It was, however, described as a symptom in several cases of normal and low acidity which did not yield to treatment for hyperacidity. Vomiting is not more common in this than in other affections.

Relief of symptoms by alkalis is a practically constant symptom of hyperacidity—the only one. It does occur, however, in other conditions, as, for example, nervous conditions and hypoaclidity, and is not diagnostic. Its absence would be evidence against hyperacidity. Relief of symptoms by food is by no means a uniform symptom of hyperacidity. It is very rare in other conditions, but does occur. When found it is very suggestive of hyperacidity, and shares with pyrosis the property of being the most suggestive of all symptoms of this condition.

In regard to the diagnosis of our condition, then we may say that it can be diagnosed with fair accuracy from the symptomatology in from one-fourth to three-eighths of the cases. In the remaining five-eighths the symptoms give us no assistance. Here we must depend upon symptoms plus chemical findings. And the condition can be absolutely diagnosed in any case only by a study of both symptoms and chemical findings.

The treatment of this clinical condition of hyperacidity of the stomach is based upon this knowledge of the cause and its effects which we gain by such an experimental study of the condition. In these cases the exciting cause, the excess of acid, acts to produce disturbance and symptoms, to my mind, in several ways. In the first place, it may irritate the membrane of the organ, causing pain or distress, peristaltic unrest, regurgitation, heartburn, pyrosis. It inhibits the digestion of starches by the ptyalin of the saliva, and may then tend to the accumulation of starch in the stomach. It acts upon the motor processes of the stomach, often diminishing the activity, even causing spasmodic contraction of the pylorus, so that retarded emptying or stasis of the contents may result. All these effects, the irritation of the acid, the affection of the motility, the retardation of starch digestion, may have results in causing symptoms, the distress, eructations, heartburn, vomiting. The affection of motility may cause stasis of contents, when dilatation or fermentation by yeast or sarcinae may occur.

In addition to and through those specific disturbances of function, the disorder has detrimental results to the body generally. As a result of the distress accompanying the act of digestion the patient eats less food than necessary. This, with the nervous influence resulting from the irritation and disturbance, affects the nutrition of the body. As a result the health is impaired, the nerve tone affected and the stomach made even less able to gain upon its disease. The irritation of the acidity also has disturbing effects upon the nervous system which doubtless tend to perpetuate the increased secretion of the stomach and the intolerance of food.

In addition to the above specific source or sources

of disturbance or symptoms in these cases, we have to consider still another element which may be present as a pathological condition influencing the disorder, namely, the relative hyperesthesia of the patient. A close study of our cases reveals the fact that the severity of the disturbance of function or symptoms is not proportional to the quantity of acid present. Cases with great excess may have symptoms milder than those with very slight excess. We not uncommonly see cases of clinical hyperacidity yielding to treatment of this affection in which the quantity of acid is normal for the average individual. Furthermore, in treating certain cases of hyperacidity we find that after cure of all disorders the quantity of acid remains the same or above the normal limits.

These facts suggest that in certain cases increased or abnormal susceptibility of the patient to the secreted acid is a causative element in the case. This is, perhaps, the case with those individuals who suffer with normal amounts of acid, and probably with those who, when cured, still retain the excess of acid. These cases might better be termed gastric hyperesthesia. In treating them, by building them up, or by neutralizing the acid which tends to maintain the sensitiveness, we relieve the hyperesthesia and stop the symptoms. It is probable that this element of hyperesthesia enters to some extent together with the acid excess as a factor in the disturbance of many of the cases. And thus in developing our method of treatment we must bear in mind these two causal conditions, the excess of acid with its irritation, and its influence upon the motor and digestive functions of the stomach, and the possible hyperesthesia of the patient having its origin in the nutritional or nervous condition of the patient. In this treatment we attack our case along both lines. We aim (1) to reduce the acidity of the contents, and (2) to increase the resistance of the patient to the acid, that is, improve the nutrition and nerve tone. Practically we find that an attack along either line is beneficial for both purposes.

To reduce the acidity of the contents, our first aim in the treatment, we may, as a first resort, administer substances which combine with or neutralize the acid. Such substances are, first, proteid food substances which combine with large quantities of acid, and, second, alkalis which neutralize the acid present. This is a simple method and works in a large majority of cases very satisfactorily. The excess of acid can be perfectly controlled by the food with small quantities of alkalis provided these substances are administered in the proper manner and at the proper time. In some cases this regular control of the acidity leads finally to a lessened secretion. In almost all cases it does away with irritation and disposes of the disturbances due to the acid excess and the symptoms of these. With the improved function which follows this treatment, and the full diet which is part of it, the system tends to regain its normal tone and the hyperesthesia of poor condition is controlled.

The system of treatment which I have used in most cases is built up upon these lines: The patient is given a diet of a caloric worth sufficient for the weight and conditions containing as high proportion of proteid foods as comfortable for the patient. (In my experience the average patient with stomach trouble is eating less than half of a sufficient diet.) This diet is separated into six daily meals, the constituents of each meal, with some alternative choice, being prescribed.

The treatment tends to use up the acid secreted and facilitates the motor function. Starches should be limited, and of carbohydrate foods sugars or predigested starches, dextrinized flours, as Avenacia flour or Horlick's food, used as much as possible, since starch digestion in the stomach is impeded in these cases. For all symptoms of disorder, as distress or eructations, some proteid, as a raw egg, is to be taken. An alkali, bicarbonate of soda in half-teaspoonful doses, or 15 grains of magnesian hydrate, may be taken in addition to food or in place of it for the relief of symptoms. In some cases large amounts of alkali, 3 drachms bicarbonate of soda, must be used in the twenty-four hours. Three pints of water are prescribed to be taken in small amounts at a time throughout the day. In addition, general rules in regard to baths, exercise, the bowels, the work, and general manner of living are laid down in writing. Debility must be treated by tonics. *Nux vomica* is a most useful agent here to improve the tone of the system and thus also perhaps the motor capacity of the stomach. Where anemia is present by blood tests iron should be given. Chlorosis is not infrequently associated with hyperacidity. After an administration of iron with the regular régime for a few weeks these cases as a rule lose all symptoms of hyperacidity even with cessation of treatment. There is little doubt that it is a similar improvement in nutrition which accompanies the increased diet, and good régime and freedom from nerve disturbance which ensure the cure in a majority of all the cases.

The exact details of treatment of course vary with the cases. Many cases of hyperacidity are intermittent or paroxysmal. These cases it is necessary to treat locally only during the period of attack, while a general method of régime should be employed constantly to prevent recurrence. In some cases the acidity is only after one meal, as, for example, dinner. This must be borne in mind in the determining of the diagnosis as well as in the treatment. We must get the contents at the period of symptoms.

This treatment gives excellent results in the great majority of cases. In some, relief is immediate, and with the return of normal tone it is possible after a month or two to drop special treatment. In a majority of these cases the acidity is found in time to be normal, in others the acidity remains as at first, though the symptoms disappear. In a certain proportion of cases the treatment must be followed in a general way permanently. It is impossible to collect accurate statistics of cure from an out-patient clinic. But it is certainly a rare exception to see a case of hyperacidity which does not yield to this treatment when properly applied. In my records I find less than 10% of cases returned as not relieved after trial of this simple treatment of régime, diet and alkalies. In these obstinate cases lavage is often a useful adjunct to treatment. After a few weeks of lavage combined with a very special diet worked out by experience with the case, the patient is raised to the regular régime. In these cases it is often necessary to feed small amounts frequently and to use concentrated food substances, as the Leuke-Rosenthal meat solution, Mosquera beef meal, somatose, which have a high capacity for combination with hydrochloric acid. Such cases are, however, exceptional. As a rule the diet of easily digested or liquid foods is the least useful one that can be chosen. In some obstinate cases I have used

nitrate of silver for internal treatment and for lavage with success.

It is well known that our cases of hyperacidity are of two types: One in which a neurosis or functional hyperactivity appears to be the fundamental element in the case, and one in which a marked increase in the gland tubules and oxyntic cells of the gastric membrane is present as an underlying pathological condition. This latter condition, a form of chronic gastritis, the gastritis acida of Cohnheim, is diagnosed by the presence of fragments of the pathological membrane in the stomach washings. It is said by some observers (Hemmeter) that 50% of the cases of hyperchlorhydria have some such hyperplasia of the tubular structures. Typical cases of this condition are, however, much less common, and such fragments are, in my experience, found in a much less per cent. of cases by ordinary methods of examination. When our condition is obstinate, and does not tolerate the regular treatment, it is well to investigate specially as to whether our case is one of this gastritis acida. For such cases, and indeed for all cases proving obstinate to the proteid treatment, the method of continuous treatment upon low proteid diet should be tried.

It has been urged that the method of treatment of hyperacidity by the utilization of the acid by food simply aims to offset the acidity of the contents, not to control the secretion, and that a more fundamental method of treatment would consist in aiming to lessen this secretion. Also it is claimed by certain observers that the secretion of acid in the stomach is proportionate to the amount of food requiring acid for digestion, that is, the proteid food. And that therefore the proteid diet, while relieving symptoms, tends to increase the disorder, while a low proteid diet will tend to decrease the actual cause of disturbance, and thus give permanent cure. Hemmeter reports some observations upon dogs which tend to support this theory.

In the few cases in which I have tried this latter method I have found it difficult to keep up. It does not give the immediate relief of symptoms obtained by the proteid method and the patients do not keep to the diet as well as in the proteid method.

The proteid treatment, whatever its aim, certainly ends in reducing the secretion of acid in many cases. It controls symptoms at the time in almost all cases. Since it acts so effectually I have used it regularly as a first resort in all cases where it is tolerated. Where it fails the other method should be given a trial.

SUBPERIOSTEAL FRACTURES.¹

BY FREDERICK J. COTTON, M.D., BOSTON.

ABOUT a year ago a somewhat peculiar case of subperiosteal fracture called my attention to this class of cases; the cases here presented are such as have come under my notice since that time. They are presented not with the idea that they show anything actually new, but because subperiosteal fractures are very common in children and a proportion of them seem on closer examination to have little in common with the type known as green-stick fractures, with which they are usually classed.

The usual type of green-stick fractures is of course

¹ Read before the Boston Society for Medical Improvement, October 29, 1900.

subperiosteal, but beyond this the correspondence between the types is not close. The usual type of green-stick fractures is familiar enough. There is a giving way of the bone on the convex side—a tearing apart, while the concave side shows simply a bending of the cortical layer. There is deformity on account of the difficulty of returning the torn bone surfaces on the convex side back to exact position, while the lack of mobility is ensured by the intact layer of bone on the inner concave side, even apart from a locking of the torn bone surfaces and from the strength of the untormented periosteum.

In the cases to be shown the conditions are different. Here there is no deformity because there are no torn surfaces, but a clean-cut crack or cross fracture, and no bent or half-broken layer of bone to prevent the motion necessary to readjustment of the surfaces. The lack of crepitus and mobility seems to be largely or entirely dependent on the strength of the thick intact periosteal layer.

CASE I. A boy of thirteen, whose right arm had been caught between the knee of another boy and the ground in the course of a football scrimmage. He came to the hospital next day complaining of slight pain and weakness of the arm and hand. There was no swelling or ecchymosis, and the disability was comparatively slight. There was localized tenderness at the middle of the right radius, but no suspicion of deformity or mobility even on the application of considerable force. The arm was put up in splints and examined at intervals, but not until ten days after the accident was there anything to be felt. At this time there was a small callus at the point of injury, and an x-ray was taken which showed a transverse fracture line apparently traversing the full thickness of the bone. There was a callus, seemingly entirely subperiosteal. There was no deformity. Within three weeks from the time of injury repair seemed complete and the arm could be freely used.

CASE II. A fracture running obliquely across the radius just above the lower epiphyseal line, showing no deformity or mobility. The x-ray showed a clean fracture line with practically no displacement. This again is evidently in no strict sense a green-stick fracture, but corresponds to the relatively not infrequent Colles's fracture without displacement seen in adults.²

CASE III. A fracture of the olecranon in a boy of seven, resulting from a fall on the elbow. The fracture line as made out under ether ran somewhat obliquely up and outward. There was a little mobility to be made out by the use of considerable force, but only through the slightest range; there was no separation of fragments, and no deformity, and it seemed evident that the fragment was held in place by the intact periosteum alone. The skiagraph shows the lateral view, in which the fracture line appears only as a crack.

CASE IV. A girl of five years fell and struck her elbow against a plank. Next day she came to the hospital. There was some effusion into the joint, some pain and tenderness. A careful examination, however, showed no sign of fracture, no deformity, mobility or crepitus. The skiagraph, however, showed a distinct crack across the humerus above the epiphyseal line, without displacement. Later there was more swelling, and some ecchymosis came to the surface. The recovery was, as in the previous cases, entirely uneventful.

CASE V. A fracture of the right radius from a fall, showing no signs of fracture at the time of injury. A callus was palpable later, and the x-ray taken after two weeks, though not good, showed the fact and location of the fracture, the presence of the callus, and the absence of displacement.

CASE VI. A fracture of the right arm three days old, in a child of five years. The middle third of the right radius showed beginning callus. The deformity in this case was trifling, but a very slight bowing could be made out; no attempt was made to reduce it. This case may have been a green-stick fracture in the stricter sense. No x-ray was taken.

CASE VII. A fracture of the right clavicle in a girl of five years, untreated for five days. Disability very little. No mobility, little pain. The only tangible sign of fracture was the beginning callus, which continued to increase in size later. The case differed from the more familiar green-stick fracture of the clavicle in that there was literally and absolutely no deformity, not even the least bowing.

CASE VIII. An almost exactly similar case of fracture of the clavicle just outside the middle in a small boy of four. Like the other case, it had gone untreated for a week, owing to the slightness of the symptoms.

CASE IX. A girl of four fell and injured her leg. There was no crepitus to be made out in an examination without ether, but a slight abnormal mobility in the lower third of the tibia. The x-ray showed a complete fracture of the tibia. The limitation of the mobility was evidently due to the periosteum. There was a slight displacement in the way of shortening—a small fraction of an inch only.

CASE X. A boy of three and one-half years was brought in on account of lameness, persisting six days after a fall on some steps. On examination there was localized tenderness at the middle of the right tibia, and a distinct callus surrounding the bone on all sides so far as could be palpated. The leg was put up in plaster, and after three weeks more was apparently well, but the callus still present, though smaller. No x-ray was taken in this case.

During this same period I have of course had opportunity to observe various typical green-stick fractures of the arm, clavicle, etc. These are not here recorded.

The cases presented do not show a fixed type in direction or character of the fracture lines, but they do show that fractures of various sorts may, even in the child, show an apparent immobility, due not to intact bone so much as to intact periosteum, and that the long bones even in children may be broken in clean lines without any resulting displacement.

Some experiments were carried out on the cadavers of new-born, presumably normal, infants to see how readily clean fractures could be produced and how much the periosteum hindered displacement at the time of breaking and on subsequent manipulation. Fractures were produced first by slow forcible bending in the hands. There resulted: (1) in a femur; green-stick fracture, periosteum intact; (2) tibia; green-stick fracture with a Y-shaped fracture line, periosteum intact; (3) tibia; exactly the same result, typical green-stick fracture; (4) clavicle; the bone could be bent double and back again, with some breaking of bony substance, but no definite fracture line. In none of these experiments was there any difficulty in forcibly reducing the fracture and bringing the bone back to the straight line, nor any necessity of completing the fracture to get good position—a much-mentioned measure which has seemed to me unnecessary clinically, as it proved to be experimentally.

Next the effect of direct blows on the shaft of the bones was tried, both with dissected and undissected limbs. (1) A right tibia so struck showed square transverse fracture; (2) femur; slightly oblique but clean-cut fracture, not extending through the full thickness of the bone, but mobile with a hinge motion, perfect reduction possible.

² Cases I and II were seen at the City Hospital while the writer was acting out-patient surgeon; the others seen at the Children's Hospital and reported by permission of Drs. Lovett and Brackett.

A humerus was stood on end, and struck on the upper end; it buckled and broke in the middle; there was some displacement of the ends and free hinge motion, but the periosteum remained unbroken.

Obviously, these experiments are too few to warrant any sweeping conclusions, but it would seem that blows are less likely than a slower acting strain to produce typical green-stick fractures, and it is at least obvious that even the soft bones of the new-born may be broken or cracked in clean-cut approximately transverse fracture lines by forces moderate enough to leave the periosteum intact.

In conclusion, it seems that fractures in children showing no deformity and no appreciable mobility are not uncommon; that they might readily be overlooked; that they often need no reduction, having no deformity; that they repair with callus and quickly.

IRRITABLE BREASTS, OR CHRONIC LOBULAR MASTITIS.¹

BY R. C. CABOT, M.D., BOSTON.

I HAVE no paper. I bring up this subject because I want to find out something more about it, and because it seems to me from talking with my friends that other physicians in the community are almost as ignorant as I.

I will begin by giving a short account of two cases that first brought the subject to my interest. About eight months ago I saw for the first time two young women between twenty and twenty-five, unmarried, both of them strikingly neurotic in temperament, of thin build and pale, but not anemic by blood test, both of whom came to me to know the nature of a lump in the breast. That lump in both cases was in the outer upper quadrant; it was distinctly tender to the touch, and it was for the pain as well as for the presence of the lump that the patients came. The lump was in one case about the size of a large horse chestnut, in the other a little larger. It was flattened from before backwards and it was notable when you pressed the breast against the thorax it was much more difficult to feel the lump than when you took it in the fingers from side to side. In one case there was no enlargement of the axillary glands, in the other they were slightly enlarged and somewhat tender. There was no retraction of the nipple, and the tumor was freely movable beneath the skin, not accurately circumscribed in either case, but faded out into the tissues of the breast, so that it was difficult to say exactly how large it was in either case. In each case under observation the tumor originally seen diminished in size and another appeared in the other breast.

These cases have been under observation now seven or eight months and have improved a good deal under general treatment. One was a girl obviously lacking in occupation, and when an occupation was secured the lump nearly disappeared, and the symptoms entirely disappeared. Neither had any symptoms except the symptoms of general debility.

This description corresponds fairly accurately with the description of "irritable breast," that given in the old textbooks on surgery, for example, in Ashhurst's "Surgery" and in one of the newer books, Shields

¹ Read before the Boston Society for Medical Improvement, October 29, 1900.

on "Tumors of the Breast," and it seemed to me the diagnosis was justified. But when I came to read over the literature I found many points indefinitely touched upon, and many which I should like to know more about. It is a subject which seems to be on the border line between surgery and medicine (since most writers recommend the treatment should be expectant and not operative) and hence of special interest.

First, as to the pathology of these tumors. The majority of writers describe them as *inflammatory*, that is, as chronic lobular mastitis, and the microscopic changes as an increase of fibrous tissue with the formation of very small cysts, the changes fading out at the periphery of the lobule and being in no sense sharply circumscribed. But, on the other hand, every writer I have seen on the subject states that these tumors frequently disappear. Herbert Snow speaks of them as the "dispersible" tumors of adolescence, as the familiar "adenoid of adolescence," but it seems curious that these thickenings should entirely disappear if their pathology is that of a fibrous hyperplasia. If the breast were very fat, it would be easy to see how a fibrous nodule might escape notice. In my cases, however, the breasts were flabby and thin, so that a small accumulation or thickening of this kind would be felt, if present. I have asked myself the question whether there is any possibility that in some of these cases the accumulation may be a galactoecele. Several cases of galactoecele are on record in unmarried women, — an accumulation either of milk or cheesy substance in the breast. That is a question I want to bring up and have answered, if possible.

I also want to ask the question whether it is possible or likely that these lumps are physiological, that a considerable number of women have them and do not find them out. It struck me very much that all the writers emphasize the neurotic constitution of the patient, describing the type of patient who would easily get stirred up about such things, feel of the breasts a great deal, handle them and be led to lay great stress on the symptoms, whereas the same might exist in less neurotic patients and not be noticed at all. One of my patients was a nurse and the other the sister of a medical student. I want to bring up the question whether it is possible that a considerable number of these tumors exist and are not discovered, and if so, whether it is fair to call them *mastitis*.

Then, as to the *prognosis* of these tumors, the question as to whether they do or do not become cancerous. In the literature the majority of writers seem to think they do not, but a respectable minority believe that out of these tumors a cancerous process may develop. The bearing of this question upon treatment is obvious.

As to the *treatment*, should these cases be operated upon? The great majority of writers say no, and recommend the treatment of iodide of potash internally, acetate of lead ointment externally, and attention to the general condition of the patient. I should like to know if it is the opinion of those competent to speak whether these measures have any effect on the process itself or act entirely as placebos.

I think I will take no more of the time of the meeting. What I want is to find out as far as possible what is the pathology of these tumors, what is their course, and what is the proper treatment.

CYST OF THE VOCAL CORD.¹

BY J. PAYSON CLARK, M.D., BOSTON.

This case is reported because it differs from the usual description of cysts of the larynx and in its general characteristics, before operation, rather suggested a fibroma.

B. K., male, age twenty-five, a clerk by occupation, came to the Throat Clinic of the Massachusetts General Hospital in July, 1899, complaining of hoarseness and difficulty in speaking, the voice getting easily tired. He began to be hoarse twelve years before and had gradually become worse. Two years ago he began to notice the sensation of something in the larynx. His general health is fair. He has never had any serious illness, but has never been robust. He

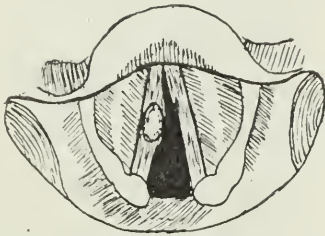


FIG. 1.

has no cough. Family history is good, with no record of any laryngeal or pulmonary troubles.

Examination of the larynx reveals considerable reddening of the vocal cords except at the middle of the right cord, above the surface of which projects an oval, smooth, grayish-white, pearly swelling, occupying a quarter to a third of the length and the whole width of the cord and causing a bulging of the free border (Fig. 1).

On introducing Schroetter forceps and attempting to grasp the growth (having first thoroughly cocain-

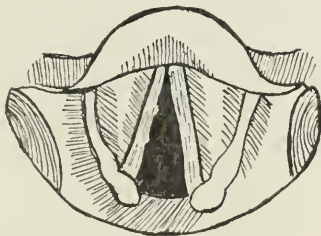


FIG. 2.

ized the larynx), it was found so firm and resistant that the forceps slipped off without grasping it. At the suggestion of a colleague that it might be a cyst I introduced a concealed laryngeal knife and incised the tumor near the free border of the cord. On removing the knife it was seen to be covered by a milky looking fluid, and, on again looking at the larynx, the tumor or cyst, as it proved to be, had entirely disappeared. A microscopical examination of the contents of the cyst showed a mass of degenerated epithelial cells and a few leucocytes.

The patient was seen again about nine months after the operation. The redness of the vocal cords

had almost disappeared. There were two minute knobs of mucous membrane projecting from the free edge of the vocal cord (Fig. 2). The patient has no difficulty in talking and his voice is fairly clear.

Speaking of cysts of the larynx, Bosworth says: "A cystoma is a small, soft, compressible growth, usually pedunculated. . . . The character of the growth is easily determined by the probe, or by its collapsing on seizure with the forceps." Lennox Browne says they are "generally red in color with surrounding hyperemia." McBride mentions only one case which he has seen. He speaks of the tense look, peculiar opaque translucency and globular shape of the cyst in his case. The growth collapsed on grasping with Mackenzie forceps. This description more nearly approaches the appearance of the cyst in my case. The sessile character and great firmness of the cyst in this case was, no doubt, due to its being rather deeply situated in the substance of the cord.

REFERENCES.

- Bosworth. Diseases of the Nose and Throat, vol. ii, p. 729.
 Browne. Burnett's System of Diseases of the Ear, etc., vol. ii, p. 759.
 McBride. Diseases of the Throat, Nose and Ear, p. 152.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, October 29, 1900, DR. E. H. BRADFORD in the chair.

DR. H. F. HEWES read a paper entitled

OBSERVATIONS UPON THE SYMPTOMS AND TREATMENT OF HYPERACIDITY OF THE STOMACH.¹

DR. C. P. PUTNAM: In establishing the diagnosis of hyperacidity is it necessary to make the examinations at several different times of the digestion, or can you be satisfied with taking the acidity at any one time?

DR. HEWES: If you find it the first time you can be satisfied it is there, but if you fail you may have to go further, because it may be present at other times of the day or upon other days.

DR. C. P. PUTNAM: If you find excess of HCl at the beginning of digestion you may be sure there is not a lack of it at any other time of the day?

DR. HEWES: I should say you could be sure of that. If you find an excess you have a right to go on the basis that that is the cause of the symptoms.

DR. C. P. PUTNAM: You say, however, that when you do not find it you look again, so that sometimes it is a case of acidity where during digestion there is not at all times an excess of it?

DR. HEWES: Yes; and you must get your contents at the time when there are symptoms. Some people have symptoms only at one meal; at other meals they do not have them. The average case has hyperacidity at all times. You notice in the case passed around there were two different meals, one large and one small, and the hyperacidity was present with each meal, larger in the second meal, but present in both cases.

¹ Read before the American Laryngological Association at its Twenty-second Annual Congress, Washington, D. C., May, 1900.

¹ See page 550 of the Journal.

DR. C. P. PUTNAM: Do you take the usual methods recommended in books, test meals, in making observations on this point?

DR. HEWES: I use the Ewald meal first because I have a table of experiments on the normal individual with this meal to use for comparison, and then I use in doubtful cases the large meal or the Leube meal, which is equivalent to the ordinary dinner, and record tests with both.

DR. R. C. CABOT presented the subject of

IRRITABLE BREASTS, OR CHRONIC LOBULAR MASTITIS.²

DR. C. B. PORTER: I should not pretend to give the pathology, and should hope somebody more competent than I might speak of that subject. As Dr. Cabot described his cases they seemed to me to be typical of what I have been accustomed to call chronic mammary tumors, and in the majority of instances the advice was given to let them alone. I do not know of any benefit from any external treatment but to cease to handle the tumors, pay as little attention as possible to them. I have no statistics with regard to how many have disappeared and how many have come to further operative treatment. I think the feel which Dr. Cabot described corresponds very much to the cystic growths that come in the breast, and where I have felt pretty positive they were cysts I have advised removal.

DR. ARTHUR TRACY CABOT said that he had taken much interest in this subject of irritable breasts, and had had many opportunities of following patients so afflicted for considerable periods of time. He said that, to begin at the beginning of the subject, these conditions of the breast occurred notably at two periods of life—in adolescence, as Dr. Richard Cabot has said, and also at the time of the menopause. These breasts may be occupied by several more or less distinct lumps or may contain but one such swelling. This condition often entirely disappears under treatment, and the treatment recommended by the speaker was the internal administration of iodide of potash, combined with bromide of potash. The irritation of the breast seems to have very close connection with the condition of the pelvic organs. It is very common to find in these cases that there is some disturbance of the uterus, usually with irregularities of menstruation. Not uncommonly the condition of the breast is very much aggravated, with increase of swelling and of pain at the time of or just before menstruation, and this condition of pain and swelling (tumefaction) is relieved by the completion of menstruation. The pathological condition of these breasts in their early stages is difficult to demonstrate, because it is not a fatal disease, and it is a disease which we rarely operate for. If medicine is given, and the tumor disappears entirely, operation is not advisable. When, however, the swelling persists, or reappears, and an operation is finally done, the condition found is usually a diffuse fibrous condition of the greater part of the breast, which by its pressure upon the ducts gives rise to the formation of retention cysts. These cysts are sometimes single good-sized cavities, with little fibrous tissue about them; but usually they are small, and are scattered pretty thickly through the fibrous tissue of which the breast is largely made up. The changes in the size of the swellings, and

the rapidity of these changes, especially at the time of menstruation, make it appear probable that a tumefaction, that is, an increased determination of blood to the parts, is largely responsible for the increase of size which causes a tumor. It is plain, however, that when the condition persists for a considerable time, new cells are thrown out which become organized into the fibrous tissues described.

In illustration of the occasional development of a cancer in connection with this condition, Dr. Cabot cited the case of a nurse, who had for many years had an irritable and lumpy breast. This patient had had a sister operated upon for cancer of the breast, which fact had led her to watch her own breasts with unusual care. She persistently, as she was approaching the menopause, noticed close to the nipple a little adhesion of the skin to one of the little lumps. This was so slight that it was difficult to demonstrate it, and it could only be made apparent by pinching up the skin and seeing that there was a slight dimple over the little lump.

Upon operating, it was found that at the suspected point there was a little nodule of commencing carcinoma, not larger than half a pea.

This case was typical of a considerable number in Dr. Cabot's experience in which carcinoma finally appeared in breasts which had for years presented all the appearances of chronic mastitis. This not very infrequent sequence of events would make it seem wise to place such a case under the observation of a surgeon, in order that it might be investigated by operation if it did not get well under appropriate treatment. The operation is a slight one if the lump does not prove to be a cancerous nodule, and a very important one if it does, so that a case of this sort, particularly a case occurring at about the menopause, which is a favorable time for the development of cancer, should be kept under observation, put under treatment, and, if it does not entirely disappear, should be operated upon.

In regard to the pathology Dr. Cabot said that he regarded the commencement of the process as a simple tumefaction. When this has persisted for some time it leads to the formation of fibrous tissue. Oftentimes a breast may be quite extensively occupied by this fibrous tissue and still feel soft and pliable.

Usually in consequence of the pressure of the fibrous tissue around the gland ducts, retention cysts form sooner or later.

DR. BAKER: In my experience the majority of these cases, and I have seen not a few, have suffered from some menstrual irregularity, coming into their lives either at twenty-five or thirty years of age, or at the menopause. In those cases occurring early in life this irregularity is due to some chronic congestion of the uterus and ovaries, unrelieved by the flow, for it is almost universally the case that there is a very scant flow. When this trouble comes about the menopause it is usually the case that they have gone two or three months without any flow, and the patient is very likely suffering from chronic metritis or areolar hyperplasia in the secondary stage. Both are favorably affected by the abstraction from the uterus of two or three ounces of blood, which treatment followed up once a month for two or three successive months, has in my experience made a very decided effect on the tumor of the breast.

In the matter of the pathology I am sorry I cannot

² See page 555 of the Journal.

add any especial light on that part of the subject, but from the fact of the treatment which has been in my hands the most successful, second to the abstraction of blood from the uterus already referred to, I should think that the suggestion which Dr. R. C. Cabot has made of the galactoele was a very reasonable one, because under the influence of the galvanic current, which I have been accustomed to use in these cases twice a week, at the strength of 15 to 20 milliamperes for ten to fifteen minutes at each sitting, I do not see what effect that current is likely to have on fibrous tissue, but, if we consider it a galactoele, it would seem to me it would have a very decided effect, and as these tumors have disappeared in my experience the most rapidly by its use I should think it more likely to be the latter than the former. The fact that the patient has a lump in her breast which may be cancer is a matter of too great importance in her mind to be cast aside and altogether forgotten. Its importance to her physically as well as mentally demands our close observation. At all events, its speedy disappearance is greatly to be desired, failure of which by treatment would necessitate an operation for its removal.

DR. BRIGGS: One point in regard to treatment has not been brought out. The cases I have happened to see have been in large, pendulous breasts. I have found that supporting the breast and light pressure on the breast have been very beneficial, apparently causing disappearance of the swelling.

DR. MUMFORD: I feel very much as does Dr. A. T. Cabot in regard to the causes and conditions in these processes, but I understood Dr. R. C. Cabot to refer only to those masses we see in the breasts of neurotic young women, and not to the lumps or tumors we see in women at the time of the menopause. In the latter class of cases one must watch carefully, bearing in mind that there may be a malignant termination of the condition.

In the former class, that of neurotic young women, I have always assumed these processes to be of an inflammatory nature. I feel that this assumption is borne out by the result of competent massage. A competent massense, a *rara avis* in the town, can usually in two or three treatments greatly diminish, or cause to disappear, these masses.

Dr. Briggs suggested the support of a breast bandage, and this, as it relieves tension and congestion when the breast happens to be heavy, carries out the same idea as massage.

DR. PUTNAM: It seems to me very questionable to recommend any treatment of tumors which apparently have a habit of going away themselves. It seems to me those tumors mentioned by Dr. A. T. Cabot are different from those spoken of by Dr. R. C. Cabot, which are of a pretty distinct type, tumors which are deep in the breast and not easily felt unless the breast falls forward, and which have a peculiar feeling. When Dr. Cabot speaks of tumors that adhere to the surface it seems to me he is speaking about a different class. I have seen a good many such breasts as Dr. R. C. Cabot speaks of, and not by any means always at the adolescent age, or at the menopause. Some of these I have taken to surgeons and some I have left alone, and as far as I know none have been operated on, and the surgeons in the particular cases mentioned recommended no treatment, recommended leaving them alone. One, for instance,

I remember in a lady who is rather thin and has rather pendulous breasts, but not large ones. She was not at either of the ages mentioned, but about forty at the time that occurred; another one I recall very distinctly was about forty-five. In both those cases the tumors went away without treatment more than a placebo, such as bathing gently with alcohol and water, and being careful not to press them at all. I believe cases such as Dr. Cabot described do not require treatment; internal medication or any such application as electricity can hardly have the effect attributed to them. The tumors go away themselves.

DR. HEWES: In regard to the question of these tumors being accumulations of blood or milk I have one interesting fact to report. I have a case in a young girl which has been in the wards of the hospital for observation, and came to me to the Out Patient several times with mastitis and a tumor. She said the tumor occasionally went away. After other methods of treatment, without improvement, I tried hypnotism for the relief of the pain and tenderness, and of the fixed idea of the patient, and under hypnotism this tumor disappeared for the time being absolutely. It came back again somewhat after the hypnotism, but there was no doubt as to its disappearing at the time. That is suggestive of the tumor being a matter of congestion in this particular case.

DR. R. C. CABOT: One question I have not quite got answered to my satisfaction, the question raised by Shields, whether these lumps are not physiological to a certain extent, whether it is a fact that a large proportion of women have them at some time and do not find it out. I wish I could get an expression of opinion from the surgeons present on that point; is it not a matter of accident that we find them in a neurotic sensitive, and is it not a possibility that they are more common than we know? As to their commonness, every one I have spoken to says he has seen a good many, and yet there is astonishingly little about them in literature. I do not understand exactly what Dr. A. T. Cabot means by a tumefaction. I do not know much of anything about the structure of the breast, but perhaps he can explain a little more in detail just what he means by a "tumefaction" such that without the presence of anything more than blood in addition to the ordinary constituents of the breast, a hard, more or less circumscribed lump would be produced.

DR. FREDERICK J. COTTON read a paper on

SUBPERIOSTEAL FRACTURES.³

AMERICAN PUBLIC HEALTH ASSOCIATION.

TWENTY-EIGHTH ANNUAL MEETING, HELD AT INDIANAPOLIS, IND., OCTOBER 22, 23, 24, 25 AND 26, 1900.

THE Section on Bacteriology and Chemistry met at the Pathological Laboratory of the Central Hospital for the Insane, with the chairman of the section, DR. THEOBALD SMITH, of Boston, presiding.

Several papers were read and discussed. Among them was one by DR. H. L. RUSSELL, of Madison, Wis., in which he showed the degree of heat which is necessary to destroy the tubercle bacillus in milk without injuring commercially the value of the milk. He also read the report of the Committee on the Bac-

³ See page 553 of the Journal.

teriology of Milk in its Sanitary Relations. As illustrating the peculiar way by which such germs find their way into milk, an incident occurring in a hospital at Leeds, England, was related. The nurses in that institution were in the habit of taking glasses of milk from the pantry up into the sick wards several hours before the milk was drunk. An outbreak of typhoid fever occurred among the nurses. Investigation disclosed the practice to which they had been resorting, and when it was ordered discontinued, the epidemic subsided.

DR. V. A. MOORE, of Ithaca, N. Y., related a diphtheria epidemic which was started in that city from milk delivered by a dairyman whose family had suffered from acute tonsillitis. The eldest son, who attended to the milking of the cows, had been pronounced well and resumed his regular work, but scientific investigation demonstrated that he still had germs of the disease in his system.

The meeting of the association was presided over by DR. PETER H. BRYCE, of Toronto, Canada. The sessions were held in the amphitheatre of the German House. Addresses of welcome were delivered by EX-PRESIDENT BENJAMIN HARRISON, GOV. JAMES A. MOUNT, and HON. ADDISON C. HARRIS, Minister to Austria. The response to these addresses was made by DR. CHARLES A. LINDSLEY, of New Haven, Conn.

The first paper presented at the general meeting was by PROF. S. H. WOODBRIDGE, of Boston, which was the report of the Committee on Car Sanitation.

CAR SANITATION.

The following recommendations were reported in the paper:

(1) When a passenger is known to be contagiously ill, he should be isolated in a compartment appropriately equipped and ventilated in such a manner as to separate it from the rest of the car. Through trains should be provided with rooms for the sick as well as state-rooms.

(2) The interior of passenger cars should be plain, finished with hard, smooth and polished surfaces.

(3) All furnishings should be as non-absorbent as possible.

(4) Coaches should be furnished with effective means for continuously supplying not less than 1,000 cubic feet of warm air an hour for each single seat, and for distributing and removing the air without troublesome draught.

(5) The temperature should be regulated.

(6) The cleaning of cars should be frequent and thorough.

(7) Floors and sanitary and lavatory fixtures should be frequently treated with a disinfecting wash.

(8) All fabrics in cars should receive sterilizing treatment. All bed and lavatory linen should be thoroughly sterilized in the process of laundering.

(9) Sewage tanks and earth closets should be provided under the cars. The practice of disposing of excreta by scattering it over road beds is dangerous.

(10) Water and ice should be obtained from the purest available sources. The use of tongs in handling ice should be insisted upon.

(11) The water tank should be frequently cleansed and periodically sterilized with boiling water or otherwise.

(12) The public should be educated to use individ-

ual cups. Paper paraffine cups might be provided by a cent-in-the-slot device.

(13) The use of canned goods in buffet car service makes careful inspection of such goods imperative. Fruits and all eatables before and after purchase should be stored with care, to avoid all unnecessary exposure to street and car dust.

(14) The filthy habit of spitting on car floors should be dealt with in a manner to cause its prompt discontinuance. It should be punished as one of the most flagrant of the thoughtless offences against the public right to health.

(15) Station premises should receive attention directed to general cleanliness of floors, furnishings, air, sanitariums, lavatories, platforms and approaches, and should be plentifully supplied with approved disinfecting material.

The recommendations of the committee were concurred in by the association.

DR. J. N. HURTY, of Indianapolis, said that if the association would make a vigorous demand for white blankets for sleeping cars, instead of colored ones, it would be a great reform. The white blanket would tell its own story. Colored blankets are frequently saturated with filth.

DR. H. M. BRACKEN, of Minneapolis, said that inasmuch as the travelling public pay a good price for Pullman cars, it is only right that the cars should be kept clean and in good condition. The beds are made up, people sleep in them, the next morning the linen is removed, while the mattresses and blankets are thrown into the upper berths and remain there until the next night, then used again. It is not uncommon for people, on entering Pullman cars, to complain of the odor of stale bedding, etc.

DR. C. H. JONES, of Baltimore, referred to tuberculous patients who travel long distances. When the greatest care and caution are observed, the blankets used on Pullman cars are now and then spat upon by them. The attendants cannot always be with such patients to cover their mouths with handkerchiefs. Railway managers should be notified of the great danger to the public from this source. When the public are educated in this matter, a great reform will have been inaugurated.

DR. C. P. WILKINSON, of New Orleans, stated that the chief objection to the equipment and furnishings of railway cars is that they are upholstered in absorbable material. In the extreme South rattan and steel springs were now used instead of plush and woollen furnishings.

DR. U. O. B. WINGATE, of Milwaukee, referred to the work that is being done in this direction by the International Association of Railway Surgeons, and suggested that it might be well to appoint a committee to co-operate with a similar committee of that association to do further work in car sanitation.

DR. HURTY spoke of one railroad which is now constructing seven cars with perfectly plain interiors. The bottoms and backs of the seats can be taken out and thoroughly sterilized at the end of every run.

DR. DOMINGO ORVANANOS, of Mexico City, Mexico, read a supplementary report on car sanitation. Boards of health in the territories covered by the association ought to try and obtain support from the different legislatures so as to make certain provisions obligatory on railway companies, as, for instance:

(1) The isolation in special cars of any persons suf-

fering from transmissible diseases; (2) to supply guaranteed filters in the tanks of drinking water; (3) the disinfection of bedclothes, hangings, curtains and towels; (4) all sleeping cars should be provided with small disinfectant stoves for small toilet articles; (5) the absolute prohibition under severe penalty of expectoration on pavements; (6) all railroad cars should be provided with a sufficient number of cuspidors containing a strong disinfecting solution.

NEW QUARANTINE METHODS AND CHANGES WHICH ARE CALLED FOR IN MARINE SANITATION.

This paper was contributed by DR. ALVAN H. DOTY, of New York City. Contrary to the popular belief, the most careful investigation, both from a scientific and practical standpoint, has demonstrated that the clothing actually worn by well persons is not a medium of infection. This is also true of the cargoes of ships. In making this statement, the author does not mean to imply that infection from these sources is not within the realms of possibility. Evidence was adduced that the cargo of a ship does not act as a medium of infection. If exceptions exist, they have not been revealed to practical sanitarians. Outbreaks of bubonic plague in European and other ports have brought prominently before our notice the question of the transmission of this disease by rats and other vermin. Information on this subject at present is incomplete, although Kitasato and Yersin have demonstrated the presence of the disease in rats during the epidemic of bubonic plague in Hong Kong in 1894. Beyond this, sanitarians have but little authentic information on the subject. It is reasonable to believe, however, that in such communities as are found in India and China, where filth, overcrowding and bad sanitary regulations exist to an extent which is almost beyond belief, that the dissemination of infection is so general that even vermin are involved. In civilized communities, however, where the ordinary sanitary regulations are carried out, the danger from this source would seem to be very limited. No authentic reports exist which show that cargoes of vessels have transmitted bubonic plague through the medium of infected rats or other sources.

In the inspection of persons coming from infected ports, the ordinary examination, which includes a statement from the person concerned, is not sufficient at all times to detect mild or ambulant cases. The most practical and important addition to the ordinary method of inspection is the use of the clinical thermometer. This has been in operation for the past two years in New York, and the most satisfactory results have been obtained in detecting mild or ambulant cases. While the essayist is convinced that the maximum period of incubation of yellow fever is five days, there is no doubt but that during the first day or so of the disease persons affected may present themselves and pass the ordinary inspection. The use of the thermometer at this time, however, will almost always show an elevation of temperature sufficiently high to justify the physician or health officer in causing a longer detention.

The author closed with a reference to the value of modern sanitary regulations.

PROF. F. C. ROBINSON, of Maine, said that formerly a great deal of paper was made from rags, and he was surprised to hear that there was no danger from infectious diseases from cargoes of rags. He believes

outbreaks of smallpox and other contagious diseases have been traced to rags.

DR. H. M. BRACKEN vigorously controverted the statement of the essayist that healthy persons are not liable to carry disease in their clothing. Every physician of experience could cite instances of physicians who have carried contagion to healthy people.

This paper was further discussed by DRs. WILSON, MONTIZAMBERT, the PRESIDENT, LEE, DURGIN, JONES, most of whom protested against the idea that physicians could not carry infection in their clothing.

DR. A. WALTER SUTER, of Herkimer, N. Y., read the

REPORT OF THE COMMITTEE ON CAUSE AND PREVENTION OF INFECTIOUS DISEASES.

Reference was made to smallpox, which he said was on the increase, and he cited copious statistics to prove his assertion. He added the pleasing assurance that the death rate from this malady is decreasing. The latter fact must not be viewed too optimistically, because smallpox is certain, if an epidemic of it continues long enough, to develop its greatest degree of virulence. He showed the value of sanitary precautions and of vaccination by citing the fact that Puerto Rico, since the United States had dominated its government, has rid itself of the disease, which, before the war, was very prevalent in that island.

He also discussed malaria, scarlet fever, typhoid fever, and declared himself a believer in the theory that the germs of malaria are transmitted by mosquitoes in many instances.

In discussing typhoid fever he referred to the declaration of Dr. Vaughan, that more than 80% of deaths among American soldiers in the Spanish War were caused by typhoid fever, and emphasized the necessity of cleanliness about military camps. He touched upon bubonic plague, and said he did not anticipate a scourge of this disease here, but urged great sanitary precautions.

ETIOLOGY OF YELLOW FEVER.

DR. WALTER REED, of Washington, D. C., read a paper on this subject, it being the joint production of himself, DR. JAMES CARROLL, DR. A. AGRAMONTE and DR. JESSE W. LAZEAR. A series of clinical, bacteriological and pathological observations was narrated, comprising 18 cases of yellow fever. Of this number 11 were designated as severe cases of the disease, with 4 deaths; 3 as well-marked cases, with no deaths, and 4 as mild cases, with no deaths. Blood cultures were made of 18 cases during life, and of 48 separate cultures made from the blood on various days of the disease and representing 115 bouillon inoculations, and 18 agar plates, they failed to find the bacillus icteroides in any of the tubes or plates. They failed to isolate the bacillus icteroides in 11 autopsies of yellow-fever patients. Having failed to isolate this bacillus, either from the blood during life, or from the blood and organs of cadavers, two courses of procedure appeared to be worthy of attention, namely: (1) A careful study of the intestinal flora in yellow fever in comparison with the bacteria that might be isolated from the intestinal canal of healthy individuals in this vicinity, or of those sick with other diseases; or (2) to give attention to the theory of the propagation of yellow fever by means of the mosquito. The essayists pursued the second line of investigation by reason of

the well-known facts connected with the epidemiology of this disease, and by the brilliant work of Ross and the Italian observers in connection with the theory of the propagation of malaria by the mosquito. Their observations point to the presence of an intermediate host, such as the mosquito, which having taken the parasite into its stomach soon after the entrance of the patient into the non-infected house was able, after a certain interval, to reconvey the infecting agent to other individuals, thereby converting the non-infected house into an infected house. This interval would appear to be from nine to sixteen days, allowing for the period of incubation, which agrees fairly closely with the time required for the passage of the malarial parasite from the stomach of the mosquito to its salivary glands.

In view of the foregoing observations they tested the theory of Finley on human beings. Experiments were made on 11 non-immune individuals. The mosquito used in all cases was *Culex fasciatus Fabr.* Results were 9 negatives, and 2 positives. The 2 cases reported as positives the authors detailed at great length.

Since they record 1 case in which a typical attack of yellow fever followed the bite of an infected mosquito within the usual period of incubation of the disease, and in which other sources of infection could be excluded, they feel confident that the publication of their detailed observations will excite renewed interest in the mosquito theory of the propagation of yellow fever, as first proposed by Finley. From their studies thus far of the disease, they conclude that the bacillus icteroides stands in no causative relation to yellow fever, but, when present, should be considered as a secondary invader in this malady. The mosquito serves as an intermediate host for the parasite of yellow fever.

DR. HENRY B. HORLBECK, of Charleston, S. C., read the

REPORT OF THE COMMITTEE ON THE ETIOLOGY OF YELLOW FEVER.

Reference was made to previous contributions on this subject by the committee, and a digest given of the labors of bacteriologists who have during the past twelve months devoted themselves to the study of the bacillus icteroides. The report closed with the following conclusions from an article by Proust and Wurtz, published September 7th, 1900:

"(1) The bacillus icteroides of Sanarelli seems to be the specific agent of yellow fever. That micro-organism injected into certain animals, especially dogs, reproduces symptoms and lesions strikingly analogous to those observed in man. The toxin of this bacillus produces in animals the same effect as the microbe. The injection of this toxin into 5 individuals reproduced in man typical yellow fever, accompanied by its symptoms and anatomical lesions. The serum of individuals attacked with yellow fever agglutinates cultures of the bacillus icteroides.

"(2) The bacillus has a prolonged vitality both in air and water (fresh and sea). It is certain that it is the same in the soil. Moulds favor its development. These facts confirm conditions that have been known a long time. They explain the reawakening of yellow fever a long time after the extinction of an epidemic, and the longevity of the disease aboard vessels in bad hygienic conditions.

"No new prophylactic measures have come out in this knowledge of the etiology of the disease. As formerly, the prevention of yellow fever consists in applying the measures of isolation and of disinfection, and of improving the hygienic conditions."

While the numerous contributions to the cause of yellow fever are far from being conclusive, the researches made during the last few years furnish matters of information which will be guiding stars in future investigations.

DR. J. P. BERNALDEZ, of Mexico, spoke of

HUMAN VACCINE AS A PROPHYLACTIC OF SMALL-POX,

and discussed its advantages and disadvantages.

DR. M. S. IGLESIAS, of Vera Cruz, Mexico, spoke of the

ELEMENTS OF DEFENCE AGAINST INFECTIOCONTAGIOUS DISEASES AT THE PORT OF VERA CRUZ.

DR. F. W. ELGIN, of Philadelphia, read a paper entitled

INFLUENCE OF TEMPERATURE ON VACCINE VIRUS.

After detailing a series of experiments, he drew attention briefly to some of the lessons suggested by the experiments: (1) Vaccine points are unreliable when stored for any length of time at any temperature; (2) virus on points may be inert, yet germs charged along with the virus remain active, causing a form of irritation somewhat resembling vaccine vesicles, and known as spurious vaccination; (3) that glycerin will not destroy the extraneous bacteria in lymph when stored at or below the freezing point; (4) that continued exposure of germs to low temperature, when constant, does not destroy their activity and but slightly decreases their number; (5) hot, and especially variable, temperatures speedily injure vaccine; (6) hot temperatures increase enormously the number of germs in fluid lymph other than that stored in glycerin.

DR. H. C. H. HEROLD, of Newark, N. J., read a paper on

NEWARK'S DIPHTHERIA ANTITOXIN PLANT.

Early in 1895, a laboratory for bacteriological research, with an attendant plant for the application of antitoxin for diphtheria, was established under the jurisdiction of the Board of Health in Newark. This department has been in practical operation for more than five years. The author presented the results of the experiment of establishing such a plant, and showed by statistics of greatly reduced mortality from diphtheria by the use of antitoxin that it is one of the best things the city officials and medical profession of that city have ever undertaken.

PRESIDENTIAL ADDRESS.

This was delivered by DR. PETER H. BRYCE, of Toronto, who sketched at great length the progress of sanitary science from its birth in the period of the Renaissance down to the present time, and declared that scientific workers ought to take courage from what they have seen accomplished in this century. The address was scholarly, and an admirable, compact sanitary digest.

REPORT OF THE COMMITTEE ON POLLUTION OF WATER SUPPLY.

This was presented by the chairman, MR. GEORGE W. FULLER, of New York City. The report took the form of records and summaries showing recent progress in the more important branches of the subject. With regard to quality, the water supply of the future should meet the following requirements: It shall be free, or substantially free, from disease-producing germs; it shall be clear and colorless, containing no noticeable turbidity or vegetable stain; it shall be free from objectionable tastes and odors, as supplied to the consumer; it shall be free from noticeable amounts of dissolved iron, such as unfit for household use; it shall be free from excessive amounts of lime and magnesia, such as make water too hard for ordinary use; it shall be carefully examined with regard to constituents capable of dissolving metals used in distributing pipes.

Of the various branches of public works connected with the pollution of water supply, there is none in which such substantial progress has recently been made as in water purification. Ten years ago information upon this subject was very meagre, and comparatively few plants were in operation. During this period English sand filter plants have been increased from about 1.5 to 19 acres, with respective normal capacities of about 4,000,000 and 57,000,000 gallons daily; and the American or mechanical filter plants have been increased from about 12,000 to 90,000 square feet, with respective nominal capacities of about 36,000,000 and 270,000,000 gallons daily. Projected plants for some of the largest cities in the country show that in the next few years there will be very rapid development in the application of both of the leading methods of purification. Of the various processes for the purification of water supplies, there are two general methods which have shown distinctly their practicability, namely, the English method of slow sand filtration, and the American method, employing rapid mechanical filters. For those waters which never possess more than a slight or moderate amount of turbidity or dissolved vegetable color, the English method is somewhat more efficient, and, as a rule, it is slightly the cheaper for such waters. For those waters which for long periods at a time contain excessive quantities of either finely divided clay or of dissolved vegetable matter, there is now no practicable method of purification without the use of coagulants and subsiding basins. While coagulants can be successfully used in connection with the English method of sand filtration, the American method, in which coagulants are imperative, yields somewhat more efficient and economical results, as a rule.

TEACHING OF HYGIENE AND GRANTING OF DEGREES OF DOCTOR OF PUBLIC HEALTH.

DR. WYATT JOHNSTON, of Montreal, compared methods of hygienic instruction in vogue in the United States and in foreign countries, with the result that the showing was decidedly favorable to the foreign countries. He inveighed strongly against the looseness of methods in this country by which men are able to secure positions as health officers or as members of boards of health without having the necessary qualifications. He urged the association to con-

sider this matter, and endeavor to arrive at some standard for a purely hygienic education.

DR. L. P. JONES, of Greenwich, Conn., followed Dr. Johnston, and outlined the following scheme for preventive medicine: (1) The endowment of a chair of preventive medicine in each of the leading medical colleges of the country; (2) the establishment of an institute the members of which should be the incumbents of these chairs; (3) an award of prizes by this institute for essays and discoveries of special merit in sanitary science; (4) establishment of fellowships for a limited number of advanced students.

DISPOSAL OF REFUSE MATERIAL.

This subject was dwelt upon by MR. RUDOLPH HERRING, of New York City, who presented a report in which he mentioned the methods for disposing of garbage in the great cities of the world. He referred to the progress made by European cities in this direction, and said that the present status of disposing of garbage and refuse has resolved itself largely into a question of engineering.

(To be continued.)

Recent Literature.

Surgical Anatomy. A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By JOHN B. DEEVER, M.D., Surgeon in Chief to the German Hospital, Philadelphia. In three volumes. Illustrated by about 400 plates, nearly all drawn for this work from original dissections. Vol. II, Neck; Mouth; Pharynx; Larynx; Nose; Orbit; Eyeball; Organ of Hearing; Brain; Male Perineum; Female Perineum. Philadelphia: P. Blakiston's Son & Co. 1900.

The second volume of this *edition de luxe* on surgical anatomy fully equals in the excellence of its plates the high standard set by the first. Among the plates on the neck especial attention may be called to the section at the line of the sixth cervical vertebra, and the diagram of the deep cervical fascia, which give an excellent idea of this difficult and surgically important structure. Another very clear and accurate plate illustrates the collateral circulation after ligation of the subclavian and common carotid arteries. The plates illustrating the distribution of the lymphatic vessels and glands of the head and neck are also to be commended.

On the subject of ligation of the innominate artery the author quotes Ashurst's statement (the date is not given) that this artery had been ligatured 24 times with 2 recoveries, whereas Burrell in 1895 collected 29 authentic cases.¹ The important and sometimes indispensable procedure of resection of the sternum in this operation, described by Burrell, is not mentioned by the author.

In the description of the frontal and maxillary sinuses the close relation of the infundibulum with the orifice of the latter and the consequent frequent drainage of pus from the former into the latter are not mentioned by the author.

In general the plates and descriptions of the nose, orbit and eyeball are clear and sufficient.

¹ International Textbook of Surgery, vol. i, p. 313.

The illustrations of the brain and craniocerebral topography are good. Reid's method for locating the fissure of Rolando, which, requiring no special apparatus, is perhaps the best and simplest, is wisely chosen by the author for description. The sections of the brain are well chosen and beautifully executed.

In criticism of the description of surgical procedures throughout the work it may be justly said that they are insufficient for the guidance of the surgeon, and that many of them might have been omitted with advantage, as not relevant to a work on surgical anatomy, and as disfiguring by their incompleteness an otherwise excellent work. For instance, the statement with regard to imperforate anus that the operation consists of searching for the rectum through an incision anterior to the coccyx, and that if the rectum cannot be found the only alternative is colotomy, leaves out of account the extremely valuable procedures of resection of the coccyx and part of the sacrum.

The plates on the male and female perineum are clear and valuable.

A Textbook of Pathology. By ALFRED STENDEL, M.D., Professor of Clinical Medicine in the University of Pennsylvania; Physician to the Philadelphia Hospital; Physician to the Children's Hospital, Philadelphia, etc. Third edition, revised. With 372 illustrations. Philadelphia and London: W. B. Saunders & Co. 1900.

This work is popular, for already it appears in its third edition. The author states that his primary purpose is to supply a moderate sized book on clinical pathology, but why the term "clinical" should be introduced here is not apparent, for it is not clear to the reviewer that the subject matter is any more clinical than that of other well-known works on general and special pathology.

The author has succeeded remarkably well in condensing a large quantity of facts into a comparatively small space. The use of the heavy-faced type for headings of subdivisions of chapters attracts the eye. The book is evidently written for young medical students and in general seems to be well up to date.

Several criticisms seem to be called for. The author's classification of carcinomata is objectionable. We can see no good reason for using the term "cylindrical epithelioma" for carcinomata arising from columnar or cylindrical epithelium, and then classifying other carcinomata of identical histological structure under "glandular carcinomata." Such a multiplication of terms must prove to be as confusing to the student as it has been to the reviewer. Thus we find, in the description of carcinomata of the stomach, adenocarcinoma discussed in a separate paragraph from "cylindrical epithelioma," as if these were different forms of tumor and with an apparent effort to make a distinction between them. If there is such a distinction the author's description does not make it plain. Moreover, we think that the application of the term "epithelioma" to certain forms of carcinomata tends to a useless multiplicity of terms and to the confusion of the student, for the forms of tumor grouped under this term by the author are all carcinomata. We agree with Ziegler that the term "epithelioma" should be preserved for certain benign epithelial growths.

The description of the histology of acute nephritis is also unsatisfactory. Thus, there is no mention or description of the commonest form of glomerular

nephritis, the intracapillary form, while acute interstitial nephritis is described as characterized by the formation of purulent foci in the kidney and is apparently considered to be identical with suppurative nephritis. Acute interstitial nephritis, non-suppurative, is said not to exist as an independent affection. The author apparently does not accept the results contained in the literature on the histology of acute and subacute nephritis and especially in the published work of Councilman upon the subject. The section on mycetoma indicates that the author apparently rejects the results of the work by Boyce and Surveyor and others on this disease.

Considered as a whole, we think that the book shows good reasons for the extensive sale it has evidently enjoyed among medical students.

A Textbook upon the Pathogenic Bacteria. For Students of Medicine and Physicians. By JOSEPH MCFARLAND, M.D., Professor of Pathology in the Medico-Chirurgical College, Philadelphia; Pathologist to the Medico-Chirurgical Hospital, Philadelphia; Fellow of the College of Physicians of Philadelphia, etc. Third edition, revised and enlarged. With 142 illustrations. Philadelphia: W. B. Saunders & Co. 1900.

This book aims to be not only a manual for the bacteriological laboratory, but also to present a readable account of the properties and peculiarities of all of the important pathogenic bacteria. The present edition of the book represents an improvement over the last edition. The author has evidently considerably enlarged his acquaintance with the literature of bacteriology and the pages abound in useful references as footnotes. In this connection it is gratifying to note the number of references to American workers.

The reviewer does not find much to object to, but yet he does object to the crediting to Canon of a part in the discovery of the influenza bacillus and to the presentation of the subject of mycetoma.

Canon's alleged discovery of the bacillus of influenza will not bear examination, for it has never been shown that the bacillus that he claimed to have discovered in the circulating blood of influenza cases was identical with, or had any resemblance to, the now accepted bacillus of influenza, described by Pfeiffer in the bronchial secretions. Canon's claim rests upon little more than an assertion.

The chapter on mycetoma is objected to, chiefly because no adequate explanation is given of what the photographs which accompany the chapter are meant to illustrate. The author apparently does not accept the views concerning the dual nature of this disease expressed in the paper from which these photographs were taken.

Manual of Pathology, including Bacteriology. The Technique of Post-mortems, and Methods of Pathologic Research. By W. M. LATE COPLIN, M.D., Professor of Pathology and Bacteriology, Jefferson Medical College, Philadelphia; Pathologist to Jefferson Medical College Hospital and to the Philadelphia (Blockley) Hospital; Bacteriologist to the Pennsylvania State Board of Health. Third edition, revised and enlarged. Pp. 846, with 330 illustrations and 7 colored plates. Philadelphia: P. Blakiston's Son & Co. 1900.

Although it is stated in the preface of this work that it is not intended to be a treatise or book of ref-

erence, but a manual for use in the laboratory and post-mortem room, and in clinical diagnosis by microscopical methods, the size and makeup of the work show that the book has a more ambitious scope than this. Thus, not only does it treat of "bacteriologic," "histologic," post-mortem, and other kinds of laboratory technique useful in medicine, including the microscopical examination of the urine, but it also attempts to present the subjects of general and special pathology.

The book is evidently written to satisfy the demand of medical students for a large amount of information on various subjects in a concentrated form. That it meets this demand to the satisfaction of a large number of medical students is shown by the fact that this, the third edition, has been published. Of course, the present edition is much larger than the first edition.

From the reviewer's point of view the book is unsatisfactory because it covers too much ground. It is neither a good work on laboratory technique, nor is its presentation of the subject of general and special pathology adequate. We note that the author defines the term hypertrophy as "increased functional power having a tendency to persist, and that is beyond the normal for a given tissue under its existing conditions." For the definition of inflammation he adopts that of Park: "Inflammation is an expression of the effort made by a given organism to rid itself of, or to render inert, noxious irritants arising from within or introduced from without." In the next edition these definitions should be improved.

Experiments on Animals. By STEPHEN PAGET. With an introduction by LORD LISTER. Pp. 274. London: T. Fisher Unwin. 1900.

This volume on animal experimentation comes with peculiar grace from Mr. Paget, who although not himself engaged in experimental work, was for twelve years secretary to the Association for the Advancement of Medicine by Research. In this official capacity, and without the enthusiasm engendered by personal experiment, which is supposed to warp judgment, Mr. Paget must be regarded as a fair critic of the questions at issue. The book is a concise, scholarly and, to unprejudiced persons, convincing presentation of facts relating to experiments on animals. It is replete with literature references and statistics, and throughout shows a judicial attitude, which should commend it to all readers, however widely their opinions may differ. The book is conveniently divided into three general parts, under which there are a number of chapters. The first part deals with experiments in physiology and narrates the classical experiments, which have formed the foundation of much of our later knowledge. The second part concerns itself with experiments in pathology, bacteriology and therapeutics, constituting the bulk of the book. The various diseases due to bacteria are treated in considerable detail, with the experiments which have so materially added to our knowledge of their etiology and prophylaxis. Parasitic diseases, myxedema, the action of drugs, and snake venom are also each given a chapter. The third part discusses the "Act Relating to Experiments on Animals," and is naturally of particular interest to English scientists.

It is hard to commend such a book too highly, containing, as it does, an admirable presentation of facts, carefully collected and concisely presented to the

reader. The final decision in this whole question of animal experimentation must clearly be reached by a painstaking collection and proper interpretation of facts and by nothing else. The book is well printed and sufficiently well bound, and has three full-page illustrations.

Disinfection and Disinfectants. By H. M. BRACKEN, M.D., Secretary of the Minnesota State Board of Health. Chicago: The Trade Periodical Co. 1900.

This handy volume contains a condensed statement of the subject of disinfection and its practical application, and will be found a valuable handbook for the use of health officers, who are constantly engaged in the campaign against infectious diseases.

The short and terse distinctions between the terms, "germicide," "disinfectant," "antiseptic" and "deodorizer" in the introduction are clearly stated. The chapter, concerning Certain Infectious Diseases, contains many useful hints and instructions, and shows very clearly the different uses of the various disinfectants in their applications to the different kinds of communicable disease to which man is liable. Undue importance, however, appears to be given to the necessity of embalming the bodies of persons dying of such diseases, the frequent allusions to this process conveying the impression that such bodies constitute a menace to the public health almost as serious as the presence of the living who are suffering from similar diseases, a theory which is not borne out by everyday experience.

The book is fully illustrated with excellent illustrations showing various forms of apparatus used in disinfection, the methods employed for disinfecting interior apartments, etc.

The Theory and Practice of Hygiene. By J. LANE NOTTER, M.A., M.D., and W. H. HORROCKS, M.B., B.Sc. Second edition. Philadelphia: P. Blakiston's Son & Co. 1900.

This work constitutes one of the best treatises yet published in English upon this subject, and may be regarded as nearly up to date as the extremely progressive character of the subject will admit. Several of the former chapters have been rewritten and important additions have been made to those which relate to water supply, sewage disposal, immunity, disinfection and infectious diseases. The material relating to the bacteriological examination of water is very fully presented. The chapters relating to water, food and beverages, sewage disposal, infectious diseases and sanitary law are very thoroughly treated. Each chapter is followed by a bibliographical list of the works employed in its preparation.

The work is illustrated with 15 inserted plates, and many wood cuts. Due credit is given to the State Board of Health of Massachusetts for the use of Plate VII in the chapter relating to food. Plate XV, illustrating Dr. Manson's observations upon the malarial parasite, together with the review of the modern researches as to the part played by the mosquito, and the methods employed for its destruction illustrate the progressive character of the work. Very much material has been brought together in this comprehensive volume which will make it a useful work of reference for students, but more especially for all persons who are interested as practical workers in sanitary science.

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"THANKSGIVING DAY."

NOTWITHSTANDING the reflection that the physician, as such, is more apt to be practically and professionally concerned with the days immediately following Thanksgiving Day, with the sequelæ of its present celebration, than with the day itself or the observances thereof, it is perhaps not amiss that we should devote a brief space in a number of a Boston medical periodical issuing on an anniversary of this old New England function to its consideration, without yielding to the temptation to produce, after the fashion of the modern magazine, a Thanksgiving number.

Thanksgiving Day is generally recognized all through the country as pre-eminently a New England function. It is only since 1863 that the proclamation appointing a general day for all the States of the Union has proceeded from the President.

Previously, as those in middle life can well remember, the governors of those States which held the day in honor issued each his own proclamation, naming his own day, which might or might not be that of other States.

The first "Thanksgiving" celebration is said to have been held by the Plymouth Colony in 1621, but the first regularly appointed Thanksgiving Day in Massachusetts was apparently held on February 22d, a date of good omen, 1632. "These days seem to have originated in the public acknowledgment of some immediate causes of gratitude to God, and not as mere formal anniversary observances." The conditions leading up to and surrounding this Thanksgiving Day of February, 1632, are in such a dramatic contrast to those now obtaining in this neighborhood, or in fact almost anywhere in this country, as to merit being again described for our chastening and correction. On the 29th of November, 1631, Governor Winthrop writes from Boston to his wife in England: "We are here in a paradise. Though we have not beef and mutton, etc., yet (God be praised) we want them not; our Indian corn answers for all. Yet here is fowl and fish in great plenty. . . . We here enjoy

God and Jesus Christ. Is not this enough? What would we have more?" Before the winter was far advanced, however, the people "were necessitated to live on clams, and muscles, and ground nuts and acorns." The governor himself had the last batch of bread in the oven, and was seen giving the last handful of meal in the barrel into a poor man distressed by the wolf at the door. A ship had been sent to England six months before for provisions, but had not been heard from. A day had been appointed for a general humiliation, to seek the Lord by fasting and prayer; for this form of observance the facilities were ample. At the last moment, in the very hour of despair, the ship was seen entering Boston Harbor, laden with provisions for them all.¹

It is not to be inferred that the fast became a feast from this early period, but a great differentiation has certainly been slowly evolved, and the observances of today — the devotion to pastimes and the generous consumption of sustenance — would doubtless scandalize the early worthies of the colonies. After the Revolution the custom of appointing a Thanksgiving Day gradually extended to the Middle States, later to the West, and more slowly to the South.

There are few years in which the inhabitants of this country have not much to be thankful for, and certainly there have been very few in which there were more, or more general, causes for keeping a day than this year — even those who voted for Mr. Bryan need not exclude themselves.

Although we have ceased to fast and humiliate ourselves, and there may be some even who do not pray, the day still has its uses, and we believe of no small value morally, socially, and even physically, to the citizens of so widely expanding a country. It gives another holiday, and as yet our people have none too many; its tribute is paid to the family; it brings the old and the young together; reknits periodically the dropped stitches in the old home life; brings those who are crowding more and more into the whirl of the cities back now and then to the calm of the country, where they were reared and where they may take new bearings as to relative values. In all these respects we hold that Thanksgiving Day is good and should be pleasant medicine for the American of today, of whatsoever descent he may be.

THE ETIOLOGY OF BERI-BERI.

THE time is clearly approaching when the various infectious diseases will so far have yielded to investigation that we shall know their causative agents and the means by which infection is produced. The extraordinary interest recently manifested in the study of tropical disease has done much to broaden our horizon and to supply problems and material for research which are quite out of reach in our temperate and highly civilized home communities. To study the subtle questions of etiology, it is clearly essential to

¹ Memorial History of Boston, pp. 117, 118.

go where the disease under investigation is endemic, and this, it is gratifying to note, is being done more and more by men well equipped with the training necessary to successful research. The recent brilliant investigations on malaria are a case in point. Admirable work had been already done in the study of individual cases, but the fundamental problem underlying the spread of the disease was practically untouched, until the very haunts and breeding places of the disorder were invaded. The conception which led to the opening of the London School of Tropical Medicine has already demonstrated the wisdom of its founders, and we look forward with confidence to a constantly increasing number of enthusiastic workers who will go out from its instruction to add to our knowledge of preventive medicine.

Beri-beri has long been a disease of which we have heard, and of which the textbooks write; to actually see it has been an opportunity which few have enjoyed. Sporadic cases, often doubtful of diagnosis, appear from time to time, as has recently happened at the Boston City Hospital, but never in sufficient numbers to permit of more than a superficial study. The condition, no doubt, derives its chief interest from the difficulties which have beset our efforts to get at its etiology. In this connection, a letter written to Dr. Patrick Manson by Dr. Van der Scheer, of the Hague, formerly of Java, and published in the November number of the *Journal of Tropical Medicine*, is of more than passing interest. Dr. Van der Scheer has had unusual opportunities for study, and has already published some of his results in the *Indian Medical Gazette*. The present letter is called out by the fact that various journal references to his work have been insufficient to attract attention to his hypothesis. Dr. Van der Scheer does not believe that beri-beri is a disease due to the influence of an exogenous toxin from the soil or from food. Regarding the influence of food, he says that many examples are known of people partaking of the same food, but living in different houses, among whom one group develops beri-beri while another remains exempt. He believes, further, that the disease is not contagious and not miasmatic, though he does not explain as fully as we should wish precisely what he means by "miasmatic."

Regarding this he writes: "I wish to point out that I have become convinced of the truth of this theory during my residence at the hospital in Batavia. It is a collection of large, spacious buildings, separated from each other at a distance of several yards and occupied by no more than 50 to 70 patients in each. The floors of the 'pavilions' are cemented. The water is furnished by artesian wells, the food is excellent, and real miasmatic diseases, as cholera, typhoid, dysentery, never occur in it, although patients suffering from these are often treated within its walls. Beri-beri occurs there in a severe fashion. And so we see it everywhere. It appears in hospitals, barracks, etc., which are apparently under the best hy-

gienic conditions; it disappears when the patients attacked (natives) leave the spot and are dwelling in their private houses under conditions much worse than the former."

The following interesting facts are also noted: That whereas cholera, typhoid and allied disorders are apt to increase when troops, for example, are collected in camps, beri-beri disappears; that persons are usually not attacked when much in the open air and that hospitals and vessels at sea are notorious centres for the development of the disease. The fact that beri-beri often breaks out on board ship long after leaving port militates against the idea that this is due to a long incubation period, since the incubation period is known, at times, to be very short and it is unlikely that this period would vary within such wide limits. Dr. Van der Scheer has reached the definite conclusion that the spread of the disease must take place through an intermediate host, either an insect or some other form of animal life. His suspicions have rested on the *blatta orientalis* (black beetle, cockroach) or of some member of that family as the probable carrier of the infection. This beetle is found in all parts of the tropics where beri-beri exists, and is frequently found on shipboard.

The general conclusions are as follows: "According to my idea beri-beri must be caused by a parasite (ameba or something else) that lives in the intestinal tube and forms a toxin which causes degeneration of nerves. A part of the life cycle of the parasite may take place in the body of a *blatta* species (in its intestines, kidneys, or lymph glands), and the spread of the disease to them would be possible when: (1) There are patients suffering from beri-beri; (2) when the *blatta* species is present; (3) when it is possible that the *blatta* eats human feces; (4) when man is infected by *blatta* excrement.

In view of the vogue which the theory of the conveyance of the exciting cause of disease by means of animal hosts is now having, this conception is certainly one demanding close inspection and further study. The matter must be taken absolutely out of the realm of speculation or possible coincidence and demonstrated as a fact before it can be accepted by scientific men. It is to be hoped that more attention will be given Dr. Van der Scheer's theory in the future than appears to have been accorded it up to this time.

MEDICAL NOTES.

SECTION ON MEDICINE OF PAN-AMERICAN MEDICAL CONGRESS.—The next meeting of the Pan-American Medical Congress, to be held at Havana, from December 26 to 29, 1900, promises to be a successful one and a large attendance is expected. It is sincerely hoped that the United States will be well represented and that the programme of the Section on Medicine will be a creditable one. The titles of papers intended for this section, together with the name and address of the author, should be sent as soon as pos-

sible to the secretary of the congress, Dr. Tomas V. Coronado, Prado 105, Havana, Cuba, and it is especially desired that a short abstract of the paper should also be prepared and mailed at the same time. For further particulars address Dr. Judson Daland, 317 South 18th Street, Philadelphia, Secretary of the Section on Medicine.

TWO CENTENARIANS.—Mrs. Thomas Flournoy, said to be in her one hundred and first year, died in Philadelphia last week. She was the widow of General Flournoy, an officer in the War of 1812, and her father served in the Revolution. Mr. George Kendall, of Fairfield, Me., also died last week, at the reputed age of one hundred years and some months. His father was the first settler in the village.

PLAGUE ON EAST COAST OF AFRICA.—It is announced that Sir Alfred Milner has proclaimed that all the East Coast ports of South Africa between the tenth and fortieth parallels are infected with plague.

DR. ABRAHAM JACOBI, VICE PRESIDENT OF THE PAN-AMERICAN MEDICAL CONGRESS.—Dr. Abraham Jacobi has been appointed vice president for the United States of the coming Pan-American Medical Congress.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the six days ending at noon, November 27, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 158, scarlatina 39, measles 12, typhoid fever 15.

BOSTON MORTALITY REPORT.—The number of deaths reported to the Board of Health for the week ending November 24 was 200, as against 225 the corresponding week last year, showing a decrease of 25 deaths, and making the death rate for the week 18.6. The deaths from tuberculosis of the lungs were 23, pneumonia 14, whooping cough 1, heart disease 23, bronchitis 4, marasmus 6. There were 9 deaths from violent causes. The number of children who died under one year was 24, under five years 41, persons more than sixty years 52; deaths in public institutions 61.

COMMITMENT OF WOMEN TO INSANE HOSPITALS.—In the recent test case regarding the claims of a certain Mrs. White that she was illegally detained in an insane asylum, Judge Morton, of the Supreme Court, in remanding her to the hospital, made the following statement: "I still think that it is a crying injustice that, although a man may be brought before the court and have every careful safeguard put around him before being committed to an insane asylum, a woman can have none of this, but may be committed without notice of hearing."

DIPHTHERIA IN A SOMERVILLE, MASS., SCHOOL.—The Jackson Primary School has been closed by the Board of Health until after the Thanksgiving vacation. The schoolhouse consists of four rooms and accommodates about 150 pupils. The janitor lives in

the basement of the building, and recently two of his children were taken ill with diphtheria. None of the pupils are ill with the disease; the building is closed merely as a precautionary measure.

SANITARIUM IN SALEM, MASS., HARBOR.—Arrangements have been completed for tearing down the main building at Lowell Island in Salem Harbor, used for a children's sanitarium, and erecting a smaller and more convenient building on the same site. It is hoped that it will be possible to have the new building in readiness for use by next summer.

ABOLITION OF CANE RUSHES.—As the indirect result of the death of a student at the Massachusetts Institute of Technology, while engaged in a cane rush, the custom has been discontinued at that institution. The student body at Tufts College has likewise voted to substitute a less dangerous test of superiority for the so-called flag rush.

CHANGES AT LONG ISLAND HOSPITAL, BOSTON HARBOR.—Dr. A. J. Ranney, who will assume the superintendency of the Long Island Institution, has announced his intention of appointing Dr. A. S. Hartwell assistant superintendent. Dr. Hartwell's position heretofore has been first medical officer.

DIPHTHERIA IN CAMBRIDGE, MASS.—A death from diphtheria was recorded at the Cambridge Board of Health November 26th, together with 5 hitherto unreported cases.

NEW YORK.

APPROPRIATIONS FOR CHARITABLE PURPOSES.—The annual meeting of the Charity Organization Society of New York was held on November 16th. The report of the council showed that the appropriations for private hospitals and other institutions in the city budget for 1901 is \$2,786,011, or \$71,730 less than for 1900. The most urgent needs of the city in the line of charity were given as additional day nurseries, more diet kitchens, increased provision for aged people, hospitals for consumptives, and active volunteer workers. Among the speakers were Dr. John H. Pryor, of Buffalo, Commissioner of Charities Keller, and Controller Coler. Mr. Keller spoke of the urgent need of a new city hospital for Harlem, and said that he had applied to the Board of Estimate and Apportionment for an appropriation to erect the proposed buildings in a more central location than the present inadequate structure. Mr. Coler said that he could promise the commissioner at least one vote both for the Harlem Hospital and for a hospital for consumptives.

STATE CHARITIES AND CORRECTION.—The first New York State Conference of Charities and Correction was held at Albany on November 20th, 21st and 22d. The number of dependents under institutional care in the State, including the insane, was stated by the president, William P. Letchworth, to be 86,893. In a paper contributed by Controller Coler, the latter said he could not but feel that the city authorities

ought to have fuller information about the quality, work, needs and merits of the large number of private institutions appealing to the city for annual subsidies. The report of the Committee on the Mentally Defective was presented by Dr. William P. Spratling, Medical Superintendent of the Craig Colony for Epileptics.

BROOKLYN WATER SYSTEM.—The Court of Appeals has just rendered a decision which may seriously cripple the water system of the Borough of Brooklyn. While the decision only awards \$6,000 damages to Benjamin Forbell, a farmer, and grants a perpetual injunction restraining the city from operating the driven wells at the Spring Creek pumping station, it involves the entire water supply system of Brooklyn, and it seems probable that the city will be called upon to make good damages aggregating \$1,500,000. More than a hundred similar suits are now pending, but they have been held back until the Court of Appeals decided the Forbell case, which was regarded as a test case.

A GOLDEN WEDDING.—Dr. Thomas M. Markoe, emeritus professor of surgery in the College of Physicians and Surgeons, and Mrs. Markoe celebrated their golden wedding on November 20th.

Miscellany.

VITAL STATISTICS OF HAVANA.

W. C. GORGAS, Major and Surgeon, U. S. Army, and chief sanitary officer, makes the following statements in his report to the Adjutant General, Division of Cuba:

The general death rate for this month makes a very favorable showing as compared with the past four months, being less by eleven deaths than the smallest figure shown in these months. The report shows that we had 507 deaths, which gives a death-rate of 25.08. This rate compares very favorably with the rate for October for the ten preceding years, being smaller than the lowest, that of 1899. We had 74 deaths from yellow fever this October. While this is large for October, it is not, as has been reported in many of the papers of the United States, as large as that for October in many of the preceding years. The years 1895 and 1896 showed considerably larger numbers. Of the cases of yellow fever occurring during this month, 62 were Americans and 225 were Spaniards; 8 Americans died and 51 Spaniards, giving a rate respectively of 12.90 for the Americans and 22.66 for the Spaniards. The immigration continues to increase, and is the great cause of our comparatively large number of yellow-fever cases. We have had so far the largest number of immigrants that has come into Havana in any one year up to November the first, and, for October, very much the largest immigration that has occurred in any October within ten years. We hope a great deal from the recently established Immigration Bureau, but so far it has not had time to have any perceptible effect. Of 308 cases this month, 167 have been on the island less than a year and 215 less than two years, which goes to prove that our yellow fever is made up almost entirely from the recently arrived Spanish immigrants. During the past month many exaggerated reports of the yellow-fever situation have been published in the United States. Out of a population of 242,000 there have been since the first of

January 968 cases. Mr. Dobson, the correspondent of the Associated Press, published very widely the statement that every block in Havana had from 1 to 17 cases. We have 857 occupied blocks. Out of these 397 have had cases of yellow fever. Of the blocks which have had cases, 224 had only 1 case, and only one or two blocks in the city approximated the numbers given by Mr. Dobson. In Havana there are 16,480 houses, of which 709 have had cases of yellow fever. In the *Boston Transcript* of October 20th, Gen. Fitzhugh Lee is quoted as stating that a yellow-fever epidemic exists in Havana at present, which epidemic is the worst in his experience. It will be seen in the body of the report that for the past ten years there have been few years in which the deaths from yellow fever are as few in number as they have been this year. General Lee, I think, spent 1896 and 1897 in Havana. In 1896 there were 1,282 deaths from yellow fever and in 1897 there were 858; this year, so far, there have been 236. The *New York Evening Post* of October 29th, in an article commenting upon the extent of yellow fever in Havana, among other things says: "Certainly, the army itself did not have so many or such serious losses to deplore as this year." The records of this office show that during the year 1899, among the soldiers within the present city limits of the city of Havana, officers and enlisted men, we had 26 cases of yellow fever with 7 deaths. Up to the first of November for the year 1900, in the same class and over the same area, we have had 20 cases and 6 deaths.

I call attention to these facts to emphasize the statement that I have frequently made, that yellow fever is not very general in its distribution in Havana, as is reported, and not by any means as universal as is generally believed. I would like in this connection to call attention to the apparently good results that we have obtained from our system of disinfection and isolation. In these 553 houses in which we have had 1 case of yellow fever, the disinfection has apparently been successful and has prevented a recurrence of the disease. I also wish to call attention to the large amount of cleaning and disinfecting that has been done during the past month. This is considerably more than this department has before accomplished in any one month during my administration. I think the money and labor we are spending in this direction is well spent, but I desire again to call the attention of the adjutant general to the need of a general system of sewerage. I do not believe that our present system of isolation and disinfection will answer in itself to eradicate yellow fever from Havana, but must be supplemented by a general sewerage system, and I earnestly urge that this be commenced at the earliest possible date.

MESSAGE IN JAPAN.

DR. H. C. WOOD, of Philadelphia, sends an interesting letter to the *Philadelphia Medical Journal* on his observations on massage in Japan:

"As every one knows, massage has been largely practised in Japan almost from time immemorial. In a recent tour through that country one of the most interesting and curious sights that I witnessed was a little 'tot' between five and seven years old, with the utmost seriousness and earnestness, and with a marked degree of skill, standing and massaging the age-stiffened trapezius and other muscles of the shoulders of an old grandfather or grandmother squatting before him. The common belief that the blind have in Japan a monopoly of the practice of massage appears to be only so far correct that probably 90% of the practitioners of the art are blind persons, who wander about the streets blowing a peculiar double whistle whose two weird notes may be heard at almost any hour of the day or night, pleading for work and sustenance.

"In order to make out the differences between the art as practised by the Japanese and the Europeans, I ordered a masseur in Yokohama, Tokyo, Kyoto, Mianoshita, Nikko, and one or two other places. As was perchance naturally to be expected, Yokohama being simply a foreign excrescence on the Japanese body corporate, the masseur in that city was not blind and seemed simply to be badly trained in the European methods. I could not make out any difference between him and a second-class American masseur.

"Kyoto is the centre of all that pertains to Japanese religion, art or customs, having been the capital of old Japan, and being still the culture capital of the country. The masseur I saw there possessed great skill; his methods, however, did not differ very greatly from those to which we are accustomed, except in one motion, which seems to me the most efficient I had ever had practised on me, for the purpose of deep kneading between groups of muscles or of muscles situated much below the surface. The motions were so quick that in the absence of ability to talk with the practitioner it was a little difficult to perceive exactly how they were made, but I finally made out that the procedure might be termed a rolling use of the different joints of the fingers; first, the tip; then the distal intraphalangeal articulation; then the next joint; and then the knuckles applied one after another with great rapidity and force; the maximum of the force sometimes being reached with the second intraphalangeal joint, the knuckles only pressing lightly; in other cases the knuckles themselves giving the main blow. It was apparently when it was desired to penetrate deeply between two closely placed muscle groups that the maximum force was applied with the second intraphalangeal joint.

"One or two somewhat curious differences between the Japanese customs and our own were noticeable. In one of the places a woman, old, blind and ugly, was sent to do the work. The length of the séances seemed to be arranged according to the desire or the ability of the person operated upon to pay, and were remarkably cheap, even when the foreign price was demanded. Thus, asking the charge at one of the hotels, before engaging an operator, I was told 'Thirty sen,' that is, fifteen cents an hour. On expressing surprise, saying I had always paid forty sen, the man replied, 'Oh, yes, that is the price for the foreigner.' Not considering myself seriously cheated I paid the forty sen, or twenty cents for an hour of labor sufficiently hard to make the operator sweat freely."

THE USE OF TOBACCO ON ACTIVE SERVICE.

THE war in South Africa has taught many things of greater and of less importance. Perhaps nothing that it has demonstrated has been more marked than the important part which tobacco plays in the soldier's existence. Whether this is to be reckoned as a great fact or a small one there can be no doubt about the truth of it. Yet the Duke of Wellington's armies had no tobacco worth speaking of. If they did not forbid its use, at any rate the Iron Duke's officers were directed to advise their men strongly against it. What a curious contrast with the campaigning in South Africa, where marches and privations as long and as stern as any suffered by our great-grandfathers were borne by the volunteers and soldiers of today with a

grumble only when their "smoke" failed them. We have it from many who took part in the forced marches leading to Paardeberg, to Bloemfontein, to Pretoria, and beyond, that when rations were but two or three biscuits a day the only real physical content of each twenty-four hours came with the pipe smoked by the smouldering embers of a camp fire. This pipe eased the way to sleep that might otherwise have lingered, delayed by the sheer bodily fatigue and mental restlessness caused by prolonged and monotonous exertion. It is difficult, then, to believe that tobacco is anything but a real help to men who are suffering long labors and receiving little food, and probably the way in which it helps is by quieting cerebration — for no one doubts its sedative qualities — and thus allowing more easily sleep, which is so all-important when semi-starvation has to be endured. The cases of acute mental derangement in the course of campaigns such as the present are many. There have indeed been many in South Africa. It would be most profitable and interesting could medical officers have taken special note of the capacity for sleep previously evidenced by those who broke down, and also of their indulgence or non-indulgence in tobacco. We are inclined to believe that, used with due moderation, tobacco is of value second only to food itself when long privations and exertions are to be endured. Two features are to be noted with regard to the smoking practised on active service. It is almost entirely in the open air, and it is largely on an empty stomach. The former is always an advantage; the latter we generally reckon a most unfavorable condition. Shall we see in the near future patients with tobacco amblyopia or smoker's heart acquired while the trusting friend of tobacco thought that he was enjoying unharmed the well-earned solace of a hard day's march? We believe not, and that the open air will have saved what might have been the untoward results of smoking when unfed. — *Lancet*.

A NEW SCOTTISH TEMPERANCE SOCIETY.

A new temperance society has been formed in Scotland with the Duke of Sutherland as president. It is to be known as the Scottish Self-Control Society, or, briefly, the "S. S. S." Its members undertake three things: (1) Not to drink intoxicants before noon or at any time except at a regular meal; (2) not to treat, that is, not to offer or accept alcoholic drinks except with a regular meal; (3) not to give or to accept drink in return for services rendered.

The standard of temperance is not so rigorous but that a strenuous effort might enable a member to live up to it.

Correspondence.

KIRKES' PHYSIOLOGY: A REPLY.

BOSTON, November 29, 1900.

MR. EDITOR:—The letter entitled "Kirk's Physiology: A Reply" appearing in your issue of November 22d over the signature of Warren Coleman, M.D., calls for an additional statement from your reviewer.

If Dr. Coleman will carefully reread the reviews and the "reviewer's note" he will find that he is not personally ac-

cused of *lifting bodily* cuts and text from the English edition. These similarities, however, exist, and if Dr. Coleman investigates, he will find that the reviewer's statement is correct, although he may personally have had nothing to do with the actual *lifting*. That the American edition (Wm. Wood & Co.) is revised from the English editions is practically acknowledged by the fact that the names of Baker and Harris, the former English editors, appear on the title page. It is useless, therefore, for Dr. Coleman to deny that the book under discussion was compiled from an English edition. The similarities in text between the recent American and English editions will be evident to any one who has both the fifteenth and the thirteenth American and English editions (before Dr. Coleman or Dr. Halliburton edited these respectively) at hand.

Dr. Coleman should surely know that no charges have been made which are not in accord with facts, and such charges as were made were not made for the first time in the reviews under discussion. Since the publication of the reviews, the reviewer has obtained a copy of the *Philadelphia Medical Journal* dated February 24, 1900, containing a letter from Mr. Murray—the owner of Kirkes' Physiology in England—protesting against "*this glaring and persistent case of literary piracy.*" I have searched for some reply to this letter from either the American editors or publishers, but can find none. Does Dr. Coleman recollect the old saw about silence and consent? Dr. Coleman insinuates that the reviewer did not confine himself to the field of "legitimate criticism." This reviewer considers it legitimate criticism to point out any questionable proceeding in connection with a book he has to review.

Dr. Coleman speaks of offensive charges. It was not the intention of the reviewer to make any accusations of an offensive nature, but the statements of which Dr. Coleman complains being true, it was the duty of the reviewer to call the attention of the public to them. Under the circumstances, the reviewer does not consider the reviews "offensive," but it must be extremely unpleasant to lend one's name to a proceeding thinking it to be honest, and then to have it shown that it is not so.

Very truly yours,
THE REVIEWER.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 24, 1900.

A. W. DUNBAR, passed assistant surgeon, detached from the "Monongahela" and ordered to the "Vermont" for temporary duty with the crew of the "Wisconsin," and then to Naval Hospital, Mare Island, Cal.

R. B. WILLIAMS, assistant surgeon, appointed assistant surgeon from November 17, 1900.

J. T. KENNEDY, assistant surgeon, detached from the "Monocacy" and ordered to the Cavite Naval Station.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOVEMBER 22, 1900.

STONER, J. B., passed assistant surgeon. Relieved from duty at Quebec, Can., and directed to proceed to Norfolk, Va., and assume temporary command of the service during the absence of the medical officer. November 20, 1900.

THOMAS, A. R., passed assistant surgeon. Granted leave of absence for four days. November 3, 1900. Granted leave of absence for one month. November 19, 1900.

WICKES, H. W., passed assistant surgeon. Granted leave of absence for seven days from November 28th. November 19, 1900.

COFER, L. E., assistant surgeon. Directed to rejoin station at Los Angeles, Cal. November 17, 1900.

HOBDDY, W. C., assistant surgeon. Granted extension of leave of absence for two weeks from November 3d. November 2, 1900.

BAHRENBURG, L. P. H., assistant surgeon. Relieved from duty at Liverpool, Eng., and directed to proceed to New York, N. Y., and report to Surgeon L. L. WILLIAMS at immigration depot for duty. November 16, 1900.

LAVINDER, C. H., assistant surgeon. Granted leave of absence for two months from November 20th. November 22, 1900.

GIBSON, L. P., acting assistant surgeon. Granted leave of absence for ten days from November 13th. November 15, 1900.

GOODMAN, F. S., hospital steward. Granted leave of absence for thirty days from December 19th. November 21, 1900.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, December 5, 1900, at 8.15 o'clock.

Paper: "Enlargements of the Prostate; the Results of Personal Investigations into the Surgical Anatomy of the Enlarged Prostate, with Special Reference to Operative Treatment," by Dr. Samuel Alexander. Drs. A. T. Cabot, Abner Post and Paul Thorndike will take part in the discussion.

F. G. BALCH, M.D., Secretary, 279 Clarendon Street.

CHANGES IN STAFF OF CARNEY HOSPITAL.

The following changes have taken place in the staff of the Carney Hospital:

Resigned: DR. MUMFORD, visiting surgeon; DR. GREENOUGH, surgeon to out patients; DR. THOMPSON, physician to out patients.

Appointed: DR. PEASE, visiting surgeon; DR. J. S. STONE, assistant visiting surgeon; DRs. A. L. CHUTE, R. O'NEIL, surgeons to out patients; DR. T. J. O'BRIEN, physician to out patients; DR. F. L. D. RUST, assistant ophthalmic surgeon to out patients; DRs. E. S. HATCH, R. B. OSGOOD, H. S. WARREN, assistants in orthopedic out-patient department.

RECENT DEATHS.

HORACE TRACY HANKS, M.D., one of the best known gynecologists in New York, died on November 18th, at the age of sixty-four. He was a native of Vermont and was graduated from the Albany Medical College in 1861. During a portion of the Civil War he served as assistant surgeon of the 30th Regiment, New York Volunteers. He resigned in 1863, and after practising a year at Royalston, Mass., removed to New York. From 1872 to 1882 he was gynecologist to the DeMilt Dispensary, and in 1889, after having served for fourteen years as assistant surgeon, was appointed surgeon to the Woman's Hospital. Since 1885 he had been professor of diseases of women in the New York Post-Graduate Medical School and Hospital.

ROBERT ACTON, JR., M.D., visiting physician to the House of Correction, Blackwell's Island, died at the Presbyterian Hospital, New York, on November 22d. He was thirty-two years old and a native of Kinsale, Ire. He came to this country in 1891, and later was graduated from the Harvard Medical School. Dr. Acton had a magnificent physique, being six feet one inch tall, and in 1893 he was a member of the Harvard University football team. *

FREDERICK CORNELL DEMUND, M.D., of Bensonhurst, Brooklyn, N. Y., died on November 20th, in his seventy-first year. He was born at Millstown, N. J. He was graduated from the College of Physicians and Surgeons, New York, in 1855, and from 1857 to 1895 practised in the New Utrecht section of Kings County.

BOOKS AND PAMPHLETS RECEIVED.

Treatment of Typhoid Fever. By Stephen Smith Burt, A.M., M.D., New York. Reprint. 1900.

Transactions of the Obstetrical Society of London for Year 1900. Vol. XLII. Parts I, II and III for January to July. Edited by Herbert R. Spencer, M.D., and Percy Boulton, M.D. 1900.

Les Maladies qu'on soigne à Berck: Abcès froids, Adénites, Ostéites, Tumeurs blanches, Coxalgie, Mal de Pott, Scoliose, Luxation congénitale de la Hanche, Pied Bot, etc. Par F. Calot. Paris. 1900.

Sexual Debility in Man. By F. R. Sturgis, M.D., formerly Clinical Professor of Venereal Diseases in Medical Department of the University of the City of New York, etc. New York: E. B. Treat & Co. 1900.

Arzneiverordnungen in der Kinderpraxis, für Studierende und Ärzte bearbeitet. Von Dr. H. Guttmann. Dritte, gemass dem Arzneibuche für das deutsche Reich von 1901. Berlin: Verlag von S. Karger. 1901.

The Prevention of Valvular Disease of the Heart: A Proposal to Check Rheumatic Endocarditis in its Early Stage and thus Prevent the Development of Permanent Organic Disease of the Valves. By Richard Caton, M.D., F.R.C.P. Illustrated. London: C. J. Clay & Sons. 1900.

An American Textbook of Physiology. By Henry P. Bowditch, M.D., John G. Curtis, M.D., Henry H. Donaldson, Ph.D., W. H. Howell, Ph.D., M.D., Frederic S. Lee, Ph.D., Warren P. Lombard, M.D., Graham Lusk, Ph.D., F.R.S. (Edin.), W. T. Porter, M.D., Edward T. Reichert, M.D., Henry Sewell, Ph.D., M.D. Edited by William H. Howell, Ph.D., M.D. Second edition, revised. Vol. I. Blood, Lymph and Circulation; Secretion, Digestion and Nutrition; Respiration and Animal Heat; Chemistry of the Body. Philadelphia: W. B. Saunders & Co. 1900.

Original Articles.

THE TREATMENT OF PLACENTA PREVIA BY CÆSAREAN SECTION, WITH REPORT OF A SUCCESSFUL CASE.*

BY FRANCIS D. DONOHUE, M.D., BOSTON,

Assistant in Operative Surgery, Tufts College Medical School; Assistant Surgeon, Boston Dispensary.

The condition known as placenta previa is today the most fatal condition with which the obstetrician has to deal, and even in the hands of the most expert obstetricians and under the most favorable conditions, shows a death rate, fetal and maternal, higher than almost any other obstetrical condition. That the published statistics do not fairly represent the high mortality in this condition is the opinion of nearly all observers; for they consider that the reported cases give simply the lowest mortality obtainable, because, as a rule, selected cases only are reported. Lawson Tait,¹ voicing this sentiment, says that more than half the cases die of hemorrhage or sepsis, and advised the removal of the uterus as the only safe method of treatment.

Definition.—A placenta is usually denominated previa when it occupies the lower uterine segment, or that part of the uterus which dilates during labor. Clinically, however, a placenta is previa when it has an attachment in the lower uterine zone and partially or entirely covers the os.⁶⁰

Varieties.—The varieties have been denominated as complete, incomplete, lateral, central, marginal, partial and deep implantation; but that which one observer calls partial another will term complete, while lateral, partial and marginal are terms which are used with an interchangeable signification in literature. Practically no two men adopt the same classification.

It would be better² if the varieties were divided into two classes,³ complete and lateral; complete meaning that condition in which the os uteri is entirely covered by the placental tissue; lateral meaning all other insertions in the lower uterine zone in which the os uteri is not covered. Lateral previa under this definition is much more frequent than complete, but the ratio is hard to estimate owing to the confusion of terms in reported cases.

Frequency.—Authorities vary as to the frequency of placenta previa, but from an average of reported cases it would appear that it occurs about once in 800 deliveries. Late statistics, however, would lead us to infer that it is becoming more frequent, but this, I think, may be attributed to more careful diagnosis. There is a marked difference between its occurrence in primiparæ and multiparæ,⁶⁷ its occurrence being about seven times more frequent in the latter class.⁶⁸ It is also liable to occur twice with the same patient. Out of 51 cases reported by Jardine,⁴ 2 had had placenta previa in former pregnancies. The age at which it occurs is also of interest. In 239 cases Read⁵ found that 54% of the patients were over thirty years old, and Mueller,⁶ in 248 cases, found that 50% had passed the thirtieth year. If we consider that three times the number of women give birth to children before their thirtieth year, we find that it is relatively three times as frequent in persons who have passed thirty years as in those who have not attained that age.⁶⁸

* Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, October 24, 1900.

One very important fact in its occurrence is the number of abnormal presentations, due, perhaps, to the abnormal shape of the uterus, various observers giving from 21% to 32% of abnormal presentation.^{23 24}

Diagnosis.—The diagnosis is not usually made until hemorrhage occurs, and it is the occurrence of this symptom which directs the attention of the physician to the possibility of a previa.

Hemorrhage occurring without appreciable cause after the third month of pregnancy, that is, after the formation of the placenta, should give rise to suspicion of placenta previa.⁷ On examination, the lower uterine segment will be found to be soft and boggy,²² and in case of lateral placenta one side will be found thicker than the other. The presence of unusually large blood vessels in vaginal or uterine wall may aid in confirming diagnosis.¹² Ballotement is usually absent.⁷⁷ Absence of morning sickness in multiparæ who have been previously troubled may be considered a diagnostic sign.⁸ For the purpose of confirming the diagnosis of such a serious condition it is held justifiable (if case is seen during last three months of pregnancy and hemorrhage is profuse), to pass the finger through os to determine the presence or absence of placenta. If the examining finger encounters a rough, granular and spongy mass, differing in constitution from a blood clot, the diagnosis may be considered as confirmed.

Treatment.—The treatment of placenta previa in the past has not taken sufficiently into consideration the fact that two lives are involved, and while craniotomy has become a thing of the past, and its performance on a living child, by many men, not justified today,⁴⁷ there is not the same feeling about the induction of premature labor, or the resort to severe operative delivery, which no less surely than craniotomy takes away the chance of life from the child. Lusk,⁹ in 1887, speaking of craniotomy, said: "If it were proposed to a physician to beat out the brains of a newborn child with a view to diminish the perils of the puerperal period, the proposition would certainly be rejected as too horrible for consideration, even though the physician were convinced that the theoretical ground for the recommendation were correct. Yet there seems to be a prevailing disposition to treat any hesitancy to destroy the unborn child, in the interests of the mother, as pure sentimentality."⁷

A list of the various methods generally employed would include tampons of vagina³⁹ or cervix,⁷³ colpeurynter, partial or circular detachment of placenta, perforation of the placenta,⁸³ incision of cervix,⁵³ rupture of membranes,²¹ forceps, induction of premature labor, version followed by immediate delivery, version not followed by immediate delivery, and Cæsarean section. These methods and others have each had, and still have, vigorous supporters and defenders, but all the treatments have been directed to arresting the flow of blood, emptying the uterus, combating anemia.¹¹

For the purposes of this paper a consideration of the following will be sufficient: (1) Induction of premature labor;^{69 71} (2) rupture of membranes followed by natural delivery or delivery by forceps;^{27 91} (3) manual dilatation of os with delivery by version;⁴ (4) Cæsarean section.

Induction of premature labor is advised as soon as diagnosis is made.¹² This treatment is based solely

on the desire for the safety of the mother without regard to the child's life. After the seventh month it might be logical treatment if no better offered, but before the seventh month it should not be justified. In the early days of pregnancy the classical treatment for threatened abortion should be given, namely, rest in bed, patient not being allowed to rise for any purpose during continuation of symptoms; all mechanical irritation of cervix should be avoided and the bowels kept open. In cases of contracted pelvis, maternal mortality of section at term is no higher than after induced labor, while the fetal mortality is practically nothing. On the other hand, the cases of induced labor show an immediate fetal mortality of 33.3% with an ultimate mortality of from 50% to 75%.¹³ This fetal mortality can never be much diminished, for it depends upon conditions over which we have no control, namely, the delicacy of the premature infant and its consequent liability to suffer from the effects of labor; the frequent necessity for interference during labor, due to malpositions and deficient uterine action; the liability of the child to perish from malnutrition within the first weeks of extra-uterine life;¹⁴ and the impossibility of knowing that we are dealing with a viable child.¹⁵

The second method is useful in cases of lateral or marginal placenta, where good pains are present and os dilated or dilating. Under favorable conditions this treatment shows extremely low mortality, but it is useful only in cases which do well naturally and is not recommended where immediate delivery is indicated, or in cases of complete previa.

The third method, the treatment of placenta previa by manual dilatation followed by version, is the method almost universally used today by English and American obstetricians, and has shown in the hands of experts a steadily decreasing maternal mortality; but it can hardly be called an ideal treatment, since while it has reduced the maternal mortality to probably the lowest point obtainable (about 12%), it has done so at the expense of the fetus.¹⁶

Blackmer, whose results with version show the lowest mortality of reported cases, says: "The safety of the mother is, of course, of paramount importance, but a mode of treatment which does not in any way tend to lessen the already numerous dangers to the child's life cannot be called an ideal one. We are justified, then," he continues, "in considering any method which may diminish the risk to the child while at the same time it does not increase the risk to the mother."¹⁶

The difficulties and dangers of version are not shown in the published statistics, even of experts, as they all agree that the results obtained in private practice are entirely different from those obtained in hospital service. The chief objection to version must ever be the high fetal mortality obtained even in the most skilled hands. Other objections are: (1) That it is not always easy to do and does not arrest hemorrhage;¹⁷ (2) with multiparae the difficulties of version increase, owing to continued increase in size of fetus with successive pregnancies, and also there is lessened intensity of contractions of the uterine and abdominal walls;¹⁸ (3) the fetus is already shocked by placental hemorrhage, and there is additional shock to the fetal heart from the manipulation of the cord necessary in version;¹⁹ (4) owing to a disproportion in size of head, or for other reasons, it is sometimes necessary to perforate aftercoming head.¹⁹

Cæsarean section for this condition was recommended as long ago as 1892 by Dr. W. Huston Ford,¹⁰ of St. Louis, who advocated section in certain cases on purely theoretical ground. At that time, however, the mortality from Cæsarean section, even in selected cases, was a high one, due principally to errors in technique, and abdominal surgery in general had not reached that perfection which we know today. Dr. Bernay,²⁰ of St. Louis, reported in 1894 that he had performed the operation upon a patient with central previa who was much exhausted from loss of blood. He saved the mother, but the child died in ten hours of asphyxia. He also reported 2 other instances in which the operation had been done under extremely unfavorable circumstances by other men, both cases resulting unfavorably. Dr. Wenning,²¹ of Cincinnati, in 1898 mentioned Cæsarean section as a treatment but gave no details as to the indications.

At the meeting of the Maine Medical Society in June of this year, Dr. Dudley,²² of New York, read a paper advocating Cæsarean section also on theoretical grounds.*

The resort to Cæsarean section in these cases must, therefore, in the absence of statistics, be based more or less upon theoretical ground, but the justification for this radical treatment is found today in the hundreds of successful Cæsarean sections for causes other than placenta previa, which have resulted in an extremely low maternal mortality and practically no fetal.

Dr. Reynolds,¹³ in an article on the causes of failure after Cæsarean section according to the Sanger method, in cases of contracted pelvis, defends the following proposition: "That when the mother is in good condition, that is, when she is generally sound, uninfected, and not exhausted by long labor, or by prolonged efforts at delivery by the forceps, the Cæsarean section is so safe an operation that it may be used unhesitatingly in cases at term whenever an intrapelvic delivery will be fatal to the child, and may often be preferred even to the induction of premature labor, on account of its superiority in the saving of fetal life. [Italics are mine.] How low the fetal death rate of the Cæsarean section will prove it is difficult to say; but if we consider the favorable cases only, it is certainly the lowest infant death rate obtainable." In support of this proposition, Dr. Reynolds reported 15 cases of Cæsarean section without a death, maternal or fetal. Since the publication of the above paper he has operated on 4 more cases, which I have his permission to quote, with the same successful results. He also reports 50 operations of Leopold when these conditions were observed, and also 24 of Evarkes; a total of 93 sections without a maternal or fetal death. In spite of these extremely favorable results, it is too radical to advise section in all cases of placenta previa, as there are certain cases which do well under conservative treatment. There are, however, certain cases which do not do well under any of the classical treatments, and in which section seems indicated.

Very few groups of cases are so reported as to be capable of analysis on the basis of surgical intervention or not, but examination of the reported cases of placenta previa show: (1) That the greatest mortal-

* I have carefully looked for the reports of other cases but have found none, and in communications, Drs. Ford, Bernay, Wenning and Dudley say they know of none except those already mentioned. So that the case I am reporting appears to be the first entirely successful one in this country.

ity, both fetal and maternal, is obtained in cases of complete previa. Depaul²³ reports 25 central with a maternal mortality of 56%, Jardine⁴ reports 12 complete with a maternal mortality of 16 $\frac{2}{3}$ % and a fetal mortality of 66 $\frac{2}{3}$ %. (2) The second deduction from reported cases shows that in primipare the firmness and resistance of the tissues render quick operative interference difficult. (3) A source of great danger is found in a rigid os uteri. Read⁶ reports 39 cases where the condition of the os was given as rigid. These showed a maternal mortality of 33% and a fetal mortality of 70%. (4) In cases of contracted pelvis the greatest death rate is not obtained in the major degrees of contraction, but where there is disproportion between the size of the fetus and the size of the pelvis.¹⁹ (5) Malpositions of fetus requiring operative interference, and cases where the cord is prolapsed, show high mortalities.²⁴

If we accept the foregoing deductions as correct it would seem that section, in preference to other operative interference, is indicated in: (1) Cases of complete previa; (2) cases of previa in primipare when signs of fetal or maternal exhaustion are evident; (3) when the condition of rigid os is present; (4) where there is a history of previous operative delivery; (5) in transverse positions and in cases of prolapsed cord, if the cord is not easily returnable.

That Casarean section is the easiest of celiotomies all who have performed it admit, and in nearly every large community it is possible to obtain an operator capable of performing it under strict aseptic and antiseptic precautions. It is also an extremely safe operation not only for mother but for child, and this latter fact leads Dr. Reynolds¹⁸ to say in the paper already quoted: "Is not the life of the child as good a reason for the performance of a simple abdominal operation as the chronic backache for which such operations are done daily?"

For the successful performance of version an obstetrician having the necessary experience (performance of at least fifty versions, for instance, being considered sufficient experience) is not so readily obtainable. The place of operation is generally considered of great importance,^{28 92} but it seems to me that section may be safely done where the performance of any clean obstetrical operation is possible.

A second Casarean section on the same woman is easier and less dangerous than the first.⁶⁰ Pollak²⁵ reports 120 Casarean sections performed on 58 women with 1 death, a woman dying of embolism after the fifth operation. After the operation the uterine wall becomes thoroughly healed without thinning, if it has been properly sutured. The abdominal wall, when closed by terraced sutures, shows no tendency to rupture, and in cases where the uterine scar has adhered to the abdominal at the time of the first operation, subsequent operations are really extraperitoneal.²⁶

This paper, while it does not aim at completeness, is designed to emphasize the fact that modern surgery has not reached its limitations, and the successful outcome of section in the appended case, when another mode of delivery would have been fatal to at least one of the lives involved, offers hope of success to others when confronted by the same grave emergency.

The report of the case is as follows:

Ruth W., age forty years, born in Plymouth, Mass., married nine years. One previous pregnancy six years and six months ago; delivered at that time by forceps.

Last catamenia, November 5, 1899. Expected confinement August 12, 1900. Quickening began last March. No unusual symptoms until Monday, August 6, 1900. Flow suddenly commenced, lasting two hours. It was profuse and unaccompanied by pains. It was not sufficient, however, to cause alarm. On August 12th she began to flow in the morning, and Dr. E. D. Hill was called from Plymouth about nine o'clock that night. He made a diagnosis of placenta previa. Mother's temperature 99°, pulse 80, fetal heart 120. Position O. L. A. Dr. Hill remained with patient until 11.30 p. m., when, symptoms not being urgent, he returned to Plymouth.

In the morning, being detained by an operative case, Dr. Churchill was sent at 9 a. m. to look after the case twelve miles away at Long Pond, and report to Dr. Hill, who was with Dr. Mixer at Manomet, seven miles away on the other leg of a triangle. Dr. Churchill reported to Dr. Hill at one o'clock that the pulse of the mother was 110, the temperature 99°, and the fetal heart 130. Hemorrhage not profuse. As the case seemed to be doing well, Dr. Mixer, to whom I had suggested Ciesarean section if it was a case of complete previa, returned to Boston, leaving me behind to look after the case and to operate if I thought necessary. About 5 p. m., Dr. Hill, Dr. Churchill and myself drove down from Plymouth to see patient; found her in a state of collapse. The hemorrhage had recurred and a messenger had been sent to Plymouth, but we had missed him on the road. Hemorrhage had been so profuse that the mattress on the bed had been soaked through completely.

On examination, vagina was found full of clots. Clots were removed and douche of corrosive sublimate solution, 1-3,000 given, but during examination active hemorrhage persisted and clots continued to form. The os was high up in pelvis and not reachable until the whole hand had been passed into the vagina. Os was then found to be dilated so that it would admit two fingers, covered by placental tissue, and extremely rigid. The whole lower segment of the uterus was boggy and no ballottement could be obtained. Patient's temperature 99.4°, pulse 140. Labor pains present. Operation advised, and consented to at once by husband and by patient.

The house was an ordinary one-story country house, with three or four rooms on the ground floor. Patient was in charge of ordinary country nurse, who afterwards took care of patient during convalescence. Operating table was made by extending the kitchen table with a light stand, and the whole covered with a folding blanket and sheet. A washstand served as a table for sponges and instruments. Light was furnished by two kerosene lamps. A wash boiler of hot water was soon ready in which the instruments were boiled. In a washbowl was mixed 2 quarts of corrosive-sublimate solution, 1-500, in which six towels were put to soak. Hands were washed at sink, water being supplied from purp. After scrubbing hands with green soap, crystals of permanganate of potassium were emptied into the palms of hands and with a little water pumped onto them made a saturated solution, which although small in amount was effective. The excess of permanganate of potassium was washed off by more well water, and the hands and arms bleached in a solution of oxalic acid. Dr. Hill, who assisted me, went through the same process. Ether in the meantime was being administered patient by Dr. Churchill. Dr. Henry R. Hitchcock, of Hyde Park, Mass., who was at his summer place about one mile away, had been sent for to help with baby, and arrived soon after woman had been placed on table. Preparation of woman consisted of shaving, scrubbing with green soap, corrosive-sublimate solution, and finished up by a dash of peroxide of hydrogen. Field of operation was surrounded by wet corrosive towels. Incision was made at a point corresponding to middle of rectus, beginning opposite umbilicus and extending well down to pubes. Abdominal wall was extremely thin and first incision opened peritoneal cavity for about one inch. Incision enlarged with a scissors until uterus could be pulled through it. Gauze then packed into abdominal cavity to hold back

intestines. Rubber tube was passed round broad ligaments, tight enough only to control hemorrhage. Uterus opened by vertical incision in median line, and membrane bulged into incision, which was enlarged upward and downward. Pail of hot and one of cold water had been provided for resuscitation of child. Membranes were then ruptured, and child's head presenting, was delivered in that way. Eyes sponged out, throat cleared with finger. Baby gasped a little, but as cord was pulsating feebly it was clamped and cut. Under treatment of Dr. Hitchcock child was soon crying vigorously. Rubber tube was then relaxed and contraction of the uterus followed. As patient was in good condition and no hemorrhage going on, the placenta was allowed to separate in the normal way, and after ten minutes was delivered through incision in uterus. There was no hemorrhage except a very slight oozing from the placental side which was directly over the os. Hemorrhage was so slight it did not wet one gauze sponge. Mucosa closed by a continuous suture of No. 1 half chromicized catgut (St. John Leavens). The uterine muscle was brought together by eight interrupted sutures, and a continuous suture of catgut closed the peritoneal wound. Gauze packing then removed. Peritoneum closed by continuous catgut suture, rectus muscle caught together by the same material, and fascia of rectus closed by continuous suture. Continuous silk-worm-gut suture closed skin incision. Sterilized dressing applied, patient returned to bed. Whole operation consuming forty-five minutes. After treatment consisted of corrosive douches with pad until tenth day, when a slight odor of lochia caused a change to sulphonaphthol douches. Patient sat up in bed on twelfth day and left bed on twenty-first day.

On September 12th, house and outbuildings were completely destroyed by forest fires, and patient was driven to Plymouth after walking one and one-half miles through woods with baby in her arms. Patient suffered no ill effects from this, and she and baby are alive and well today.

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THE DUTIES OF THE MEDICAL EXAMINER IN MASSACHUSETTS.¹

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IN these days when the subject of medicine is divided into so many specialties, the medical examiner may be considered very properly a specialist in the detection of the causes that result in unnatural deaths.

He should be familiar with the appearances that wounds on the live body present after death, and be able to decide the nature of the instrument that inflicted them; he should be able to recognize the post-

¹ Read before the Middlesex South District Medical Society, October 10, 1900.

mortem appearances that are caused by drowning, and to decide whether a body entered the water before death, or was thrown in after death; he should be conversant with the action of poisons, and able to differentiate between the symptom of food poisoning, generally called ptomaine poisoning, and metallic irritants. Continued experience in these and many other questions that are continually confronting the medical examiner should qualify him to assign to any suspicious circumstance its proper weight, and thereby enable him to disclose a hidden crime, or to prevent an unjust suspicion from clouding the life of an innocent person.

The medical examiner will find that it is just as true in his specialty as in all others that the value of his services depends mainly on the extent and thoroughness of the foundation that he has laid in his study of general medicine. The statute that abolished the coroner and created the medical examiner recognized this fact when it provided that the medical examiner "should be learned in the science of medicine." He is indebted for this qualification to the medical profession, which becomes, therefore, in this respect responsible for him. He can reasonably expect that he has been thoroughly grounded in his student days in the many causes that change physiological processes in the body into pathological ones, and that he has been taught to read aright in the lifeless organ the story of destruction that an insidious disease has written there.

If the teachers of medicine have done their duty, and have made the medical examiner, as the law prescribes, learned in the science of medicine, then the responsibility for success or failure in the many important duties that he is called upon to perform is shifted from the profession to the individual, and should he prove unequal to them, the profession should insist that they be entrusted to more competent hands.

The medical examiner, in addition to being learned in the science of medicine, must know something of the legal side of the question, and, if he is well versed in medical jurisprudence, he will be in a position to render valuable service to the Commonwealth, and to reflect credit on his corps. He should not encroach, however, on what pertains to the law, but confine himself to the solution of the question, What caused this death? leaving the question, Who did it? to be answered by the legal profession.

The medical examiner stands between the two professions, and at the same time unites them. He does this by reason of a knowledge of the legal side of a question that the medical profession in general has little means of acquiring, and by a knowledge of the medical aspect that is beyond the scope of a legal education.

Perhaps the best way to give you an idea of the duties of the medical examiner will be to show him at work in a particular case: with this view in mind, I will briefly relate a case that came under my care about a year ago.

In the forenoon of October 12, 1899, I was summoned to the city of Newton to view the bodies of two persons who were said to have been murdered. I immediately went to the place indicated, and learned the following story from the policeman in charge. The family living in the house had moved to Boston for the winter, but had left their coachman and horses

in the stable. Two days before my view, the coachman had driven his mistress about Boston, and had returned to Newton in the evening. Nothing was heard or seen of him the next day. On the day that his body was discovered, his mistress expected him to drive to her house in Boston at nine o'clock in the forenoon. After waiting an hour or more, she decided to go to Newton, and learn why he had not driven to Boston. She found the stable door locked, and two days' supply of milk at the door. She then sought the assistance of a policeman, who entered the stable through the window and found the coachman dead in his room. At this point, I wish to call your attention to the correct method of procedure followed by the policeman. He locked the room, notified the medical examiner, disturbed nothing, and remained on guard until I arrived. As a consequence, I found everything to the slightest detail just as it was left by these two persons, the cause of whose death it was my duty to determine if possible. The members of the medical profession should thoroughly appreciate the great importance of leaving everything undisturbed, for they are often the first to see these cases; in many instances, by an entirely unnecessary examination of the body, they have either destroyed or befogged important evidence, and thereby increased the difficulty of unravelling the puzzling questions that such cases often present.

After hearing the history of the case I went upstairs, and entered a small, unplastered room, in which up against the board partition was a single bed, on which were lying two dead bodies. Before making an examination of the bodies, it was my duty to note and record every fact in connection with the contents of the room, so that I might be able to reproduce a picture of the room for the prosecuting attorney and the jury when the case should be tried. In such cases the medical examiner cannot exercise too much care in gleaning every trifling detail, which should be jotted down in a methodical manner for future use.

This is not the time or place to give such a detailed description of the room and surroundings as I have just indicated; a few of the important facts will suffice to give you a proper understanding of the case.

There was an earthen pitcher and a cup half filled with a fluid on a chair close to the bed; on the floor near the bed was a spittoon also partly filled with fluid. The contents of these receptacles were put into clean bottles, and given to a chemist, who reported that the cup and jug contained water, and the spittoon a mixture of water and urine, in the sediment of which was vaginal epithelium. On a narrow single bed standing against the wall were the bodies of a man and a woman, covered with three comforters. The woman was lying on her back on the outer side of the bed; her hands were clenched, her arms were crossed on her breast, her mouth was partly open, and her lips were slightly discolored with a dark stain. She was undressed and wore only a thin chemise and a light undervest. The man was lying partly on his side over against the wall. In addition to his accustomed everyday clothes, he had on a thick overcoat, and a carriage robe around his shoulders.

There was no indication of any struggle, and everything was suggestive of a peaceful sleep; neither were there any marks of violence on either body. Rigor mortis was present.

As it was impossible to decide the cause of the death

of this man and woman from the view alone, I proceeded to act under authority of Section 8 of the act concerning medical examiners, which reads as follows: "If on view thereof, and personal inquiry into the cause and manner of death, he deems a further examination necessary, he shall, upon being thereto authorized in writing by the district attorney, mayor, or selectmen of the district, city, or town where such body lies, in the presence of two or more discreet persons, make an autopsy." Having obtained permission to make the autopsy, I decided to employ a chemist, as empowered to do under Section 16, which provides that "the medical examiner may, if he deems it necessary, call a chemist to aid in the examination of the body or of substances supposed to have caused or contributed to the death."

Dr. Harrington, of the Harvard Medical School, the chemist, was present at the autopsies. He sealed up in separate jars and took away with him such portions of the different organs as he required for his examination.

It is always desirable to have the chemist present at the autopsy, and have him take charge of the specimens, so that the opposing attorney at the trial cannot say that the specimens have been tampered with in passing through several hands.

In making an autopsy, the law provides that the medical examiner shall then and there carefully reduce or cause to be reduced to writing every fact and circumstance tending to show the condition of the body, and the cause and manner of death, together with the names and addresses of said witnesses, which record he shall subscribe. Before making such autopsy, he shall call the attention of said witnesses to the position and appearance of the body. The evidence in both these autopsies was negative, except that a large ante-mortem clot was found in the heart of the woman. After an autopsy the law requires the medical examiner to notify the district attorney and a justice of the district court, and to file a duly attested copy of the record of his autopsy in such court, and a like copy with such district attorney. The case then goes into the hands of the legal profession, and further action is left to the prosecuting attorney. Although the case that I have cited briefly is only of secondary importance, and designed to illustrate some of the duties of the medical examiner, still you may be interested to hear the report of the chemist, and the findings of the judge.

Dr. Harrington reported as follows:

HARVARD MEDICAL SCHOOL,
Laboratory of Hygiene.
BOSTON, December 5, 1899.

DR. JULIAN A. MEAD, *Medical Examiner*,
Watertown, Mass.

DEAR SIR:—I have the honor to report on the examination of the organs of William McCauley and Alma Y. Peterson. The condition of the bodies when found, the absence of evidence of diarrhea and vomiting, the non-occurrence of convulsions evidenced by the undisturbed condition of the bedclothes, and the negative evidence of the autopsies were of themselves sufficient to rule out of the list of possible causes of death most of the poisons with which we are acquainted; but, notwithstanding, I made a careful examination for the presence of irritants, cyanides, chloral and alkaloidal poisons. In both cases the result has been wholly negative excepting that with Fröhde's reagent I obtained a faint, somewhat doubtful reaction for the only poison which is compatible with all

the circumstances, namely, morphine. I have characterized the reaction obtained as "somewhat doubtful," that is to say, it was so slight that I should feel a decided reluctance to report it positively if thereby one's life or liberty were placed in jeopardy.

Yours very truly,
(Signed) CHARLES HARRINGTON.

(COPY.)

At the inquest, the judge asked me who I thought caused the death. I replied that, in my opinion, one or both had committed suicide. He told me some weeks later that he came to the conclusion that the woman poisoned the man and then took the poison herself. The police learned later that the man had a wife and several children in Canada, that a woman in Boston claimed him as the father of her child, and that he was engaged to the woman who was found in bed with him. It is possible that the deceased woman may have anticipated the police in acquiring the above information.

The method of procedure, as prescribed by law, is much the same in every case, but the line of inquiry followed by the medical examiner varies very materially with the nature of the violence he is called upon to investigate.

It is apparent that the prosecuting attorney will not care to know anything about poisons in a case of homicide by shooting; but he will want to know how the pistol was held, how far the muzzle was from the person when the pistol was discharged, if the deceased could have inflicted the wound by his own act, and if the bullet entered at right angles or obliquely to the surface of the body. The experienced medical examiner will be prepared as far as possible to answer these questions, and to give his reasons for his opinions in such language as the average man in the jury can comprehend; if there is a common name in use for a particular bone, muscle or any part of the body he will use that word instead of the technical term, and he will bear in mind that he can only instruct the members of the jury by using language that they can understand.

The medical examiner law went into effect twenty odd years ago, a time sufficiently long to determine the wisdom of its creators; it was a new and conspicuous departure in that vast system of protection which it has been found necessary to establish for the community; other States have expressed their opinion of it by that sincerest mark of approval, imitation. The medical examiners during this period of twenty years have done good work for the State, and have reflected credit on the medical profession, but perhaps it would be better on this point to call as a witness one who represents the legal profession, and therefore I will close this paper by quoting from an address by Attorney-General Knowlton, delivered some two years ago at a meeting of the Medico-Legal Society.

"My experience," he says, "is that success grows and results much more from men than from machinery in any department of human activity, whether in business or in the working of laws. It is the men who are entrusted with the work, rather than the machinery that is devised, that make or mar results. I am glad to say this, gentlemen; it is the first opportunity that I have had of putting in formal shape my testimony to the very commendable exertions of the members of this body, and of the medical examiners throughout the State, to enforce the provisions of this

law in the interest of justice in the Commonwealth. It may be that my experience has been larger than that of living men. I have had to do directly and indirectly with the trial of thirteen indictments for murder, and the investigations of many more cases, and I have uniformly found the medical examiners with whom I have been brought in contact to have that understanding, that intelligent understanding, of the duties imposed upon them by the Medical Examiner Act that was necessary for its success. As you know, the medical examiner system succeeded a system that had fallen into disrepute, and which had become worse than obsolete. This act was an immense advance in the business of detecting and punishing crime, and yet this act would not have been a success, had it not been for the character of the men who enforced it."

A CASE OF ALEXIA, MIND BLINDNESS, ETC., WITH AUTOPSY.¹

BY EDWIN E. JACK, M.D., BOSTON.

THE patient was a rather spare man, aged sixty-three, whose general health, with the exception of chronic indigestion, had always been good. There had been some sickness, but it had no apparent bearing on his later condition. Up to a year ago he had been at work at his trade, wood-carving. It became necessary from lack of employment, etc., to turn to other things, and the change and the worry incident to it had a bad effect on him generally.

He consulted me first the 23d of last December, giving a history of failing vision for about one month, first noticed in reading the labels on boxes. V. O. D. = 5-20, V. O. S. = 5-27, the letters being slowly picked out. A correction of his hypermetropia did not seem to improve him. There was nothing in the test or in anything he or his wife said which led me to believe he could really see better. Fundi, both discs slightly red and hazy but not abnormal; small spot of chorioretinitis in the right eye a short distance upward and to nasal side of macula. Fields normal, pupils normal. Inability to name colors. This latter fact, though the apparent color scotoma was not confined to the central region, suggested retrolbulbar trouble, and in the absence of any tobacco or alcohol history, the possibility of diabetes came to mind and an examination for sugar was made later with negative result. I did not at this first visit suspect the real trouble, no hint except that of a negative examination being got from either patient or his wife. At the second visit, three days later, correcting the hypermetropia, I found that by pointing out letters at the first of the examination he could name a letter or two of much smaller type, and that when after a moment or two he could not do this, he could roughly draw their shape. The power to do this also was quickly exhausted. These observations led to questions which showed the nature of his trouble.

He was unable to come to my office alone; he had no idea of the signs on the cars; former familiar streets were only partially or not at all recognized. There was evidently no difficulty in merely seeing letters, words or objects. Later investigation of the case brought out the following symptoms, which

varied from time to time. With these I will give other negative ones, the two together making a more complete picture of the defects in question.

The patient could hear sounds of all kinds and recognize them, with one odd exception. He certainly on one occasion failed to interpret musical sounds. I asked him once if he knew the tune "Annie Rooney"; he did not. I then whistled it; still he did not know it. Immediately afterward I played on a small parlor organ a hymn of which he was particularly fond, and on asking what it was he slowly shook his head and said interrogatingly, "Annie Rooney?" A day or so later the same tune was recognized and awakened the sad memory of former failure. He understood spoken words. He could see letters, numbers and words, printed and written, but he could not, except to a slight and variable extent, comprehend them. There was at all times an ability to recognize a few letters and figures and even words, and this not confined to any particular ones, but limited apparently by the exhaustion of his power. He could see objects, but there was an inability to a considerable extent to recognize them. Such objects as matches, a key, comb, napkin, photographs, etc., brought up no remembrance of similar previous ocular images. Other objects he evidently recognized, but could not find words to express the name, or the idea vanished before he could put it into words. This inability to interpret objects was not limited to those seen. When asked, he could not describe the schoolhouse across the way nor the arrangement of the streets, and this not due to lack of aural perception apparently. There was a variable inability to tell the use of objects, very often an absolute ignorance. For example, one day a key was held up; he could not tell what it was or its use, and when put into his hands he was helpless; an attempt to draw it on paper was also a failure. He once named a watch correctly and immediately afterward called a knife a watch; he could not tell its use, but could use it. A later examination showed less of this particular power even. In showing me the use of a small hand mirror he took out a pencil and began to write on it. I think he had just been using a pencil. The use of a chair, stove, trousers and money were unknown. His wife said that at times he did not recognize her and that he made odd mistakes, trying to drink out of the sugar bowl and salt cellar, dipping his toast into the jelly tumbler instead of his coffee and then eating without apparently noticing his mistake, and once mistaking his hat for his coat and trying to put it on over his arm. Hearing usually set him on the right track; touch sometimes failed. Salt was readily recognized when tasted, though wholly unknown by sight.

He could speak voluntarily, for the most part well, but often forgetting words or stopping short, having the whole mental picture of what he wished to say vanish. He had spells of wandering off in his talk to the scenes of his past life, applying them to the present. He could not speak words read, that is, he could not read aloud. Here again some modification of statement must be made, though a few letters or figures and a word or two were all he was at any time able to recognize. He could write voluntarily a little. The best example of this is shown on the paper dated January 23d, when he wrote his own name and recognized it afterward. The power of writing to dictation was limited in about the same way; the ex-

¹ Read before the American Ophthalmological Society at Washington, May 3, 1900.

tent of his success is also shown on the papers. He could not do transfer copying, that is, he could not turn writing into printing, and vice versa. He could not give the names to the more ordinary colors, but there was not true color blindness, though matching the worsteds was done very slowly.

After the second visit to my office the patient was too weak to make the rather long journey to the city. The only symptoms developed other than those mentioned were a lack of appetite, frontal headache spreading over the parietal region to the occiput, not severe and variable, and some vomiting. The importance of this last symptom was doubtful because of its following closely the taking of potassium iodide, and because of its cessation soon after stopping the drug, the same process being repeated on taking up the iodide again. In about three or four weeks the patient took to his bed and did not again, except for a few days, leave it. At this time there was an increase in the localizing symptoms. He was uncomplaining, but the presence of pain was made evident by his putting his hands to the forehead. There was, too, some soreness or pain on dragging the head on the pillow, in the left parieto-occipital region, but in all probability it was not at any time severe. In the latter days there was more vomiting, and this without relation to any medicine. I made no observations the last ten days of the patient's life, but up to that time there was no optic neuritis, and up to within two weeks of death no well-defined hemianopsia. An examination by Dr. J. P. Conroy, of Everett, who referred the case to me, showed a mitral regurgitant murmur and moderate arterial sclerosis.

The clinical diagnosis made was alexia and mind blindness, both partial and of the cortical variety, and amnesic color blindness. The lesion was placed on the left side (the patient being right-handed) at the region of the angular gyrus and in the occipital lobe, probably sparing the cuneus and calcarine fissure. The cortical situation of the lesion was inferred from the inability to write spontaneously or to dictate, for in pure word blindness, with a subcortical lesion between the visual word centre and optic centres (or, as some put it, between the visual word centre and the centre for speech-sound memory), the ability to do both these things is present. The mind blindness, too, was regarded as cortical, because, beside the difficulty in recognizing by sight objects placed before him, there was a like difficulty in picturing them to himself voluntarily or on questioning.

The autopsy and pathological investigation and report were made by Dr. George Burgess Magrath, of the Harvard Medical School, to whom I wish to express my indebtedness.

Cranium.— Upon removal of the calvarium the dura presents a condition of somewhat increased tension; it is adherent to the under surface of the left temporal lobe within an area 5 by 4 centimetres, situated a little posterior to the middle third of the lobe.

Dura mater.— Presents conditions above mentioned.

Sinuses.— Natural.

Pia mater.— Over the convexity of the brain presents a somewhat cloudy appearance, most marked over the sulci, along the course of the blood vessels. The subarachnoid tissues are slightly edematous.

Brain.— Weight, 1,350 grammes; arteries of the

base natural. The inferior aspect of the left temporal lobe presents an area of softening occupying its middle third; posterior to this, the dura mater is adherent to the brain within an area 4 by 5 centimetres. The lateral aspect of this lobe opposite the region of the adhesion presents, within an area 3 centimetres in diameter, a somewhat gelatinous appearance, differing markedly from the surrounding brain substance. Upon section through the area of adhesion, there presents a spherical mass 4 centimetres in diameter, adherent to the dura mater, which at the site of adherence is 3 centimetres in thickness; distinct from the surrounding brain substance, from which it is defined by a thin zone of gray pulsatous material. The surface of section presents a nearly homogeneous appearance, yellow, mottled with minute translucent areas. The extent of the mass is backward to the anterior boundary of the left occipital lobe; forward from this posterior limit for a distance of 6 centimetres; upward to the level of the first temporal convolution; inward to the collateral fissure. It involves the third temporal convolution in its most posterior part and the gyrus fusiformis. Anterior to the mass and extending somewhat deeper into the substance of the left occipital lobe, there is a region of softening apparent only on the under surface of the brain. Upon section this region extends forward, externally to the descending horn of the left lateral ventricle, into the substance of the temporal lobe, and backward from the mass into the substance of the occipital lobe. The latter presents upon the surface of section an irregularly outlined area occupying for the most part the white matter, at one point extending into the gray matter (base of occipital lobe), the central part of which is yellow, soft, and similar to the surface of section of the mass, the outer part reddish gray, continuous anteriorly with the circumscribed mass, extending upward to within 1 centimetre of the surface of the first occipital convolution, downward and backward to the posterior border of the occipital lobe, and inward to within 3 centimetres of the mesial surface of the occipital lobe.

The floor of the left lateral ventricle presents a grayish appearance, and is softened in places to the point of disappearance. The roof of this ventricle presents extensive softening, being represented by more or less gelatinous, pulsatous material. This softening involves the under surface of the hemisphere as far as the hippocambal gyrus.

Microscopic examination.— For the purpose of microscopic study, pieces were taken from (1) the main mass of the tumor; (2) the white matter of the occipital lobe (softened); (3) the white matter of the anterior part of the temporal lobe (softened). These pieces were prepared for staining neuroglia by Mallory's method, cut in celloidin and stained with phosphotungstic acid hematoxylin. Upon microscopic examination:

(1) The main mass of the tumor presents along one side the dura very much thickened. The histological components of the mass are blood vessels and abundant cells; the blood vessels are fairly numerous, and many of them are of the capillary type, with thin walls and surrounded by a moderate amount of fibrous connective tissue. The cells are for the most part placed very closely together; in places they are less numerous than elsewhere. The cells are medium sized and

small, round, with deeply staining nuclei; between these cells there is a rich network of fine threads; in places this constitutes an open meshwork, elsewhere it contains large numbers of cells. Some of the cells are apparently fatty degenerated. There are some areas of necrosis.

(2) The white matter of the occipital tube presents an appearance very similar to that above described; in this region, between the cells, in addition to the neuroglia fibres, there is a certain amount of granular material; there is little or no evidence of normal brain structure present.

(3) The white matter (softened) of the anterior portion of the temporal lobe presents the same appearances, the blood vessels constituting the only surviving elements of the normal structure.

Anatomical diagnosis.—Glioma of the brain. Localized softening of the brain.

It will be seen by referring to the pathological report and to the sections which I have made (plates are in the original article) that the angular gyrus is apparently not directly involved, though the greatest development of the tumor is in the same vertical lateral plane. It is to be supposed then, that either the effect was produced by pressure, inhibition, etc., of the tumor, or that an involvement of the fibres to and from this centre would give the group of symptoms present, or, further, that the area in question is not the only one that has to do with the visual memory of words. To me, unaccustomed to deal with such brain problems and therefore accepting the more readily the easier solution which the involvement of definite centres gives, the first of the suppositions seems the most probable. This seems to agree well also with the partial and variable nature of the symptoms. The connecting fibres must have been affected, however, and possibly a partial isolation of the visual word centre from the optic, auditory perceptive, and graphic centres would account for the symptoms, but such is purely hypothetical and has no basis of fact. It would be simpler and very likely nearer the truth, as Dr. J. J. Putnam has suggested to me, to abandon trying to make certain symptoms or groups of symptoms correspond with defects in definite areas, but to regard this whole region as having to do with visual and sound perception and interpretation, all parts being intimately connected together and interdependent, on them resting the power of speech and writing, a break in any part of the mechanism throwing the whole machinery out.

A more careful investigation of the fields, especially in the later days, would probably have shown defects, not necessarily hemianopsia. I regret that this was not done, but it would have been very difficult under the circumstances. The sections show that the cuneus and calcarine fissure were probably not involved, but the course of the fibres forward around the horn of the ventricle, especially the upper ones, could hardly have escaped interruption, though I suppose considerable pressure might not be destructive of function. The absence of optic neuritis is not surprising. The mind blindness and amnesic color blindness I should say were easily accounted for by changes in the occipital lobe.

The absence of hemianopsia with amnesic color blindness is, I believe, unrecorded. It unfortunately cannot be definitely stated that this case is an exception to the rule.

Clinical Department.

NOTE ON THE X-RAYS AS A CURATIVE AGENT IN CERTAIN DISEASES OF THE SKIN.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

It is now recognized that the Röntgen rays assist both the physician and the surgeon in the diagnosis of disease, but there is comparatively little appreciation in this country of their usefulness as a therapeutic agent. My own use of the x-rays has been chiefly limited to their employment as an aid in the diagnosis of diseases of the chest; still it has seemed to me desirable to test their value as a curative agent and to call attention to their usefulness in this direction.

During the past three years, a number of dermatologists, chief among whom are Schiff and Freund, of Vienna, have reported good results in lupus, favus, acne, sycoosis, herpes tonsurans, eczema, folliculitis and hypertrichosis by means of the x-rays. In lupus especially this method has proved more satisfactory than any other when large areas are present, and the skin is left in a better condition; for small patches other methods of treatment are, as a rule, sufficient. In the removal of patches of superfluous hair the x-rays have also shown their superiority over other methods of treatment, but if only a few hairs are in question, electrolysis is to be preferred. In the treatment of certain skin diseases it is essential to temporarily remove the hair of the beard, for example, from the diseased area, and the x-rays have been serviceable in accomplishing this purpose.

My own experience with the x-rays as a curative agent in lupus has demonstrated to me: (1) That excellent results can be obtained by exposing the diseased portion of the skin near a Crookes tube which is giving off x-rays, and that the treatment causes no pain and that it is not necessary to repeat it so frequently as to produce an inflammatory reaction; (2) it is essential that the treatment should only be undertaken by one who has learned how to manage an x-ray apparatus and has provided himself with special appliances for carrying out this method.

I wish here to thank Dr. James S. Howe for sending me at my request, two cases of lupus for treatment with the x-rays. I shall hope later to give a detailed account of the method of procedure in this field. It is certainly wonderful to see the excellent results that follow this treatment in lupus.

Medical Progress.

REPORT ON PROGRESS IN MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BOSTON.

MELANCHOLIA.

KRAEPELIN¹ attempts to draw the distinction between conditions of depression in other diseases and the independent disease—melancholia. The conditions of depression appearing before the age of thirty are never simple forms ending in recovery, but are either cases of dementia precox or the beginning of circular insanity. The latter may also begin

¹ Mounats, f. Psych., November, 1899.

much later in life. He thinks that the development of pronounced inhibitory conditions in the domain of thought and volition is peculiar to the circular form. A large number of cases of depression end in dementia, and it is often possible to predict this termination comparatively early. The chief indications of a termination in dementia are the lack of any profound emotional excitement, the occurrence of negativism and automatism and stereotyped movements. In advanced life conditions of depression also arise, which do not recover like the ordinary forms of retrogressive melancholia, but end in dementia. These occur usually in more advanced age, and show at the start a certain amount of mental failure. The cases of periodic or circular insanity beginning in more advanced years are also difficult to distinguish from ordinary retrogressive melancholia, except by long-continued observation, and there are finally cases occurring in advanced life which show marked depression with symptoms of katatonia and negativism.

DEMENTIA PRECOX.

Finzi and Vedrani² have studied a series of cases presenting dementia beginning primarily in young persons and associated with katatonic symptoms. In all there was an almost complete absence of emotional disturbance, with a lack of motive for their conduct and pronounced stupor and negativism. The chief factor, the dementia, should give the name to the disease, as it is the most important clinical symptom, the former term hebephrenia being limited to a definite age, and katatonia referring merely to one group of symptoms. All the cases which they report had more or less realization of their disease, unlike a patient with paranoia. Delusions were early and often persistent, but they were not organized into a permanent system. The indications of mental weakness were present from the outset. The patients often seemed confused, but in reality they are never confused, or only for a very short time. The dementia is an early condition and not secondary. It may develop progressively and subacutely, without acute paroxysms, or slowly at first and then rapidly after an acute attack, or very slowly with many acute attacks. The fundamental clinical characteristic is the peculiar acquired mental weakness, which is common only to those cases which have been described as hebephrenia, katatonia, fantastic paranoia, and dementia paranoides, which should now be grouped under the one term of dementia precox. The katatonic symptoms, like hallucinations and delusions, are not characteristic of one form of disease, but they appear with special frequency in dementia precox. Finzi³ has also studied the organic symptoms in cases of dementia precox in 87 cases, and finds that in only about one-quarter were they always absent. The most frequent symptoms were exaggerated reflexes, changes in the pupils, vasomotor symptoms, flushing and pallor, and sialorrhea. In addition, among the common symptoms were a sense of physical exhaustion, headache, sleeplessness, paresthesia, loss of appetite or absolute refusal of food, and various vasomotor symptoms. The organic symptoms are, on the whole, comparatively numerous, but they may vary in the individual cases, and there are not usually many in a single case. They may change in number in the same individual,

and even wholly disappear; but the same symptoms tend to persist or to reappear in the same individual. They are more frequent in the initial stages than in the terminal, and they are more frequent in some conditions than in others, and some are found by preference only in definite conditions. None of them, of course, are essential or necessary either to the disease or to any combination of symptoms. It seems, however, that neurasthenic symptoms and vasomotor disturbances may be of some value to the diagnosis of dementia precox if associated with impulsive acts, meaningless agitation and apathy, a rapid and marked increase or decrease in weight unrelated to any change in the mental symptoms, and sialorrhea, which are more common in dementia precox than in any other mental disease. The organic symptoms, however, are sometimes the direct manifestation of some coexisting disease, which is not associated with the mental trouble.

GENERAL PARALYSIS AND DEGENERATION.

Pilez⁴ quotes the recent opinion of Näcke that hereditary taint and frequent signs of degeneration exist in the majority of cases of general paralysis, contrary to the opinion which has previously prevailed. He, however, believes that heredity is an unimportant feature in general paralysis, and that there is a certain antagonism between paralysis and degeneration, degeneration affording a certain immunity against general paralysis. He, therefore, studies two groups of the insane; one of general paralytics, and the other of degenerates with criminal tendencies. Criminals, prostitutes, and the like, are not very often affected by general paralysis. Thirty-two out of 170 cases of general paralysis showed hereditary taint, and of these 32, 23 had certainly been infected; 28 out of 67 degenerates showed hereditary taint. Out of 117 paralytics 44 had a stretch of the arms greater than the height; out of 65 degenerates, 48; and out of 28 epileptics 24 had a stretch greater than the height. Twelve out of 170 paralytics, and 32 out of 67 degenerates were tattooed. Fifty-one out of 170 paralytics, and 44 out of 67 degenerates had other stigmata of degeneration. Of the 51 paralytics with stigmata of degeneration, 31 had only one; 13 had two; 5, three; 1, four; and 1, five. Out of 44 degenerates 14 had only one stigma; 7 had two; 7, three; 7, four; 5, five; 2, six; and 2, seven. Of the 170 paralytics 74.2% had certainly been infected, but only about 20% of the 67 degenerates. He believes, therefore, that a neuropathic heredity protects the nervous system against the injurious action of syphilitic infection as producing organic disease, at least so far as general paralysis is concerned. The brain of the degenerate is comparatively little disturbed by feeling for others, and therefore the struggle for existence tells less severely upon him. Of the two factors, syphilization and civilization, which, according to Krafft-Ebing, cause general paralysis, the latter has comparatively little effect upon the degenerate.

DIFFERENTIAL DIAGNOSIS OF GENERAL PARALYSIS AND SYPHILITIC PSEUDOPARALYSIS.

Klein,⁵ after a careful study of 7 cases of cerebral syphilis, draws the following conclusions: Diffuse syphilis of the brain and general paralysis may have

² Rev. Sper. di Fren, vol. xxv, pp. 180, 326.

³ Revista di Patologia nerv. e ment., February, 1900.

⁴ Monats. f. Psych., July, 1899.

⁵ Loc. cit., June, July, August, 1899.

very similar symptoms, which renders it difficult to distinguish between them; but the two diseases should be absolutely separated on account of their clinical course, the prognosis, and the results of treatment. The differential diagnosis often cannot be made except by a prolonged observation and study of the history and the results of treatment. The mental state is also a very important factor. In cerebral syphilis we see the violent onset of severe symptoms unlike to those of general paralysis, but with a positive history of infection. There may be bulbar symptoms or symptoms of a tumor, some affection of the ocular apparatus—either neuritis or temporary disturbance of the muscles of the eye—with a predominance of symptoms of a focal lesion. There is usually the absence of hypaesthesia or of disturbances of speech or handwriting. The affection progresses much more slowly, and may last for twenty years or more. Secondary manifestations may appear during the mental trouble. The mental state and the favorable results of treatment also are an important aid. Contrary to what is seen in general paralysis, there is no progressive mental weakness. The mental symptoms often present themselves under the form of psychoses or of functional neuroses, hysteria, melancholia, mania, confusion, paranoia. These mental troubles have a tendency to vary constantly. The patients much more frequently have a full appreciation of their morbid state. Symptoms of paranoia have a certain value in diagnosis in the chronic cases. Among these are hallucinations of hearing, morbid ideas of suspicion, obsessions, hallucinations of muscular sense and abnormal sensations with a deluded interpretation. In many cases the picture may be very similar to that of chronic paranoia. Hallucinations of hearing are rare in general paralysis; they are much more common in diffuse syphilis of the brain. In all doubtful cases it is urgent to put the patient under treatment by iodide of potassium for the purposes of diagnosis as well as of treatment.

ACUTE PSYCHOSES AND KATATONIA.

E. Meyer⁶ has collected 54 cases of acute psychoses observed in the clinic at Tübingen, excluding the cases of pronounced mania and melancholia. In 10 cases occurring in the puerperal state he found that the common feature was an acute dream-like confusion, with many unconnected hallucinations and illusions and a few delusions. The confusion he believed to be brought about through the hallucinations, which came on so acutely that they were not made a part of the life of sensation and ideas, as in the chronic hallucinations. The hallucinations were often vague and indistinct, and everything seemed upset and confused in the patient's mind. In the cases occurring at the period of the climacteric the diseases usually began without any pronounced preliminary stage; the patients became anxious, restless and often excited, at the same time that the hallucinations developed. In these cases, too, the confusion was marked and was usually to be attributed to the hallucinations and the disturbances of perception. A third class of cases similar in nature occur in the period of puberty. The katatonic symptoms were stupor of varying degree, stereotyped positions and movements and the wax-like flexibility. Meyer opposes the theory of Kraepelin and his pupils that

these conditions of stupor are primary. On the contrary he regards the stupor and confusion as the result of the delusions and hallucinations. In the cases which have recovered the patients often have explained their stupor, their resistance to treatment, and their stereotyped movements as due to the influence of such delusions. Katatonic symptoms may be seen after various psychoses, confusional insanity, chronic paranoia, degenerative insanity, etc. Where these symptoms are pronounced the patients may recover, but the course is relatively more unfavorable. Meyer thinks the majority of acute cases may be spoken of as confusional, although the distinctions between the various acute forms of insanity are somewhat vague. The hallucinations and delusions are less marked in mania than in confusion and also in melancholia, excepting in the so-called melancholia attonita. The so-called acute paranoia seems to him to be closely allied to confusion, if not the same thing. Chronic paranoia may be distinguished from this by the existence of a slow beginning, permanent systematized delusions and preservation of the logical order of thought.

ACUTE DELIRIUM.

Ceni⁷ reports 2 cases of severe psychomotor attacks with simple sensory delirium. These attacks ran their course without fever; the patients recovered and returned to their normal conditions. In later attacks in the same patients there was a marked rise of temperature; the symptoms were more severe and the patients soon died with symptoms of a true acute infection and genuine delirium. In the first attacks it was never possible to find any micro-organisms in the blood; in the last attacks they found in the first case staphylococcus pyogenes and just before death the bacterium coli, and in the second case the streptococcus pyogenes and the micrococcus tetragenus. The presence of these germs in the blood was not regarded as the direct cause of the morbid symptoms, but the pre-existing mental conditions were exaggerated by the infection and were, therefore, changed in character; the infection of the blood was probably due to the various functional and organic alterations which formed the basis of the mental trouble.

DELIRIUM OF NEGATION.

Obici⁸ has studied certain chronic delusional conditions, especially those intermediate between the acute and chronic psychoses. He concludes that the delirium of negation is not a disease by itself, but that the ideas may arise in various forms of psychoses, even in acute psychoses, from exogenous causes, although they predominate in the chronic forms with disorganization of the personality. The ideas of negation assume the degree of complexity and systematization indicated by Cotard, especially in the graver forms of melancholia; but they are also frequent in patients who have had repeated attacks of periodical melancholia. In these last cases the delirium of negation appears only at the period when the process of involution of the organism begins, and it seems to be a direct expression of this. It seems, therefore, to be rather a condition secondary to an antecedent periodical psychosis, and is to be considered as an associated affection which may modify or change the character-

⁶ Arch. f. Psych., xxxii, 780.

⁷ Rev. Sper. di Fren., xxvi, 70.

⁸ Loc. cit., 291.

istics of the first form. In other chronic forms the ideas of negation do not modify the fundamental course or change the primary characteristics. The melancholia of senility seems rather the initial expression of the same process which leads to profound dementia. In such cases, although the melancholia may seem to be cured, there is never a complete restoration, but always some diminution of the mental powers with an acceleration of the senile processes. This form of melancholia is merely a phase of transition to senile dementia, except where it results fatally. Secondary paranoia also is merely a symptom of acquired mental weakness. In true paranoia there is an original mental weakness indicated by the profound alteration of the personality and an insufficiency of the intellectual functions. This weakness may be congenital, in which case the trouble may be regarded as due to an original defect in the brain, which does not progress, or it may be acquired as the result of some injury to the developed brain, in which case the trouble is apt to be progressive and to lead to dementia.

EARLY DISCHARGE OF THE INSANE.

Tonoli⁹ calls attention to the fact that, although the asylum in Brescia has an extremely large number of admissions each year, it has not a corresponding increase in the total number of inmates each year. This is due to the practice of discharging patients to their homes before they are fully recovered, which has been carried out particularly in that asylum. He cites the old views of the advantages of asylum treatment for the insane, and the modern reaction from those views, criticising asylum treatment, and believes that the practice of early discharge helps to reconcile the two views. The system followed at Brescia was applied to the insane who were recovering very slowly, and to others who had scarcely passed the most acute stage of the disease, but who were evidently convalescing. Such patients were entrusted to the care and treatment of their own families. Tonoli's figures refer only to the female patients. In the year 1898, 223 women were admitted to the asylum, and 173 discharged. Of the discharges, 77 were cured, 64 were improving, 25 were stationary cases, and in 7 cases the insanity was not established. Many of the cases had an inheritance of pellagra or alcohol, which did not admit a complete development of the intelligence, and favored the development of vague delusions, so that it was often difficult to draw the line between insanity and their habitual state. Such patients often had a torpid mental organization, so that it would often be useless to expect a complete cure in the asylum, and they improved more rapidly at home. They were frequently confused, excited, and victims of hallucinations. From such a condition, Tonoli believes that they can be rescued only by putting them back into a familiar and sympathetic environment which does not require any new perceptions and adjustments. In this way he believes that secondary dementia may often be prevented, the removal from their friends and the association with other insane tending to keep up the mental disturbance. The position of the asylum at Brescia favors frequent visiting by the friends of the patients and consequent familiarity on the part of the physicians with the family conditions. This naturally enables the physi-

cian to determine more readily the suitability of the family conditions for an early discharge. The director of the asylum also has a small fund at his disposal each year of 3,000 francs, with which he can aid the patients who have been dismissed from the asylum, especially the cases of pellagra. The results of this early discharge have been extremely good; the patients often showed a marked improvement, and of 173 patients thus discharged in 1898, only 14 were returned up to June, 1899. These were chiefly cases of periodic excitement and pellagra.

(To be continued.)

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting, Wednesday, October 24, 1900,
DR. R. A. KINGMAN in the chair.

DR. SARAH E. PALMER gave a

REPORT OF A CÆSAREAN SECTION.¹

DR. FRANCIS D. DONOGHUE read a paper entitled

TREATMENT OF PLACENTA PREVIA BY CÆSAREAN
SECTION, WITH REPORT OF A SUCCESSFUL CASE.²

DR. REYNOLDS: I think if we are going to deal with the subject of placenta previa in the rather crude way of having one rule it would probably be safer to adopt the rule that the Cæsarean section should be done. I think the mortality, maternal and fetal, would probably be lower. But I think there are comparatively few previas that cannot be dealt with with very great safety to mother and child by the ordinary methods. Previa complicated by any mechanical difficulty in delivery would certainly show an exceedingly high mortality for mother and child. Central previa would show, I should suppose, at least 10% to 12%, and the Cæsarean section in anything like favorable circumstances can certainly show a far lower maternal mortality than that.

I think that we ought to realize for placenta previa, as for all obstetric cases in which the Cæsarean is raised, that the choice should properly be made at the beginning of labor. If the section is going to be done it ought to be done with all the chances in its favor. In the case quoted it certainly would have been far better if the operator had been on hand at the beginning of labor and operated before the mother was exhausted. A large proportion of babies are lost in the detachment of the placenta during labor, and cannot be saved after the placenta has been detached, and the great maternal mortality, in fact I should suppose three-fourths of the maternal mortality from placenta previa is from post-partum hemorrhage, owing to the fact that the uterus is so weakened by ante-partum hemorrhage that it cannot contract; all this should be saved. Of course in cases such as this one just read, where the operator first sees the case when the woman is exhausted, he has got to deal with the problem on

⁹ Rev. Sper. di Fren, xxv, 614.

¹ To be published later.

² See page 571 of the Journal.

that basis and I should fancy that, as a rule, section would even then be safer than forcible extraction.

The only portion of the paper with which I feel strongly at issue is that in which it was stated that craniotomy is to be reprobated and never performed on the living child. Probably nobody in this country is a stronger advocate for Caesarean section than I, but my study of the subject has led me to the conclusion that, while section under favorable circumstances is an exceedingly safe operation, yet when the woman is exhausted by labor it is an operation with so enormous a mortality—a mortality of 40% or 50% maternal—as to be utterly unjustified, and I think that the man who finds an insuperable mechanical obstacle, that is, too great even for symphysectomy, to the delivery of a child in a woman exhausted with labor is, setting the religious question aside, simply a coward if he fails to face the most disagreeable operation I have ever performed or seen—that of craniotomy on the living child. I think it is his duty. But I hope the day will come when we shall not be forced to this, because women will not be allowed to reach this point without operation.

Dr. HIGGINS: I think Dr. Donoghue is to be congratulated on his very successful case, but I have come to believe pretty strongly that Caesarean section is not indicated except when the mother is in pretty good condition. Most cases of placenta previa at the hospital come in as emergency cases after a good deal of hemorrhage, and in such circumstances we believe Caesarean section contra-indicated. I think for a long time we have recognized that Caesarean section would be indicated in favorable cases where the placenta is complete. I believe in those cases that are somewhat exhausted if we could pack the vagina tightly to control the hemorrhage and wait a certain length of time until the mother has recuperated, all the time under careful observation, the fetal mortality as well as maternal would be considerably reduced and Caesarean section could then be more safely performed.

Dr. WORCESTER: I have been delighted to hear both the papers and I think among the many auspicious signs for the coming century none is more auspicious in its import than the advent of the surgeon in the domain of obstetrics. I go back with dismay to the time when I was confronted with the necessity of doing Caesarean section, for the operation had not been done hereabouts for many a long year, moreover the patient was thoroughly exhausted in labor. But the delight I have taken in her joyous motherhood, for she had lost the five preceding children and longed to have a living child, and the delight I have taken since in that eight-year-old youngster named for me has amply repaid my anxiety.

With regard to the operation for placenta previa, I have come to the conclusion that it is the right operation. After a most disastrous series of cases of placenta previa some two or three years ago I tried to obtain the support of my colleagues of the Obstetrical Society to this procedure, but at that time I could not find one who would assent to it. One surgeon told me of a successful case of ligaturing the uterine arteries through the vagina and so controlling a hemorrhage that otherwise would have been fatal. A few weeks after that meeting I ran up against another case of placenta previa. I confess my absolute inability to distinguish the different forms. When you go through the os and find the placenta I don't know how to de-

cide whether it is marginal, lateral, central or anything else. It is there in front of you. I thought perhaps the best way to do was to get ready to ligature the uterine arteries. I got ready and then went in the usual old murderous way, boring through the placenta, and delivered the child. I have forgotten now whether the child was alive or not. I know the mother was dead in a pretty short time and in spite of my too late and perhaps too bungling ligaturing of the uterine arteries. I never shall try that again. To ligature the uterine arteries by the vagina may be a very easy job for some men, but with a rush of blood as if poured out of a pitcher, it is no easy task. It must be done by the sense of touch and you have not many minutes to lose in such hemorrhages as I have seen. In another such case I shall do a Caesarean section if allowed to do it and I think I shall back out of the case if not allowed. I admit having reached that time when perhaps timidity overcomes a man and he is more willing than he should be to believe that others confronted by the same difficulty might do better.

But I have had such frightfully bad fortune in following the regular obstetrical methods in handling these cases that I have in my own mind come to the conclusion that there is nothing so bungling, so unsurgical, so unscientific and so barbarous as the treatment advised for placenta previa. I understand that treatment to be in the face of a hemorrhage to dilate manually, bore through the placenta with the hand, do podalic version, get the child out as best you can, and the remains of the placenta afterwards, and then to use the ordinary, unscientific measures advocated for the treatment of post-partum hemorrhage. There is but one real way to stop hemorrhage. That is to compress the vessels. And the use of styptics, and hot douches to shock the inside of the uterus, all such measures are unreliable. The only right way to stop a post-partum hemorrhage is to compress the vessels from which the blood is coming. I believe in cases where it is decided best to bore through the placenta and deliver the child by podalic version, that it would be only a decent life-saving provision to have somebody ready to open the abdomen and compress the uterine arteries in case the hemorrhage proved to be tremendous. In such a crisis, with the thin belly wall between the surgeon and the vessels through which the life blood is flowing, a man who has even a pen knife and hesitates to go through that belly and get at those vessels where he can properly compress them is a coward. It is the only right way of treating such cases, and hesitancy to apply surgical principles is merely our evil inheritance from presterile times. When we remember that the natural closure of the vessels which supply the placental site during pregnancy depends upon the contraction of the uterus when the placenta separates, when we remember also the fact that the lower segment of the uterus has no power of contraction after the cervix has been forcibly dilated, and when we think of the operation of tearing the placenta free from the lower segment of the uterus, leaving those sinuses open, hoping blood will coagulate in them and knowing that they will not be subject to pressure; when we remember, too, that the forcible delivery in these cases is almost sure to rupture the cervix badly, keeping these things in mind could we imagine an operation more unscientific and unsurgical than the forcible dilatation of the cervix in such cases? It is ab-

solutely wrong. I am now purposely confining my attention to the danger of the mother without ignoring the greater danger to the child. It may be that we have not sufficient statistics to arrive at a final judgment, but certainly among the general practitioners who have had experience in everyday obstetrics there is a greater dread of placenta previa than of any other condition that has to be faced. I can think of no other exigency where the surgeon's advent into the obstetrician's domain will bring greater relief. In these cases it is always possible for the general practitioner to control ante-partum hemorrhage. The vagina can be plugged and even if the cervix is considerably dilated it is possible to drive in tampons against the gravid uterus in such a way as to prevent further hemorrhage. Of course the tampons may leak in a little while, but the general practitioner knows enough to take them out and put others in, thus giving time for the proper preparation of the patient for operation and for summoning a surgeon capable of doing the Cesarean section.

In the case of a woman who is exhausted by ineffectual labor, whose pelvis presents mechanical obstacles to her safe delivery, I feel that we must not forget or ignore the old-time practice, which was safer than we perhaps admit, of letting such a woman have a good long rest. If we let her alone her pains become more and more infrequent and she naturally sinks into restful sleep. I believe, in the case of a woman who has thus exhausted herself by ineffectual labor, that, by making the vagina antiseptic and resting her even under slight anesthesia during her pains, it would be possible, with the arts of reviving the patient that we have at command, to get her ready where she would stand the shock of a Cesarean section a great deal better than she would the shock of a craniotomy and the tearing through of a child whose head has been jammed to pieces; to say nothing of the mental and moral shock to all concerned.

DR. M. H. RICHARDSON: I have been very much interested in what I have heard. I am interested in this subject because, as a general surgeon, I may be called upon at any moment to decide the question of Cesarean section when I cannot have the advice of skilled obstetricians. Certain questions of technique have seemed to me especially important. An abdominal surgeon, and especially one who has operated many times upon the uterus, ought to be able to perform a Cesarean section, and to perform it well; it is the indication for operation that it is difficult to recognize. The general surgeon is not often called upon to intervene in recognized cases of pregnancy. He is called upon once in a while to operate upon uterine neoplasms in which careful study has shown the tumor to be a pregnant uterus. Unless he is constantly on his guard, the surgeon will find himself opening the abdomen for normal pregnancy. He ought therefore to know most intimately the signs and symptoms of pregnancy, not only in the early, but also in the advanced months. It is amazing to see how frequently pregnancy is overlooked, even by the experienced. On the other hand, it is extraordinary to see how often the diagnosis of pregnancy is made when there is only a fibroid, or other tumor of the uterus. A familiarity with the pregnant uterus is therefore essential for the abdominal surgeon, and he should be as prepared to perform a Cesarean section or a Porro as to remove the uterus for a fibroma.

He is not likely perhaps to be asked often to operate in the emergencies of well recognized and advanced pregnancy; yet Cesarean section lies well within the province of the abdominal surgeon. Indeed, no other but the surgeon experienced in abdominal work should be called upon to perform this most formidable intra-abdominal operation.

Taking the evidence that has been presented here tonight, the verdict must be, I think, in favor of Cesarean section in some cases at least of placenta previa. Perhaps the evidence is not as yet wholly conclusive, and the question may be regarded as still *sub judice*.

I am convinced of the safety of most operations upon the uterus. The safety of a complete removal of the uterus by experienced operators is great. Perhaps I am not justified in saying that hysterectomy is as safe as a difficult labor; but if not quite, it is very nearly as safe. In uncomplicated hysterectomy, skilfully performed with the most approved aseptic technique, the mortality is not over 5%. I am not sure that it is not less than 5% in experienced hands. Just what the mortality in labor is I do not know; but, taking all the cases together, normal labor, placenta previa, faulty positions of the fetus, albuminurias and eclampsias, prolonged labors — taking, as I say, all the cases of obstetrics together — I am inclined to think that in a hysterectomy skilfully performed upon a strong patient the dangers are not much greater than the general dangers of obstetrics.

Every speaker tonight has referred to the enormous mortality of placenta previa. I am surprised to learn that the best results show a mortality of 12%, and in some cases of 50%. The mortality in Dr. Reynolds's collection of 93 cases of Cesarean section — his own, Dr. Washburn's, and others — has been practically nothing. So far as I know there has been in this community practically no mortality in Cesarean section. I cannot see, then, how the verdict can fail to be in favor of a scientific operation, an aseptic operation, and an anatomical operation, — one which permits exact dissection, which cannot fail to stop the hemorrhage, which cannot fail to save the child, and in which the mortality — wholly in the cases of the mothers — is vastly less than by the older methods.

Very little can be said against Dr. Worcester's radical views on this subject; very little could now be said against the radical position in other surgical subjects which years ago he defended in this room. The course of events in the last ten years has shown that no matter how advanced views a man may take in surgery, it is difficult for him to make them too advanced.

DR. WASHBURN: I did not come in time to hear the papers and I ought not to say anything except that it has not been my misfortune to see a case of placenta previa that was not distinctly marginal, but I have some time since made up my mind that in case I did see one that was not absolutely and distinctly marginal I should do a Cesarean section on it. And I should like to say one word also on another thing that has developed in the discussion of the evening, and that is the great danger of doing Cesarean section on a patient somewhat exhausted by labor. I think that in most cases the danger of any other interference except of the simplest kind is fully as great as the danger from a rapidly and carefully performed Cesarean section. I think the dangers of Cesarean

section performed with absolute attention to asepsis and with tolerable rapidity in the hands of a careful person are not very great and the chances of saving not only the mother but the child also are very well worth working for.

Dr. H. R. HIRENCOCK: I have not anything to add to the paper except that I was the first doctor to see the case. At that time, 5 P. M., I examined her and thought it was placenta previa and wrote Dr. Hill to that effect and I did not see her again until she was under ether. It was a very quick and clean, neat operation; very instructive.

Dr. RICHARDSON: I should like to ask Dr. Worcester why separation of the placenta by Cesarean section should any more effectually check hemorrhage than separation after version.

Dr. WORCESTER: It seems to me the difference is this: By separating the placenta after Cesarean section you do not disturb the cervix, do not lacerate it, do not even tire it out. When you dilate the cervix by drawing the child through, you tire out the muscles of the cervix so it cannot contract at all.

Dr. DONOGHUE: In regard to the question just asked by Dr. Richardson, when you take the child out above you should allow the uterus to contract, and the contraction and retraction of the uterine fibres would separate the placenta. That was the method I followed in this case. Instead of attempting to separate the placenta immediately I waited ten minutes for the placenta to separate in the normal way and close the sinuses at the same time.

The idea of the operation in exhausted cases was suggested first to my mind by the operative results in cases of extra-uterine pregnancy with hemorrhage. One of Dr. Mixer's cases made a deep impression on my mind. The patient was pulseless. Dr. Mixer opened a vein in the arm and after infusing a quart to three pints of salt solution the pulse returned, laparotomy was done, the bleeding tube tied off, abdominal cavity filled with salt solution and the woman made a perfect recovery. Looking up the statistics of the surgical treatment of intra-abdominal hemorrhage, the mortalities are found to be surprisingly low, and if those things are possible in an extra-uterine hemorrhage the same surgical treatment applied to any kind of hemorrhage ought to meet with the same results. If the woman, in a case of placenta previa, was exhausted from ante-partum hemorrhage, it seems to me it would be logical to open a vein, infuse salt solution, do Cesarean section, fill the abdominal cavity (if necessary) with salt solution and give it the ordinary surgical treatment of shock.

Dr. REYNOLDS: I am very heartily in accord with what Dr. Donoghue said as to the section being the quickest and probably the best way to control hemorrhage. I should not think hemorrhage pure and simple was a contraindication to the section. I am now making observation on this subject which I intend to publish later, but I may say that at present it seems to me that there is a pathological basis for my opinion that prolonged labor pains and the section form a particularly fatal combination.

Dr. RICHARDSON: I should like to say one thing suggested by Dr. Donoghue. Six or eight years ago I published a list of extra-uterine pregnancies, and stated then that if the patients were on the verge of the grave from hemorrhage, it would be better to let them alone, in the hope that they would react from

the collapse and grow strong enough for operation. Since that time my experience has been such that my opinion is decidedly different. I believe that if you wait for the pulse and strength to return when the patient is collapsed and pulseless, you generally wait in vain. Under such circumstances the intravenous injection of salt solution is a very valuable life-saving procedure — a procedure by which the pulse may be brought up and the patient enabled to rally enough to withstand a rapid operation. We have tried it a number of times. In a case of post-operative hemorrhage in which the patient had practically no pulse, two quarts of salt solution brought the pulse up so that by an extremely rapid operation the bleeding vessel was tied, and the patient was saved. I never shall wait again in a case of extra-uterine pregnancy or of abdominal hemorrhage in the hope that the patient may, by elevation of the feet, stimulation, and so on, be restored enough to endure the operation. I recall several fatal cases in which I did not operate for the reason that I felt sure the shock of the etherization would be sufficient to turn the scale. I shall never wait again, even in such a case; I shall infuse and stop the hemorrhage — no matter how desperate the circumstances — and I am sure that I shall save many a patient who would succumb under any less immediate and heroic measures.

AMERICAN PUBLIC HEALTH ASSOCIATION.

TWENTY-EIGHTH ANNUAL MEETING, HELD AT INDIANAPOLIS, IND., OCTOBER 22, 23, 24, 25 AND 26, 1900.

(Concluded from No. 22, p. 562.)

Dr. JUAN BRENA, of Zacatecas, Mexico, dealt with the

VICE OF SMOKING AMONG YOUTHS,

and offered suggestions as to the means of overcoming it.

REPORT OF THE COMMITTEE ON DISINFECTION.

This was presented by Prof. F. C. ROBINSON, of Brunswick, Me. From what has been accomplished in this work, the following conclusions seem warrantable:

(1) Household disinfection after infectious diseases should combine the use of formaldehyde with other means. It can be safely relied upon for all exposed surfaces, and these only.

(2) Formaldehyde requires moisture enough in the air to nearly saturate it for its most efficient working.

(3) There is much disagreement among experimenters as to the disinfection of tuberculous matter. One says a 2% solution of formaldehyde disinfects it; another, that even a 10% solution does not. Several say that formaldehyde gas applied as above destroys it; others deny this. Further experiments are needed.

(4) Soap is a poor disinfectant, but 1% caustic alkali, or 20% carbonate of alkali is efficient.

(5) Carbolic acid, less than a 5% solution, has little scientific value.

(6) The creosotes, as used in creolin, lysol and solutol, are safe disinfectants.

(7) Alcohol at from 50% to 75% has considerable disinfecting power, but not at other strengths.

(8) Most metallic salts, except those of mercury, have little disinfecting action.

(9) Bichloride of mercury, or corrosive sublimate, should be used in strength of at least 5-1,000 if tuberculous matter is to be disinfected. A fresh solution is more active than one which has stood for some weeks. The addition of salts does not increase the strength of a fresh solution, but prevents it from losing its strength as rapidly.

(10) Bright sunlight kills the tubercle bacillus in a few hours, and, as a rule, pathogenic bacteria keep their greatest virulence only when kept in the dark.

Dr. JESUS CHICO, of Guanajuato, Mexico, gave some

HINTS ON MALARIA FROM PERSONAL OBSERVATIONS,

in which he did not think the mosquito was as important a causative factor as had been generally supposed, but in Mexico he thought the injudicious use of tropical fruits played an important rôle.

Miss HESTER McCLUNG, of Indianapolis, recounted the

SANITARY WORK OF WOMEN IN THAT CITY.

REPORT OF THE COMMITTEE TO DEFINE WHAT CONSTITUTES AN EPIDEMIC.

This was read by the chairman, Dr. BENJAMIN LEE, of Philadelphia. In the minds of the public at large, and of many of the profession, the word "epidemic" still conveys an idea of universal atmospheric contamination. This is to be deplored, because, while on the one hand its use inspires an indefinable horror and creates panic, on the other hand it leads to the disregard of the very precautions which are of essential use in restricting the spread of the contagion, namely, those which should be taken in regard to the person and the excreta of the patient, his effects and his immediate environment.

In view of changed views as to the propagation of communicable diseases, the word "epidemic" has outgrown its usefulness. It has become the means of perpetuating false conceptions, and its official use may be misleading and mischievous. Without attempting any stricter, more comprehensive, or more lucid definition of this word, the committee recommended that, as opportunity occurs, in all laws and regulations in which certain executive action is made contingent on the declaration by health authorities of the existence of an epidemic, the phraseology shall be altered by omitting the word "epidemic," and in place thereof inserting a brief statement of the condition calling for such action, as, for example, "whenever a communicable disease prevails to such an extent, or is spreading with such rapidity as in the opinion of the board to make it its duty to notify either the general public or the authorities of neighboring towns of the fact that such and such action shall be taken." The report of the committee was adopted, and the committee discharged.

REPORT OF THE COMMITTEE ON NATIONAL LEPER HOME.

Dr. H. H. BRACKEN, of Minneapolis, chairman, presented this report. The committee dealt with the desirability of establishing national leprosaria in the United States. The records of Dr. Bracken for cer-

tain States, compared with those of Dr. Hyde, are as follows:

State.	Dr. Hyde.	Dr. Bracken.
North Dakota	2	2
South Dakota		1
Iowa	20	3
Minnesota	120	61
New Jersey	1	1
Ohio		1
Pennsylvania	6	6
Wisconsin	20	7

He presumes that Dr. Hyde's figures for Iowa and Wisconsin are estimated. Probably they are not too high. He has taken only those cases of which a history could be given. It is probable that the 120 cases credited to Minnesota are taken from Dr. Hansen's report. It seems to him that this, too, must be an estimate. If there were 120 cases in Minnesota, the speaker cannot understand why they are not on his records. If there were that number of cases in 1888, the number for Minnesota is much higher than he has given, for many of the cases in the official list cannot have possibly belonged to Dr. Hansen's 120.

It might appear from the report of cases in the Northwest that leprosy was far more common in Minnesota than in the neighboring State. He can see no reason for this belief, for the lepers in this district are among the immigrants from Norway, Sweden, Iceland and China. These people have quite a representation in all this group of States. He can only attribute the more complete returns for Minnesota to the fact (1) that there has been less agitation against leprosy in this than in some of the neighboring States; (2) that with this lack of agitation against leprosy, physicians report their cases more willingly to the State Board of Health, which has endeavored during the last twenty years to palliate the sufferings of this unfortunate class; (3) that Minnesota is fortunate in having among its physicians men who are familiar with leprosy, and who are interested in philanthropic work, and these physicians have given material aid to the State authorities engaged in securing a list of all lepers in Minnesota. Several lepers in the Minnesota list give the history of a previous residence in Wisconsin, but their names in not a single instance appear upon the Wisconsin records. Of the 37 living lepers known to be resident in the Northwest, 17 only are in Minnesota, and there is a strong possibility of 2 of these being dead, but he has no positive knowledge of the fact. He does not dwell upon these facts as an alarmist, but simply reminds the association that leprosy has existed, does exist, and will continue to exist for years to come in all three countries represented in the association.

ESTABLISHMENT OF LEPROSARIA.

A leprosarium should afford a comfortable home for lepers. This means, not only good buildings, but extensive grounds comprising many acres, where the lepers may have liberties and still be in seclusion. The buildings connected with the leprosarium must combine the privileges of a home and of a hospital. Those who have the disease in mild form may need little if any medical care. They need comfortable clothing and good food. With those in whom the disease is more advanced, the care should be that of a hospital patient, with medicines to lessen their suffering, and dressings that would commend themselves to any surgeon. A leprosarium should resemble modern colonies for epileptics. It should furnish employment

for those who are able to work, and amusement of various kinds for all.

Two of the strongest medical societies in Minnesota have placed themselves on record as favoring the establishment of national leprosaria, also the American Dermatological Association has appointed a committee to determine the best methods to be used in the care of lepers.

By resolutions the association placed itself on record as favorable to the establishment of national leprosaria.

DR. JOHN H. S. FULTON, of Baltimore, described

A SUITABLE DRESS FOR DEFENCE AGAINST INFECTIOUS DISEASES.

MR. F. H. NEWELL, government hydrographer, contributed a paper showing

SOME RESULTS OF THE INVESTIGATION OF STREAM POLLUTION

which has been made by the United States Geological Survey. The government, realizing the importance of public water supplies, and their conservation and protection against pollution, has established a special division under the title of Board of Hydrography.

REPORT OF THE COMMITTEE ON ANIMAL DISEASES AND ANIMAL FOOD.

This was read by DR. D. E. SALMON, of Washington, D. C., chairman. He urged the importance of careful observations being made of glanders, in view of the fact that serum for use in the treatment of many human ailments is obtained from horses. Army horses are peculiarly liable to contract the disease in time of war, on account of the extra exertion and frequent lack of full rations during such periods. He roundly condemned the carelessness of the U. S. Government in the matter of providing skilled and trained veterinarians in the army. He discussed the subject of hydrophobia, and emphasized the importance of active measures looking to the extermination of this disease. He cited statistics of many outbreaks of rabies, and showed the disease to be peculiarly virulent and almost invariably fatal to human beings. Misguided people who declare there is no such thing as hydrophobia communicated to man from animals were sternly rebuked. Dr. Salmon declares that their obstructive tactics have wrought incalculable harm in the way of deceiving people into a careless attitude towards this malevolent disease. The Pasteur treatment was highly commended by the committee, which also recommended that the association take steps to enlighten the public on the disease and its treatment, as well as means for its prevention.

TUBERCULOSIS.

The committee made strong recommendations on the subject of tuberculosis, asserting its belief in the theory that the disease can be and is communicated from infected cows through their milk. Here also the committee encountered learned men who controvert the theory, asserting that the difference in appearance of the bacillus of human tuberculosis and that of bovine indicates that the latter cannot communicate the disease to human beings. Bovine tuberculosis is undoubtedly communicable. He inveighed against loose methods prevailing in many creameries by which the milk received from an infected herd is

mixed with the general supply of milk on hand; and further, the practice of distributing, without previous sterilization, the waste milk and cream to be used as food for swine was condemned.

PRESIDENT BRYCE added a few terse, vigorous utterances on the care which ought to be employed in dairies to guard against the distribution of milk infected with tubercle bacilli.

DR. R. M. WOODWARD, of Washington, D. C., gave a résumé of the recent foreign work of the Marine-Hospital Service.

DR. F. F. WESBROOK, of Minneapolis, reported on behalf of the Committee on Transportation of Diseased Tissue by Mail, recommending that nose and throat specimens be included in one package.

DR. CRESSY L. WILBUR, of Lansing, Mich., presented the report of the Committee on Demography and Statistics in their Sanitary Relations. He mentioned the progress that has been made in matters relating to vital statistics concerning which the association had acted in the past. He urged the association to stand for united and determined action in elevating the standard of registration laws in this country, and in ensuring the practical success of new laws when enacted.

The following resolutions were introduced, discussed and adopted:

(1) *Resolved*, That the association, recognizing the benefits of medical school inspection, heartily approves the efforts of boards of health and of education directed towards the establishment of systems of inspection. (Offered by Dr. Adolph Gehrmann.)

(2) *Resolved*, That the association approves of and encourages all efforts made by governments, whether national, state or municipal, for the limitation of pollution of streams. (Offered by Mr. C. Monjeau.)

(3) *Resolved*, That a committee of three be appointed, to be known as the Committee on Uniform Municipal Statistics, to take such steps as may seem practicable towards securing greater uniformity in all branches of municipal accounts, reports and statistics, and particularly those branches relating to vital and sanitary statistics; said committee to have power to confer with similar committees from other societies already or hereafter appointed to the same general end, and to report at the next meeting of the association. (Offered by Dr. Leal, of Paterson, N. J.)

ELECTION OF OFFICERS.

The following officers were selected for the ensuing year: President, Dr. Benjamin Lee, of Philadelphia, Pa.; First Vice President, Mr. Rudolph Hering, of New York City; Second Vice President, Dr. J. N. Hurty, of Indianapolis, Ind.; Secretary, Dr. Charles O. Probst, of Columbus, O.; Treasurer, Dr. Henry D. Holton, of Brattleboro, Vt.

Buffalo was selected as the place for holding the next annual meeting. The Executive Committee recommended that the time be fixed during the third week in September, 1901.

DIPHTHERIA AND MEASLES IN INDIANA. — There are, according to the *Medical News*, 1,000 cases of diphtheria and measles in Muncie and physicians are powerless to stamp out the contagion. One-fifth of the school children are afflicted and the schools are depopulated.

Recent Literature.

A Textbook of Practical Medicine. By WILLIAM GILMAN THOMPSON, M.D., Professor of Medicine in Cornell University Medical College, New York City; Physician to the Presbyterian and Bellevue Hospitals, New York. New York and Philadelphia: Lea Brothers & Co. 1900.

This "Textbook of Practical Medicine" has 1,000 pages and is illustrated by 79 engravings. The author is professor of medicine in one of the large New York medical schools. One cannot reasonably write a textbook of medicine without being a professor in a medical school, and conversely it may be regarded as true that one can hardly be a professor of medicine or clinical medicine without writing a book. In this case the author considers that "the advent of a new century makes appropriate a comprehensive review of the present status of medical practice," and it is "the aim of this book to offer such a presentation to students and practitioners."

The contents of Professor Thompson's work are divided into nine parts and seventy-nine chapters. The first part, with thirty-four chapters and 355 pages, more than one-third of the whole book, is devoted to the important subject of infectious diseases; the second part, with 160 pages, to diseases of the digestive system; the third part, of 32 pages, to diseases of the spleen, lymphatic system, and ductless glands; the fourth part, of 83 pages, to diseases of the blood and vascular system; the fifth part, of 63 pages, to diseases of the respiratory system; the sixth part, of 35 pages, to diseases of the urinary system; the seventh part, of 137 pages, to diseases of the nervous system; the eighth part, of 2 pages, to diseases of the muscular system, and the ninth part, of 82 pages, to miscellaneous diseases, poisons and drug habits and diseases due to parasites.

Professor Thompson has added another very good textbook to those which have preceded his, and the work of the publishers has been well done.

The Student's Medical Dictionary. Including all the Words and Phrases generally used in Medicine, with Their Proper Pronunciation and Definitions, Based on Recent Medical Literature. By GEORGE M. GOULD, A.M., M.D. Eleventh edition, enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Gould's Student's Medical Dictionary has reached its eleventh edition in somewhat enlarged form. It still remains, however, a comparatively small and portable volume, a size which we hope future editions will not greatly exceed. The book has stood the test of time and criticism, and remains one of the best dictionaries we have; it retains the cardinal merit of being inexpensive.

Saunders' Pocket Medical Formulary. By WILLIAM M. POWELL, M.D. Sixth edition, thoroughly revised. Philadelphia: W. B. Saunders & Co. 1900.

This small volume is essentially a collection of prescriptions gathered together from many sources. In addition it contains considerable information on various medical matters. The book is attractively bound in flexible leather and the fact that it has reached its sixth edition bears ample testimony to its popularity.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, DECEMBER 6, 1900.

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OYSTERS AND DISEASE.

WITH the advance in our knowledge of the subtle and unexpected ways in which disease may be transmitted, suspicion has from time to time, and not unjustifiably, fallen upon the oyster. It has been easy for a somewhat vivid imagination to picture the contamination to which oyster beds may be exposed, and to conceive of the possible multiplication of pathogenic bacteria or other agents inimical to health within their shells. Admitting these facts, it is a short step to imagine the effect upon man of eating such oysters and to add another terror to the constantly increasing number with which we are surrounded. Fortunately in this, as in many other matters, an appeal to experiment does much to clear the way for a calmer and more rational interpretation of the facts. This service has lately been rendered by an exhaustive and painstaking study on the general subject of oysters and disease undertaken by Prof. W. A. Herdman, of Liverpool, and Prof. Rubert Boyce, also of Liverpool, and both of University College. Their work is published in full, with plates, in the second volume of the Thompson Yates Laboratories Report, and well repays a careful perusal. The conclusions of these investigators are of moment, and should be generally known both by the raisers and consumers of shellfish. In general their experiments, in common with those of others, go to show that oysters and other shellfish used as food must from their nature and the circumstances of their cultivation and sale be regarded as liable to contamination from pathogenic and other organisms or their products. Recognizing this fact, the following statement made by the writers is sufficiently self-evident: "Shellfish must not be taken as food from grounds where there is any possibility of sewage contamination; after removal from the sea, while in transit, in store, or in market, they should be carefully protected from any possibility of insanitary environment; they should not be kept longer than is absolutely necessary in shops, cellars, etc., in towns where, even if not running the risk of fresh contamination, they are under conditions favorable to the reduction of

their vitality, and the growth of their bacterial contents — the fresher they are from the sea the more healthy they are likely to be; finally, only absolutely fresh shellfish should be eaten uncooked, and those that are cooked must be *sufficiently cooked*, raised to boiling point and kept there at least ten minutes."

Among the details of their experiments several matters of great interest were brought out. The vexed question of "greening" in oysters was one. The investigation showed that there are several perfectly distinct varieties of greenness, some being entirely healthy, and others indicating an excess of copper; in certain American oysters, for example, it was distinctly proved that their green color was due to copper, and also that the copper is situated in the blood cells, or leucocytes, which are much increased in number. This condition they call a green leucocytosis. On the other hand experiments in feeding oysters with weak solutions of copper and iron salts gave no clear evidence of any absorption of the metals accompanied by greening.

The investigations on the presence of typhoid bacilli in oysters is also of much importance. They did not find the bacillus in any oysters obtained from the sea or from markets, but were able experimentally to inoculate oysters with typhoid and recover the organism from their bodies up to the tenth day. It appears, however, that the bacilli do not increase in the body or tissues, and probably die in the intestine. Sea water was found inimical to the growth of the bacilli and the washing of infected oysters in a stream of clear sea water led to a great diminution or, in some cases, a total disappearance of the bacilli in from one to seven days. The colon group of bacilli is frequently found in shellfish, but probably not in those living in pure sea water. It is unsafe, however, to infer from this that the presence of colon bacilli invariably indicates sewage contamination. Further investigation on this point is desirable. The writers inform us with reference to their negative results regarding typhoid that their samples of oysters were in no case, so far as they were aware, derived from a bed known or suspected of contamination with typhoid.

As a result of their investigations they feel amply justified in sounding a warning note regarding the raising and selling of oysters. They urge the greatest possible care in the prevention of contamination, and for the regular inspection of the grounds by qualified persons. Foreign oysters should be as carefully inspected as those raised at home, and a systematic quarantine established.

The report is, in a general way, reassuring, and yet, throughout, it recognizes a real danger, provided the utmost precaution be not taken to guard the oyster beds as we would any other source of food supply. It is well that we should be fully aware of all the facts and insist upon the legal enforcement of close inspection. When this is done we may, no doubt, still enjoy our oysters, with the practical assurance of their harmlessness.

REVISION OF CHARTER OF CITY OF NEW YORK.

IN the report of the commission appointed by Governor Roosevelt to revise the charter of the city of New York, which has just been made public, the opinion is expressed that the present Board of Health is unnecessarily expensive and complicated, and that the mayor should not be prohibited, as at present, from appointing a physician president of the board. It is therefore recommended that the board be composed of one commissioner (to be selected by the mayor, without restriction upon his choice), the head of the Police Department, and the health officer of the port. The powers and duties of the Health Department are not materially changed. The substitution is recommended of a single commissioner of Public Charities for the present board, consisting of three commissioners. The most important change, however, in the matter of public charities is that Bellevue and its allied hospitals, namely, Fordham, Gouverneur and the Emergency Hospital, be placed under the administration of a board of seven trustees to be appointed by the mayor. Provision is made that certain societies have a recognized opportunity to make nominations for those appointments, but the power of the mayor in the matter is to be in no degree abridged by such recommendations or nominations. It is the belief of those favoring this change that the executive efficiency of the Department of Public Charities will be in no wise impaired thereby, as the experiment of conducting city hospitals by boards of trustees, rather than by the executive officers of the city government, has been successfully tried in Boston, Baltimore, Cincinnati and other large cities. The commissioner of charities will be *ex officio* a member of the board, and his existing powers of visitation will be fully preserved. In regard to the water supply, the commission strongly recommends that the excessive powers granted under what is known as the Ramapo Charter, being Chapter 985 of the laws of 1895, should be repealed. It furthermore recommends the adoption of the Massachusetts plan, under which cities and towns are furnished by the State itself; water so furnished to be sold to the various municipalities using it, and the State to issue bonds for needed appropriations.

THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

THOSE who contemplate attending the third Pan-American Medical Congress, which meets in Havana from December 26th to 28th, inclusive, will be interested in the following details which we have received from Dr. Ramon Guiteras, the associate secretary of the congress.

One can go either by the land routes, which are all *via* Florida and are much more expensive for those going from our Northeastern States, or by steamer from New York. The new Ward Line steamer *Morro*

Castle, with capacity of 136 cabin passengers, leaves New York December 22d, arrives in Cuba on the 25th, remains there until the close of the congress, leaving Cuba late on the 29th, and reaches New York on January 1st. The round trip by steamer, everything included, is \$60. Any one going *via* the Ward Line will be absent from New York ten days.

English-speaking members of the Cuban Reception Committee will meet all steamers on their arrival in Havana, and escort all delegates to the hotels assigned to them. The best hotels in Havana are the *Telegrapho*, *Mascotte*, *Inglaterra*, *Pasaje* and *Roma*. Rates are from \$3.00 to \$5.00 a day, everything included.

Excursions have been planned by the committee to various points of interest on the island, among which are the caves of *Bella Mar* in *Matanzas*, the large sugar plantations, *Morro Castle* and other points of interest. A number of receptions and entertainments will be given in honor of the delegates from foreign countries. All details of entertainments are as yet in the hands of the Cuban Committee.

Quarantine was raised on November 15th. Before that time New York passengers were detained long enough to cover five days from their departure from Havana. There will be no danger from yellow fever at the time of the congress.

In another column may be found the names of the presidents and English-speaking secretaries of sections. Particulars regarding sections and other information as received from Havana will be given from time to time. All literature pertaining to the congress will be in Spanish.

MEDICAL NOTES.

PAN-AMERICAN RED PEPPERS AT THE PAN-AMERICAN EXPOSITION.—We quote the following from a circular recently received from the Division of Foods, Pan-American Exposition: "It is intended to make this the finest and most extensive collection of red peppers ever made, with the object of demonstrating by special exhibit connected with 'accessories to foods' that Pan-America can produce all the red peppers consumed in Pan-America. It is, perhaps, only known to experts that vast quantities of red peppers are imported from Europe, Asia and Africa every year because Pan-Americans are not actively alive to their own interest in this important matter. To whom this greeting comes, we ask for co-operation in making this demonstration, and we promise that recognition shall be given all who take an interest in the affair."

ENGLISH CAPITALISTS NEGOTIATING FOR BADEN SULPHUR BATHS.—It is reported from Vienna that certain English capitalists are negotiating for a lease of the hot sulphur baths at Baden, a few miles southwest of Vienna. They are said to have offered a rent of \$28,000 and pledge themselves to expend \$1,000,000 in improvements of the property, besides adding a theatre, casino and other attractions.

PASSING OF THE FIJI ISLANDERS.—Dr. Morgan I. Fiumcane, medical inspector of the colony, is authority for the statement that the black tribe of Fiji Islanders is dying out. This is due not to a small birth rate, but to an enormous infant mortality, caused by sanitary neglect, filthy houses, and the absence of skilled physicians. It is not expected that much can be done in the way of improving the conditions while the native character remains as it is.

ESTIMATED COST OF PROFESSIONAL EDUCATIONS.—A writer in the *London Daily Mail* has figured it out that, averaging the poor and frugal with the rich and extravagant, it costs a young Englishman about \$2,000 to fit himself for the navy, \$3,000 for the army, \$3,875 for the church, \$4,000 for the bar, and \$4,720 for the practice of medicine.

JOHN HOPKINS UNIVERSITY.—According to the *Philadelphia Medical Journal*, Dr. William H. Welch and Dr. William Osler, of the Johns Hopkins Medical School, have been named as possible candidates for the presidency of the university in place of President Gilman, resigned.

A CENTENARIAN.—Nathaniel Wells, a chemist by profession, died in Washington, November 29th, at the reputed age of one hundred and seven. He was a friend of Darwin, Spencer and Huxley. He is said to have been around the world twenty-five times.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the eight days ending at noon, December 5, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 171, scarlatina 23, measles 19, typhoid fever 14.

BOSTON MORTALITY REPORT.—The number of deaths reported to the Board of Health for the week ending December 1st is 186, as against 206 the corresponding week last year, showing a decrease of 20 deaths, and making the death rate for the week 17.3. The deaths from consumption were 19, pneumonia 14, whooping cough 1, heart disease 18, bronchitis 2, marasmus 7. There were 9 deaths from violent causes. The number of children who died under one year was 31, under five years 58, persons more than sixty years 43; deaths in public institutions 64.

FAULKNER HOSPITAL CORPORATION.—The organization of the hospital under the will of the late Mrs. Abbey L. A. Faulkner, of Jamaica Plain, has been perfected. As far as possible the proposed hospital will be modelled after the Massachusetts General Hospital, to be managed by a board of five trustees, according to the express wish of the donor, but as the privilege was allowed the executors of the will to increase the number, the Board of Trustees as now constituted consists of Charles P. Bowditch and Alfred Bowditch, whom Mrs. Faulkner had nominated herself; Ellen C. Morse, Cornelia Bowditch, Charles H. Souther, Henry B. Chapin, all of Jamaica Plain, and Emily G. Denny, of Brookline. The work of the hospital will have to be decided later by the trus-

tees, but it is probable that it will contain a medical and a surgical ward, as well as out-patient and convalescent departments. It is hoped that the work of construction may begin in the spring.

A NEW ENGLAND CENTENARIAN. — Mrs. Anna Weed, said to be one hundred and two years old, died recently at Merrimac, Mass. Both her maternal and paternal ancestors were remarkable for their longevity.

NEW YORK.

NEWARK'S ENTERPRISING BOARD OF HEALTH. — If any one desires to avoid the ills of life and attain a serene and undisturbed old age he should at once decide to make his home in Newark, N. J. At a recent meeting of the Board of Health of that city it was determined to add to its Sanitary Code twelve new ordinances, among which are included measures to compel barbers to sterilize their razors and use a separate towel for each customer, to stop obnoxious noises, such as the screeching of factory and locomotive whistles, to prevent the early morning crowing of roosters by prohibiting the keeping of chickens within the city limits, to regulate the habits of dogs by enforcing certain rules for their owners, to prevent cats from running at large at night, to close wells in which typhoid bacilli may disport themselves, to secure the removal of dead trees, decayed telegraph and telephone poles, and unsafe pulley lines, to regulate the exposure of food stuffs, to restrict the manufacture of water gas, and to prohibit the operation of open trolley cars during unseasonable parts of the year. As Newark has recently secured for itself a permanent supply of excellent water, there would seem to be little left to make residence there a truly Utopian existence.

COMMENDATION OF WORK OF STATE TENEMENT HOUSE COMMISSION. — In the annual report of the Charity Organization Society, just issued, the work of the State Tenement House Commission is highly commended. Special attention is directed to the dark, narrow and unventilated airshaft and the dark hallways of the tenements as usually constructed, as a menace to health and morals; and the hope is expressed that the legislature, with the knowledge which will be placed at its disposal in the report of the present commission, will not fail to take some effective step, through the erection of a new city or State department, or otherwise, to remedy these and other evils. The report gives the result of the new law authorizing the payment of city subsidies to private institutions, and then goes on to say: "The question arises whether the amount disbursed prior to the adoption of the present rules should not have been regarded as a maximum to be distributed on some basis for services rendered by the institutions approved by the Board of Estimate and Apportionment. Otherwise it will be only a few years until public subsidies have entirely supplanted private charity in the field of medical relief."

OUTBREAK OF SMALLPOX IN NEW YORK. — There has been during the past week quite an unusual outbreak of smallpox in the city. On November 27th 6 cases were reported in Manhattan, this being the first appearance of the disease in New York, with the exception of an isolated case in the Borough of Brooklyn a few days previously, since the third week in August, when 1 death was caused by it. On the following day 4 additional cases were reported, and on November 29th 14 new cases. On November 30th, however, only 2 new cases were discovered. Nearly all the cases were in one tenement house block, and 11 of them were in one house. A large proportion of the patients were young children, some of whom attended a kindergarten maintained by the Riverside Association in West 69th Street. The disease is supposed to have originated from a negro who is an actor belonging to a Southern troupe and who recently arrived in the city and took lodgings in the neighborhood where it broke out.

MEETING OF THE CHILDREN'S AID SOCIETY. — The forty-eighth annual meeting of the Children's Aid Society was held on November 27th. The report of the secretary showed that during the past year 581 children have been placed in homes in the country. Homeless and destitute families numbering 1,013 persons, mostly children, have been assisted to reach friends or employment in the country, making a total of 1,594 persons sent away from the overcrowded city. The farm school in Westchester County proved important in turning the attention of many city boys to the advantages of country employment. During the summer the Sick Children's Mission aided with medical advice, food, medicine, etc., 1,157 children, and 6,508 children enjoyed the benefits of the Summer Home, at Bath Beach. At the Health Home and Coney Island there were 7,385 mothers and sick infants, 3,122 of whom remained for a week or longer.

NO "EMBALMED" MILK. — The president of the Board of Health has just made public a report by Chief Milk Inspector Herman Betz, which shows that no "embalmed" milk is being sold in the city, as was recently charged. The report is in part as follows: "Every sample of milk taken by our inspectors during 1898, 1899 and 1900, up to today, to the number of 2,846, has been examined in the laboratory, as part of the analysis, for antiseptics such as formaldehyde and boracic acid; but not a single case has been found which would have justified legal proceedings. Suspicious samples were found on several occasions, but when an attempt was made at verification the result was always negative.

CITY AND SUBURBAN HOME COMPANY. — The Directors of the City and Suburban Home Company, of which Dr. Gould is president, have issued notices that its dividend rate has been raised from 4 to 5 per cent. per annum. They have also sent out a circular inviting subscriptions to an issue of \$500,000 additional stock, the money raised by the sale of which is to be

used to erect model tenement houses on land adjoining the company's present property on First Avenue. The experience with those previously constructed in this location has demonstrated beyond question that the plan to build model tenements on a paying basis in New York is a perfectly feasible one.

NEW WARD FOR DISEASES OF WOMEN AT BELLEVUE. — There was recently opened, with a service conducted by the Rev. Dr. Huntington, of Grace Church, an annex to the Marquand Pavilion, for diseases of women, at Bellevue Hospital. It contains a very finely equipped operating room and twelve beds, and is the gift of Mrs. Louisa Dehon and her daughter. The latter is a patient of Dr. Wm. M. Polk, and it was at his suggestion that the building, which cost about \$10,000, was erected.

A COURAGEOUS POLICEMAN. — On Thanksgiving night a policeman named William Baumeister, while arresting a desperado who was engaged in a fight, was shot in the abdomen by the latter; but, although mortally wounded, he pluckily held on to his prisoner until some other officers came to his assistance. The poor fellow was taken to the Harlem Hospital, where he died on the following day.

CROTON WATER SYSTEM. — Some complaints have recently been made about the condition of the Croton water, but there is apparently no reason whatever for a scare in regard to it. Mr. Birdsall is authority for the statement that there is absolutely no contamination from outside sources, and that the slight discoloration and at times unpleasant taste are due simply to unusual weather conditions.

AN AQUARIUM RATHER THAN A MORGUE. — Apropos of this subject, Judge Howland, at the recent dinner of the Society of Mayflower Descendants at Delmonico's, told of a lady who when asked if she did not boil the Croton water nowadays to kill the microbes, replied, "No; I would rather be an aquarium than a morgue."

Miscellany.

OFFICERS OF THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

THE following are the presidents and American secretaries of the more important sections of the coming Pan-American Medical Congress: General Medicine: President, Dr. Carlos Finaly; Secretary, Dr. Judson Daland. General Surgery: President, Dr. Tomas Plasencia; Secretaries, Drs. W. P. Nicholson, John Ridlon, Duncan Eve. Military Medicine and Surgery: President, Dr. E. S. Agramonte; Secretary, Surgeon Major Jefferson Kean, U. S. Army. Obstetrics: President, Dr. Eusebio Hernandez; Secretary, Dr. Gustave Zink. Gynecology and Abdominal Surgery: President, Dr. Gabriel Casuso; Secretary, Dr. H. P. Newman. Pathology and Therapeutics: President, Dr. Raimundo Castro; Secretaries, Dr. D. Hunter McAlpine and Dr. Hobart A. Hare. Anatomy: President, Dr. Federico Horsman; Secretary,

Dr. A. D. Bevan. Physiology: President, Dr. M. Sanchez; Secretary, Dr. A. P. Brubaker. Pediatrics: President, Dr. Joaquin L. Duenas; Secretary, Dr. I. N. Love. Ophthalmology: President, Dr. Enrique Lopez; Secretary, Dr. John E. Weeks. Laryngology, Rhinology and Otology: President, Dr. Carlos Desvernine; Secretaries, Dr. G. Hudson Makuen and Dr. James F. McKernon. Dermatology and Syphilography: President, Dr. Henry Robelin; Secretary, Dr. A. Ravogli. General Hygiene and Demography: President, Dr. Vincente de la Guardia; Secretary, Dr. Alvah H. Dotey. Marine Hygiene and Quarantine: President, Dr. Luis Cowley; Secretary, Dr. R. M. Woodward. Mental and Nervous Diseases: President, Dr. Gustavo Lopez; Secretary, Dr. Chas. P. Hughes. Bacteriology: President, Dr. Juan N. Davalos; Secretary, Dr. G. Garcia Rijo.

SPASMODIC WRY NECK AND ITS TREATMENT.

DR. W. M. LESZYNSKY reports in the *New York Medical Journal*, November 24, 1900, two cases with recovery. Both patients were young married women, aged respectively twenty-four and thirty-six years, in whom the condition had existed for seven months. The sternomastoid, trapezius, and splenius capitis muscles were involved. The treatment that led to a successful result was daily massage of the neck muscles, passive movements of the head and neck, and systematic voluntary exercises with and without resistance.

He had resorted to the subcutaneous injection of atropine in twelve cases of clonic wry neck, and believes that while atropine may prove exceedingly beneficial in some cases, it is unsatisfactory in many others, and should only be utilized as an adjunct to absolute rest and general management. In his opinion, the principal therapeutic feature in every case should be the rational use of massage and the methodical education of the muscles and their co-ordinating centres. Such measures, in conjunction with rest in bed and general tonic treatment, should be thorough, and persistently carried out before surgical intervention is considered.

Obituary.

RUFUS P. LINCOLN, M.D.

DEATH has of late been busy among the prominent medical men of New York. Dr. Rufus Pratt Lincoln, the eminent laryngologist, died on November 27th. His case was one of unusual interest from an anatomical, as well as a surgical, standpoint, on account of the peculiarities of intestinal formation disclosed at the autopsy. On October 18th Dr. Lincoln had an acute attack of appendicitis, and a peculiar feature of the latter was the excessive vomiting attending the onset of the trouble. He convalesced within a week, and in ten days resumed his work. On the advice of his physician, Dr. Henry F. Walker, and of Dr. Charles McBurney, he decided to have an operation for the removal of the appendix, and the operation was performed on Sunday, November 18th. The appendix could not be found, while the caput coli was undeveloped and the ascending mesocolon entirely absent. A thick band of inflammatory exudation bound down the small intestines near the usual site of the caput coli. Finding it impossi-

ble to discover the appendix without a hazardous operation, Dr. McBurney, recognizing the abnormalities of structure present, determined to close the wound. The wound healed perfectly, without sign of fever or tenderness. The vomiting following the ether was very severe, and afterwards vomiting became persistent, but was never stercoraceous. Gas passed from the anus, at times very freely, but no full action of the bowels was obtained. Dr. Lincoln died of exhaustion on November 27th, nine days after the operation.

The autopsy was made the same day, Drs. McBurney, Walker, McCosh, Collins and Swift being present. The external and internal wounds were entirely aseptic throughout. It was found that the cecal extremity of the colon was undeveloped, and that its lower end was at the level of the umbilicus. The small intestine passed behind, and entered the colon on its right side, as in fetal life, before rotation of the intestine. The appendix lay behind the colon and upon the kidney, and could be discovered only after complete evisceration. It was tightly strictured at its proximal third, and contained mucopus. Externally it showed signs of inflammation. The mesenteries were everywhere imperfectly developed, and in some parts were entirely wanting. The last twelve inches of small intestine had no mesentery whatever. Two parts of a loop of the ileum were bound together and held down by organized lymph, and the lumen of the gut was almost completely closed. This inflammatory exudation had been distinctly felt and seen at the time of the operation, but its degree and amount could not then be determined. That the vomiting was never stercoraceous was due to the section of intestine stricture.

Dr. Lincoln was born at Belchertown, Mass., on April 17, 1841. He was graduated at Phillips, Exeter, in 1858, and from Amherst in 1862. After leaving college he was commissioned as second lieutenant in the Thirty-seventh Regiment, Massachusetts Volunteers. He served with distinction throughout the Civil War, being wounded both in the battle of the Wilderness and at Spottsylvania, and eventually rose to be colonel of his regiment. During the latter part of the war he was inspector general on the staff of General Wheaton, of the Sixth Corps, Army of the Potomac, and his last promotion was made for conspicuous gallantry before Petersburg. He studied medicine for one year at the College of Physicians and Surgeons, New York, and for two years at the Harvard Medical School, and was graduated from the latter in 1868. After serving as interne at the Massachusetts General Hospital he took up practice in New York, and devoted himself more particularly to diseases of the throat and nose. One of his earliest successes was an extensive operation by means of the galvanocautery upon the late Gen. Judson Kilpatrick, and as this application of electricity was then comparatively rare, the case at once brought him into prominence. From that time on Dr. Lincoln's career was one of uninterrupted success, and for many years he had one of the largest practices among the best class of patients in New York. It is a remarkable fact in connection with this very successful professional attainment that he wrote comparatively little, and that throughout its course he never held a hospital appointment or a teaching position in any of the colleges. He was very highly esteemed by his medical brethren, and his services as a consultant were frequently called for. In this connection it is interesting to recall that his opinion was asked by the late Sir Morell MacKenzie, with whom he was long on terms of close friendship, in the case of Emperor Frederick, of Germany. Early in his professional life Dr. Lincoln rented the house presented to Gen. George B. McClellan by the city of New York, and he had occupied it for thirty-two years at the time of his death. He was an ex-president of the American Laryngological Society and of the Harvard Medical Society of New York. In 1859 he married a niece of the late Professor Tyler, of Amherst College, who, with one daughter, survives him. His only son, Rufus Tyler Lincoln, died about ten years ago, also of appendicitis, while on a pleasure trip in the far West.

METEOROLOGICAL RECORD

For the week ending November 17th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.	Daily maximum.	Daily maximum.	Daily minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S. . 11	30.16	42	49	31	70	74	72	S. W.	S. W.	9	7	O.	O.	
M. . 12	29.81	46	51	41	92	61	78	W.	W.	6	12	O.	O.	
T. . 13	29.67	44	52	37	64	72	68	S. W.	S.	12	13	C.	P.	
W. . 14	29.89	42	51	34	68	65	66	W.	W.	22	6	C.	C.	
T. . 15	30.10	33	38	28	58	86	72	S. W.	W.	12	10	P.	C.	
F. . 16	30.50	30	35	24	62	89	76	N. W.	N. W.	20	8	C.	C.	
S. . 17	30.55	31	41	21	74	63	68	W.	S.	10	9	O.	O.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ‡ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOVEMBER 17, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York . . .	3,651,594	1124	311	19.04	16.32	1.84	1.36	3.12	
Chicago . . .	1,698,575	—	—	—	—	—	—	—	
Philadelphia . . .	1,293,697	—	—	—	—	—	—	—	
St. Louis . . .	575,238	—	—	—	—	—	—	—	
Baltimore . . .	508,957	199	53	29.50	8.00	7.00	2.25	7.50	
Cleveland . . .	381,768	—	—	—	—	—	—	—	
Cincinnati . . .	325,902	—	—	—	—	—	—	—	
Pittsburg . . .	321,616	90	46	19.98	9.99	4.44	5.55	—	
Washington . . .	277,000	—	—	—	—	—	—	—	
Milwaukee . . .	275,000	—	—	—	—	—	—	—	
Providence . . .	150,000	52	13	17.28	9.60	3.84	—	1.92	
Nashville . . .	87,754	—	—	—	—	—	—	—	
Boston . . .	560,892	190	60	28.62	11.65	2.65	1.06	8.48	
Worcester . . .	115,231	33	13	18.18	12.12	—	3.03	6.06	
Fall River . . .	106,594	34	9	20.58	8.82	8.82	5.88	—	
Cambridge . . .	95,185	21	7	33.32	9.52	—	—	14.28	
Lowell . . .	98,611	36	16	22.62	22.62	—	—	—	
New Bedford . . .	74,943	20	6	10.00	20.00	—	—	—	
Lynn . . .	69,769	—	—	—	—	—	—	—	
Somerville . . .	67,363	16	4	43.55	6.25	6.25	6.25	—	
Lawrence . . .	60,937	15	4	20.00	6.66	—	13.33	—	
Springfield . . .	60,085	—	—	—	—	—	—	—	
Holyoke . . .	45,623	12	3	33.33	16.66	—	8.33	—	
Brookton . . .	40,299	7	1	71.40	—	—	—	14.28	
Haverhill . . .	38,714	14	1	28.56	28.56	—	—	—	
Salem . . .	38,583	19	6	15.78	15.78	—	—	15.78	
Malden . . .	38,321	3	1	66.66	—	—	—	66.66	
Chelsea . . .	35,022	11	3	9.09	—	—	—	9.09	
Gloucester . . .	32,285	2	2	50.00	—	—	—	50.00	
Fitchburg . . .	31,648	—	—	—	—	—	—	—	
Newton . . .	31,224	12	3	—	—	—	—	—	
Everett . . .	31,167	6	—	50.00	16.66	—	—	16.66	
Taunton . . .	28,891	7	1	14.28	—	—	—	—	
Quincy . . .	25,653	14	1	78.54	—	—	14.28	64.26	
Pittsfield . . .	24,226	—	—	—	—	—	—	—	
Waltham . . .	23,288	8	4	25.00	12.50	12.50	—	12.50	
North Adams . . .	22,196	2	1	—	—	—	—	—	
Brookline . . .	20,225	4	—	—	—	—	—	—	
Chilcope . . .	18,790	8	2	37.50	12.50	—	—	—	
Medford . . .	17,869	5	1	20.00	40.00	—	—	—	
Melrose . . .	15,411	3	1	33.33	—	—	—	—	
Newburyport . . .	15,157	8	—	37.50	12.50	—	—	—	

Deaths reported 1,983; under five years of age 576; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 461, acute lung diseases 230, consumption 244, diphtheria and croup 96, diarrheal diseases 56, typhoid fever 36, cerebrospinal meningitis 8, scarlet fever 8, measles 5, erysipelas 2. From cerebrospinal meningitis New York 5, Baltimore, Worcester and Holyoke 1 each. From scarlet fever Boston 4, New York, Pittsburg, Cambridge and Somerville 1 each. From

measles New York 3, Pittsburg and Boston 1 each. From erysipelas New York 2.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending November 10th, the death rate was 16.9. Deaths reported 3,755; acute diseases of the respiratory organs (London) 307, diphtheria 88, diarrhea 75, fever 70, measles 50, whooping cough 43, scarlet fever 30.

The death rates ranged from 11.8 in Norwich to 26.0 in Salford; Birmingham 18.0, Bradford 13.4, Cardiff 12.1, Gateshead 20.0, Hull 16.2, Leeds 16.9, Liverpool 20.4, London 17.0, Manchester 22.5, Newcastle-on-Tyne 16.9, Nottingham 16.5, Plymouth 12.2, Sheffield 15.5, Sunderland 21.6, Swansea 13.3.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOVEMBER 24, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.	
New York	3,654,594	1164	315	19.60	16.24	1.68	1.76	4.00	
Chicago	1,698,575	—	—	—	—	—	—	—	
Philadelphia	1,293,697	426	113	17.02	14.72	—	1.15	5.29	
St. Louis	575,238	—	—	—	—	—	—	—	
Baltimore	508,957	195	54	19.89	12.75	2.04	1.53	3.57	
Cleveland	381,768	—	—	—	—	—	—	—	
Cincinnati	325,902	—	—	—	—	—	—	—	
Pittsburg	321,616	97	30	33.99	9.27	11.33	6.18	5.15	
Washington	277,000	—	—	—	—	—	—	—	
Milwaukee	275,000	—	—	—	—	—	—	—	
Providence	150,000	75	23	22.61	14.63	3.99	1.33	5.32	
Nashville	87,754	—	—	—	—	—	—	—	
Boston	560,892	200	41	23.00	9.00	2.00	1.50	6.00	
Worcester	115,231	33	9	18.18	24.24	3.03	—	—	
Fall River	106,954	—	—	—	—	—	—	—	
Cambridge	95,185	30	3	43.29	13.33	—	—	10.00	
Lowell	91,611	33	7	18.18	12.12	—	3.03	—	
New Bedford	74,943	31	12	6.46	6.46	—	3.23	—	
Lynn	69,769	14	5	35.70	—	—	—	7.14	
Somerville	67,863	8	—	37.50	—	—	—	—	
Lawrence	60,937	26	14	38.46	3.85	7.70	—	11.55	
Springfield	60,085	11	—	18.18	9.09	9.09	—	9.09	
Holyoke	45,623	18	9	38.85	16.66	5.55	—	22.22	
Brockton	40,299	13	3	46.14	—	—	15.38	7.69	
Haverhill	38,714	9	3	11.11	—	11.11	—	—	
Salem	38,583	9	4	—	—	—	—	—	
Malden	38,321	7	—	28.56	—	—	—	—	
Chelsea	35,022	7	—	42.63	—	—	—	—	
Gloucester	32,285	5	—	—	—	—	—	—	
Fitchburg	31,648	13	4	46.14	—	7.69	15.38	15.38	
Newton	31,224	5	—	40.00	20.00	—	—	40.00	
Everett	31,167	9	5	44.44	—	—	11.11	33.33	
Taunton	28,891	6	—	33.33	—	—	—	—	
Quincy	25,653	6	1	33.33	16.66	—	—	—	
Pittsfield	24,226	—	—	—	—	—	—	—	
Waltham	23,296	6	1	33.33	—	—	—	33.33	
North Adams	22,196	4	—	25.00	—	—	—	—	
Brookline	20,225	—	—	—	—	—	—	—	
Chicopee	18,790	—	—	—	—	—	—	—	
Medford	17,869	—	—	—	—	—	—	—	
Melrose	15,411	—	—	—	—	—	—	—	
Newburyport	15,167	—	—	—	—	—	—	—	

Deaths reported 2,475; under five years of age 672; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 539, acute lung diseases 357, consumption 274, diphtheria and croup 124, diarrheal diseases 49, typhoid fever 49, scarlet fever 16, cerebrospinal meningitis 11, whooping cough 8, erysipelas 6.

From scarlet fever New York, Baltimore and Boston 3 each, Philadelphia 3, Worcester, Cambridge, Lynn and North Adams 1 each. From cerebrospinal meningitis New York 5, Philadelphia 2, Providence, Baltimore, Worcester and Lynn 1 each. From whooping cough New York and Pittsburg 2 each, Baltimore, Providence, Boston and Lynn 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending November 17th, the death rate was 17.6. Deaths reported 3,917; acute diseases of the respiratory organs (London) 352, diarrheal diseases 72, fever 71, diphtheria 70, whooping cough 62, measles 47, scarlet fever 31.

The death rates ranged from 9.5 in Norwich to 24.8 in Salford; Birmingham 18.9, Bradford 14.0, Cardiff 12.1, Gateshead 17.2, Hull 18.3, Leeds 19.1, Liverpool 20.5, London 17.1, Manchester 21.9, Newcastle-on-Tyne 21.6, Nottingham 18.7, Plymouth 15.3, Portsmouth 19.3, Sheffield 18.8, Sunderland 18.4, West Ham 13.4.

METEOROLOGICAL RECORD

For the week ending November 24th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: --

Date.	Barometer	Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
S. .18	30.14	48	60	37	67	64	66	S.W.	S.W.	16	12	O.	O.	.01
M. .19	30.27	48	57	39	97	100	98	N.E.	N.E.	12	17	R.	R.	.06
T. .20	30.09	50	63	37	92	91	92	N.W.	S.	4	7	O.	O.	.10
W. .21	29.64	56	68	45	97	89	93	S.	S.W.	12	24	O.	O.	.11
T. .22	29.98	49	55	43	82	75	78	W.	S.W.	20	6	O.	C.	.08
F. .23	29.96	50	62	39	83	78	80	S.W.	W.	12	12	O.	C.	.12
S. .24	30.40	40	42	37	59	88	74	N.	E.	9	12	O.	N.	.82

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☉ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING DECEMBER 1, 1900.

C. R. BURR, assistant surgeon, ordered to the "Monongahela," December 1st.
 R. K. McCLANAHAN, assistant surgeon, detached from the Navy Yard, Washington, and ordered to the "Indiana," December 1st.
 R. SPEAR, passed assistant surgeon, detached from the Naval Hospital, New York, and ordered to the "Buffalo," December 5th.
 R. B. WILLIAMS, assistant surgeon, ordered to duty at the Naval Hospital, New York, December 5th.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The regular meeting of the society will be held at the Medical Library, 19 Boylston Place, on Monday, December 10th, at 8.15 p. m.
 Papers: Dr. W. B. Lancaster will present a short paper on the "Radical Treatment of Lachrymal Diseases." Cases will be shown.
 Dr. H. Barton Jacobs, of Baltimore, late secretary of the American National Committee, will read "A Short Account of the Recent International Medical Congress at Paris."
 Drs. J. C. Warren, M. H. Richardson, G. B. Shattuck and the president will speak.
 ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.
 RÖNTGEN SOCIETY OF THE UNITED STATES. — The first regular meeting will be held in New York City, December 13 and 14, 1900, at the Library, Grand Central Palace, Lexington Ave., Corner 43d St.

BOOKS AND PAMPHLETS RECEIVED.

Injuries of the Eyelids and Eyeballs. By L. Webster Fox, A.M., M.D., Philadelphia, Pa. Reprint.
 Röntgen Rays in the Treatment of Skin Diseases and for the Removal of Hair. By William Allen Pusey, A.M., M.D. Reprint. 1900.
 Transactions of the Association of American Physicians, Fifteenth Session, held at Washington, D. C., May 1, 2 and 3, 1900. Philadelphia. 1900.
 Orthopedic Surgery. A Handbook by Charles Bell Keetley, F.R.C.S., Surgeon to the West London Hospital. London: Smith, Elder & Co. 1900.
 Thomas Sydenham. By Joseph Frank Payne, M.D., Fellow and Harveian Librarian of the Royal College of Physicians. New York: Longmans, Green & Co. 1900.
 Impetigo Contagiosa Bullosa; Its Relation to Pemphigus Neonatorum, with the Bacteriology of Eight Cases. By Martin F. Engman, M.D., St. Louis, Mo. Reprint. 1900.
 Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Vol. IV. December, 1900. Diseases of Digestive Tract and Allied Organs, the Liver, Pancreas and Peritoneum; Genito-urinary Diseases and Syphilis; Fractures, Dislocations, Amputations, Surgery of the Extremities and Orthopedics, Diseases of the Kidneys, etc. Philadelphia and New York: Lea Brothers & Co. 1900.

Original Articles.

PERICARDITIS WITH EFFUSION.¹

BY GEORGE G. SEARS, M.D., BOSTON.

THE present paper supplements one published in the Boston City Hospital Reports of two years ago, which was based on an analysis of 100 cases of pericarditis, by taking up in more detail certain points in the diagnosis and treatment of pericardial effusion which have been especially studied in cases recently under observation. While a number of conditions may simulate a collection of fluid in the pericardium, practically the chief difficulty in diagnosis lies in its differentiation from marked cardiac enlargement, unless the case has come early under observation, and it has been possible either to watch the gradual accumulation of the fluid, or, rarely, to follow its fluctuations from day to day as illustrated by the following case, in which each relapse of the joint symptoms was accompanied by a demonstrable increase in the amount of pericardial effusion, both subsiding under increased doses of the salicylates.

CASE I. A colored boy, twenty-two years old, was admitted April 11, 1900, with a history of acute rheumatism of a month's duration, but without evidence of cardiac involvement. No murmurs were heard, but the second pulmonic sound was quite sharply accentuated. The following day friction sounds developed over the precordia. The area of cardiac dulness increased, until on the 15th it extended nearly 3 inches to the right and 4 inches to the left of the midsternal line, and above to the top of the second rib. The point of cardiac impact farthest down and to the left, which may for convenience be called the apex beat, though probably made by a portion of the heart above the true apex, was situated in the fourth space, $\frac{1}{2}$ inch inside the nipple line. An area of dulness was present in the lower left back and axilla merging anteriorly into that of the pericardium, over which the respiration was somewhat diminished and slightly bronchial, with increased voice. At the right base there was evidence of a small amount of fluid.

April 23d. The area of precordial dulness has decreased half an inch on the right side, but not on the left, and the apex can be faintly felt in the fifth space. The joints are improving.

April 29th. The apex is plainly felt in the fifth space, and apparently considerable of the pericardial fluid has been absorbed. The patient, however, is beginning to complain once more of his joints.

May 2d. Fluid has again increased and some epigastric fulness is noticeable. The cardiac sounds are more feeble and the apex beat is once more in the fourth space. There is evidence of fluid at the bases of both lungs. The joints are quite painful.

May 3d. An attempt at aspiration was made today in the fourth space, 1 inch to the right of the sternal border. Although the needle moved freely in the pericardial sac and the heart could be plainly felt against its point, no fluid was obtained.

May 10th. The width of the cardiac area has again diminished, and the apex beat has moved back to the fifth space.

May 14th. Another relapse with a rise of tem-

perature and pain and swelling in the hands and wrists. The apex beat has returned to the fourth space.

Later he gradually improved and was discharged against advice with some fluid still remaining in the sac.

Where, however, no opportunity has been given for watching the progress of the case, the extreme difficulty, or perhaps impossibility, of diagnosis is acknowledged by all writers, owing to the ambiguous character of most of the physical signs. The extension of the dulness beyond the apex beat points to the presence of pericardial effusion, although it is far from conclusive unless very marked, since it is found in cases of uncomplicated cardiac enlargement, while the lack of correspondence between the comparative strength of the radial pulse and the decided weakness of the impulse and sounds of a heart whose percussion outlines apparently show a great increase in size is also suggestive of the same condition. In spite, however, of the striking character of this increased area of dulness, its shape is still variously described. To quote but three of the numerous authors who have recently written on the subject, Roberts says that it assumes "a more or less triangular, pyramidal, or more strictly speaking, pyriform or pear-shaped outline with its truncated or 'peaked' apex above." Ewart says it resembles a bag of fluid spreading out at the base, while F. C. Shattuck describes it as simply that of "the normal heart equally extended in all directions. Therefore, of course, it is also that of a symmetrically enlarged heart, though the latter can seldom, if ever, produce so large a dull area." Both the latter have apparently given up the idea that it is ever pear shaped, while Shattuck denies the pyramidal form. This may be only a question of definition, or it may be due, as he suggests, to the method of percussion adopted, which must give a different outline according as the outer border of the pericardium or the inner limits of the lungs are sought. My experience would confirm in most details the claims of the last two, but it is more in accord with Ewart than with Shattuck. I have never been able to mark out by percussion a pear-shaped outline, perhaps, because, like Dr. Shattuck, I have always attempted, from greater confidence in the results, to define the outer border of the heart and not the limits of so-called cardiac flatness; nor have I ever obtained any outline which suggested the superposition of a smaller on a larger sphere as was found by Sibson on artificially distending the sac with a moderate amount of fluid, either by percussion or with the skiagraph, but my experience with the latter has been limited to few cases, since most of the patients have been too ill to allow their removal from the ward to the x-ray room. The outlines of these photographs lacked clearness of definition, but nevertheless were very similar to those obtained by percussion and showed a general broadening of the area of precordial dulness, especially at its lower portion, the line on the left being nearly parallel to that which is found with a normal heart, while that on the right of the sternum either flared outward toward the nipple, giving a shape which at times was so symmetrical as to fully justify its comparison to a bag of fluid, or ran parallel to the sternal border as if a part of the right side of the bag had been shaved off vertically. It has seemed to me, as Ewart and others have stated, that in connection with the increased area of cardiac dulness the most important single sign of pericardial effusion in distinction

¹ Read before the Clinical Section of the Suffolk District Medical Society, November 21, 1900.

from cardiac enlargement is the angle made by the line bounding the right side of the precordial dulness with that which marks the upper limit of hepatic flatness. In my experience, no matter how large the heart, its percussion border is always a curved line whose lower end tends to approach the sternum so that the angle made by the outlines of the enlarged heart and the liver on the chest wall is an acute one, or at least never exceeds 90°. In fact, when the cardiohepatic angle is equal to a right one the chances are in favor of pericardial effusion.

Secondary signs resulting from pressure or displacement can only be considered as corroborative evidences. The quadrilateral area of dulness in the lower left back described by Ewart was present in a number of cases, but it may also be found where there is very marked cardiac enlargement. More often it has formed a part of a larger area extending into the axilla and to the front, so that the whole lower portion of the chest has been dull with diminished and somewhat bronchial respiration, or else the presence of secondary or coincident pleural effusions has robbed the sign of its significance.

The pulsus paradoxus, which occurs in pericardial effusions as in several other conditions, was found with considerable frequency, but not always when the quantity of fluid was large, as has been stated; in a few cases it has been well marked where the amount of exudate seemed comparatively small.

An accentuation of the pulmonic second sound has been described by Warthin as the earliest sign of pericarditis and in my cases it has occurred sufficiently often to arouse one's suspicions that such a complication is developing when it is otherwise unexplained and persistent in diseases liable to cardiac accidents. Its presence has allowed me on one or two occasions to make what was a lucky, but correct, guess as to the course of future events.

In the early stages a sedative to quiet the heart and in the later a stimulant were the only medicinal measures used. No attempt to control the effusion was made, but an ice bag or a poultice was applied, if they comforted the patient or reduced the pulse rate. Blisters were never used, as their value seems doubtful and they interfere with the examination of the chest, but tincture of iodine was applied if the patient demanded treatment. The chief interest from the therapeutic standpoint lay in the decision as to when and where to aspirate. The history of my own attempts is largely a record of failure, but no harm has ever resulted and the marked relief to the patient which sometimes follows the withdrawal of a few ounces of fluid fully justifies the procedure. While in pleurisy one expects to get fluid on the introduction of the needle, experience shows that a dry tap is by no means infrequent in pericardial effusion. It was so in Dr. Shattuck's published cases, and it has been even more so in mine. In some instances, even where there was no question that a very considerable amount existed, and where the needle moved freely in all directions after its introduction and could be pushed up against the heart itself, no fluid, or at most a drachm or two, could be drawn through the needle by the aspirator. This has been explained as resulting from the presence of flocculi in the exudate or from its trabeculated or loculated nature. The site selected for puncture undoubtedly has an important bearing on the success of aspiration, but it is ques-

tionable if one position *per se* can be selected as better than another, so much depends on the position of the heart in its relation to the pericardial walls, which is not always constant. The close proximity of a friction rub even in the presence of a considerable amount of fluid has several times prevented me from using the fifth left space, the most frequently recommended, from fear of wounding the heart, and with one exception I have found it inexpedient to adopt the route suggested by Dr. Shattuck, to the left of the apex beat, since the outer limit of the pericardium has been impossible to determine, owing either to the presence of pleural fluid or to the dulness caused by compression or retraction of the left lung. Rotch, some years ago, after some experiments on the cadaver, pointed out the advantages of the fifth right space and recently Damsch has recommended either the fifth or sixth right space near the sternum, since he found in a series of similar experiments that the fluid collected in the lower right-hand portions of the pericardium. Although the fourth and fifth right spaces have been the ones more often selected in my cases, as the danger of wounding the heart seems smallest there, the proportion of productive taps has not been particularly encouraging.

The following cases, with the one reported at the beginning of this paper, comprise my whole experience in paracentesis of the pericardium. Cases IV and V have already been reported elsewhere and are given only in outline.

CASE II. H. R., colored, male, twenty-three years old, entered the Massachusetts Hospital, during my term as house physician, in the service of Dr. W. L. Richardson, to whom I am indebted for the privilege of reporting it, October 11, 1884, suffering from tuberculosis of the lungs and bowels. His chief complaint was of pain near the ensiform cartilage on drawing a long breath. Fluid gradually collected in the pericardium until almost the entire front of the chest, from the second rib downward, was dull on percussion. The abdomen became distended, particularly over its upper portion, which was dull on percussion and gave an indistinct sense of fluctuation. This local distention of the abdomen became so marked a feature of the case that on October 24th a needle was thrust into the right side of the epigastrium, well below the costal border, and 1½ ounces of bloody fluid, slightly tinged with yellow and containing numerous red cells and leucocytes, was obtained. Four days later an attempt at aspiration was made through the upper belly of the right rectus muscle not far from the spot previously selected, but without result. On the left side, however, 3 or 4 ounces of bloody fluid were drawn off. He failed gradually and died November 2d. At the autopsy, which is reported from memory, as the records have unfortunately disappeared, almost the whole front of the chest was occupied by the distended pericardium, which had displaced the diaphragm and with it the liver and other abdominal organs, and was the cause of the tumor noticed in the epigastrium and upper abdomen. Over 2 quarts of bloody fluid were contained in the sac.

CASE III. M. N., male, twenty-four years old, admitted to the City Hospital, December 22, 1896, with acute rheumatism and a well-marked pericardial friction rub. The second sound at the base was very loud. Fluid gradually collected in the pericardium and also in both pleural cavities, so that on January

3d the precordial distress and dyspnea were very marked. An aspirating needle was introduced in the fourth space, a little to the left of the left edge of sternum. It moved freely in all directions, and the heart could be felt beating against it, but no fluid was obtained. Twenty-four ounces of serum were drawn from the right chest with relief. He slowly improved and was discharged "relieved" March 23d.

CASE IV. S. B., male, twenty-three years old, admitted June 19, 1897, with acute rheumatism. He later developed a pneumonia of the left lower lobe and a pleurisy with a small effusion in the right base. Fluid also gradually collected in the pericardial sac. The pulse varied between 110 and 120, and the respirations between 40 and 56. A needle introduced in the fourth right interspace, 1 inch from the sternal border, drew off 10 ounces of bloody fluid containing pneumococci. Improvement slowly followed, and he was discharged September 14th.

CASE V. J. D., male, twenty-five years old, was admitted August 3, 1898, with mediastinal and pulmonary sarcoma. Fluid was present in both pleural cavities and in the pericardium. The following day 16 ounces of bloody serum were withdrawn from the left back, with marked improvement in the physical signs above the angle of the scapula. On the 5th an attempt was made to relieve the pericardium by inserting a needle in the sixth left space a little outside the mamillary line. Thirty-eight ounces of bloody fluid flowed out in vigorous jets synchronous with the heart, while a distinct pulsating movement was imparted to the needle itself. So much relief followed that at the request of the patient a further attempt was made on the following day in the fifth left space just outside the nipple line, but nothing was obtained. The sixth space was then tried in the same position as before, but the result was negative. At the autopsy, which occurred less than two weeks later, the left pleura, from which fluid had been withdrawn, was completely obliterated, and so was the pericardial sac with the exception of a few small pockets.

CASE VI. T. M., male, thirty-eight years old. Markedly alcoholic. Admitted November 20, 1899, with a history of rheumatism of three weeks' duration. He was slightly delirious, and little reliance could be placed on his statements. The area of cardiac dulness was somewhat increased. The apex was in the fifth space, $\frac{1}{2}$ inch outside the nipple line. A soft systolic murmur was heard both at the apex and over the aortic area. The second pulmonic sound was accentuated. On the 24th his delirium increased, and on the 28th he grew very hoarse. On December 2d a little consolidation was noted at the base of the right lung. The heart sounds had become distant and feeble and the area of cardiac dulness extended to within an inch of the nipple line on the right, and on the left to just outside that line. A friction rub had been present for one day over the fourth left cartilage. Two days later the cardiac area extended on the right almost to the nipple, and on the left $1\frac{1}{2}$ inches outside it. His respirations and pulse were rising and he was evidently losing ground. A needle introduced in the fifth right space obtained 3 drachms of flocculent fluid. Further attempts at aspiration were made on succeeding days by introducing the needle in the fifth left space, $1\frac{1}{2}$ inches outside the nipple and twice again in the

fourth space. Although the tip of the needle in each instance moved freely as though in a cavity, the results were negative. He gradually failed, and death occurred on the 15th, to which his alcoholic excesses largely contributed.

To summarize these attempts: The fourth right space was used four times with one successful result; the fourth left space once, without result; the fifth left space, outside the apex, was no more successful on the one occasion it was used, but from the fifth right space 3 drachms of fluid were obtained. From the sixth left space just outside the nipple line, the largest amount, 38 ounces, was withdrawn, but owing to the equivocal nature of the physical signs it cannot be said with absolute certainty that it did not come from the pleura. The autopsy failed to throw light on this point. The fact that the fluid was twice obtained in one case below the margin of the ribs is a medical curiosity, and instructive as showing the amount of displacement which occurs with large effusions.

CASES OF ACUTE ORAL INFLAMMATION.

BY JOHN C. MUNRO, M.D., BOSTON.

A SEARCH of the records of the Boston City Hospital of cases of stomatitis, glossitis and Ludwig's angina, severe enough to be treated in the surgical wards, has been made in the attempt to secure a clinical picture of these distressing and serious diseases. No account has been made of the lighter forms treated in the out-patient departments. Too few cases have appeared in recent years to give data as to the bacteriology of these affections. In the few cases examined the streptococci and staphylococci were the predominating agents.

Ulcerative stomatitis.—Of 29 cases, 6 were of the gangrenous type, but the distinction between the ulcerative and the gangrenous case is often difficult, the former so easily advances to the latter, and undoubtedly some of the ulcerative cases were rapidly becoming gangrenous until checked by good care and treatment. The lighter cases exhibited more or less superficial ulcerations of the gums, cheeks, tongue or pharynx, singly or collectively, and probably diphtheria was the true condition in some of the earlier cases. In many there appeared to be no recognizable cause, while others started presumably from carious teeth, a glossitis or from burns of liquids. One case of recovery showed ulceration of the entire oral cavity; another had a deep, foul, indurated slough of the cheek that was prevented from perforating by treatment with poultices, washes, etc.; still another had severe swelling of the palate that required incision, but without showing the presence of pus.

In the recovery cases, main reliance was placed upon washes containing myrrh, chlorate of potash, permanganate of potash or hydrogen peroxide, in addition to vigorous supporting and stimulating diet. One child four years old, where the noma perforated the cheek, recovered under this treatment. The process never advanced rapidly enough to warrant surgical interference.

One fatal case is interesting in that the process originated in a tubercular glossitis that could not be

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recognized until after death. Swelling of the tongue, cheek and neck started two weeks before entrance to the hospital; soon the tongue ulcerated and gave rise to occasional hemorrhages and at entrance the mouth was filled with the swollen tongue, sloughs and blood clots. The local condition improved under treatment, but the general condition grew steadily worse. Autopsy showed tuberculosis of the tongue and epididymis, and a severe stomatitis much like that seen in mercurial poisoning. One male, thirty years old, with a gangrenous ulcer of the inside of the cheek, but not perforating, died a few days after entrance, apparently from general sepsis.

Four cases designated as noma died, 2 being young children, and 2 men fifty years old. Pneumonia and measles preceded the noma in each child respectively. There was the typical gangrenous ulcer of the buccal surface advancing to perforation, autopsy showing also a necrosis of the upper jaw and an acute bronchopneumonia in the case that lived two weeks; sepsis and a pneumonia probably killed the other child at the end of four weeks before the cheek had become perforated. One of the adults entered in collapse with a gangrene of the cheek extending from the mouth to the ear. In the other case the disease started as an alveolar abscess followed by a series of abscesses, retraction of the gums and loosening of the teeth. Sloughing of the cheek and necrosis of the lower jaw followed, with death at the end of a week.

Acute glossitis.—These cases are interesting from the lack of ascribable cause in many instances, from the rapid onset of swelling and the equally rapid subsidence under treatment. Of 28 cases all but 5 were in males of about thirty years of age. A sore throat, a blister, a rough tooth or a bite was given as the exciting cause in some, but more frequently no cause could be found. In several the swelling attained its maximum within a day or even within an hour, but in the majority it took four or five days. In half the cases the swelling affected the entire tongue, while in the remainder it was confined to one side or to the base. The swelling was great enough in most instances to almost completely fill the oral cavity. Pus was rarely noted, and where the organ was incised relief followed as well from evacuation of blood as from pus. In 11 cases in which the tongue was opened, either spontaneously or with the knife, there was alarming dyspnea, while the cases treated with washes and poultices to the neck were for the most part not urgent and rapidly yielded to the milder form of treatment, a patient rarely being detained in the hospital longer than five days. Two patients died, one from uremia and cystic kidneys, and the other probably from acute sepsis. The latter, a woman of thirty, entered delirious, in high fever, and with a phlegmon of the tongue and floor of the mouth. Operation was done at once on account of dyspnea, but the patient died in a few hours. One markedly alcoholic patient had three attacks at intervals of a month, with two operations.

The history of the cases throughout impresses one with the fact that the phlegmonous type is much severer than the abscess type. In some it is difficult to distinguish between a true glossitis and a Ludwig's angina, and indeed the two conditions may coexist, or the disease may start as a cellulitis of the floor of the mouth and extend to the tongue.

Ludwig's angina.—Only 9 cases were indexed, 1

being fatal. Eight were in adult males, and 1 in a girl of fourteen. One case opened spontaneously into the mouth; all of the remainder were operated upon, some within the mouth, but the majority beneath the chin. The origin of these cases is obscure, carious teeth being the favorite cause ascribed by the patients. The clinical picture is very characteristic in all; a brawny fulness beneath the chin, an elevation of the floor of the mouth to the level of the edge of the teeth, with a pushing upwards and backwards of the tongue, and in some a cellulitis extending in various directions as far as the shoulder or the chest. The single fatal case obtained temporary relief from dyspnea by free incisions into the sublingual space, but within a few hours a tracheotomy was necessitated; dyspnea, however, returned, and the patient died two days later, probably from a septic pneumonia.

The impression that one obtains from studying these records is that the diseases are severe and that the treatment required must be vigorous. Where, as in glossitis and angina, the cases are not severe enough to demand immediate operation for the evacuation of pus or (of equal importance) of blood for relief of obstruction to respiration, the medical procedures must in their way be equally energetic. Catharsis, abundant food, rest, cleansing and antiseptic washes and large hot poultices to the neck and face will often abort a case that threatens to become serious within a few hours. When, however, there is doubt, or when delay seems dangerous, a free incision into the swollen tongue or the mouth floor is best, whether pus is present or not. The cases of stomatitis can probably be benefited if the gangrenous sloughs are removed with the curette or the cauterizer.

The incision in glossitis, unless there is a well-defined collection of pus—which is not to be expected—is best made into the dorsum on each side of the median line. In the angina cases the incision is best made, in most instances, in the median line below the chin, whence each lateral space can be easily explored with the finger or a blunt instrument until the small focus of pus, if present, is found.

The distress and suffering of these cases is frequently intense; the drooling, the inability to swallow or talk, often the dyspnea and cyanosis, in addition to the acute general infection, make the condition a grave one, but, fortunately, under good treatment, of brief duration and without sequelae for the most part.

THE RESULTS OF OPERATIONS ON VARICOSE VEINS.¹

BY J. B. BLAKE, M.D., BOSTON.

THE treatment of varicose veins has always been unsatisfactory. Non-operative treatment is palliative, but in recent years a cure has been attempted by operation. This consists either in (1) ligation of the veins in several places, with or without the removal of small sections; or (2) excision of a considerable portion of the vessel in continuity. Accurate statistics are necessary to determine the success of operative treatment. Cases must be traced and reported after the patients have returned to their customary occupations and habits of life; after the conditions which produced or

¹ Contributed to the Boston City Hospital Reports, Eleventh Series.

favored the original varices have again been established.

Statistics of this character are not numerous, and are not easily obtained. Hospital cases are proverbially difficult to trace, and this class of patients is no exception to the rule. Furthermore, it is essential before attempting to classify results, to determine what constitutes a "cure" or a completely successful operation. A simple standard, and one which seems reasonable, is, that if the patient can follow his customary occupation, and considers himself well, the surgeon may consider him cured. And the reverse of this (if the patient's statements can be believed) should equally be held true.

Finally, the element of time and the age of the patient present additional complications, and render a positive standard still more difficult to obtain. An interval of six months after operation is the minimum time limit, and it is probable that this should be extended to a year.

Statistics conforming to the above requirements have been obtained in 11 cases, all but 2 of which were operated at the Boston City Hospital. Of these, 7 were cured, 3 were relieved temporarily or partially, and 1 was worse than before. Some of these patients were examined personally, others replied in writing, and, in 1 or 2 cases, members of the immediate family furnished the information.

It is obvious that no sweeping deductions can be drawn from so small a number of cases, but an examination of them shows certain instructive and interesting facts. Briefly stated, these are as follows:

The single case in which the condition was described as "worse than before operation" seems to represent a type in which operation of excision will probably be followed by little or no improvement. It is therefore described in some detail.

The man was sixty-three years of age, born in Ireland, and was a street laborer. He had extensive varicose veins for forty years, and had been operated upon four times, once on the right, and three times on the left leg.

Seventeen years ago, the veins in the right leg were ligated subcutaneously with silver wire, at points 5 inches above, and 5 inches below the knee. He has had complete relief from painful or distressing symptoms since then. The veins are still visible, and are large and tortuous, from ankle to saphenous opening, and over the entire inside of the thigh, but the man stated definitely that they do not cause him any trouble.

The left leg was subjected to a similar operation, in London, twenty-five years ago; it was followed by relief of symptoms for about ten years. Pain and distress then began to return, and in 1893 a second operation was done in Boston. This consisted of a dissection and the removal of about 10 inches of the left internal saphenous vein. After leaving the hospital he was free from pain for six months, and then the symptoms recurred. In 1895 a third operation was performed—also in Boston. The man said that, owing to his previous experience, he requested that this last operation should be by "tying, and not cutting." The surgeon, however, made a dissection of about 5 inches, and the man insists that he has had pain ever since, and worse than before. Examination shows two wide scars, corresponding to the operations described above, but no veins above the knee. Below, the veins are distended, but not as much as on the

right side. The leg swells, however, and the pain makes him lame.

This case is an excellent illustration of the fact that size or extent of varicose veins, whether in the scrotum, at the anus, or on the extremities, bears no necessary relation to the discomfort or disability of the patient. A large mass of veins may be free from distressing symptoms, and a small varicosity may at times cause a patient to seek hospital treatment.

Three cases are classed as "partially or temporarily cured." In 1 of these the unpleasant symptoms have entirely disappeared, but an ulcer, which closed after the operation, has broken out again, though its area is smaller than formerly.

A second man has returned to work, though he writes that his "leg still pains him and some of his cords bother him."

The third case was relieved for one year. This patient is a cook and is on her feet all day before a fire. At the end of the year the veins above and below the incision began to swell. Pain commences soon after she begins to work, and increases during the day. She is, however, able to continue her occupation.

Seven cases are considered cured. In 1 of these the internal saphenous vein had previously been ligated, but without relief. It is to be noted, however, that some of these cases have been operated less than a year, and as it sometimes happens that relapse follows a year of relief, it is obvious that these cases have not yet passed the final stage. These cases represent various degrees of severity, with the exception of extreme varicosity, complicated by advanced age. The ages in this group vary from twenty-five to fifty years, and the occupation included engineers, stablemen, cooks, clerks, etc. In all cases the scars are firm, not tender and not painful. In 4 the operation was performed at least three years ago.

In conclusion, it may be said:

(1) Operation for radical cure of varicose veins by dissection is not successful in every case.

(2) To obtain successful results, cases must be selected and certain conditions avoided, and recommended to palliative treatment.

(3) The conditions which will probably militate fatally against satisfactory results are: (a) Old age, or an extremely debilitated condition; (b) excessive and very extensive varicosity; (c) occupations which to an extraordinary degree favor the development of varicose veins.

(4) Cases which may be cured by a thorough and careful operation are: (a) Local varix, even of marked prominence, particularly if thrombosis has occurred, either in thigh or lower leg; (b) extensive varix, limited to a single venous stem; (c) varicosities, which are a bar to passing civil service, military or naval examination; (d) cases in youth and middle life; (e) cases in which the development of the permanent varicosity was at least partially due to more or less removable conditions (flat foot, garters, etc.).

(5) Operation, even if not entirely successful, will usually relieve such complications as thrombosis, hemorrhage and ulceration.

(6) The usual conditions which follow unsuccessful operations are: (a) Pain in and around the scar; (b) general swelling and tenderness of the leg; (c) development of varicosities above or below the operation scar, but not at the site of the operation itself.

(7) In all operated cases, general systemic treatment as well as local treatment should be prescribed, together with exercise and the avoidance of a continued upright position whenever possible.

(8) Cure of symptoms does not necessarily mean the removal of all visible varicosities.

(9) Comparison of relative methods of multiple ligation and continuous dissection must be based upon a larger number of cases than are here recorded.

(10) Bennett's conclusions² and his extreme limitation of the indication for successful operation are too sweeping.

A CONTRIBUTION TO THE THERAPEUTIC ACTION OF HEROIN.

BY BERNARD LAZARUS, M.D., NEW YORK,
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In the treatment of patients suffering with diseases of the respiratory organs the indication frequently arises for a remedy which will allay the irritation of the affected mucous membranes and relieve the harassing cough. For this purpose opium and its alkaloids have been hitherto the chief reliance of the physician. This was from necessity and not from choice, for morphine presents many objectionable features in this class of cases. The relief of cough is often obtained at the expense of gastric disturbance, constipation, and a feeling of general lassitude, while the drug is apt to arrest the bronchial secretions and render expectoration more difficult. For these reasons, when my attention was drawn to heroin by the very extensive studies of Dr. Manges, of New York, I decided at once to give the preparation a trial, with the view of determining its relative advantages as compared with the opium alkaloids. My connection with the Bellevue Hospital Outdoor Department and the Demilt Dispensary afforded me an excellent opportunity for making such experiments.

Professor Dreser, who was the first to make careful investigations of heroin on animals, demonstrated that it produced a diminution in the number of respirations, with an augmentation of the volume of inspired air and an increase in the force of expiration. The same phenomena have been observed in human beings by a large number of observers. It has been found that while heroin acts as a sedative in conditions of irritation, its action upon the respiratory centres is that of a stimulant. Moreover, it is free from any depressing action upon the heart or circulation, a fact which I have always noticed in my own experience, thus permitting the use of heroin even in cases in which cardiac lesions exist. The observation that heroin has a regulating influence upon the breathing also caused it to be employed in conditions of dyspnea, to which attention has been directed by Professor Leo.

Its analgesic properties have also been utilized in the treatment of neuralgias by Professor Enlenburg; of painful uterine affections by Dr. Mirtl, of Vienna; and in diseases of the stomach attended with pain by Dr. Einhorn, of New York.¹ Recently a very thorough investigation of its analgesic and hypnotic qualities has been made in the Howard Hospital, of Philadelphia, by Drs. S. H. Brown and E. D. Tompkins,²

who upon the ground of their experiments pronounce it a very safe and reliable analgesic. Professor Enlenburg further suggested its use in the treatment of morphine habitués, a suggestion which has been adopted with excellent results.

As heroin is insoluble in water, it is of advantage to employ it in the form of the hydrochloride, which may be readily dissolved, and is therefore adapted for hypodermatic use. My experiments have been conducted exclusively with this preparation, which is identical in effect with heroin, both as regards physiological action and dosage. Below I have subjoined a few cases among the large number treated, with a view of illustrating the action of the drug in various diseases of the air passages, as well as in other conditions:

CASE I. J. B., age twenty-two, employed in a cigar factory, complained of a feeling of thoracic discomfort, resembling constriction within the chest. At times he became nervous, anxious and restless, and this was generally followed by a spasmodic attack. Examination revealed long drawn out inspiration and prolonged expiration, the patient stating that he felt as if the air were unable to enter the lung fast enough to prevent constriction. There was present extreme dyspnea and whistling breathing. On expiration the abdominal muscles contracted, assuming a board-like firmness and hardness. During these attacks the patient found it necessary to fix his shoulders by grasping the back of a chair in order to bring the supplementary muscles of respiration into action, although little relief would be obtained. During one of these attacks I discovered a subnormal temperature. On both inspiration and expiration distinct sibilant and sonorous râles could be heard all over the chest, being audible even at a distance.

The patient was instructed to change his employment, and I placed him on heroin hydrochloride, $\frac{1}{2}$ grain every four hours, and at bedtime, with cascara sagrada, $\frac{1}{2}$ drachm, as he complained of constipation. The attacks, which were quite frequent and usually lasted for a half hour, diminished both in severity and duration after the first week's treatment. Since three weeks the patient has never suffered a night attack (which was quite frequent), but as the disease is of hereditary origin, a permanent cure cannot be expected, although no attack has occurred in twenty-three days.

CASE II. W. K., age nineteen, employed in a hide and leather house, had been able to speak only in a husky whisper for seventeen days. He was troubled with hoarse and stridulous cough with abundant mucopurulent expectoration, frequently streaked with blood and of a very offensive odor. Respiration was accompanied by a whistling sound, and swallowing of solid food often excited spasms of the glottis; talking caused fatigue. Severe paroxysms of coughing and straining were experienced in the morning, due to the accumulation of secretion at night, which was thrown off with considerable difficulty. At first I put him on astringents and general expectorants, but with very little relief of the cough, straining and dyspnea, until I placed him on heroin hydrochloride, $\frac{1}{2}$ grain three times daily, and $\frac{1}{8}$ grain before going to bed. After two doses the cough and dyspnea were considerably relieved, but not until the following night did the patient enjoy a perfect and undisturbed rest, the want of sleep having been the cause of his

¹ Philadelphia Medical Journal.

² Therapeutic Gazette, August 15, 1900.

³ Lancet, October 15, 1898.

utter exhaustion. I continued the treatment in doses of $\frac{1}{2}$ grain, four times daily, for a period of nine days, which effected an entire disappearance of cough, pain, dyspnea and sleeplessness.

CASE III. Miss M. L., age twenty-four, shop girl, applied for treatment, suffering with severe pains behind the sternum, difficult breathing and severe cough, which had been present for some time. Examination revealed frequent and obstructive breathing, so that she was unable to lie down, but generally had to sit inclined forward; shallow respirations reaching 38 to 40 per minute; the inferior part of the chest and the epigastrium were drawn in with each inspiration, while the upper part of the chest was immovable. Her speech was short and jerky. The alae nasi were dilated; the face congested, cyanosed and swollen; and the jugular veins distended. The most prominent and troublesome symptom of all was the harassing cough, accompanied by severe pains, and as the patient was also quite anemic, the cough and dyspnea rendered her at times utterly exhausted. I therefore put her on an appropriate remedy to counteract the anemia; but to overcome the severe pain, cough and dyspnea, which was of paramount importance, nothing gave as much satisfaction and such prompt relief as heroin hydrochloride, $\frac{1}{2}$ grain hypodermatically, and followed by $\frac{1}{6}$ grain every four hours for the first twelve hours. The remedy was then continued in $\frac{1}{2}$ -grain doses every four hours, internally, for the next twenty-four hours; and as I was going out of town for a week I instructed her to continue it in $\frac{1}{4}$ -grain doses every four hours. On my return I found that the pain had entirely disappeared, the harassing cough had become much less troublesome and was gradually subsiding, and the cyanotic lividness of the lips and face had vanished. Under the hypodermic injection of $\frac{1}{2}$ grain daily for four days the inferior part of the chest and epigastrium became elevated instead of being drawn in during inspiration, while the upper part became normally movable. Speech was easy, and sleep was undisturbed. There was no increase nor decrease of weight the first five days, but at the end of the second week the weight had increased 7 pounds. I am now convinced that the treatment with heroin hydrochloride not only relieved the symptoms but entirely cured the patient, the anemia being combated by the usual tonics.

CASE IV. E. M., age thirty-one, applied for treatment of an intercostal neuralgia, which has caused her the most agonizing suffering. The pain was intermittent, of a tearing character, and was increased by coughing or sneezing. Her sufferings dated back three months. To overcome the pain I put her on heroin hydrochloride, $\frac{1}{4}$ grain, every two hours for ten hours until relieved, and then $\frac{1}{2}$ grain four times a day. She had no severe exacerbations. The administration of $\frac{1}{2}$ grain was continued for five days, and at the end of that time she was told to take a dose of $\frac{1}{6}$ grain only when she felt indications of a return of a paroxysm of pain. As no attack occurred, she was discharged cured in two weeks of an illness of fully three months' standing. One point which was greatly appreciated by the patient was that she did not suffer pains of any account from the time she first came to my office.

CASE V. J. C., age thirty-two, suffered with advanced pulmonary disease with laryngeal involvement.

The patient was quite emaciated and weak, suffering severely from coughing usually at night, with scarcely any relief from the usual applications and inhalations. He had not obtained a comfortable night's rest for months, until I tried heroin hydrochloride in $\frac{1}{2}$ -grain doses every three hours. The administration was begun at 10 A. M., and continued until 9 P. M., at which time the cough had been greatly relieved, and a refreshing sleep secured for the first time in quite a while. Being much interested in the patient, I noted on my second visit the following day the appearance of comfort and relief instead of the usual expression of suffering.

In 7 other cases of advanced phthisis which have come under my observation, heroin hydrochloride administered in $\frac{1}{4}$ -grain dose at 8, 10 and 12 A. M., and $\frac{1}{2}$ grain at 3, 6 and 9 P. M., controlled the cough sufficiently to permit of rest and comfort at night. Under its administration in pulmonary tuberculosis great relief is obtained so far as cough, dyspnea and sleep is concerned, although it acts only as a palliative in such cases.

CASE VI. F. A., age ten; acute coryza and nasal catarrh, attended with severe sneezing and lachrymation. In this case I prescribed the following, from which the patient obtained wonderful relief, namely:

Heroin hydrochloride	$\frac{1}{4}$ gr.
Caffeine citrate	3 gr.
M. ft. pulv. No. 6.	

The patient took one powder, followed within an hour by another and experienced considerable amelioration, but not until he had taken four was complete relief afforded.

CASE VII. B. G., age twenty-nine. Physical examination showed a cavity in the middle lobe of the right lung and the upper lobe of the left lung. The patient was put on heroin hydrochloride, $\frac{1}{4}$ grain every two hours during the forenoon, and $\frac{1}{2}$ grain every three hours during the afternoon. Within three days the cough diminished to a considerable extent, and the pain disappeared. I continued the remedy in doses of $\frac{1}{2}$ grain every four hours, and $\frac{1}{6}$ grain at bedtime.

CASE VIII. G. S., age forty, complained of hard, dry, persistent and troublesome cough, especially at evenings. There was very little expectoration, the removal of which caused considerable pain and dyspnea. Heroin hydrochloride, $\frac{1}{2}$ grain, every three hours for two days eased the cough; the pain and dyspnea vanished, and the expectoration became easy and free.

CASE IX. D. S., age twenty-two, complained of severe cough and pain, usually coming on at night and lasting until morning. Heroin hydrochloride, $\frac{1}{2}$ grain every four hours in afternoon, and $\frac{1}{6}$ grain at bedtime relieved the patient, and after a week's treatment the entire symptoms disappeared.

My clinical material, from which the above cases have been selected, consists of 38 cases treated in the hospital and 14 in private practice, and comprises pulmonary tuberculosis, bronchitis, asthma, pneumonia, laryngitis, coryza, rhinitis and intercostal neuralgia. Under the administration of heroin hydrochloride the relief of pain, cough and dyspnea was obtained in from one to five days. Among the 52 cases heroin hydrochloride caused nausea and giddiness in only 2 after the administration of $\frac{1}{6}$ grain; but this disappeared promptly after the dose was reduced to $\frac{1}{2}$

grain. In 1 case it produced gastric disturbance similar to morphine when given on an empty stomach, but this was not observed when it was administered after meals. In 3 cases it caused constipation, which was relieved by the addition of $\frac{1}{2}$ grain of calomel to each dose. It will be noted in the above cases that the after-effects observed in a few instances appear only after large doses of $\frac{1}{2}$ grain, and promptly vanished after the dose was reduced to $\frac{1}{12}$ grain.

The very thorough investigations which I have made with heroin hydrochloride in my practice enable me impartially to state that I consider this drug a most valuable aid to the medical profession. Its range of application, while originally confined to the treatment of respiratory affections, has been much extended by later observations. In pulmonary affections accompanied with coughs, I would rank it as a specific, while its analgesic qualities in neuralgia and its antispasmodic effect in asthma and whooping cough have been so well established as to entitle it to a prominent place in the treatment of these affections.

Medical Progress.

REPORT ON PROGRESS IN MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BOSTON.

(Concluded from No. 23, p. 582.)

THE INFLUENCE OF MATERNAL INEBRIETY ON THE OFFSPRING.

SULLIVAN¹ states that maternal inebriety is a condition peculiarly unfavorable to the vitality and to the normal development of the offspring. Its gravity in this respect is considerably greater than that of paternal alcoholism. While its influence, particularly as measured by the test of infant mortality, appears to be exercised in a considerable degree indirectly through deterioration of the *milieu*, a large part also depends on the primary action of the poison. The reality of this latter mode of influence is evidenced by the tendency to stillbirths and abortions, by the high rate of epilepsy in the surviving children, by the prevalent mode of death, by the effects of modifications of the intoxication. This primary influence of alcohol is due in part to the permanent effects of the poison on the maternal organism, inducing a transmissible degenerate condition; in part to a direct toxic action on the embryo, owing to continued excesses during pregnancy and lactation. The first of these modes of primary influence is, by its nature, permanent, with a tendency to increase. The second mode, while tending also to a constant and constantly increasing operation, is susceptible of temporary augmentation or diminution.

Under these combined modes of influence the normal tendency of the family with alcoholic maternity is towards a type the inverse of the syphilitic family; that is to say, the firstborn children are normal, then come more or less defective children who live beyond infancy, then children dying in infancy, then stillbirths, and, finally, abortions.

Deviations from this type are probably due in many cases to oscillations in the intensity of the second

mode of influence. Deviations originating in this fashion may be seen, for instance, in the death in infancy of the earliest born children of the family as a result of conception in drunkenness, and in the survival of late born children when the mother has been imprisoned during part of the pregnancy.

It is hardly necessary to point out in conclusion the evidence which these observations furnish as to the social gravity of female inebriety, and the social profit in its removal. In suppressing the female drunkard the community not only eliminates an element always individually useless and constantly liable to become individually noxious; it also prevents the procreation of children under the conditions most apt to render them subsequently, if they survive, a burden or a danger to society.

THE INSANE JEW.

Beadles² has studied something over 1,000 cases of insanity in the Jewish race, and notes, first of all, the abnormally great predominance of general paralysis among the men, 21% of all male Jewish admissions being cases of this disease, in contrast to 13% of the general yearly average. The mental strain resulting from excessive zeal in acquiring riches, with the consequent worry and annoyance, he considers plays no small part in the mental breakdown of these people. It is difficult to determine the exact amount of insanity among the Jews, but apparently it is not very much greater than the average. The average age at which Jews become insane is distinctly earlier than the age of non-Jews. At Colney Hatch the relapsed cases form 14% of the admissions, which is twice the amount formed by the entire admissions to the London County asylums. This high figure is due in part to the greater frequency of relapses and the greater number of Jewish patients discharged as only relieved; the recovery rate appears better than among non-Jewish patients, and the death rate is lower. This is due mostly to the small number of deaths among women, owing to the large proportion of puerperal insanity, over 15% of all the Jewish women admitted being puerperal cases. In non-Jewish admissions the percentage of puerperal cases is a trifle over 6. The explanation of this large proportion of puerperal cases he attributes to the neurotic temperament of Jewish women, the early age at which marriage takes place, and impaired nutrition from unhealthy occupations and surroundings. Notwithstanding the seemingly good recovery rate, he does not look upon the prospects of complete mental recovery as particularly hopeful, very many Jewish patients being discharged to their friends when they are only relieved.

SUICIDE IN GENERAL PARALYSIS.

Monestier³ comes to the following conclusions: Suicide is quite common in general paralysis, both in the course of the disease and in its initial period. There are, however, a number of cases where the suicide is only apparent, and where the patient does not really wish to put an end to himself. He becomes the victim of his illusions, and loses consciousness of the danger he may run on account of the marked disturbance of a clear perception of the reality of things. In most of the cases of delib-

¹ Journal of Mental Science, July, 1899.

² Journal of Mental Science, October, 1900.

³ Ann. med. psych., March, 1900.

erate suicide the suicidal ideas have the characteristics not only of dementia, but also of the delusion which the patient may have, a delusion which is almost always irregular and transitory. This irregularity and transitory character are more or less marked; most frequently the ideas of suicide are sudden and of short duration. It is easy to divert the patient from them and he takes no care to hide them. There are, however, other cases where the means employed to commit suicide differ in no degree from those which other insane employ. The patients seem to have a definite idea of committing suicide as shown by the precautions which they take, by the premeditation of the act, and by the length of their preparations for it. In these cases there is less dementia.

PROGNOSIS OF THE PSYCHOSES OF PUBERTY.

Cullere⁴ has studied 120 attacks of the psychoses of puberty in subjects from fifteen to eighteen years of age—53 males and 57 females. Of these 3 died in the first attack. There were 33 cases of dementia precox which came on in 18 during the first attack, in 9 during the second, and in 2 in the third. In 4 cases the attack degenerated into secondary systematized insanity with mental enfeeblement. There were 20 cases of periodic insanity, all forms being represented. There were 25 cases of recurrence with varying issue. These recurrences were most frequently benign and were at considerable intervals apart. This group was the most favorable in point of view of ultimate prognosis. There were 9 cases of insanity with a consciousness of the condition, obsessions, or impulsive states. These cases were generally permanent. In 30 cases the patient disappeared from observation after the first attack. The clinical aspect of the first attack, however, would permit us to classify them with the subjects of the preceding groups. The prognosis of the attack in the insanity of puberty is favorable in the enormous proportion of 79%, but the ultimate prognosis of the disease is more serious. The individual who is cured of this form of mental disease runs the risk in the future of recurrences, of dementia precox, of periodic insanity, or of returns of the insanity of obsessions. The least sad feature is that the inevitable recurrences are reduced to a small number at long intervals apart, with long periods of more or less normal health between them.

THE TREATMENT OF INSANITY BY REST IN BED.

Korsakow,⁵ in a communication presented to the Thirteenth National Congress at Paris, comes to the following conclusions: In the question of treatment of mental disease by rest in bed, we must distinguish between the system of bed treatment as a mode of the internal organizations of asylums and the employment of bed treatment as a therapeutic measure. The foundations of the system of bed treatment are as follows: The use of the bed is considered as an essential element in the treatment. The stay in bed is obtained not by violence but by means of the moral influence and the suggestive effect of the environment. It requires a particular organization of attendants, which is only one manner of caring for the patients and for following and carefully observing the physical and

mental symptoms of the disease. The refusal to make use of separate rooms as a principle is not a fundamental condition of the system in question, but it is a powerful aid in the development of the bed treatment, and, on the other hand, the diminution in the use of separate rooms is one of the first benefits of the régime. The exact determination of the time which the patients must remain in bed, of their walks and occupations out of bed, constitute the essential part of this system. The rest in bed must be regulated in all its details from absolute confinement to the bed up to the most limited use of it. The use of common wards is a powerful means in the regular organization of the system of bed treatment, although we may be obliged to apply the bed treatment equally well in separate rooms; this has a secondary importance in the system in question. The forced detention in bed is not an element of the régime of bed treatment as a system.

The principal advantages of the system are as follows: Greater order in the asylum, especially if it is crowded; greater security for the patients; greater facility in caring for them and in clinical observation; a limited use of isolated rooms, the system of rest in bed being capable of abolishing completely the imprisonment in cells. Finally, the diseases characterized by a state of agitation have a more moderate course. In the asylums where the system of bed treatment is applied the mortality of some grave acute psychoses is notably diminished. With the system of bed treatment we must not include other systems which have a favorable action, such as that of moral influence, of non-restraint, of work, and of open doors. It is possible to successfully combine all these systems. The indications for absolute rest in bed are only very imperfectly established. To have these indications upon a scientific basis, we must not only multiply researches, but also their sphere. Investigations are desirable as to the effect of rest in bed and lack of exercise upon the composition of the blood, the elimination of toxins from the organism, and the mental functions, and above all upon the energy of the directing force of the mind. The principal indication for rest in bed is a state of excitement. Prolonged rest in bed carried out in a rigorous manner is contraindicated in patients with a sluggish intelligence, predisposed to apathy, anemia, and masturbation. It will be very important to study the effect of this treatment upon mental diseases in young subjects, in case they become incurable. Rest in bed must be applied in different ways, according to individual indications in almost all acute psychoses, especially at the initial period of the disease. It has an especially favorable action in the majority of maniacal cases, in cases of alcoholic delirium, and in many forms of mental confusion and of melancholia. There are vital indications for its application in patients whose mental trouble is connected with infection and high temperature, and in patients who are greatly exhausted.

ARTIFICIAL SERUM IN MENTAL DISEASE.

Jacquin⁶ believes that injections of artificial serum may be of advantage in psychiatry. These injections have the advantage of ease of administration, of simple technique and freedom from accidents. They are indicated in all cases where the mental troubles seem

⁴ Arch. de neurol., September, 1900.

⁵ Loc. cit., October, 1900.

⁶ Ann. med. psych., May, 1900.

associated with infection or auto-intoxication, that is, in cases of poisoning of the organism of the brain, either by microbes, by products of secretion or by toxic substances resulting from the increased formation or insufficient elimination of normal poisons. They fulfil these indications by eliminating the toxins, diluting them, re-establishing the secretions, and acting quickly. He calls especial attention to their action upon the urinary functions and the importance of proper functioning of the kidneys in the insane.

THE TREATMENT OF ACUTE MANIA WITHOUT SEDATIVES.

Hitchcock⁷ gives the results in 206 consecutive cases of acute mania observed during sixteen years at York. One hundred and seventy-one recovered, 8 died during the attack from the disease, 3 died during the attack from intercurrent disease, 12 were discharged relieved, 7 were transferred, and 5 remained under care. The average period under treatment was for males three and a half months, and for females five months. Seven cases recovered after one year, 2 after three and five years respectively. The ratio of recoveries to the number of cases under treatment was 83%; the ratio of deaths, 3.8%.

Although excitement and sleeplessness were prominent symptoms in all these cases, he did not use sedatives in the treatment of any one of them, and he firmly believes that he thereby secured a larger proportion of recoveries, a calmer after existence for the cases which have not recovered, and perhaps a diminished death rate.

THE STATE IN THE CARE OF THE INSANE.

Kraepelin⁸ says that the helplessness of the insane and their need of protection make it necessary that the State should pay some attention to their condition, even when they are not dangerous and do not demand institutional care. In general it would be practical to leave such patients to the care of their families and not to interfere unnecessarily with them. Only when the patients are not able to withstand the struggle for existence and all other aid has failed does it become a public duty to give aid to the feeble in order that an aggravation of their mental disorder and an increase of suffering may not result from their poverty. The task of solving these questions belongs to individuals rather than to the magistrates. They can only be dealt with properly by the various philanthropic associations, since a thorough knowledge of the conditions under which the patient lives and a choice of the means to be used are necessary. The participation of the charity organizations and their representatives in this kind of work is to be emphatically commended. Experience has shown that these bodies have done excellent work in the care of the insane outside of institutions, their efforts having been especially useful in caring for discharged patients. The State has every reason, as in many instances it

has already done, to aid the unpretentious but sterling work of these societies.

RECEIVING HOUSES FOR THE INSANE.

The Tenth Annual Report⁹ of the Asylums Committee of the London County Council states that receiving houses seem to be in a fair way to become accomplished facts, as their establishment has been recommended by a special subcommittee and by a conference of guardians representing the metropolitan unions and parishes. The Commissioners of Lunacy seem to favor their establishment.

New Instrument.

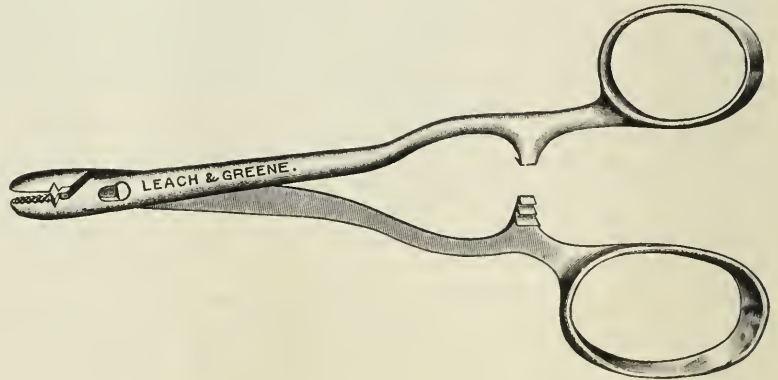
A MODIFICATION OF THE OLD SIMS NEEDLE FORCEPS.

BY W. L. BURRAGE, M.D., BOSTON.

THE needle forceps here figured embodies no new principle of construction, but is rather a revival of an old form with several additions and improvements as suggested by the good points of other popular forceps. It is in effect a large hemostatic forceps, having needle holding jaws and shears handles.

The length of the forceps is a trifle over seven inches. The handles are like those of shears, and are bevelled to protect the thumb and fingers of the operator from chafing and to give a better hold, also, one loop being larger than the other ensures the instrument always being handled right side up.

The jaws are made narrow so that they will not break full curved needles. One jaw is faced with a copper plate held in place by two rivets passing through the steel of the jaw, thus ensuring a firmer fastening than by the old method of soldering. The face of the other jaw is roughened by rather coarse



checks in the steel. One groove is cut in each jaw, one opposite the other, for the reception of a Hagedorn needle, the upper groove being bevelled for a full curved Hagedorn.

The forceps will hold any sort of a needle firmly in any useful position without breaking the needle. It is perfectly simple in construction, easy to keep clean, and cannot well get out of order.

A needle forceps should not only hold a needle in a variety of positions, but it must be so constructed as to easily seize the needle after it has been forced through the tissues and extract it without injury to

⁷ Journal of Mental Science, January, 1900.

⁸ American Journal of Insanity, October, 1900.

⁹ Journal of Mental Science, June, 1900.

its point or without breaking it. To hold the needle firmly this forceps has the malleable copper opposed to the checked steel, a combination long known as one of the best for this purpose, and to seize the needle readily after it has been pushed through, it has jaws opening widely and closing like the jaws of a hemostatic forceps, simulating the action of the human fingers in picking up a small object.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

H. F. HEWES, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 21, 1900, DR. V. Y. BOWDITCH in the chair.

DR. H. L. MORSE read a paper entitled

LEUCOCYTE COUNT IN SEROUS PLEURISY.

He said in part: The leucocytes were counted daily in 20 cases of primary serous pleurisy from entrance to discharge or recovery. Their number exceeded 10,000, the normal limit, in only 13 of 224 counts. Nine of these occurred in 1 case with a secondary pneumococcus infection. Nine of the cases were certainly tubercular, the others probably so. In the cases certainly tubercular the count never exceeded 10,000. There was no evident relation between the duration of the disease or the temperature and the number of white cells. Blood and microscopic amounts of pus in the fluid did not affect their number. There was no apparent relation between the amount or progress of the fluid and the leucocyte count.

Serous pleurisy is only exceptionally accompanied by an increase in the number of white corpuscles, and then intermittently. The white count is of value in two ways in the diagnosis of serous pleurisy. If the physical signs are doubtful, and there is no leucocytosis, the condition is almost certainly not pneumonia or empyema, but serous pleurisy. If there is a serous pleurisy and a continuous leucocytosis, some complication is present.

DR. SEARS: I can remember no other observations so carefully made as those reported by Dr. Morse. He has covered the ground so thoroughly that it is scarcely possible to add to his conclusions. The leucocyte count has been made in all the cases which I have seen at the City Hospital at some time during the course of the disease, but often not more than once or twice. They have been entirely in accord with what Dr. Morse has said. In a large proportion of the cases they have numbered less than 10,000. It therefore seems probable that in those in which the number was greater some complication existed, but it has rarely been possible to detect what this was. In a few, the number has run up to 14,000 or 15,000. Almost every case which I have had has reacted to the tuberculin test where this has been tried.

DR. HEWES: I should like to ask Dr. Morse if any of his patients were children.

DR. MORSE: No; all of these patients were adults.

DR. HEWES: Has your experience with children been different in any respect?

DR. MORSE: I have not made any careful observations of the blood in serous pleurisy in children. I have made single examinations in various cases, but my results are not extensive enough to warrant any conclusions.

DR. HEWES: I have seen several cases of serous pleurisy in children with a continuous leucocytosis. It is well known that leucocytosis occurs much more easily in children with any inflammatory condition that can produce it than in adults, and it is probable from my experience that a continuous leucocytosis of several days' duration has not in these cases the significance which Dr. Morse's results would indicate that it has in adults.

DR. V. Y. BOWDITCH: I should like to express my pleasure at the paper by Dr. Morse. It seems to me that anything we can get to enlighten us in these cases that he speaks of where the physical signs are doubtful is of the greatest value to us. I have not made any similar experiments, but I certainly shall do so in the future.

DR. GEORGE G. SEARS read a paper entitled

PERICARDITIS WITH EFFUSION.¹

DR. G. C. SMITH: I have been very much interested in this paper on account of its conciseness and on account of the clearness of detail with which Dr. Sears has gone into the subject. I would like to ask one or two questions connected with it. First, how much value he attaches to the rational history in these cases from a diagnostic standpoint; whether in all of these cases or in any part of them it was not possible to rule out hypertrophy of the heart by the history; whether a distinction could be made between eccentric and concentric hypertrophy; whether or not, in the cases that were considered from the point of view of hypertrophy, the dilatation of the right side could always be ruled out? If it could, would not the hypertrophy always displace the apex to the left and downward and you fail to get your increased cardiac dulness on the right side, provided you have no pleural effusion, and providing you could rule out any consolidated or lung tissue or old retracted pleuritic conditions? It seems to me that perhaps in many of these cases at least, not particularly of his, but in many of the cases which come to us, if we can rule out all heart murmurs, can rule out old chronic bronchitis, emphysema and nephritis, and other causes for hypertrophy (the idiopathic so-called hypertrophy of the heart can be practically ignored), and if hypertrophy, uncomplicated by old pleuritic or fresh pleuritic trouble, can be ruled out, as it can of course in many cases, why, we would expect the hypertrophy to show an increase of dulness to the left largely, and would not expect it to carry it to the right very much, nor to give the form of bag shape which Dr. Sears speaks of. In the few cases I have seen, it seems to me, *this form* he describes could be pretty clearly made out, but owing to the fact that so many of our cases are complicated by pleurisy and emphysema it often becomes exceedingly difficult to define clearly the outlines of dulness or flatness. But I would like to ask how much significance he attaches to the rational history in these cases of pericarditis. It seems to me that perhaps more can be attached to the rational history than to physical signs oftentimes.

DR. MORSE: My experience with pericarditis with

¹ See page 595 of the Journal.

effusion has led me to realize very thoroughly the great difficulty there sometimes is in the diagnosis between pericarditis with effusion and hypertrophied and dilated heart, especially hypertrophied and dilated right heart. My experience has also led me to the same conclusion that Dr. Sears's led him, that the one most important sign is the angle between the right side of the heart and the liver. The next most important sign is the position of the apex with relation to the outer limit of dulness to the left. The other signs are, I think, of subordinate importance. I have also been struck with the comparatively slight importance of the area of dulness in the left back. It seems to me that this is present in many conditions besides pericarditis with effusion. My experience in tapping in pericarditis with effusion has been very slight and rather unsuccessful.

DR. HEWES: Have you ever tried paracentesis from below the arch of the diaphragm, a method recommended by some foreign observer whose name I have forgotten?

DR. SEARS: No, I never have. I have preferred the other method, but, as my results show, not with the success I had hoped. There is one thing to be said about the epigastric route—that if flocculi in the fluid are the reason why one gets so few successes they would more naturally tend to collect in the lower portion of the sac than in the upper. But it is doubtful whether this is worth considering, since the fluid must be kept in pretty constant motion from the churning of the heart, and would be therefore less liable to follow the laws of gravity.

DR. HEWES: I remember one case in the service of Dr. F. C. Shattuck at the Massachusetts Hospital while I was house officer which was aspirated after death from below the arch of the diaphragm. The case had been tapped three times during life without result except that once a few drops of bloody fluid were obtained. Immediately after death we tried the method of tapping up through the diaphragm and obtained over a pint of fluid which flowed very freely. Of course the conditions of the organs after death may have been so different as to make it easier to get the fluid out then, but it certainly came very freely in a case in which after tapping in three other places we failed to get any fluid at all with the patient in the same position as when we tapped after death. If we had succeeded in aspirating successfully at first it would doubtless have prolonged the patient's life for a short period at least.

DR. SEARS: That position has been recommended by first-rate observers who have obtained fluid there. I confess that I have never aspirated the pericardial sac without some misgivings, and I think I may have had more at the thought of going in there and have therefore not done it.

DR. V. Y. BOWDITCH: Dr. Sears does not touch upon the more strictly surgical procedures in these cases. I should like to know his views as to whether there is any objection to making a surgical incision to the left of the sternum, even in serous effusions, simply because of the comparative ease of making this and the lessened danger of wounding the heart by the puncturing needle.

DR. SEARS: I have had no practical experience and can express no opinion.

In reply to Dr. Smith, I hardly know how to answer so complicated a question. Certainly in a very large

proportion of the cases pericardial effusion is found first on physical examination and its presence is not suggested by subjective symptoms. Pain, pericardial distress and dyspnea might point to pericarditis, but none of them are constant and might result from other causes. In all cases of marked cardiac enlargement, whether the right or left ventricle is most involved, a certain amount of lateral increase in the area of cardiac dulness is present which is most marked in the former. But in practically every case, normal or abnormal, except where there is marked emphysema, one can detect by gentle percussion an area of dulness on the right of the sternum, so that the mere presence of the dulness on the right has little significance unless it is increased beyond what one would normally expect,—a finger's breadth or a finger's breadth and a half.

DR. SMITH: I had particularly in mind not the symptoms that go with the rational history of pericarditis, but of hypertrophy. You generally have a pretty straight history of a case with hypertrophy of the heart which frequently may help you to decide whether you have got hypertrophy or not. Of course if you can rule out all the causes of hypertrophy it aids somewhat in making a diagnosis of pericarditis if you have that broad area of dulness.

DR. SEARS: It would not help you in cases of pericardial effusion occurring with a large heart, by no means a very rare combination in chronic nephritis.

DR. SMITH: In the uncomplicated cases when you can rule out nephritis, and the histories of other things like emphysema and chronic bronchitis, and anything in the way of disease that may lead to hypertrophy; if you have no cause for hypertrophy that you can find in the rational history would you not be quite justified in ruling out hypertrophy in favor of pericarditis with effusion?

DR. SEARS: I think you might, but it is difficult to rule out all causes for hypertrophy from the history. Practically the diagnosis must be made on physical signs rather than on statements of the patient.

DR. MORSE: It seems to me there can be no question that the diagnosis of pericarditis with effusion rests on the physical signs and not on the history. Most of the cases I have seen have been discovered on routine physical examination. As to the question of diagnosis between a hypertrophied heart and a pericarditis with effusion it does not seem to me that it is at all difficult. The diagnosis between pericarditis with effusion and a dilated hypertrophied heart in one thing; that between a pericarditis with effusion and a hypertrophied heart is another. The physical signs are practically opposite. The area of dulness is different, the cardiac action different—in the hypertrophied heart, strong, active; in pericarditis with effusion, comparatively feeble. In the hypertrophied heart the impulse is at the outer limit of dulness; in pericarditis with effusion, inside the limit. The sounds are strong in hypertrophy; comparatively weak in pericarditis with effusion. One second sound is accentuated in hypertrophy; both very likely to be weakened in pericarditis with effusion. Hence the diagnosis between hypertrophy and pericarditis with effusion does not seem to me to be difficult, but between an hypertrophied heart which is dilated a great deal and a pericarditis with effusion it is often very difficult.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

TWENTY-SIXTH ANNUAL MEETING, HELD AT ASHEVILLE, N. C., OCTOBER 9, 10 AND 11, 1900.

DR. M. H. FLETCHER, Asheville, chairman of the Committee of Arrangements, called the meeting to order, and prayer having been said by the REV. R. F. CAMPBELL, addresses of welcome were delivered by MR. THEO. F. DAVIDSON on behalf of the city and State, and DR. JOHN HEY WILLIAMS on behalf of the profession of Asheville. Prominent reference was made in these speeches to the beautiful climate of the popular health resort, which occupies a commanding position on the Blue Mountain Ridge of the Alleghanies. Though the place is full of doctors, one of the speakers said they would die of starvation were it not for the patients sent to them from less highly favored parts of the country.

THE PRESIDENT'S ADDRESS.

The president, DR. H. N. MOYER, in the course of his address, said an apology for the medical profession had lately been delivered at Paris by one of its own nestors. The American medical profession needed no apology, and as proof thereof, they had only to read the tribute paid to it by the *London Lancet*, which pointed out that, allowance being made for the difficulties that had to be overcome in a new country, and particularly one where democratic principles prevailed, and there was a consequent dislike of interference with individual liberty, it was remarkable what American physicians and surgeons had achieved, and what had been and was being done to raise the standard of education among students of medicine. In the light of this quotation it was evident that they did not require to apologize for their profession, but only for their representative who had been appointed to speak for it in Paris. He (Dr. Moyer) had no desire to wash any professional dirty linen. If there was anything of that kind to be done it could best be attended to in the local professional laundry. But some of the matters touched on in the address referred to were of the utmost importance alike to the profession and the public. Among other things the essayist had gone into a question of ethics which was at least twenty years old, and which most of them no doubt thought was dead and buried long ago. Unfortunately, it had not been embalmed, and now it had been resurrected with all its old malodorousness.

Passing this by as a matter which was of little interest now, save to a few practitioners on the Atlantic seaboard, he came to the statement of the essayist that there were too many medical societies. The essayist said there were only two in the old colonial days, and he seemed to regret that they were not living in these days still. He (Dr. Moyer) did not think there were too many medical societies. On the contrary, he believed that even the most insignificant societies were helping to advance medical science, and that it was principally due to their united efforts that so much progress had been made, and that the profession occupied the position which had evoked the tribute of the *London Lancet*. In this country, it was to be remembered, they had almost no endowment of medical education or research. They had no government subsidy, and no paid hospital staffs. But in spite of all this the physicians and surgeons of Amer-

ica were acknowledged to take high rank by reason of their achievements. The medical societies had enabled the profession to do for itself what abroad was done for it by legislation and subsidy. As to the Mississippi Valley Medical Association, some people thought there was no particular need for it, inasmuch as it did not represent any definite geographical area, and the State and national associations might be supposed to meet all legitimate wants. The prosperity of the Mississippi Valley Association, however, was sufficient to show that it served a useful purpose, and it was noteworthy that its members for the most part were also active members of the national association, of which the Mississippi Valley Association was a valuable auxiliary instead of being in any sense a rival.

Another matter of importance was the relation of law to the medical profession. A good deal of misapprehension existed as to the attitude occupied by physicians and surgeons to the movement for the passing of statutes for the regulation of medical practice. Legislation was required, not so much for the protection of the profession as for that of the public; and with the view of making the law operative against unqualified practitioners he suggested that, instead of attempting to define what was meant by "practising medicine," they should leave it to the courts to say what came within the scope of these words. The law required that pilots and others should possess certain qualifications as a guarantee that they could be entrusted with the lives of the public; and that was all that medical men asked should be required in regard to their own profession. Personally they might prefer that there was no such thing as a Medical Practice Act; but the fact remained that laws of the kind were necessary for the protection of the public.

Reverting to the essayist who had drawn up the apology for the American medical profession, Dr. Moyer said that another of his allegations was that there were too many medical journals in this country, and that they did not all preserve the same high standard that was desirable. The medical journals could no doubt be left to look after themselves, but those acquainted with the facts knew that the medical journals of America could stand favorable comparison with those of Europe. Only the best of the latter were known here. On the other side of the Atlantic, as on this, there were plenty of weak-kneed, advertising, nostrum-fostering periodicals which no member of the profession could regard with anything but contempt.

In the concluding part of his address, Dr. Moyer dealt with the subject of specialism, laying stress on the fact that there was too great a tendency on the part of beginners to aim at this branch of practice in total ignorance and disregard of the fact that the only genuine descriptions of specialism were those that were founded on a thorough experience in the field of the general practitioner. Specialism was like matrimony — not to be forced, but only to be adopted when it came naturally.

DR. H. O. WALKER, Detroit, Mich., read a paper on VAGINAL VERSUS ABDOMINAL HYSTERECTOMY.

The question, he said, was largely one of working in a light or a dark passage. The conclusion at which he had arrived was that the abdominal route was the better of the two, and that for this reason, not only

could they see more clearly what they were doing, but they obtained a better control of hemorrhages, and ran less risk of complications through the slipping of ligatures. In other words, the danger to the uterus was limited, and if any injury was done it could easily be repaired.

The paper was favorably commented on by DR. LEE, of St. Louis, and others.

CANCER OF THE UTERUS.

A paper on this disease and its treatment was read by DR. R. S. SUTTON, Pittsburg, Pa.

Cancer operations, he believed, should be recommended, not as curative, but as palliative, and in that respect useful. Total vaginal extirpation of the uterus at or after time of climacteric, he said, should find a place as prophylactic treatment against cancerous disease. After reviewing the anatomy, pathology, diagnosis and present method of treatment, the author expressed the opinion that treatment for existing cancer of the uterus had probably reached its complete evolution; but in view of the ultimate results of this treatment, which he heartily endorsed because there was no other known treatment to take its place, he asked, *Cui bono?*

Proceeding to discuss the question of prophylaxis, he stated that the average age of the patients he had operated on was forty-three years and a fraction, and claimed that if these patients had all been subjected to total vaginal extirpation at the average age of forty, all of them would have escaped cancer of the uterus. According to statistics he had prepared, only 4% of them would have died, whereas nearly 100% did die within a period of two or three years after operations for cancer. He urged greater attention to the early repair of lacerations of the cervix, together with a more painstaking observation and consideration by physicians at large of the train of symptoms which preceded and led up to the development of cancer of the uterus. Radical surgical treatment should be resorted to in all such cases; but above all if they were to reduce the number of cases of uterine cancer, and consequent mortality, steps must be taken to forestall the disease.

TRACHELOPLASTY.

DR. H. P. NEWMAN, Chicago, read a paper on this subject, in which he called attention to the need of recognizing the normal and pathological significance of the cervix uteri, the importance of its function, and the improvement which had been introduced in the technique of the surgical reparation of this organ.

POST-OPERATIVE INTERNAL HEMORRHAGE.

DR. A. H. CORDIER, Kansas City, Mo., read this paper.

He showed that in diagnosing post-operative hemorrhage a review of the operative history should be gone over carefully. Symptoms of shock and hemorrhage were very similar, but in suspected cases a single stitch cut in a closed wound would tell the difference. In all cases where a hemorrhage was feared, a tube should be introduced. The surgery must be quick and decisive in post-operative procedures, and large quantities of normal saline solution would save many cases.

DR. GEORGE W. CALE, Springfield, Mo., described

A CASE OF INTERMITTENT HYDROPS OF THE KNEE.

The patient was a lady of forty years of age who had recurrences of the disease at intervals from one to six months during the last five years.

VENTRAL HERNIA FOLLOWING LAPAROTOMY.

In this paper DR. B. BRINDLEY EADS, Chicago, emphasized the importance of this sequel of abdominal operations, discussing the principles involved in the choice of incision, the making and closing of the incision, and the way to cure ventral hernia.

DR. E. H. RICHARDSON, Atlanta, Ga., reported a case showing

PERFECT RECOVERY FOLLOWING GANGRENE OF THE SCROTUM AND PENIS.

The initial lesion was an abrasion of the skin near the os pubis with probable infection from the *erysipelas cocci* at this point, and later a mixed infection from the *streptococcus* of gangrene, terminating in the destruction of the gangrenous portion of the entire integument of the penis and of three-fourths of the scrotum. Plastic operation was adopted with the effect of preserving the integrity of the penis and testes.

MIDDLE EAR DISEASE IN ITS RELATIONSHIP TO THE CRANIAL CAVITY.

DR. OTTO J. STEIN, Chicago, contributed this paper. Stereopticon demonstrations were given by an assistant. The object of the author was to show the necessity of recognizing the importance of possible intercranial complications in every case of middle ear disease.

SECOND DAY.

The proceedings commenced with the

ADDRESS IN MEDICINE,

by DR. I. N. LOVE, formerly of St. Louis, now of New York, who chose as his subject "Nutrition and Stimulation."

The physician, he observed, should be the family counsellor, and in particular should be consulted in regard to all matrimonial plans. When a new being was brought into existence its proper nutrition should be looked after from the very beginning—even prior to birth. After birth the security of the infant depended upon the proper appreciation of its proper feeding. One danger which had to be guarded against was that of overfeeding, which was apt to lead to infantile obesity and gigantism. On the other hand it was necessary to give sufficient nutrition to provide for growth as well as life. After maturity was reached less food was required, for it was only necessary to furnish nutrition that was needed for the maintenance of life. Food, like alcohol, was used too much for pleasure rather than the maintenance of life. Stimulants, the speaker went on to say, were of value if used in the right way and at the right time, but in the healthful condition they were not needed. They were essentially a luxury, and all luxuries should be used with the greatest care, only the thoroughly healthy being able to indulge in them at all freely. The use of tobacco, particularly when the smoke was inhaled, as it usually was by cigarette smokers, he maintained, did even more harm than the abuse of alcohol.

PROCTOLOGICAL DISEASES.

A symposium of papers on proctological subjects followed, the first being one by DR. JOHN L. JELKS, Memphis, Tenn., on the treatment of

PERIRECTAL ABSCESSSES.

The author maintained that these abscesses when properly treated were not so serious as when poulticing was in practice and that they need not necessarily result in fistula. The walls, he pointed out, were not gotten rid of when simply incised and drained; thorough curetting was also essential. The next paper was by DR. J. PAWSON PENNINGTON, Chicago, who described a

SIMPLE OPERATION FOR THE ENUCLEATION OF HEMORRHOIDS.

Each quadrant was grasped with a pair of T-forceps, the hemorrhage being controlled by torsion and rubber covered tampon. He contended that there was less pain and that earlier recovery could be relied on by this method than by any other.

DR. STERLING B. TAYLOR, Columbus, O., who read the third paper of the series, dealt with the subject of

OBSTIPATION.

Having obstipation, constipation and costiveness, he proceeded to classify the causes of the first-mentioned complaint, principal among them being hypertrophy of the rectal valve. He defended Martin's views and methods.

The discussion on the papers was opened by DR. JOSEPH M. MATHEWS, Louisville, Ky., who said he had been very much interested and entertained by the papers, and that of Dr. Jelks he wished to commend very highly. When fistulas were at all complicated, no man could say that he could cure them by a first operation, therefore, if they could prevent them they should certainly do so. Dr. Pennington had also given them a number of useful suggestions, but he did not agree with his method of treatment. He used to excise tumors, but he had ceased to do so because of the severe hemorrhages which ensued, and had gone back to the old method of the ligature. He admitted that excision was the ideal method, or at least would be so were it not for the danger of hemorrhage, and if Dr. Pennington had discovered a means of effecting it without that danger he had done a great thing. He suggested, however, that to make the operation safe it would be well to bring the parts of the mucous membrane together and suture them. As to the last papers, he remarked that if they substituted the word "constipation" for "obstipation" it would convey a better idea of the complaint, and many old country doctors would tell them how to cure it. The authorities made no mention of these rectal valves about which they had recently been hearing so much, and for his part he did not believe in their existence. Folds no doubt there were, but they could not have the effect attributed to them. He would certainly await further developments before adopting the new procedure, which was known as "valveotomy."

Several other speakers said they had been very anxious to see those rectal valves, but had never succeeded in doing so.

DR. PENNINGTON, in replying to criticisms, said

if he could not control a hemorrhage by torsion he would use a ligature, but he had never found it necessary to do so.

DR. TAYLOR maintained that the question of obstipation had been dodged by those who did not admit the existence of rectal valves while acknowledging that every one had what they preferred to call folds.

THIRD DAY.

ADDRESS IN SURGERY.

This was delivered by DR. C. A. WHEATON, St. Paul, Minn. He devoted himself principally to the subject of "Appendicitis," which he claimed was essentially a disease for the surgeon to deal with.

TUBERCULOSIS OF THE SPINE.

A paper on the treatment of this disease was contributed by DR. ALEX. C. WIENER, Chicago. He entered a plea for early diagnosis before deformity was visible, extension and hygienic treatment being essential, if complications such as paresis and gravitation were to be avoided. He exhibited a specimen showing the possibilities of Cobat's forcible correction of the spine, and described cases of psoas abscess which had been cured by injections of carbolic acid, accompanied by other treatment.

DR. H. HORACE GRANT, Louisville, Ky., followed with a communication on the

MEDICAL AND SURGICAL TREATMENT OF ACUTE AND CHRONIC LYMPH NODES.

Having referred to the useful purposes served by the lymphatics, he said they should not be removed except for good and sufficient cause. When they became diseased and useless there should be no hesitation about taking them out.

In the course of the discussion which followed, DR. WHEATON protested against the indiscriminate use of the knife in the case of affected glands, his belief being that the majority of cases would get better with proper hygienic surroundings and internal medicine.

COCAINE ANESTHESIA OF THE SPINAL CORD.

DR. CARL H. ANDERSON, Chicago, reported a number of cases in which this operation had been performed, and discussed the physiological and clinical results of the procedure. While advocating the operation, he warned the profession against the dangers it involved, chiefly because of the difficulty of obtaining a sterile solution. He had tried in vain to get a sterile solution by Tuffier's method, though he had succeeded in doing it by a process of his own.

DR. MOYER gave a demonstration of the technique of the operation as performed by Dr. Anderson. If he were asked his advice as to this method of administering an anesthetic he would say with their present knowledge, and having regard to the delicacy of the operation and other circumstances, "Don't do it." At the same time the subject was a fascinating one and incalculable benefits would result from the procedure if it could be freed from some of the dangers now attending it. Therefore further experimentation was desirable, but it should only be carried on in well equipped clinics.

DR. A. M. PHELPS, New York, read a paper on the TREATMENT OF TUBERCULAR AND PURULENT HIP-JOINT DISEASES WITH LARGE SPECULUM DRAINAGE AND PURE CARBOLIC ACID.

All abscesses, he said, should be opened as soon as diagnosis was made, for the purpose, primarily, of exploration, and secondarily, for drainage, and any surgical operation which might be deemed advisable. The action of the carbolic acid on the skin and tissues was neutralized by the use of pure alcohol. Incidentally it was brought out that carbolic acid thus was a specific for erysipelas. The profession was much indebted to Dr. Seneca Powell, New York, for discovering the antidotal properties of alcohol as regarded carbolic acid, thus making the latter available for use in the ways indicated as well as in others.

PULMONARY TUBERCULOSIS IN INFANCY AND CHILDHOOD

was discussed in a paper by DR. FRANK P. NORBURY, Jacksonville, Ill. Heredity was a factor, but not so important a one as was sometimes thought. Infection was the most common source of the disease. The principal avenues of infection were the respiratory and the intestinal tracts. Other diseases, as was well known, paved the way for the infection. House pets frequently introduced it into a household; therefore care should be taken. Cats, dogs and other domestic animals feed upon tuberculous meat. The author then proceeded to discuss the parts that hygiene, climate and symptomatic treatment played in the cure of the disease.

DR. STEIN, Chicago, in discussing the paper, advocated intratracheal injections of oil to relieve patients whose stomachs were liable to be upset by taking it by the mouth.

THE PHYSICIAN AS A SANITARIAN

was the subject of a paper by DR. HUGH A. COWING, Muncie, Ind. While many physicians rendered invaluable services to the community by the attention they devoted to the cultivation of sanitation, there were others whom he considered criminally negligent and careless, and were often the means of spreading infection.

THE GIRL AT TWELVE.

This was the title of a paper by DR. J. H. TAYLOR, Indianapolis, Ind. Discussing the management of girls at the age of puberty, he laid stress on the bad effects of manual labor and overwork in school, contending that physical and mental overexertion were alike to be deplored. Emmenagogues should be avoided in the case of girls at this period, and more attention paid to the general health. He appealed to mothers and physicians to unite in giving more care to girls entering on the stage of womanhood, as by so doing they would prevent many diseases which now so frequently resulted from lack of care and excess of work or study.

ASTHMA.

DR. R. A. BATE, Louisville, Ky., in discussing this subject, quoted the saying of Loomis that the primary cause of asthma is undoubtedly some constitutional idiosyncrasy and also the remark of Haig that asthma represents one of the effects of uric acid on the circulation. The curative treatment consisted of diet, hygiene and antilithic measures.

DR. THOMAS H. STUCKY, Louisville, Ky., said the primary causes of asthma were imperfect salivation or mastication. Personally he knew when he was going

to have an attack of asthma, not by how he felt, but by what he ate. Asthmatics were fond of sweet, starchy food, they were people of full habit and they were lazy. He confessed that he filled the bill all through.

DR. C. L. MINOR, Asheville, referred to the relation between asthma and tuberculosis. He believed every asthmatic had uric acid and pulmonary patients who had uric acid were fortunate. In this respect asthma was like gout. They probably knew of the physician who told a patient he had the choice of dying of gout or tuberculosis. The patient chose gout, and showed his wisdom by so doing, because he lived much longer. Gout and asthma were alike favorable symptoms in pulmonary patients.

CURABILITY OF INEBRIETY BY MEDICAL TREATMENT.

DR. T. D. CROTHERS, Hartford, Conn., read this paper, in which it was maintained that inebriety was a neurosis, usually self-limited, and very largely curable. The craze for drink was symptomatic. The real causes were central nerve irritation, exhaustion, poisoning and starvation. The success of medical treatment depended upon accurate knowledge of the causes and conditions present in each case, and the accurate application of general means and measures for their removal. Each case required special means and measures particularly adapted to meet the conditions present. The family physician as well as the specialist should treat these cases successfully. The stopping of the use of spirits should always be followed by medical treatment, but it was necessary to guard against the substitution of drugs which would produce even worse effects than alcohol. When properly treated as a disease a degree of cure far beyond expectations would be obtained, and when it was so recognized the family physician and not the clergyman or the quack would be called on to advise in such cases.

THE SUPRARENAL CAPSULE.

DR. W. H. BATES, New York, contributed the results of some further observations he had made on the clinical application of this drug, the aqueous extract of which he said was the most powerful astringent, hemostatic and heart tonic known. It lessened the congestion of the eye and other organs. The extract was not irritating or poisonous, and, unlike other powerful drugs, it was never contraindicated. There was no remedy which was so useful in all forms of inflammation.

DR. J. A. STUCKY, Lexington, Ky., said he had obtained excellent results from the use of the suprarenal liquid combined with chloretone, particularly in middle-ear complaints and hay fever.

THE PHILOSOPHY OF THE SCIENCE AND ART OF MEDICINE.

In this paper DR. WM. F. BARCLAY, Pittsburg, Pa., showed the value of approaching the study of medicine from a purely philosophical point of view. The philosophy of medicine was the comprehension of the truth in the investigation of the science enabling one to arrive at rational conclusions in the study of the physical laws which governed organized matter in their normal and pathological condition.

DR. EDWIN ROSENTHAL, Philadelphia, read a paper on the

CLINICAL VALUE OF PURGATIVE MINERAL WATERS, of which he took Apenta as a type.

WHAT THE LAW REQUIRES OF A SURGEON

was the subject of a paper by DR. DUDLEY S. REYNOLDS, Louisville, Ky.

DIFFERENTIAL LEUCOCYTOSIS

was discussed in a paper by DR. L. H. WARNER, Brooklyn, N. Y.

NEW OFFICE BEARERS AND NEXT PLACE OF MEETING.

The following were elected the office bearers of the association for the ensuing year: President, Dr. A. H. Cordier, Kansas City, Mo.; First Vice President, Dr. Charles F. McCahan, Aiken, S. C.; Second Vice President, Dr. C. L. Minor, Asheville, N. C.; Secretary, Dr. Henry E. Tuley, Louisville, Ky.; Treasurer, Dr. Dudley S. Reynolds, Louisville, Ky., the last two being re-elected.

It was arranged to hold the next meeting at Put-in-Bay, Ohio, on September 10, 11 and 12, 1901. Dr. J. C. Culbertson, Cincinnati, was appointed chairman of the Committee on Arrangements.

Drs. Wheaton, Lamphear and Moyer were appointed delegates to the Pan-American Medical Congress to be held at Havana in December.

The proceedings were brought to a close by a banquet in the Battery Park Hotel.

Recent Literature.

Handatlas der Anatomie des Menschen. Mit Unterstützung von WILHELM HIS, bearbeitet von WERNER SPALTEHOLZ. Dritter Band, I Abtheilung. Leipzig: S. Hirzel. 1900.

Hand Atlas of Human Anatomy. By DR. WERNER SPALTEHOLZ, Extraordinary Professor of Anatomy, etc., with the advice of WILHELM HIS, Professor of Anatomy in the University of Leipzig. Translated from the third German edition by LEWELLYS F. BARKER, Professor of Anatomy in the University of Chicago, with a preface by FRANKLIN P. MALL, Professor of Anatomy in the Johns Hopkins University. Vol. I, Bones, Joints, Ligaments. Leipzig: S. Hirzel. 1900.

We have had occasion in the past to praise the first two volumes of this work, parts of which have reached us at different times. We have now the first division of the third volume before us. This treats of the viscera, among which the teeth are properly included. We are happy to find a continuation of the same rare combination of high art and anatomical accuracy.

That the book is a success is evident from the fact that, while it is still incomplete, the first volume has reached a third edition. More than this, an English translation of this third edition has appeared, making the first volume accessible to our students. In fact, however, this is hardly an accurate statement, for the book is meant to be essentially an atlas. The author states that he wrote the text unwillingly. He had the fear of seeming to write a compendium before his eyes. It is intended to help in the use of the plates, not to pose as a textbook.

In his preface to the English edition Dr. Mall brings up the sore subject of anatomical nomenclature, endorsing that of the German anatomists. Such Latin terms as *facies* for surface and *crista* for border, to say nothing of more complicated ones like *articulatio-talo-cruralis* for ankle joint, strike us as very pedantic. The law of the survival of the fittest will probably help us out of this snarl in spite of anatomists. As for the rest, we are delighted to have the book in an English form.

The Medical News Visiting List for 1901. Weekly (dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year); and Perpetual (undated, for 60 patients weekly per year). The first three styles contain 32 pages of data and 160 pages of blanks. The 60-patient Perpetual consists of 256 pages of blanks. Each style in one wallet-shaped book, with pocket, pencil and rubber. Philadelphia and New York: Lea Brothers & Co.

One of the best and most convenient of the many medical visiting lists is the *Medical News Visiting List*. Its blank pages are arranged to classify and record memoranda and engagements of every description occurring in the practice of the physician, surgeon or obstetrician. The work opens with 32 pages of printed data of the most useful sort, including an alphabetical table of diseases with approved remedies, a table of doses, sections on examination of urine, artificial respiration, incompatibles, poisons and antidotes, a diagnostic table of eruptive fevers, and a full-page plate showing at a glance the incisions for ligation of the various arteries, an invaluable guide in such emergencies. The *Medical News Visiting List* is issued in four styles, adapted to any system of records and any method of keeping professional accounts.

Anleitung zur Diagnose und Therapie der Kehlkopf-, Nasen- und Ohrenkrankheiten. Vorlesungen gehalten in Fortbildungscursen für praktische Aerzte. Von DR. RICHARD KAYSER, in Breslau. With 121 illustrations. Berlin: S. Karger. 1901.

The object of the author is to supply to students in a post-graduate clinical course a systematic summary or set of lecture notes covering the same ground that such a course might be expected to cover. As may be presumed from the fact that the book contains only 160 pages, no attempt is made to discuss doubtful points, nor to describe rare and unimportant conditions. The author in the preface points out that this is the first time in Germany in which the diseases of the larynx, the nose and the ear have been united in one book. To his readers it would seem more remarkable that one book should unite these three and leave out the oropharynx. If it is possible to treat a subject like laryngeal tuberculosis satisfactorily to anybody in three pages, the author has done it well. The troublesome subject of vasomotor rhinitis is practically given by title only. The classification of nasal polypi under hypertrophic rhinitis has much to recommend it, but their connection with disease of the accessory sinuses should not be omitted. The simple inflammatory diseases and the inflation of the middle ear are concisely and clearly described. So are the sections on methods of examination. The same may be said of most of the conditions often met in a clinic. The illustrations are well chosen and as a whole the book is good for what it aims at, brief lecture notes.

Modern Medicine. By JULIUS L. SALINGER, M.D. Demonstrator of Clinical Medicine, Jefferson Medical College; Chief of Medical Clinic, Jefferson Medical College Hospital, etc., and FREDERICK J. KALTEYER, M.D., Assistant Demonstrator of Clinical Medicine, Jefferson Medical College; Hematologist to the Jefferson Medical College Hospital, etc. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1900.

This is an octavo volume of 800 pages. The first section of 170 pages is devoted to a consideration of symptomatology and semiology, physical diagnosis, clinical bacteriology, laboratory methods. This is followed by the main body of the work on clinical medicine, and this again is subdivided into eleven parts treating consecutively of infectious diseases; diseases of the circulation; diseases of the respiratory system; diseases of the digestive tract; diseases of the kidneys; constitutional diseases; diseases of the blood and ductless glands; diseases of the nervous system; diseases of the muscles; intoxications and sunstroke; diseases due to animal parasites.

The authors and the publishers have produced a good and useful book of its kind. Truth will not permit us to say that it is the only book on the subject, or that it either covers new ground or old ground in an absolutely new way. But it is up to date, accurate, well turned out, and would prove a good guide and companion to the student of clinical medicine.

Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D., F.R.C.P., Physician and Special Lecturer on Clinical Medicine at Charing Cross Hospital, etc. New (ninth) American from ninth English edition. Revised and enlarged by H. MONTAGUE MURRAY, M.D., F.R.C.P., Lecturer on Pathology and Morbid Anatomy at Charing Cross Hospital; Revised for America by WALTON MARTIN, Ph.B., M.D., of the College of Physicians and Surgeons, New York City. Philadelphia and New York: Lea Brothers & Co. 1900.

This octavo volume of 578 pages needs no introduction to English-speaking medical students. In the present edition, the ninth, nearly half of the subject matter has been rewritten, several new sections have been added and 180 new illustrations have been inserted. Dr. Walton Martin has supplied chapters on malaria and on the pathology of the blood, as well as a chapter on microscopical technique.

It is needless to say that the book appears in a greatly improved form. While not as pretentious a volume as some other recent books for medical students, it seems to the reviewer that it should continue to be of great usefulness to beginners in medicine. There are 4 colored plates and 339 engravings.

A Manual of Hygiene and Sanitation. By SENECA EGBERT, A.M., M.D. Second edition, enlarged and revised. Philadelphia and New York: Lea Brothers & Co. 1900.

In this new edition Dr. Egbert has added about 65 pages of new matter, including several new illustrations. Each page has been carefully revised, and much of the material has been entirely rewritten, so as to bring the matter up to date. A chapter upon Military Hygiene has also been added, with references to the most recent improvements in this department of sanitation.

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THE PROPOSED GARBAGE PLANT ON LONG ISLAND, BOSTON HARBOR.

THE difficulty of finding a location for the establishment of a municipal garbage plant has led certain members of the city government to consider Long Island as a suitable place for such a plant. It is, no doubt, generally known that the city almshouse and hospital is located on this island, but this knowledge apparently does not bring with it a realization of the fact that the residents of this island, some six or seven hundred in number, there by necessity and not by choice, are deserving of consideration at the hands of those who are responsible for their care. The island is not a large one, and it must be perfectly evident to any one who considers the matter seriously that a garbage plant, with all that it entails, in the immediate neighborhood of the institution buildings would be a nuisance of the most flagrant character. A daily contemporary well expresses the situation when it says: "That the plant is a nuisance in its present location is quite probable, and as such the citizens of Dorchester are justified in their clamor against it. But that fact does not furnish a warrant for placing this unwholesome and offensive institution where it will constantly distress a class of people who cannot help themselves; who cannot get away or command any influence to get their troubles abated. The theory of the new spirit of our city charities is that the paupers, who may be very worthy though unfortunate people, are entitled in food, lodging and nursing to the best treatment possible, and certainly to the freest of God's blessings, fresh and untainted air. To make them breathe the sickening garbage odors would certainly be a cruelty, and a mean string tied to our humanity."

It has been the aim of an increasing number of public-spirited persons in Boston to raise the standard of the institution at Long Island to a level of efficiency and usefulness in accordance with its importance to the city. To this end hospital methods have been introduced, far greater attention has been paid to the

needs of the sick than ever before, and a creditable hospital for chronic disease has by degrees been established. It is now proposed to interfere with this good work by the erection of buildings which will more and more, as the city grows, stamp the island as an undesirable place of residence for the variously afflicted who are forced to take refuge there, and so indirectly but none the less surely hamper the development of the institution as a whole. This inevitable consequence we believe the city government does not desire, and we can hardly think that it will on mature consideration consent to so short-sighted a policy as the proposed plan implies. There is certainly not room on Long Island for a city garbage plant and a city almshouse and hospital. If the garbage plant is established there it cannot be many years before the almshouse and hospital will have to seek another location. If, on the other hand, the present institution is allowed to remain in possession, there is offered a possibility of growth and usefulness, which only those who have closely followed its development during the past few years can fully appreciate. We are, therefore, in entire accord with the vigorous protest against this location of the garbage plant recently urged upon the mayor by the Board of Pauper Institutions Trustees, which we publish in full in another column. Were no other location possible we should withhold judgment, but under the existing circumstances, we can see no possible excuse for the deliberate establishment of a public nuisance on an island already being developed for other purposes and in close proximity to various other institutions which would suffer hardly less than the residents of Long Island itself.

THE PROPOSED CHANGE IN THE CONTROL AND MANAGEMENT OF BELLEVUE HOSPITAL.

IN our last issue we referred briefly to the proposed revision of the charter of the city of New York as affecting Bellevue and its allied hospitals, the management of which it is proposed should be taken from the Department of Public Charities, in which it is at present vested, and given to a board of trustees, seven in number, with a term of office of seven years, to be appointed by the mayor. The charter further provides that the terms of these trustees shall be so arranged that one member of the board shall go off each year; that each year the mayor shall appoint a new member of the board; that no member of the board of trustees shall receive any pecuniary compensation for his services, or be interested directly or indirectly in any contract relating to the hospital, or hold any office or other position of emolument under the county, State or national government except the office of notary public or commissioner of deeds, or that of an officer in the National Guards, and that the commissioner of public charities is to be *ex officio* a member of the board.

It is said that those who were interested and instru-

mental in these proposed changes were much influenced by a study of the conditions which obtain at the city hospitals of Boston and Cincinnati, these hospitals being regarded by them as models of their kind and bearing well comparison with private hospitals in any of our cities, being run as business institutions on business principles.

In other large cities where the city hospitals are a part of a city department—generally the department of public charities—they are too apt to be considered as belonging to the party in power and to form an important share of the party patronage. An interested observer calls attention in the *New York Sun* to the fact that in both Boston and Cincinnati Democrats have been appointed trustees by Republican mayors, and Republicans have been appointed trustees by Democratic mayors; and furthermore emphasizes the statement that in Boston the Board of Trustees of the City Hospital went at one time for fourteen years without change; that one member of the board has held office for twenty-four years, and another for sixteen years, and that the superintendent has held office for twenty-one years.

The experience of Boston certainly justifies the expectation that Bellevue would have much, very much, to gain by the adoption of these provisions of the proposed charter; at the same time it should not be forgotten that even with the full responsibility for appointments resting on the mayor, and without the temptation of spoils or direct emolument, a constant vigilance on the part of those interested in good hospital administration cannot be dispensed with. The force of this seems to have been realized by those who revised the New York charter in their suggestion of certain advisory organizations which shall be consulted by the mayor before making his appointments to the board of trustees.

THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

Too late to withdraw our editorial note last week concerning the Pan-American Medical Congress, a notice was received from the secretary, announcing a change of date for the meeting.

At a meeting of the International Executive Committee, held on December 4th, in Washington, at the office of Surgeon-General Wyman, of the Marine Hospital Service, notice was received from Dr. Santos Fernandez, president of the Third Pan-American Medical Congress, saying that it had been postponed until February 4th. The reason for this was on account of the yellow fever which has been existing in Havana during the last two months, and of which, although it has nearly subsided, there are still a few cases.

This, together with the fact that the meeting was about to take place during the Christmas holidays, had led a number of delegates who had desired to attend to write asking if it could not be postponed.

It may be said that although there will doubtless be a larger attendance in February, the success of the meeting was assured, even if it had taken place during Christmas week, as over a hundred papers have already been prepared, and between two hundred and three hundred delegates had signified their intention of being present from this country. The exact date for the congress will be communicated as soon as decided upon.

PERIPHERAL NEURITIS DUE TO ARSENIC IN BEER.

THE appearance of an epidemic of peripheral neuritis in Manchester, Eng., has led to certain interesting and important facts regarding etiology, which have a general application. It appears, as reported in the *British Medical Journal*, that the affected persons were found on investigation to be habitual beer drinkers, and it was furthermore noted that the type of symptoms corresponded more closely to effects produced by arsenic than by alcohol. Chemical analysis of various samples of beer showed that they contained arsenic. It furthermore appeared that the cheaper beer used by the persons afflicted with neuritis was manufactured by the use of so-called commercial sulphuric acid, which has been demonstrated to be highly contaminated with arsenic. The fact, therefore, seems very probable, though not absolutely proved, that the arsenic contained in this rather inferior beer was sufficient to produce a very decided general outbreak of neuritis. The cases showed a somewhat unusual symptomatology, which is explained on the ground that the alcohol menstruum, in which the arsenic was ingested, may have played a part in the production of the final result. The *British Medical Journal* raises the further question of the possible contamination of many other articles of food with arsenic. It is at any rate certain that small amounts of arsenic taken over a considerable period of time may produce very marked disturbances, against which it is well to be forewarned and forearmed.

MEDICAL NOTES.

SAMUEL D. GROSS PRIZE. — As announced in detail in another column, this large prize, \$1,000, has not been awarded this year, because no sufficiently worthy essay was presented. No doubt the standard set is high, but it remains a noteworthy fact that so tempting a money offer should not call forth earnest competition of distinguished merit. That this has not been the case forces the conclusion, which we have before several times expressed, that the offer of a prize is not the best means of stimulating scientific research.

BRITISH CONGRESS OF TUBERCULOSIS. — The British Congress of Tuberculosis will be opened in

London, July 22, 1901, by the Prince of Wales. In May, 1899, a German Congress on Tuberculosis was held in Berlin, under the patronage of the Empress of Germany and the presidency of the Duke of Ratibon and Professor von Leyden. This congress was so great a success that it was thought an English congress of similar aims would serve a useful purpose.

GINSENG. — The inhabitants of China, generally estimated at 400,000,000 people, are said to value ginseng root as a panacea for nearly all human ailments, and there seem to be some North Americans who consider this form of commerce likely to be more profitable than that in cotton cloth, and who propose to devote themselves to supplying this precious medicine in desired quantities.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, December 12, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 165, scarlatina 36, measles 12, typhoid fever 20.

BOSTON MORTALITY REPORT. — The number of deaths reported to the Board of Health for the week ending December 8th was 202, as against 207 the corresponding week last year, showing a decrease of 5 deaths, and making the death rate for the week 18.79. The deaths from consumption were 28, pneumonia 20, heart disease 28. The number of children who died under five years was 48; deaths in public institutions 73.

THE PROPOSED GARBAGE PLANT ON LONG ISLAND, BOSTON HARBOR; A PROTEST. — We quote the following protest, sent by the Board of Pauper Institutions Trustees, to the mayor relative to the proposed garbage plant on Long Island: "We, the undersigned, members of the Board of Pauper Institutions Trustees, having in charge the pauper institutions of the city of Boston, would respectfully call your attention to the fact that a proposition has been made to the effect that a garbage plant for the city should be established at Long Island Head, on the westerly portion of Long Island. Believing that it is our duty to set forth the evils which we are confident would result from the establishment of such a plant, we would also call your attention to the fact that there is at Long Island a hospital population of between 200 and 300 persons, to whom the presence of such a plant might be distinctly detrimental. It is to be remembered also that there are at Long Island a number of feeble and infirm persons, not hospital inmates, but who, by reason of their age and infirmity, are confined to the infirmary wards of the institution, and who are, to all intents and purposes, sick people. For all such persons, the necessity of pure and uncontaminated air is great, and on their behalf, and especially on behalf of the hospital patients, it is most strongly urged

that no such use as that contemplated shall be made of Long Island Head, or any portion of the island. The plan as proposed would bring a garbage plant within three-quarters of a mile of the pauper institutions, on an island where there are at present between 600 and 700 persons, of whom a large proportion are hospital patients, and it is believed that the injury to this department of the city would be irreparable. We trust that this remonstrance may meet with your favorable consideration, and may aid in determining the City Council to reject any such proposition as the one now before it."

DIPHTHERIA IN WAKEFIELD, MASS. — It has been voted to close the Warren School and the High School in Wakefield until further notice, on account of several cases of diphtheria which have broken out among the pupils. Fifteen or 18 cases have been reported during the past few weeks. Precautions are being taken to prevent the spread of the disease.

REPORT ON STATE HYGIENE, NEW HAMPSHIRE. — Dr. Granville P. Conn, president of the New Hampshire State Board of Health, draws attention in his report to various matters relative to public hygiene, the more important of which are the sanitary conditions of railway stations, the question of good roads, public lands and tuberculosis.

DR. S. H. DURGIN ADDRESSES NEW JERSEY SANITARIANS. — Dr. Samuel H. Durgin, the chairman of the Boston Board of Health, addressed the New Jersey Sanitary Association last week at Lakewood, on the subject, "Shall Regulations Relating to the Construction of Buildings be Extended to Include Piping for Gas and Water Supplies?"

ENLARGEMENT OF WALTHAM, MASS., HOSPITAL. — The Waltham Board of Aldermen has voted to give to the trustees of the Waltham Hospital 15,000 square feet of land from Mt. Feake Cemetery, which adjoins the hospital land. The hospital authorities have under consideration plans for enlarging the institution.

A HOSPITAL FOR PLYMOUTH, MASS. — It is reported that Eben D. Jordan, of Boston, has offered to build a hospital and present it to the town of Plymouth. Such an institution is needed, and it is expected that the offer will be accepted by the authorities.

CAUSE OF TYPHOID FEVER IN WALTHAM, MASS. — An investigation in Waltham by the State Board of Health is said to indicate that the outbreak of typhoid fever in that city was due to infected milk. The investigation is not yet complete.

NEW YORK.

AN IMPORTANT DECISION REGARDING DAMAGES AGAINST THE STATE. — Justice Gaynor, in the Supreme Court, Brooklyn, on December 3d, gave an important opinion in regard to suits for damages against the State and its subdivisions. This was rendered in

denying a motion for a new trial in the suit for \$20,000 damages brought by the widow of a lineman in the employ of the New York Fire Department who was killed by the breaking of a pole upon which he was at work. The justice, in his decision, said: "The negligence charged is that the defendant failed to have the pole inspected. Even so, the plaintiff cannot recover. It may not be easy in the conflict and variation of decisions in this State to state the principles of this, but it is settled by authority that the State cannot be sued, without its consent, for any negligence or omission of its officials, or liability created by them. And the rule that sovereignty cannot be sued in its own court prevents counties and towns in the State from being sued, for they are only subdivisions of the State government. They can be sued only in such cases when it is expressly permitted by statute. This is the common law, as we get it from England."

A MEMORIAL TO DR. HENRY D. NOYES. — The medical staff of the New York Eye and Ear Infirmary has issued a memorial in recognition of the services rendered to that institution by the late Dr. Henry D. Noyes, who, as assistant surgeon, surgeon and executive surgeon, was on the staff of the infirmary from 1859 to 1898, a period of thirty-six years. During these years the growth of the institution was marked. In 1859 there were 4,178 new dispensary patients and 144 in the wards, while the corresponding figures last year were 47,684 and 2,257. In 1859 it was simply an eye infirmary; now there are three departments, one each for the eye, ear and throat. To Dr. Noyes's efforts is due in no small degree the well-ordered hospital of today, with its isolated cataract wards, pavilion for contagious ophthalmia, training school for nurses, school for the instruction of graduates in medicine, medical library and annual issues of volumes of scientific transactions.

GRADUATION OF COLORED NURSES. — At the Academy of Medicine on December 7th the graduating exercises of the Colored Home and Hospital Training School for Nurses were held, and six young colored women received diplomas. The address to the graduates was made by Dr. Stephen Smith, who mentioned the fact that the course of training through which they had passed was exceptionally thorough. This was an event of unusual interest, as it was the first time that there has been regularly graduated a class of colored nurses in the Northern States. In the South there are two schools for the training of negro nurses, but even they are of comparatively recent foundation. The Colored Home and Hospital, which has existed under various names for sixty years, was removed to new and commodious quarters in the Borough of the Bronx two years ago, and it was at this time that its training school was organized.

SMALLPOX. — Cases of smallpox continue to be reported, but are growing less numerous. On December 4th there were 10 patients suffering from the disease in the Health Department's Hospital on North

Brother Island, 2 deaths had occurred, and 2 new cases were discovered in the infected district on the West Side. Among the precautions taken to prevent its spread has been the closing of the public schools and various other schools in the neighborhood of the locality of the outbreak. It is likely to be some time before the disease is entirely stamped out, as cases have recently been reported in widely separated sections of the city, and also in the neighboring towns of Hoboken, Perth Amboy and Montclair. One additional death has occurred within the past week. Naturally, the outbreak has given a great impetus to the matter of vaccination, and this will be of invaluable service in the way of protection in the future.

PREVENTION OF SMALLPOX AT SING SING; PREVALENCE OF TYPHOID. — With a view to the prevention of the possible introduction of smallpox into Sing Sing Prison the warden has issued an order prohibiting visitors to the convicts and also the reception of packages by the latter, while all incoming mail matter is to be fumigated. While these precautions have been taken against a possible invasion of smallpox, another serious disease has actually broken out in the prison. Up to December 9th there were 19 cases of typhoid fever, all of which had developed within the preceding week. The newspapers report that the outbreak is supposed to be due to Croton water, which is supplied to the institution from the old New York City aqueduct; but it seems highly probable that a careful investigation will show some other origin for the disease.

BATHS FOR THE POOR. — In the fifty-seventh annual report of the New York Association for Improving the Condition of the Poor, just issued, special attention is called to the work of the society in providing baths for the indigent. Commissioner Kearney, it is stated, asked for an appropriation of \$52,000 to maintain the new city bath, in Rivington Street, during the year 1901, and has been allowed \$35,000 for that purpose. At the People's Baths, provided by the association, 131,000 baths were taken during the year. The operating expenses were \$5,775, and the receipts \$6,203; leaving a credit balance of \$428. The charge is five cents, including towel and individual piece of soap.

GOLF AND GOATS. — The Richmond branch of the Health Department, at the instance of members of the Harbor Golf Club, on Staten Island, has caused summonses to be issued for a number of goat owners to appear in court and explain why they are violating the sanitary code by keeping goats without a license. It is claimed by the golfers that the goats from a settlement of Italians near the club, familiarly known as Goatville, frequent the links and frighten the women players, while in several instances the animals have been seen to chase the balls and swallow them. The Health Department is involved, it is said, on the ground that gutta-percha is not good for the goats.

PRIVATE BUILDING AT THE NEW YORK HOSPITAL. — A new private patients' building in connection with the New York Hospital was thrown open on December 5th, when a reception was held in it by the Board of Governors. It occupies the site of the old Thorne mansion on 16th Street, which was formerly used for the library of the hospital, and is ten stories in height, with two separately equipped operating rooms on the upper floor. At the rear of the building, and detached from it, is an isolating department, which has its own independent heating and ventilating system.

A CENTENARIAN. — Mrs. Hannah Rosenthal died in New York on December 6th, in her one hundred and fourth year. Her age is recorded at the Health Department as one hundred and three years, eleven months and six days. Mrs. Rosenthal was born in Berlin, and came of a family noted for its longevity, both her father and his brother having been centenarians.

A DEATH FROM HYDROPHOBIA. — On December 6th there was a death from hydrophobia at St. Vincent's Hospital. The patient was ill only two days, and came from Hastings-upon-Hudson, where he was bitten about three months ago by his own St. Bernard dog, which was afterwards shot by a policeman. He had not taken the Pasteur treatment.

FREE TUITION FOR FILIPINOS. — At a meeting of the Trustees of Columbia University, held December 3d, it was decided to offer, through the United States Government, to five Filipinos free tuition in any department of the university except the Medical School.

Miscellanea.

THE STRANGE ADVENTURES OF AN ANATOMIST'S HEAD.

XAVIER BICHAT passed a considerable part of his short life in the dead house, but his own mortal remains appear to have had a more singular fate than usually befalls the fragments of humanity in which he sought so eagerly to discover the secret of life. Writing recently in the *Temps*, M. G. Clarétie says it is well known that when Cuvier was put into his coffin an iron cage was placed over his head so that it might not be stolen as Bichat's had been. A writer in the *Chronique Médicale*, commenting on this statement, says that in 1808 there came in a curious fashion of doing honor to "masters of medicine" by keeping their heads in the condition of anatomical preparations for forty years. Bichat was buried in the St. Catharine Cemetery, in a small corner bought by one of his colleagues at the Hôtel Dieu, and might never have been found if the pious care of friends had not from time to time renewed the marks by which the grave was identified. The cemetery having been closed, Bichat's remains were removed to Père Lachaise. On November 16, 1845, the body was

examined under the direction of Dr. Denonvilliers, and in the presence of four members of Bichat's family, one of whom was Dr. Adet de Roseville, assistant physician of Saint Lazare, husband of Bichat's niece. The report of the exhumation states that, under a gravestone bearing the inscription, "À Xavier Bichat, par les Membres de la Société d'Instruction Médicale," there was discovered, at a depth of 1 metre and 70 centimetres, in a soil of remarkable dryness, an excellently preserved skeleton. The cervical vertebra were perfect, but the head was missing. Further digging failed to bring the head to light. Professor Roux, who was present, came forward and stated that the head of Bichat had "come into his hands" three years after the death of the great anatomist. He described the head, calling attention to the following points: (1) The existence of a fracture of the occipital bone, which he himself had made at the post-mortem examination; (2) the obliteration of the alveoli of the first upper molar of the left side and of the corresponding one on the right, which Bichat had had extracted towards the end of his life, after having suffered much from those teeth, as he says himself in his article on the teeth in his "Anatomie Générale"; (3) the perfect correspondence of the articular surfaces of the atlas found in the grave with those on the skull. M. Malgaigne had previously arranged in an oak coffin all the bones as they were taken up, and M. Roux completed them by restoring with his own hands the skull which had been so long separated from the skeleton. It may be mentioned that the ceremony of the translation of the relics to Père Lachaise was attended by some 4,000 members of the medical profession. — *British Medical Journal*.

THE OPERATIVE TREATMENT OF TUBERCULOUS PERITONITIS.

In a paper contributed to the Eleventh Series of the Boston City Hospital Reports, Dr. John T. Bottomley reports and analyzes 28 cases of tuberculous peritonitis treated by operation. After careful discussion of the literature of the subject, and of these cases from the hospital services, Dr. Bottomley reaches the following conclusions:

It seems only prudent to wait at least a year before reporting cases as cured. The fact that this has not been done may account in part for the great variation in the percentage of reported recoveries.

Of this series of 28 cases, 11 recovered and an equal number died—a percentage of 39.3. Two cases (7.1%) improved, and 4 (14.3%) could not be traced. Of the 19 cases of the ascitic type, 8 (42%) recovered, 7 died, 1 improved and 3 were not traced. Three (42.8%) of the 7 fibrous cases recovered, 3 died and 1 improved. Of the 2 ulcerated cases, 1 died and 1 could not be traced. By most writers the ascitic form is said to give the highest percentage of recoveries following operation; but in this series operation was equally successful in both the ascitic and fibrous type. The prognosis in the ulcerative variety is always bad.

Of the many other treatments for tuberculous peritonitis, of the many theories as to why laparotomy often cures the trouble, nothing will be said. It may be noted in passing that tapping was tried in 6 of

these cases; in each case the fluid reaccumulated in a very few days.

The importance of early operation, as far as prognosis is concerned, is probably not great. The average time from the onset of the symptoms to the time of the operation in this series is practically the same in the fatal cases as in those that recovered. The comfort of the patient is, of course, to be considered.

To summarize briefly: (1) We may reasonably expect cures (one year or more after operation) in from 30 to 40% of all cases. Fatal cases usually die within a few months after operation. (2) Family history does not appear to be important etiologically. Previous inflammatory affections of the abdominal viscera may have etiologic significance. (3) Operation usually affords at least temporary improvement either locally or generally, even in cases that later prove fatal. The use of drainage should be avoided, when possible. (4) Inferences as to the remote results of operation should be drawn very guardedly, if at all, from the immediate results; though in cases which do not immediately receive from an operation either local or general benefit, the prognosis is very unfavorable.

INFLUENCES OF DIGESTION ON ANIMAL HEAT PROCESSES.

In a contribution from the Physiological Laboratory of the University of Pennsylvania, in the *American Journal of Physiology*, December 1, 1900, Dr. Edward T. Reichert reaches the following conclusions in regard to "digestion fever": (1) That the rise of temperature observed during the period of digestion is due to an increase of heat production; (2) that the temperature gradually rises and reaches a maximum during the fourth hour, or possibly later; (3) that the greatest increase of heat production occurs during the first hour after feeding; (4) that the changes in temperature and heat production are not proportional; (5) that the most marked effects, as a whole, are observed when the diet consists of proteid and fat, next with proteid, and least with fat; (6) that the increase of heat production is not nearly so great as is indicated by the results of the oxygen experiments of Fredericq.

METEOROLOGICAL RECORD

For the week ending December 1st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer		Thermometer		Relative humidity.		Direction of wind.		Velocity of wind.		Weather.		Rainfall in inches.		
	Daily mean.		Daily mean.		8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.			
			Maximum.	Minimum.											
S...25	30.09		40	43	36	100	100	100	N. E.	N.	16	14	R.	R.	.52
M...26	29.68		42	46	37	100	98	99	N. E.	N.	25	11	R.	O.	1.79
T...27	29.68		36	39	33	100	99	100	N.	N.	15	23	P.	N.	.03
W...28	30.19		30	35	26	70	65	68	N. W.	N.	12	4	C.	C.	.01
T...29	30.19		36	43	28	80	88	84	S.	S. E.	9	9	F.	R.	O.
F...30	30.04		40	45	37	96	88	92	N.	N.	15	10	R.	O.	.65
S...1	30.10		40	46	34	86	71	78	N. W.	N.	3	2	C.	F.	
☞	30.28		42	33			89								

* O., cloudy; C., clear; F., fair; G., fog; H., hozy; S., smoky; R., rain; T., threatning; N., snow. † Ind. cases trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 1, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York . . .	3,654,594	1067	326	23.33	18.55	1.31	1.97	4.87
Chicago . . .	1,698,573	—	—	—	—	—	—	—
Philadelphia . . .	1,293,497	—	—	—	—	—	—	—
St. Louis . . .	575,238	—	—	—	—	—	—	—
Baltimore . . .	508,957	157	38	24.84	14.01	3.18	1.91	5.10
Cleveland . . .	381,768	—	—	—	—	—	—	—
Cincinnati . . .	325,992	—	—	—	—	—	—	—
Pittsburg . . .	321,616	99	42	19.19	12.12	1.01	6.06	5.05
Washington . . .	277,000	—	—	—	—	—	—	—
Milwaukee . . .	275,000	—	—	—	—	—	—	—
Providence . . .	150,000	39	11	30.77	7.68	2.56	—	2.56
Nashville . . .	87,754	—	—	—	—	—	—	—
Boston . . .	560,892	186	58	26.36	8.60	1.61	2.15	9.14
Worcester . . .	115,231	33	15	12.12	3.03	—	—	3.03
Fall River . . .	104,954	25	8	28.00	24.00	16.00	—	—
Cambridge . . .	95,185	26	7	43.80	21.90	—	7.70	11.55
Lowell . . .	91,611	23	9	28.56	14.28	3.57	3.57	—
New Bedford . . .	74,913	18	12	5.55	27.75	—	—	—
Lynn . . .	69,769	16	3	12.50	—	—	—	6.25
Somerville . . .	67,863	14	4	35.79	7.14	7.14	—	14.28
Lawrence . . .	60,937	19	6	21.04	15.78	—	—	—
Springfield . . .	60,085	17	—	23.52	11.76	—	5.88	11.76
Holyoke . . .	45,623	17	9	35.28	—	5.88	—	17.64
Brockton . . .	40,249	6	3	—	—	—	—	—
Haverhill . . .	38,714	10	4	10.00	—	—	—	—
Salem . . .	38,583	14	4	14.28	—	7.14	—	7.14
Malden . . .	38,321	6	3	50.00	—	—	16.66	16.66
Chelsea . . .	35,022	9	2	—	—	—	—	—
Gloicester . . .	32,285	7	3	57.12	—	—	—	42.84
Fitchburg . . .	31,648	5	1	—	—	—	—	—
Newton . . .	31,224	6	2	33.33	33.33	—	—	16.66
Everett . . .	31,167	11	3	36.36	—	—	9.09	18.18
Taunton . . .	28,491	13	—	38.45	7.69	—	—	—
Quincy . . .	25,653	9	—	33.33	11.11	—	—	22.22
Pittsfield . . .	24,226	—	—	—	—	—	—	—
Waltham . . .	23,296	5	1	40.00	20.00	—	20.00	20.00
North Adams . . .	22,196	9	1	11.11	11.11	—	—	—
Brookline . . .	20,225	7	1	14.28	28.56	—	—	—
Chicopee . . .	18,790	4	1	—	50.00	—	—	—
Medford . . .	17,869	—	—	—	—	—	—	—
Melrose . . .	15,411	—	—	—	—	—	—	—
Newburyport . . .	15,157	5	2	20.00	—	—	20.00	—

BILLINGS, W. C. assistant surgeon. To proceed to Clarksburg, W. Va., for special temporary duty. November 24, 1900.

THORNBURY, F. J., assistant surgeon. Granted leave of absence for four days. November 23, 1900.

MOORE, DUNLOP, assistant surgeon. To proceed to Port Townsend Quarantine and report to medical officer in command for duty. November 28, 1900.

EARLE, B. H., assistant surgeon. To proceed to Columbia River Quarantine and report to medical officer in command for duty. November 28, 1900.

LONG, J. D., assistant surgeon. To proceed to Baltimore, Md., for temporary duty during absence of Assistant Surgeon BILLINGS. November 24, 1900.

LLOYD, B. J., assistant surgeon. To proceed to San Francisco Quarantine and report to medical officer in command for duty and assignment to quarters. November 28, 1900.

PIERCE, C. C., assistant surgeon. Relieved from duty at the Tortugas Quarantine Station and directed to proceed to Key West, Fla., and report to medical officer in command for temporary duty. November 27, 1900.

BAILEY, W. C., acting assistant surgeon. Granted leave of absence for three weeks from November 14th. November 23, 1900.

BROWN, F. L., hospital steward. Relieved from duty at Cape Charles Quarantine and directed to proceed to Boston, Mass., and report to the medical officer in command for duty and assignment to quarters. November 27, 1900.

PROMOTION.

L. E. COFER, assistant surgeon, commissioned as passed assistant surgeon. November 23, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, December 19, 1900, at 8 P. M. At 8 o'clock: Dr. J. L. Goodale, "Retropharyngeal Abscess in Adults." At 8.15 o'clock: Dr. Fredk. C. Cobb, "Peritonissilar Abscess." Discussion by Drs. Farlow, Knight, Langmaid, Coolidge and Clark.

HENRY F. HEWES, M.D., Secretary.

MEDICAL SOCIETY OF THE STATE OF NEW YORK. — The ninety-fifth annual session of the society will be held in Albany, January 29, 30, 31, 1901.

Those who desire to read papers will communicate at once with the chairman of the Business Committee, Dr. Frank Van Fleet, 63 East 79th Street, New York City, or with the president, Dr. A. M. Phelps, 62 East 34th Street, giving the title of the paper and such other information as the author desires.

THE SAMUEL D. GROSS PRIZE.

ONE THOUSAND DOLLARS.

No essay which the trustees deemed worthy of the prize having been received on January 1, 1900, they hereby announce that the prize will be awarded on October 1, 1901.

The conditions annexed by the testator are that the prize "Shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 S. 13th St., Philadelphia," on or before October 1, 1901.

Each essay must be distinguished by a motto and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

W. W. KEN, M.D.,
J. EWING DEARS, M.D.,
J. CHALMERS DA COSTA, M.D., } Trustees.

BOOKS AND PAMPHLETS RECEIVED.

Proceedings of the Eighth Annual Meeting of the Association of Military Surgeons of the United States, held at Kansas City, Mo., September 27, 28 and 29, 1899. Columbus, O.: The Berlin Printing Co. 1900.

Deaths reported 1,894; under five years of age 580; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 453, acute lung diseases 273, consumption 225, diphtheria and croup 107, typhoid fever 42, diarrheal diseases 33, whooping cough 15, cerebrospinal meningitis 15, scarlet fever 8, measles 5.

From whooping cough New York 8, Baltimore, Providence, Boston, Pittsburg, Cambridge, Somerville and Clinton 1 each. From cerebrospinal meningitis New York 9, Providence, Boston, Worcester, Lowell, Gloucester and Brookline 1 each. From scarlet fever New York, Pittsburg and Boston 2 each, Worcester and Malden 1 each. From measles New York and Pittsburg 2 each, North Adams 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending November 17th, the death rate was 17.6. Deaths reported 3,917: acute diseases of the respiratory organs (London) 352, diarrhea 72, fever 71, diphtheria 70, whooping cough 62, measles 47, scarlet fever 31.

The death rates ranged from 9.5 in Norwich to 24.8 in Salford: Birmingham 18.9, Bradford 14.0, Cardiff 12.1, Derby 16.4, Hull 18.3, Leeds 19.1, Liverpool 20.5, London 17.1, Manchester 21.9, Newcastle-on-Tyne 21.6, Nottingham 18.7, Portsmouth 19.3, Sheffield 18.8, Sunderland 18.4, West Ham 13.4.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOVEMBER 29, 1900.

STONER, J. B., passed assistant surgeon. Bureau letter of November 20th, directing Passed Assistant Surgeon Stoner to assume temporary command of the service at Norfolk, Va., amended and directed to assume command of the service at Norfolk, relieving Passed Assistant Surgeon J. M. EAGER. November 24, 1900.

EAGER, J. M., passed assistant surgeon. Relieved from duty at the port of Norfolk, Va., to take effect November 30, 1900.

HOBDY, W. C., assistant surgeon. Granted leave of absence for seven days from November 25th. November 27, 1900.

Original Articles.

REMARKS UPON QUESTIONS ARISING DURING THE REMOVAL OF FIBROIDS, WITH ESPECIAL REFERENCE TO THE TECHNIQUE OF THE OPERATION.¹

BY MAURICE H. RICHARDSON, M.D., BOSTON.

My subject may seem one about which so much has already been written that there is nothing further to be said. There is one reason, however, for the present communication which seems to me sufficient, namely, that the dangers inseparable from the operation for fibroids are grave or slight according to the methods used in performing it.

Before advising so serious an operation as hysterectomy careful examinations should be made as to the urine and the amount passed in twenty-four hours.

In tumors which threaten life one must often proceed to operate even when the amount of urine is dangerously insufficient, or when there is definite evidence that the kidneys are not perfectly normal. In hopeless and advanced renal diseases, however, it is unjustifiable to perform so severe an operation as extirpation of the uterus. In fibroids which do not threaten life—which justify hysterectomy, though they do not demand it—trivial changes in the quantity and amount of urine should receive careful consideration. Such changes should always suggest at least a postponement of operation until they have disappeared, or until it is apparent that they are secondary to the tumor, and that its removal is essential for their disappearance. In most fibroids it is possible to wait for this favorable period of intervention. In some it is not; the patient must run the risks of operation at an unfavorable time.

One cannot see a large number of abdominal cases without being impressed by the difficulties of palpation upon the conscious patient. Tumors which apparently were easily perceptible and well defined often present, when the abdominal walls are relaxed by thorough anesthesia, characteristics entirely different—so different, indeed, that one's previous estimate of the case, as to diagnosis, prognosis and indications, is entirely upset. An acute diffused tumor, for example, filling the right iliac fossa in suspected appendicitis often is resolved into the small and definitely outlined mass of an enlarged appendix. Smooth tumors, apparently fibroids, evidently connected with the uterus, may under anesthesia assume characteristics which suggest even more strongly an enlarged and inflamed tube, a tense solid ovarian tumor, or even an extra-uterine pregnancy. Neglect to examine under ether as a preliminary procedure has led me into several unnecessary operations, and into at least one costly error.

The importance of preliminary examination under complete anesthesia seems to me therefore great. Not that it is always essential, for in some cases as complete an examination of the pelvic viscera is possible without ether as with it. But even in such cases it is important to make a pelvic examination at the time of operation, for the reason that renewed examination may present new features; it may present old ones in a new light, or even the entire absence of features previously found. The importance of such

preliminary examination cannot be too strongly emphasized. The "ether examination," so called, may be made some days or weeks before the operation; even then a second should be made at the time of intervention. Too often one will find that changes which he can hardly believe possible will have taken place between the two examinations. The chief objection to the early preliminary anesthesia is in the occasional demoralization of the patient, and in the not infrequent disagreeable effects of the ether itself.

I could mention several examples of the errors into which I have fallen by neglect of the rule to examine vaginally just before opening the abdomen, and that, too, in apparently simple cases. Fortunately all the cases in themselves required operation.

The surgeon should never take the responsibility of operating upon the advice of another; he should himself concur or not concur in the diagnosis, for he himself has to bear the whole responsibility. The previous examiner, though experienced and skilful, may have made a hasty examination; he may have been drawn by preconceived ideas into a false opinion; he may not have used an anesthetic; he may have been entirely wrong. I have learned to take no man's opinion without a careful, unbiased history and examination of my own. On the other hand, I do not wish another to take my diagnosis without making his own investigation. A boy was once operated upon for appendicitis on the strength of my diagnosis, which was acute appendicitis. He had a pneumonia and later a pleurisy, with marked abdominal symptoms. I have several times operated for extra-uterine pregnancy on the advice of skilled examiners. Once I found a normal pregnancy, and once a tumor on the opposite side from that in which the tumor had been detected. At another time I operated for a fibroid and found a normal pregnancy. In all these cases, however, I had examined carefully under ether and concurred in the diagnosis.

The chief objection to vaginal examination just before opening the abdomen lies in the danger of carrying sepsis upon the examining fingers. This danger, considerable though it may be in careless and hasty sterilization of the hands, is completely obviated by thorough methods; it is absolutely prevented when—the vaginal examination having been made with gloved hands—fresh sterilized gloves are substituted after fresh sterilization of the hands.

From many observations in cases of my own, and from many in the hands of my colleagues, I have become convinced that the risks of the operation are minimized by the careful following of a certain technique. These dangers are, chiefly, owing to sepsis and to faulty dissection. The dangers of sepsis inseparable from every operation, no matter how rigid the precautions, may be greatly increased by faulty dissection. Faulty dissection adds the danger of wounded bowel, bladder and ureter to those of hemorrhage. An ideal hysterectomy is one in which all these dangers are reduced to a minimum.

Time as an element in hysterectomy is important in so far as it is reduced to a minimum consistent with careful and intelligent dissection. Time bears a similar relation to the dissection of pelvic viscera that it does to the removal of a tumor from the subclavian triangle, for instance, except that prolonged exposure of the peritoneal cavity is a more serious matter

¹ Read before the Obstetrical Society of Boston, October 16, 1900.

than prolonged exposure of the tissues of the deep neck. He would be a rash operator—not to say a careless one—who should dissect the subclavian triangle with the speed that made a clear recognition of structures impossible. Yet he would be an incompetent one, perhaps, who would waste time in a tardy recognition of the phrenic nerve, or even of the subclavian vein.

It is too often true that the operator uses caution in beginning his dissection when rapidity is safe, and ends it with rapidity when caution is essential. The truth is that he gets tired by the time that he should work carefully. Beginning with short and painstaking strokes of the knife, he ends with long and careless ones. In abdominal surgery the time for rapid work is in exposing the field; the time for caution is in dissecting the depths of it.

In hysterectomy, whether abdominal or vaginal, speed is permissible everywhere except in the dissection about the cervix, for in uncomplicated cases no harm can be done by the most rapid methods. As soon as the broad ligaments below the ovaries are secured, no step should be taken without exact knowledge of what is being done. In this way, and in this way only, can the uterus be removed without the mistake of wounding bladder, bowel or ureters.

To remove the uterus in absolute safety as regards these structures requires, by the method herein described, from fifteen to thirty minutes; to close the peritoneum over the stump of the uterus, and to finish the operation, from fifteen to thirty minutes more. This makes the operation from half an hour to an hour in duration. In some instances the time is, by unusually facile dissection, somewhat reduced; in others somewhat prolonged. When the operation is in progress, and when it is completed, I am absolutely sure that no harm has been done other than that inseparable from the operation itself.

In complicated cases, when, for example, the uterus is adherent to everything about it, when the tubes are inflamed and adherent, additional care must be used; free and rapid steps are impossible at any stage of the operation. Incision through the abdominal wall itself must be slow and painstaking to avoid wounding an intestine or a misplaced bladder, or rupturing too early an abscess cavity. In these cases the anatomy of the parts is frequently so obscured that it is only with extreme care and difficulty that no harm is done, and the time of operation is thus unavoidably prolonged.

In uterine tumors, especially those of large extent situated near the cervix, the normal anatomy is sometimes excessively distorted. A tumor in the cervical region may grow beneath the ureter and push it high into the lateral and upper aspects of the mass. A tumor starting in front of the uterus and becoming adherent to the bladder may, in years of growth, project slowly backward and to one side, and drag with it the bladder into an unexpected and apparently impossible position. In very rare cases a ureter may become obstructed and even obliterated among the changed tissues about the cervix. Fortunately the enlargement of uterine tumors generally pushes both bladder and ureters away from operative dangers rather than toward them. The occasional occurrence of the converse, however, should always put the operator on his guard.

The displacement and non-recognition of the bowel is much less frequent and therefore less important.

The intestine should always be easy of recognition and of avoidance; yet occasionally, in complicated cases, failure to recognize and to avoid the bowel leads to costly errors.

In the exposure of the uterus the median incision through the linea alba or the lateral one through the fibres of the rectus may be used. I prefer and use the linea alba, for it is a space without blood vessels, and incision through it is therefore bloodless. The prevention of hernia is in no way ensured, in my opinion, by the lateral cut. In cutting through the peritoneum the greatest care must be taken, even in the simplest cases, for the tumor may prove to be not what it seems; it may have caused perplexing changes in both parietal and visceral peritoneum; it may have distorted bladder and intestine, and too bold and rapid cutting may open one or both.

In large uterine fibroids of slow growth, attacks of peritonitis may cause early adhesions to intestinal coils, which have thereby been displaced by the enlarging mass into positions of easy wounding.

The tumor itself may not be uterine: it may be an old abscess with thick and firm walls, or one whose anterior wall is the abdominal wall, and the first sign of which may be its unexpected and untimely rupture. The mass may prove to be one of the many varieties of ovarian tumor; it may be a salpingitis or an extra-uterine pregnancy—lesions which should be approached and unmasked with caution.

Whether uterine or not, the tumor may be covered by intestine flattened out over it. The bladder may be much higher over the tumor than one would think possible, even from extensive previous experience. Obscure pelvic tumors simulating uterine may prove to be tubercular masses to which the peritoneum is so closely adherent that free incision opens at once the intestine. It is a good rule to proceed with extreme caution whenever anything in the gross appearance of the peritoneum suggests the abnormal. A bladder wall will then be avoided as well as an adherent bowel. In certain rare instances excessively thin peritoneum will lie over distended intestine and be indistinguishable from it. So transparent is the peritoneum that it will have been cut through before the surgeon is aware of the fact. The intestine projecting into the wound may have precisely the appearance of parietal peritoneum. Such an intestine may be incised even when extreme care is used—it is almost sure to be when the cut is hastily made. The combination of transparent peritoneum and pale intestine is fortunately rare. Error will always be avoided by pushing the finger or a blunt instrument into the doubtful area. If the peritoneum has been incised, the finger or instrument will push by the intestine into the peritoneal cavity, and demonstrate at once the situation of things. This precaution seems worth mentioning because I, for one, have been very nearly deceived into opening the gut, and at a time when, perfectly sure that I was cutting parietal peritoneum, I was really cutting intestine. Such an error, especially liable to occur in changed conditions of the peritoneum, must be guarded against in the simplest cases. Not that incision into the bowel adds much to the danger—though the unavoidable escape of gas and fecal matter cannot but add something to it—but it delays further proceedings until the cut is repaired, and it is humiliating to the last degree. I have known an operator to go through the abdominal wall, intestine, and into

the tumor in one cut, and I have known several instances in which the peritoneal cavity has been opened by the first stroke of the knife. In such cases it is a matter of luck and not of skill that serious injury is not done and that the success of further procedure is not compromised.

It is a good plan to make in the first place a cut just large enough to admit one finger, for things may be found that will contraindicate further measures, and obviate the disadvantages of a larger incision. This cut should next be enlarged enough to admit the hand, by means of which the whole abdominal cavity may be thoroughly explored. In most cases this exploration will be negative, but in some it will prevent a worse than useless operation. Such conditions are, for example, hopeless malignancy of the tumor itself, metastases, contiguous infiltrations, and remote tumors too extensively and intimately adherent to permit removal. Independent and hopeless diseases of other viscera are extremely unusual, for the previous study of the case should have been too thorough to overlook the effective contraindication to operation which slight disturbances in other organs justify. In obscure tumors of the pelvis, and especially in malignant disease, the contraindications must be very strong to justify the giving up of further steps.

No contraindication having been found by exploration with the whole hand, the incision should be enlarged until there is abundant room for a clear view of the field. Such a cut must extend from the pubes to the umbilicus, and in very large tumors even higher. No greater mistake can be made than the dissection of a uterus through an incision too small for a clear view. I have found Doyen's pubic self-retaining retractor of great assistance. With this and a retractor on each side the whole lower abdomen may be inspected and examined with the greatest ease and satisfaction.

The tumor itself should be first examined, especially as to its nature and the difficulties of its removal. If malignant, with infiltrations into viscera that cannot be themselves excised, further procedure must depend upon questions of relief rather than of cure. In fibroids it is rather a question of extent and operability, for in some instances the tumors will present difficulties of such magnitude that removal will be too dangerous to be justifiable. Under such circumstances the lesser evil should be chosen, and the patient should be allowed to live with her tumor, uncomfortable and dangerous though it may be, rather than subjected to an operation so severe as to give but slight chance of recovery.

I recall several tumors of this class, in some of which I have proceeded to extirpation, in others to abandonment of the operation. I have been influenced in my decision by the wishes of the patient as expressed before operation. In one case I was begged to proceed at any cost; in another to undertake nothing desperate. It seems clear to me that the patient should be advised to make the choice under all circumstances, and especially in the case of tumors which — no matter what they may ultimately become — are at the time of operation discomforts rather than dangers.

The duty of the surgeon seems quite different when, in addition to the discomforts of the tumor, there is found evidence of pressure upon the ureters and beginning changes in the kidneys, both easily perceptible to the examining hand. In such cases the operation

should be continued, even at great risk, for with increased pressure the changes in the kidneys, perhaps just beginning, cannot but progress to a fatal termination. It is well, therefore, as a preliminary step, to palpate both kidneys, and to examine the ureters at the most accessible point.

In a recent case I found both ureters distended — the right to a considerable, the left to an extreme degree. The renal pelvis were themselves dilated correspondingly. The obstruction was found near the cervix. That involving the right ureter was a calcification of a semi-solid ovarian cyst which complicated a uterine fibroid; that of the left a deviated and thickened cervix uteri. The right ureter ended apparently in the calcareous mass, from which it was dissected free enough to permit its insertion into the bladder. The left ureter was relieved by amputation of the uterus low down upon the cervix. In this case the tumor was sessile and everywhere adherent below the plane of the true pelvis. The question of possible removal arose, and it was decided to go on, in spite of the formidable difficulties of separation. The tumor involved the sigmoid flexure, and removal left a gap in it. It was impossible in this case to ascertain the true condition of things until the dissection had been carried too far for retreat. It was fortunate that the difficulties were not known, for they would have been prohibitory. They were successfully overcome, however, and the patient has made a brilliant convalescence. Early recognition of the hydronephrotic kidneys would perhaps have justified abandonment of the operation on the ground of hopelessness, for it would have seemed too much to impose upon a patient with double hydronephrosis the dangers of a formidable dissection.

In uterine fibroids it is important to ascertain the situation of the fundus and the cervix, in order that the possibility of saving the uterus may be considered. Careful examination of the tumor after hysterectomy has shown in several cases that it would have been feasible to remove the tumor without sacrificing the uterus — a most desirable procedure, especially in the young.

The rules for guidance in deciding between hysterectomy and myomectomy depend upon many things, chief among which are age, likelihood of marriage and childbearing — conditions which make conservation of uterus and ovaries desirable. The general condition of the patient must be considered, as well as conditions of heart, lungs and kidneys — conditions perhaps requiring that procedure which is quickest and least bloodless; or conditions, on the other hand, permitting leisurely and painstaking dissections. The one characteristic of the fibroid itself which indicates myomectomy is facility of removal. A fibroid with small pedicle should always be removed from the uterus; so should small subperitoneal fibroids, especially those which are hard and bloodless. Large, hard fibroids which bulge from the uterus, even if they are not pediculated, are often easy of separation. They present pale masses, smooth and rounded, over which numerous flattened veins ramify. Such fibroids do not bleed when incised; moreover, the veins over them bleed but little, the hemorrhage soon subsiding after enucleation of the tumor. Many fibroids which lie deep in the uterine wall, even subserous ones, present features of hardness and mobility which strongly indicate easy enucleation. When the indications favor

enucleation, the possibility can be settled almost with the first stroke of the knife, for an easily separated tumor projects into the incision as soon as its capsule is cut. Brief attempts at separation with finger or blunt instrument will show at once the feasibility of extirpation. The operator will proceed to extirpation or to hysterectomy in accordance with the information thus gained. If, with incision, hemorrhage is excessive, and from numerous points and difficult of control, not ceasing or diminishing as the tumor is uncovered,—if this difficulty increases rather than diminishes as the depths of the tumor are reached,—it may become necessary to abandon enucleation, and to remove the uterus and all. Exploration of the tumor in this way takes little time; it adds little to the risk, for it is undertaken only in those cases in which the patient is in good general condition.

A contraindication to myomectomy lies in the presence of many small fibroids, some of which are difficult if not impossible of removal. It is obviously unwise to remove one or two large tumors and to leave several small ones. Even if all that can be felt are removed, it by no means follows that some too small for detection do not remain. This argument against myomectomy is not sufficient to contraindicate the operation when the desirability of saving the uterus is great—for it does not follow that the fibroid, if any is left, will ever grow, or that growing, it will ever cause symptoms; moreover, if it does grow and cause symptoms, years will probably elapse before a second operation becomes necessary, if indeed it ever does.

In examining the uterus to determine the feasibility of myomectomy, the region of the cervix must not be overlooked, for not infrequently a fibroid will be found there which may be the chief cause of the symptoms.

From the experience thus far gained, I should say that when in doubt it is better to perform a hysterectomy than to attempt a myomectomy. Yet with renewed experience it may prove that the uterus has been sacrificed more often than was really necessary.

Deep pelvic examinations, besides demonstrating the presence of tumors at or near the cervix uteri, will show whether there are adhesions, inflammatory masses, cervical or incarcerated portions of the tumor. One of the dangers in the forcible delivery of abdominal tumors is tearing the rectum or other pelvic structures—an accident which may happen when the pelvic portions of the tumor are firmly adherent to surrounding parts. One should examine carefully the ovaries and tubes. I have in several instances been surprised to find that the masses which I supposed to be fibroids were tense ovarian cysts or solid tumors, dilated and tense tubes, or even extra-uterine pregnancies.

In myomectomies the incision should be carried well down upon the fibroid; otherwise the separation will be carried through uterine tissues so difficult of separation that a false impression will be given as to feasibility of enucleation. The actual substance of the fibroid must be reached, and this will be easy of recognition. I grasp the presenting mass with double hooks, and often am able to deliver and separate it by traction alone. At times tumors of great size can be torn out of their beds with the greatest ease; if not torn out, dissected with a few strokes of the knife. The hemorrhage comes usually from the edges of the incision, where it may be easily controlled. Occa-

sionally it comes from the loose tissues of its matrix, where it can be easily checked by ligation. When there are several fibroids I usually pack with gauze the spaces left after removal. When all have been enucleated, the wounds in the uterus are closed by inverting their edges and suturing in the interrupted Lembert fashion. If blood fills the spaces, it is confined there until it has been absorbed. I have never seen any unpleasant results from this method. Even when the tumors have been large, or have been taken from the submucous spaces of the depths of a large uterus, no evil has followed.

In hysterectomies, as well as in myomectomies, it is desirable that the field be bloodless. First, because loss of blood adds greatly to the shock of operation; secondly, because blood is a very inviting medium for infection; and, finally, because a bloody field encourages slovenly methods.

It is impossible to make myomectomies bloodless, for the blood vessels cannot be secured before the incision is closed. The enucleation of some tumors will be practically bloodless. The incision exposing others—particularly the soft, vascular and rapidly growing ones—will often cause formidable bleeding, and, in fact, demand immediate ligation of the uterine arteries and removal of the uterus.

Removal of the uterus with the fibroids may be, in the majority of cases, absolutely bloodless if the following technique is carefully followed. Occasionally, in spite of the greatest care, the operation will be marked by a bloody, slovenly field. The cause of unavoidable hemorrhage lies in the situation of those numerous large veins which surround the tumor and inosculate freely with the venous plexuses of the broad ligament. These veins are flattened out over the tumor, where they cannot be grasped by pressure forceps, and where attempts at ligation only cause fresh bleeding. In such cases oozing continues until the uterine arteries are tied.

When it has been determined that no deep adhesions or other complications prevent the forcible delivery of uterus and tumor, the fundus may be grasped between the hands or by some especially adapted instrument. The corkscrew has one disadvantage in that it may penetrate the uterine cavity, the contents from which, with the oozing blood, may contaminate the peritoneum. Another disadvantage is in the impossibility of rotating the tumor about its longitudinal axis—a very desirable manipulation while working upon the structures about the cervix. Instead of the corkscrew, therefore, I use a pair of very large specially constructed double-hooked forceps, with broad grasping areas. These forceps are carefully applied, including between their teeth, perhaps, two or three inches of the presenting summit, whether tumor or uterus. When the fundus uteri presents, it is usually possible to tell whether the hooks will be likely to penetrate and tear the uterine cavity. If the uterine wall is thin, the hooks should be superficially inserted. I usually apply them so that they grasp the fundus or the tumor anteroposteriorly. When applied to friable tumors they often tear the tissues and cause oozing. It is best to seize such tumors as a whole rather than their summits. The hooks should be applied in vascular tumors in such a way that the venous plexuses will not be torn open. The handles are firmly closed and held by a ratchet or tied together by means of a strip of gauze. Very considerable control may thus

be exerted over the tumor: it may be forcibly drawn from the pelvis in any direction; it may at the same time be rotated so as to bring to the operator, standing, say, on the patient's left, the anterior cervical region, the posterior, and, in very long pedicles, even the opposite side.

The minute details of dissecting and removing uterus and tumor are of great importance in carrying out a bloodless and safe operation — one which gives no post-operative anxiety as to bladder, intestines, and especially ureters. The method which I have used for many years, and the one which I think all practical anatomists would naturally adopt, is one of clean dissection, beginning at the summit of the broad ligament and ending with the amputation of the cervix, or with its separation from its vaginal attachments. Every step that is taken, every cut that is made, is in regions and through tissues that are seen and recognized. Not a single blind step is taken from beginning to end. The first step is the passage of a ligature, by means of the Cleveland needle, between the left ovary and the uterus, through an area of the broad ligament translucent and free from veins. This ligature tied checks hemorrhage from the uterine side. If the ovary is to be removed, the next ligature is passed outside the ovary and fimbriated extremity of the tube through a translucent space in the broad ligament. The third ligature passes through the openings made by the second and first, and is tied below the ovary. Ligation of the ovary in one ligature is dangerous because the ligature, after the ovary and tube have been cut away, is near the apex of a truncated cone, and often allows the slippery peritoneum to escape before the operation is completed.

The next ligatures are placed about the round ligament far enough apart to cut safely between them. The left ovary and tube are now hanging from the left side of the summit of the tumor, which can now be lifted considerably above its former position, until the deeper regions of the left broad ligament are accessible. The knife is now used to make an anterior flap, the incision being carried through peritoneum as far as the reflexion of the right broad ligament. A similar flap is made posteriorly. The anterior flap will be dissected with ease, being loosely connected with the uterus; the posterior with difficulty, being intimately adherent to the back of the cervix. The cut may be freely made through peritoneum without injuring the veins lying upon the tumor, if one is skilled in making such cuts. If not, careful dissecting is essential, for the subjacent veins lie flattened upon the hard surface of uterus or tumor, and can be controlled only by the slow process of passing a ligature under them — a manœuvre which is quite as likely to increase the hemorrhage as to check it.

In making the flaps and in dissecting the deeper regions of the broad ligament the assistant intelligently rotates the tumor with his double-hooked forceps, at the same time drawing it upward and toward the right. The uterus with its tumors is now rapidly dissected through the loose tissues of the left broad ligament until the cervix is reached. The exact position of the vaginal attachment should be ascertained, for we may be in close proximity to the ureter, and it is therefore important to know the level upon which we are working.

With the uterus pulled upward and to the right, there will appear the blood vessels running verti-

cally, the uterine artery being surrounded and buried up in plexuses of veins. Its position can be found by its pulsation. It may be necessary, however, to relax the traction to feel them. I uncover the uterine artery by dissecting the veins away from it. The artery is so intimately connected with its surrounding veins, and both artery and vein are so firmly bound together by unusually dense and strong connective tissue, that isolation by blunt instruments almost always tears open the venous plexuses and causes abundant hemorrhage. When the artery has been satisfactorily isolated from the vein, a fine silk ligature is passed under it and tied. No other ligature is applied. The ureter, being the most important structure in this region, is sought for and exposed, that it may not be injured; but only in case the dissection is being carried into evident proximity with it. In most cases the isolation of the uterine artery is the lowest point reached, and the amputation of the cervix is so much above the point of ligation that no anxiety need be felt for the ureter. The left half of the dissection is now complete. A large piece of gauze is now placed in the region just dissected, and the uterus and tumor are drawn toward the left. Any oozing or renewed bleeding is controlled by pressure of the uterus upon this gauze. The operator and assistant now change places, and the right side is dissected precisely like the left. The uterus now remains attached only by its cervix. Returning to the left, the pelvic gauzes are removed and large fresh ones substituted all about the cervix. A single gauze is placed just behind and below the cervix, where it is proposed to make the amputation.

The Paquelin cautery is used to cut through the cervix. The cut is made low enough to go through healthy uterine tissue. It begins on the left side, well above the ligation of the uterine artery, and is carried across the cervical canal to the right side. The canal itself is carefully seared above and below. Frequently fluids will run down from the uterine cavity; these must be met and destroyed before leaving the canal. The remaining portion of the cervix is then divided, and finally the veins and ligated artery of the right broad ligament. Just before the uterus is separated, an assistant grasps the anterior half of the stump of the uterus with small vulsellum hooks, and draws it up into view. Any bleeding points are grasped with pressure forceps. The single pad placed behind the cervix to catch the discharges from the uterus is now removed and a fresh one substituted. The stump is carefully inspected and all its bleeding points tied. The cervix is sewed up anteroposteriorly by means of interrupted silk ligatures. Over the stump the peritoneum is drawn, inverted, and closed by continuous silk sutures of the Lembert style.

Before the cervix is sewed over, it is wiped with gauze wrung out of corrosive sublimate solution 1-1,000. The completed peritoneal suture is wiped with gauze wrung out of corrosive sublimate 1-5,000. When the operation is completed, nothing remains but a short transverse line of peritoneum marked by a running silk thread.

Since seeing Doyen use the angiotribe I have tried to save time by it, applying the instrument where I have used temporary ligatures to prevent bleeding. I found that the great veins of the tumor, though crushed together, began to bleed when disturbed by subsequent manipulations. Its use to make a sulcus

of crushed tissue for the more efficient application of the ligature I have tried and abandoned.

When it is decided to remove the cervix greater care is essential for the preservation of the ureters. After ligation of the uterine artery, the cervix is dissected toward the vagina, the dissection being carried close to the uterine tissues when the cervix is benign, and as far from it as possible when the cervix is malignant. The ureters need not be exposed when the dissection hugs the cervix unless the operator is in doubt. When in doubt, or when dissecting far from the cervix, the ureter should be sought by careful dissection with blunt instruments between the cervix and the sacro-iliac synchondrosis. If it cannot be found elsewhere, it can be found as it passes over the iliac vessels and followed down to the desired point. At the cervix the ureter lies in loose tissues and its isolation is easy. Indeed, its easy displacement is the very characteristic which makes blind grasping and cutting so dangerous in hysterectomies.

When the posterior flap has been carried well down behind the cervix, the posterior lip is grasped with forceps and drawn upward and backward, making tense the retro-uterine fold. The vagina, previously sterilized, is now opened. The vaginal attachments are divided with scissors close to the cervix on all sides. As soon as the separation between the cervix and the vagina is complete, the uterus is easily torn from the remaining loose connective tissue, and the operation is completed by inverting the peritoneal flaps over the gaping vagina.

The operation of hysterectomy seems to me one of the most gratifying and satisfactory in surgery. When it is performed anatomically — when every step is taken in full recognition of the anatomical structures involved — no harm can be done. When carried out in darkness, with blind grasping and cutting, no operation is so likely to lead to costly and irreparable blunders. It is perhaps natural for me to emphasize the anatomical features of this operation. Indeed, anatomists are said to be timid — but when the dissector is timid it is time to be timid. The time to be cautious is when caution is needed. A hysterectomy performed in the full light of day, with sigmoid flexure, bladder, rectum, ureters, arteries and veins conspicuously shown in their relations to the uterus, is an operation followed by no harassing fears that the ureters may have been tied or cut, that feces may be escaping into the abdominal cavity, that the bladder may have been included in a ligature or a suture. On the contrary, the surgeon feels that no avoidable harm has been done, that the patient will run only the risks incident to the removal of the uterus itself, and that her chances of recovery are at least 95 per cent.

maintaining in the blood, on account of imperfect functional activity of the eliminative organs.

Renal insufficiency is doubtless chiefly responsible for the gradual accumulation of toxic products in the blood. But every obstetrician has seen serious cases of eclampsia, in which renal activity was but slightly impaired, and, indeed, fatal cases in which autopsy revealed little or no pathological change in the kidney. Indeed, it must not be overlooked, that the lungs, liver, skin, and bowels have important eliminative functions, and that imperfect action of one or more of these organs must often play an effective contributory part in the development of eclampsia. It is also to be remembered that the condition of the nervous system must be taken into account in all considerations of the etiology of eclampsia. To be sure, nervous systems of equal strength and stability react differently to similar irritations; but it is rational to believe that a nervous system depressed by malnutrition and anemia, by overwork, by the frequently observed dependency in those illegitimately pregnant, and in those who have an abnormal dread and fear of labor — or a nervous system rendered unstable by insufficient or disturbed sleep, undue excitement or inadequate mental repose, is more liable to the eclamptic seizure under a given toxemia, than a nervous system well nourished, well rested, well balanced, and not unduly subjected to the worriments, annoyances, and excitements of daily life.

It is perhaps superfluous to repeat the generally accepted dictum that prevention of disease is the greatest function of medical science. But when it is remembered that eclampsia is probably the most serious, and in these days, under whatever treatment, the most fatal, complication of pregnancy and parturition, it behooves the student and practiser of medicine to realize that the symptom-complex known as puerperal eclampsia is to a large degree a preventable disease.

Intelligent and successful prophylaxis of eclampsia presupposes an opportunity for the observation of pregnancy from the early months. It presupposes that the observer will exercise an intelligent supervision over the daily life and general health of the gravida: that he will not content himself with an occasional test for albuminuria, but will assure himself that the skin, bowels, and liver are performing their functions, that the lungs, unhampered by undue compression by tight clothing, are supplied with pure air, and that the nutrition is adjusted to the increased demands of fetal development, with a view to preventing undue impairment of the maternal well being. He will satisfy himself that the kidney is eliminating a proper percentage of urea, and, when necessary, will so regulate the use of highly nitrogenous food that this important organ will not be unduly taxed. He will bestow especial attention upon the condition of the gravida's nervous system, enjoining freedom from needless excitement, worriment, and mental perturbation, quieting groundless fears, and ensuring undisturbed and adequate sleep and mental repose. It is unfortunately true that adequate supervision of pregnancy is not always possible; but it is also true that except in the lowest social strata it generally would be possible, were its importance fully appreciated. Nor is it to be supposed that proper supervision of the pregnant entails, as a rule, either a large expenditure of time on the part of the physician or burdensome pecuniary expense to the patient: under

THE VALUE OF THE HOT-WATER IMMERSION BATH IN THE TREATMENT OF THREATENING PUERPERAL ECLAMPSIA.¹

BY CHARLES M. GREEN, M.D., BOSTON.

ALTHOUGH the etiology of puerperal eclampsia is not, as yet, fully known, it is undoubtedly true that the group of symptoms leading up to the eclamptic seizure must be attributed to the ultimate, toxic effect on the nervous system of excrementitious products re-

¹ Read before the Obstetrical Society of Boston, October 16, 1900.

ordinary circumstances, an occasional visit enables the physician to teach his patient how to live under the new conditions in which she finds herself, and to correct by appropriate advice and treatment any departure from normal, physiological function.

But it is not my purpose, in this brief paper, to discuss the etiology or the prophylaxis of puerperal eclampsia; but rather to call attention to the value of a therapeutic expedient in the presence of threatening symptoms, which seems not to have been fully appreciated.

The general principles on which, in the writer's opinion, threatening eclampsia should be treated have already been indicated in his remarks on prophylaxis. When symptoms indicative of toxemia appear, the patient should be put to bed, and mental and physical rest secured. If necessary, sodic bromide, chloral hydrate, or other nerve sedatives should be employed to ensure a stable equilibrium to the nervous system. Meanwhile vigorous measures must be adopted to relieve the blood of accumulated toxins. If, as is generally the case, the kidney is chiefly at fault, whether from simple hyperemia or actual parenchymatous nephritis, the diet must be such as to throw a minimum of work on the disabled organ: experience has shown that an exclusive milk diet is the best, until a decided amelioration of symptoms makes a cautiously enlarged dietary advisable. Then, increased functional activity of the other eliminative organs must be invoked, to relieve the overburdened kidney: it is seldom wise to give other than the mildest diuretics, such as water and bitartrate, or acetate, of potassium. In some cases the old Basham's mixture has been found very serviceable, and in some, small doses of digitalis may be advantageously employed. The lungs to perform their full function must be supplied with pure air. To stimulate the action of the liver and bowels, croton oil, elaterium, calomel, or simple salines are most commonly used, according to the urgency of symptoms. Increased function of the skin may be induced by diaphoretic drugs, or by the external stimulation of dry or moist heat. Pilocarpine has been largely used to meet this indication; but experience has shown this drug to be at times not only inefficient in its action on the skin, but disastrous in its effects on the lung. Nitroglycerin has been used with admirable results: by its action on the capillaries more blood is brought to the surface and the sweat glands thereby stimulated to increased activity; and incidentally blood tension is lowered and the heart's action relieved.

Cutaneous stimulation by heat may be effected by the hot-air bath, by the hot wet pack, or by hot-water immersion. In the writer's judgment the hot-air bath is most appropriately used in the treatment of actual eclampsia, and then chiefly because the patient is often comatose and unable to help herself: under most circumstances, certainly in most private practice, it is impracticable to use hot-water immersion baths, when the patient is comatose, for want of adequate assistance. The hot wet pack is often successful in its results; but when circumstances permit its use the hot-water immersion bath, in my opinion, more satisfactorily meets the indications. Not only does it produce profuse diaphoresis and reduce blood tension, but it acts, as is well known, as a marked sedative to the nervous system. This bath is easily administered to a conscious patient, the aid of a single assistant being

sufficient: few houses today, even among those in humble circumstances, are without a bath tub. The water should be as hot as can be borne, and the patient should remain therein until profuse perspiration of the face shows that the sweat glands are in full activity. If the heart's action is at all weak, it is wise to administer brandy before immersion. When, as often seen in hospital practice, the skin is obviously dirty, its activity, and cleanliness as well, may be promoted by the friction of a flesh brush. When free perspiration has been induced, the patient should be rolled in a blanket, placed in a warm bed and covered with several blankets and perhaps a rubber sheet. In this use of the hot-water bath it should be remembered, however, that it is a powerful agent in the induction of labor, and should not be employed unless the termination of pregnancy seems indicated, or at least warrantable. To be sure, the free use of chloral may prevent this common effect of the hot bath; but the inhibitory action of chloral cannot be depended upon, and the use of the hot-water bath is therefore inadvisable prior to fetal viability or shortly thereafter, except in the presence of urgent symptoms not otherwise relieved. It should also be remembered that when free diaphoresis is employed, there should be an ample ingestion of liquids. In the comatose patient in actual eclampsia normal salt solution, by hypodermic or rectal injection, or intravenous infusion, meets the indication. But in threatening eclampsia the patient is able to drink freely and thus supply the needed volume of fluids.

As an illustration of the writer's experience with the hot-water bath, in the treatment of threatening eclampsia, the following cases are quoted from the records of the Boston Lying-in Hospital. I am indebted to Dr. J. S. Stone, a former house officer, for the notes:

CASE I. A primigravida, seven months advanced, aged twenty-four, entered with the following history: For several months she had suffered with headaches, and for two months there had been edema of the feet. Five weeks previously she had vomited considerably, had several "fainting spells," and had been slightly incoherent, although never losing consciousness. There had been marked muscular twitching, particularly when startled. After a few days she had got better, and so remained until two days before entrance. At that time she had severe headaches, chills, "fainting spells," and the same muscular twitchings as before. There was no loss of consciousness. For several days there had been increased edema of the extremities. The day before entrance only about a half pint of almost black urine was passed. Her diet had been limited to beef tea, milk, and brandy. Morphine had been given subcutaneously. Throughout the day of entrance there had been severe headache, nausea, and vomiting.

On entrance the patient was conscious, the skin was hot and dry, the face and hands puffy, with marked edema of feet and ankles, — the pulse 84, of high tension. The uterus extended two-fifths of the distance from the umbilicus to the ensiform. The fetal heart was 156. Labor had not begun. The urine was slightly smoky, containing $\frac{1}{4}\%$ of albumin. The sediment contained many granular, epithelial, and fatty casts, with considerable uric acid and many leucocytes.

The patient was immediately placed in a hot tub-bath, and when sweating freely was put to bed surrounded by heaters and blankets. She was given elaterium, $\frac{1}{8}$ grain, chloral, 20 grains, and sodic bromide, 30 grains, together with potassic acetate, 20 grains, every four hours. The diet was restricted to milk and lime water. She soon sweated well, and remained comfortable until labor began at the end of twelve hours. Then the headache increased, and the skin became hot and dry. As labor progressed the patient became very noisy and restless, in spite of further doses of chloral. After eleven hours of labor, she was delivered naturally of a 3½ pound baby, which lived for sixteen hours. After delivery she remained restless, at times becoming drowsy, and roused only with difficulty. Pilocarpine, $\frac{1}{4}$ grain, was given subcutaneously with good effect. Next day the urine still contained $\frac{1}{2}\%$ of albumin, and was slightly smoky, though the amount was increasing, and the patient was now sweating well. On the second day she was much brighter, sweating freely. The amount of urine had increased to over 24 ounces, and contained but $\frac{1}{8}\%$ of albumin.

The convalescence was rapid and normal. On the fourth day she was allowed soup, bread, and gruel. Two weeks after delivery she was discharged well, except that there was still $\frac{1}{10}\%$ of albumin in the urine, which now varied in quantity between 50 and 75 ounces.

CASE II. A primigravida, aged eighteen, a little over eight months advanced, entered with this history: Throughout the day she had suffered severe epigastric pain, which extended up into the shoulders, and down the arms, being marked about the elbows. There was some headache. Nothing suggested digestive disturbance. Similar pain had occurred a week previously, lasting a day. For a fortnight micturition had been frequent, and the amount of urine small.

The patient on entrance was writhing with almost constant epigastric pain; she was pale, the skin hot and dry, the pulse of rather a high tension. Labor had not begun, although the head was low. The urine was found to be smoky, containing over $\frac{1}{2}\%$ of albumin. She was put to bed, surrounded with heaters and blankets, and an ice cap was applied to the head. She was given potassic acetate, 15 grains every two hours (later to be reduced to half that amount), potassic bromide and chloral, which were vomited, and two $\frac{1}{8}$ -grain doses of elaterium. For several hours the condition was threatening: she was restless, tossing from side to side, with head and eyes aching, epigastric pain severe, pulse of high tension, skin hot and dry. Finally, however, she dropped off to sleep for three hours, sweating freely, and waking much better. During the night there were passed 8 ounces of very dark, smoky urine containing much blood and many hyaline and fine granular casts. The amount of urine passed during the first twenty-four hours was 30 ounces, containing about 180 grains of urea.

For eight days the diet was limited strictly to milk. The acetate was continued, and cream of tartar water, cracked ice, and water were given *ad libitum*. Bromide and chloral were given occasionally, although during labor chloral was used freely. Pilocarpine was given subcutaneously once at the end of twenty-four hours. The bowels were kept open with ela-

terium. Drugs were not pushed, however, after the least nausea appeared.

For several days the patient slept but lightly, frequently waking with a quick start, and twitching the muscles during sleep. Improvement was rapid, however; at the end of a week the daily amount of urine was about 80 ounces, containing about 400 grains of urea and only $\frac{1}{8}\%$ of albumin. With this improvement the diet was increased cautiously. On the ninth day gruel was allowed, on the tenth soup, on the twelfth toast and crackers. With these slight additions, however, the amount of albumin in the urine increased to from $\frac{1}{8}\%$ to $\frac{1}{4}\%$, while the daily amount of urine decreased to about 40 ounces, and the amount of urea to about 250 grains. Together with these unfavorable changes in the urine, there was slightly increasing headache. There had been, after a fortnight, occasional labor pains which had just begun to dilate the os.

On the seventeenth day it was deemed unwise to temporize longer, and the patient, after taking $\frac{1}{2}$ ounce of brandy, was put into as hot a bath as she could stand, until perspiration started freely, in the hope that labor might be hastened. From the bath she was immediately put back into the hot bed. In a few hours the occasional, spasmodic pains became more regular and more severe, although later they gradually diminished in spite of repeated hot vaginal douches. Next day the bath was repeated, the pains thereafter again starting up, and the os dilating to the size of a half dollar. On the twentieth day the pains were coming regularly, but lacked strength: the os was easily stretched without ether to the size of a dollar, and later to half the full dilatation, the membranes meantime having ruptured. When the os was three-fourths dilated the patient began to show signs of exhaustion, together with increasing headache: she was therefore etherized and delivered with forceps without incident. After delivery the amount of urine began to increase and the albumin to diminish. In two days the patient was given gruel, broths, and bread: at that time the albumin was but $\frac{1}{10}\%$, and the amount of urine was 120 ounces.

Despite the starvation she had undergone, the patient made a rapid convalescence, and was discharged well two weeks after delivery. The baby at birth was thin and scrawny, but gradually began to gain.

CASE III. A primipara, aged twenty-four, entered the hospital with this history: About a month before, she had caught cold, and had had a cough ever since. During the same time there had also been headaches, worse in the morning, and accompanied by nausea on rising. For a week past the headaches had been worse and there had been dizziness on rising: there had been no vomiting since the early months. There had been edema of the hands, face, and feet, first appearing in the feet a month before. The edema had subsided slightly within a few days before entrance, and the urine had increased in amount. There had been no epigastric pain. For several days she had walked a good deal, and on reaching home the afternoon before entrance she became very dizzy and her eyes were blurred. Headache had markedly increased during the afternoon, and she had had several dizzy spells.

On entrance there was marked edema of feet and ankles, slight of the hands. The skin was hot and

dry. The pulse was 69, of not particularly high tension. The patient was so dizzy that she had to be supported by a nurse. Labor had just begun, the cervix being partly taken up, and the os admitted one finger. The urine was smoky, and contained over $\frac{1}{2}\%$ of albumin. The sediment, which was considerable, contained many hyaline, fine granular, and epithelial casts, together with some blood, pus, and large round cells: there were only $2\frac{1}{2}$ grains of urea to the ounce of urine.

After taking $\frac{1}{2}$ ounce of brandy, the patient was given a hot-water bath, and when free perspiration had started was put to bed, and surrounded with heaters and blankets: an ice cap was applied to the head. She was given 45 grains of chloral in three doses. Labor progressed rapidly, and was finished in six hours. Throughout labor the patient sweated profusely, and great care was taken to avoid exposure. She was given 20 grains of potassic acetate every four hours, and a tumblerful of cream-of-tartar water every six hours.

After delivery the headache subsided, the edema rapidly disappeared, the amount of albumin diminished, and the urine increased greatly in amount, reaching 100 ounces on the third day, and containing but a trace of albumin. Drugs were then omitted. The diet, which had been limited to milk, was increased by adding soup, bread, and gruel. The next day the edema was gone, and house diet was allowed; but two days later meats were prohibited, since the amount of albumin had increased to $\frac{1}{8}\%$. Two weeks after delivery mother and baby were discharged well, there being no albuminuria.

A PLEA FOR LARGER DOSES OF ANTITOXIN IN THE TREATMENT OF DIPHTHERIA.¹

BY JOHN H. MCCOLLOM, M.D., BOSTON.

SINCE 1878, when a report of each case of diphtheria was required by the Board of Health, Boston has suffered more than any other of the large American cities from the inroads of this disease. During this time, particularly from 1878 to 1894, a comparison made with some of the foreign cities is not favorable to Boston. The actual number of deaths each year from diphtheria has varied from 817 in 1894 to 170 in 1898. The percentage of mortality to the number of cases in the city at large has ranged from 35.7 in 1881 to 9.76 in 1899. Some of this diminution in the mortality percentage may be explained by the fact that by means of a bacteriological examination, many cases are recognized that otherwise would escape detection, but this does not explain the continuous and marked diminution in the death rate of diphtheria in the past five years in Boston. A study of the ratio of mortality from any given cause per 10,000 of the living is a much more satisfactory manner of arriving at a definite conclusion regarding the benefits to be derived from any particular line of treatment. The ratio of mortality of diphtheria in Boston per 10,000 of the living from 1893 to 1899 has been compared with that of five European and five American cities. Chart A shows the ratio of deaths from diphtheria per 10,000 of the living in Boston, London, Liverpool, Glasgow, Paris and Berlin from 1893 to 1899, inclusive. It will be seen from

this chart that in 1893 and 1894 Boston had the highest death rate of any of these cities. Chart B shows the ratio of mortality from diphtheria in five American cities taken for comparison with Boston, namely, New York, Philadelphia, Brooklyn, Chicago and St. Louis. It will be seen from this chart that in none of the other American cities has there been the marked and continuous diminution that has occurred in Boston. This reduction commenced in 1895, in the latter half of which year the South Department was opened and antitoxin was given to each and every patient at the hospital ill with diphtheria. A diminution from 48 per 10,000 to 4.99 in five years cannot be attributed to good fortune, nor to the mild types of the disease. This diminution can only be explained by the use of antitoxin and treatment in hospital. It must be borne in mind that previous to 1895 only about 10% of the reported cases were treated in hospital, while in 1896, 1897, 1898 and 1899, about 50% had hospital treat-

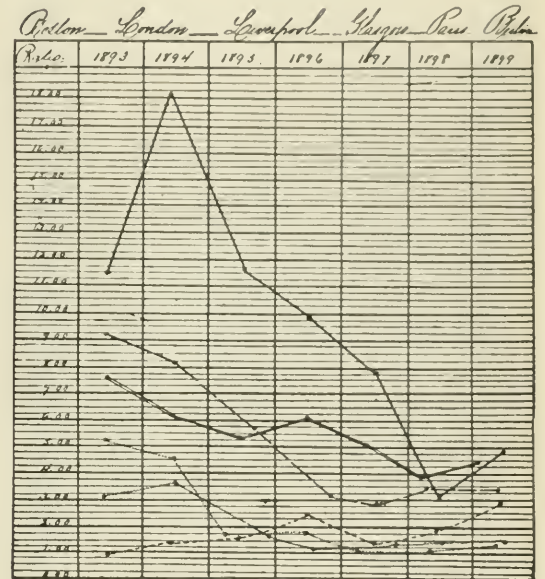


CHART A. Ratio of deaths from diphtheria, per 10,000 of the living, in Boston, London, Liverpool, Glasgow, Paris and Berlin, from 1893 to 1899, inclusive.

ment. In none of the five American cities taken for comparison has the percentage of reported cases treated in hospital been so large as in Boston. In London the percentage of cases of diphtheria treated in hospital was, in 1898, 56.88; while in Boston for the same year it was 50. In Glasgow, in 1898, 60% of the reported cases of diphtheria were treated in hospital.

The fact is evident to the intelligent observer that diphtheria in Boston has been extremely prevalent, and that it has been a very important factor in increasing the death rate. If the number of cases of the disease occurring in Glasgow during 1898, for example, is compared with that in Boston for 1899, it will be seen that in Glasgow, with a population of 724,349, there were 433 cases reported, giving a ratio of morbidity per 10,000 of 5.9, while in Boston, with a population of 550,057, there were 2,836 cases reported, the ratio of morbidity being 51. The ratio

¹ Contributed to the Boston City Hospital Reports, Eleventh Series.

of morbidity per 10,000 for London for 1898 was 25.62. In New York City (Boroughs of Manhattan and Bronx) for 1898 and 1899, it was 37.06 and 38.77 respectively. The morbidity ratio per 10,000 in Boston has fallen from 81 in 1895 to 51 in 1899. A comparison of the morbidity ratios previous to 1894 with those of the succeeding years cannot be made, as there were no general bacteriological examinations previous to 1894. Chart C shows the ratio of morbidity in Boston per 10,000 of the living for five years, 1895 to 1899, inclusive. It will be seen from this chart that there has been a reduction in the morbidity ratio of diphtheria since the opening of a special hospital for the treatment of this disease. For instance, compare 1895, an epidemic year, with a ratio of morbidity of 81, a ratio of mortality per 10,000 of 11.73, and a percentage of mortality to the number of cases of 14.48, with 1899, also an epidemic year, with a ratio of morbidity of 51, a ratio of mortality per

time 7,657 patients were treated, the percentage of mortality was 12.9. It must be borne in mind that these were all cases of diphtheria, both from a clinical and from a bacteriological point of view. The death rate of diphtheria in young children has always been very high, as high as 76%. Elderly people generally succumb to the disease. A comparison of mortality rates in the Asylums' Board Hospitals in the years 1888 to 1894, during which time 11,598 patients were treated without antitoxin, and the same hospitals from 1895 to 1898, when 20,382 patients were treated with antitoxin, with that of the South Department from August 31, 1895, to August 31, 1900, when 7,657 patients were treated with antitoxin in large doses, may be of interest. The death rate in the London hospitals before antitoxin was used was 30.3; in the same hospitals with antitoxin, 18.4; while that of the South Department was 12.9. Chart D shows the per cent. of mortality, by age, of diphtheria in the Asylums' Board Hospitals, London, before antitoxin was generally used; the percentage of mortality in the same hospitals from 1895 to 1898, when antitoxin was generally used, and the mortality percentage from diphtheria in the South Department for five years, when antitoxin was given to each patient ill with diphtheria. A study of this chart shows that in the London hospitals, before antitoxin was used, the mortality percentage in children under one year of age was 61.8; that in the London hospitals, when antitoxin was used, the rate was 38%; that in the South Department the rate was 34.6%. In children from one to five years the percentage in the London hospitals before antitoxin was 49.33; that in the London hospitals, when antitoxin was used, it was 26.83; at the South Department the rate was 17.8%. From five to ten years the percentage was 28.1 before antitoxin, 16.3 with antitoxin; 8.1 at the South Department. It is of interest to note that the rate in patients from five to ten years of age at the South Department is lower by one-half than in the London hospitals. In the other ages the difference is not so marked, but in each instance the rate of the South Department is lower than that of the London hospitals. Lest it should be said that a large number of cases is compared with a smaller number of cases to the manifest advantage of the latter, Chart E has been prepared, which gives the percentage of mortality by age for one year in the following hospitals, namely, South Department, Boston City Hospital; Municipal Hospital, Philadelphia; Belvidere Hospital, Glasgow, and Asylums' Board Hospitals, London. By following the full black line, it will be seen that the rate at the South Department is generally lower than that of the other hospitals taken for comparison. For instance, compare the hospital in Philadelphia with a percentage of mortality of 63 in children under one year of age with that of the South Department with a percentage of 26. There is also a marked diminution in children from one to five years of age in favor of the South Department. In the epoch of life from fifteen to twenty-five years the difference between the percentage of mortality in the Glasgow hospital as compared with the Boston hospitals is very marked. It is a very significant fact that in 1899 the cases of diphtheria were of an extremely virulent type, and, therefore, that much larger doses of antitoxin were required than in some of the previous years, and yet

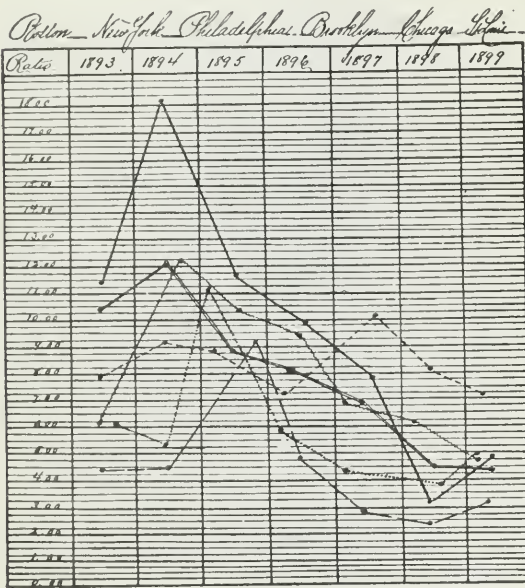


CHART B. Ratio of deaths from diphtheria, per 10,000 of the living, in Boston, New York, Philadelphia, Brooklyn, Chicago and St. Louis, from 1893 to 1899, inclusive.

10,000 of the living of 4.99, and a case percentage of mortality of 9.76.

Before the advent of antitoxin the death rate of diphtheria varied from 30% to 50%. In the table prepared by Lennox Browne in his work on diphtheria the per cent. in 11,598 cases treated in the Asylums' Board Hospitals, London, from 1888 to 1894, inclusive, was 30.3. In the Boston City Hospital the rate previous to 1895 was 46%. Other hospitals give mortality rates of 40% and 50%. In Bayeux's comprehensive work on diphtheria the death rate is given as 55% before antitoxin and 16% since the advent of this agent. The rate of 16% is based upon an analysis of more than 200,000 cases. Bayeux in his work also makes the statement that not a single death has been scientifically demonstrated to be due to the use of the serum. In the five years that the South Department has been in operation, August 31, 1895, to August 31, 1900, during which

the death rate was lower generally than in any of the hospitals taken for comparison.

It is generally conceded that laryngeal diphtheria is a very serious disease, and that in operative cases, intubation and tracheotomy, the death rate is very high, being in pre-antitoxin days from 75% to 87%. Since antitoxin has been in use, the death rate has fallen very materially. In 313 cases of tracheotomy in the Asylums' Board Hospitals of London, the percentage was 38. In the Belvidere Fever Hospital, Glasgow, the operative cases for the year ending May 31, 1899, had a percentage of 41.9. In the Willard Parker Hospital, New York City, according to Dr. W. H. Park, there were 737 cases of intubation treated from 1895 to February, 1900, with a per cent. of mortality of 63. In the last two years the rate was 52%. In the Municipal Hospital of Philadelphia, the rate in 165 cases was 58.78%. At the South Department during 1899, there were 192 intubation cases treated, the percentage of mortality being 34, as compared with a percentage of mortality of 46 in 1898. This reduction must be attributed to the large doses of serum given in the severer cases when there was an indication that the membrane was extending into the bronchi.

It has been shown by the foregoing figures that the ratio of mortality of diphtheria per 10,000 of the living has been diminished in a marked degree in Boston since the introduction of antitoxin; that there has also been a marked reduction in the mortality per cent. in the operative cases since larger doses of the healing serum have been given. No hard and firm rule can be made regarding the use of the serum; the agent must be given until the characteristic effect is produced on the diphtheritic membrane; in some cases 4,000 units will accomplish this, in other instances 60,000 or 70,000 units may be required. When a guinea pig is inoculated at the laboratory with a certain definite amount of the toxin of diphtheria it is a very easy matter to antagonize this with a certain amount of antitoxin. In the case of a patient ill with diphtheria there is no way of estimating the quantity of toxin generated by the membrane, and therefore one must administer the agent until the characteristic effect is produced, namely, the shrivelling of the membrane; the diminution of the nasal discharge; the correction of the fetid odor, and a general improvement in the condition of the patient. In the operative cases the beneficial effect of large doses of antitoxin has been marked, preventing, in many instances, the extension of membrane to the smaller ramifications of the bronchi; a most important factor in raising the death rate in this class of cases. In the operative cases it is safe to say that nearly 20% of the deaths was caused by blocking of the bronchi with diphtheritic membrane. At the South Department the autopsies proved this fact. It was observed in pre-antitoxin days that patients in operative cases would do well for from twenty-four to forty-eight hours after the operation, and then would commence to have a limited amount of dyspnea; the temperature would rise; the tube would become clogged with a thick, tough, tenacious mucus; the physical signs in the lungs would be those of a bronchopneumonia, and the patient would succumb in a short time. This clogging of the tube with hard mucopurulent discharge is an indication of extension of membrane; a symptom of very serious import, and demands the heroic administration of antitoxin. No case of diphtheria in

the acute stage should be considered hopeless. Antitoxin should be administered in each and every instance. It has been my experience during the past few years to see so many patients apparently hopelessly ill recover that my convictions are very firm on this subject. When one sees a patient with membrane covering the tonsils and uvula; profuse sanguinous discharge from the nose; spots of ecchymosis on the body and extremities; cold, clammy hands and feet; a feeble pulse, and the nauseous odor of diphtheria, and finds that after the administration of 10,000 units of antitoxin in two doses the condition of the patient improves slightly; that after 10,000 units more have been given there is a marked abatement in the severity of the symptoms; that when an additional 10,000 units have been given the patient is apparently out of danger, and eventually recovers, one must believe in the curative power of antitoxin. When one sees a patient in whom the intubation tube has been repeatedly clogged; when the hopeless condition of the patient changes for the better after the administration

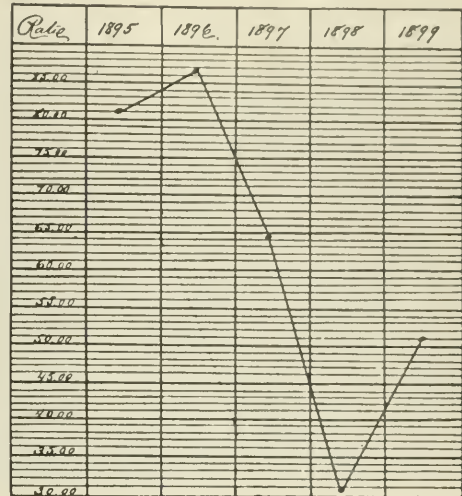


CHART C. Ratio of morbidity of diphtheria in Boston, per 10,000 of the living, for five years, 1895 to 1899, inclusive.

of 50,000 units, one cannot help but be convinced of the importance of giving large doses of antitoxin in the very severe and apparently hopeless cases. In the majority of instances these large doses are not required, particularly if the patients are seen early in the attack, 4,000 to 6,000 units being enough to produce the characteristic effect on the membrane. As illustrating the advantage of the early administration of antitoxin, an allusion to the cases of diphtheria occurring in the staff of the South Department may be of interest. There have been since September, 1895, 104 instances of diphtheria contracted in the line of duty, and not a single death. Each patient received a full dose of antitoxin, 4,000 units, at the outset, or as soon as there were any symptoms of the disease. In some instances it was not necessary to repeat the dose; in others the doses were repeated two or three times. It is of interest to note that in this series of cases there were no marked symptoms of paralysis; that heart complications did not occur, and that the duration of the illness was comparatively

short. It must be borne in mind that these were genuine cases of diphtheria, contracted under unfavorable conditions. The results obtained with cases of diphtheria injected with antitoxin by the Health Department of New York City also prove the advantage of the early administration of the serum. Dr. Park gives the following figures: Of 319 patients injected on the first day of the illness, 13 died, a mortality of 4%; 850 were injected on the second day, 57 died, a mortality of 6.7%; 573 were injected on the third day, with a mortality of 12%.

In the study of any particular line of treatment for a special disease, the clinical picture presented by patients ill with that disease is always of interest and is frequently more conclusive than a simple array of figures. A short history of a few of the extremely severe cases of diphtheria in which antitoxin was administered in large doses will be given.

CASE I. A boy, six years of age. When admitted he had been ill three days; there was a large patch of mem-

Smith, D. M. 1875-1879 — May Board 1885-1894 — May Board 1894-1898

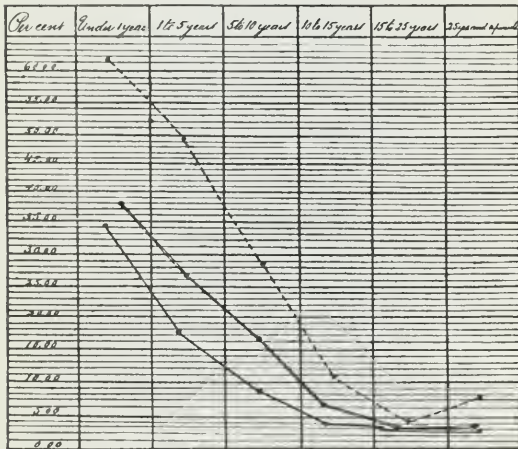


CHART D. Percentage of mortality, by age, of diphtheria in the Asylums' Board Hospitals, London, 1875-1894, antitoxin not used; in the Asylums' Board Hospitals, 1885 to 1893, antitoxin used; in the South Department, Boston City Hospital, 1895 to 1899, antitoxin used.

brane on each tonsil; the uvula was edematous; there was a profuse nasal discharge. Dyspnea was very great and there was marked cyanosis. The cultures were positive. Pulse feeble and rapid. Temperature 99.5°. There was a slight trace of albumin in the urine. He was intubated at once and given 4,000 units of antitoxin. The intubation tube not giving relief, it was removed in ten minutes, when the patient expectorated a quantity of thick, tough, tenacious mucus, and the breathing immediately became easier. On the second day after the admission the dyspnea was urgent and the boy was re-intubated with marked relief. In four days this patient had 56,000 units of antitoxin without any injurious effect and with positive relief. He was discharged well. He had none of the usual sequelæ of diphtheria. He did have a troublesome urticaria. The heart did not at any time have an irregular action; there was no indication of paralysis.

CASE II. A girl, six years old. She had been ill three days when admitted. The tonsils and uvula were covered with a thick membrane. Pulse rapid and weak. The membrane commenced to disappear in three days, but on the fourth it commenced to re-form and therefore large doses of antitoxin were given. In all, this patient received

80,000 units of antitoxin. The cervical glands suppurated. At one time during the course of the attack the action of the heart was irregular. There was a slight palatal paralysis. At one time there was a slight trace of albumin in the urine. She made a good recovery.

CASE III. A man, eighteen years old. He had been ill one week at the time of admission. There was great prostration; a profuse nasal discharge with a foul odor; there was a very extensive membrane covering the tonsils, uvula and palate. The action of the heart was feeble; the sounds indistinct. Pulse feeble. The general condition indicated speedy death. He had on entrance an initial dose of 6,000 units of antitoxin, repeated in five hours. The next day he had four doses of 6,000 units each, and on the third and fourth days, a like quantity. On the fifth day after entrance the throat was clear and the mucous membrane normal in appearance. For the first four days delirium was a marked symptom. The patient was unable to swallow any food and stimulants were given by the rectum. At one time there was a slightly nasal voice, but there was no marked paralysis. The action of the heart was regular at the time of discharge. A slight trace of albumin was found in the urine. Urticaria was an annoying complication, but not a grave one. There was no arthralgia. Brandy and strychnia were given in large doses. It is cases of this class that swell the mortality ratio of hospitals. The patient was moribund when admitted; he left the hospital well and has been well up to the present time. It is possible that the man might have recovered with a slightly diminished dose; it is certain that the usual doses of antitoxin would not have saved his life, and it is also certain that no injurious effect followed the large dose.

CASE IV. A colored boy, seven years old. On admission this patient had a very weak pulse; the heart sounds were feeble; the tonsils, uvula and hard palate were covered with a dirty necrotic membrane; there was a profuse nasal discharge; the cervical glands on the right side had sloughed; there was an intolerable odor. His condition was as unfavorable as it could well be. The boy had 84,000 units of antitoxin in five days. He was discharged well in sixty-six days. At the end of the sixth day after entrance, the condition of the patient had improved so much that no one who had not seen him on entrance would have believed that he had been so critically ill. He made a good recovery, which was somewhat delayed by post-diphtheritic paralysis. He was nourished during part of the time by the rectum. At one time during convalescence he had one-eighth of 1% of albumin in the urine. This albuminuria could not, however, be attributed to the antitoxin, as it is one of the most frequent symptoms in severe attacks of diphtheria and was recognized and described long before the days of antitoxin.

CASE V. A boy, age eight years. On entrance there was profound prostration; very extensive membrane in the throat; a marked dyspnea; feeble and irregular action of the heart. This certainly could not be called a mild attack of the disease. This patient had 56,000 units of antitoxin. He made a good recovery. He did not have paralysis. There was an eruption of urticaria of moderate severity. A slight trace of albumin was found in the urine.

CASE VI. A woman, age twenty-four years. When seen, the patient had been ill five days. There was a profuse fetid nasal discharge; extensive diphtheritic membrane in the fauces; marked prostration; a weak and irregular pulse; a dilated heart, feeble in action; the sallow hue of the skin seen in toxemia. This patient had 76,000 units of antitoxin in four days. On the fifth day after entrance the membrane had disappeared from the throat, and her general condition had very much improved. In the case of this patient, the irregular action of the heart continued for some little time. She, however, was discharged well at the end of fifty-four days. The somewhat prolonged stay in the hospital was due to the condition of the heart and a slight paralysis of the muscles of deglutition. Urticaria was not a distressing symptom in this case. Arthralgia was not present. A slight trace of albumin was

found in the urine for three or four days during the period of convalescence.

CASE VII. A girl, eleven years of age. This patient had been ill two days when admitted. Her condition was as follows: Marked prostration; profuse nasal discharge; extensive membrane on the tonsils and uvula; a strong fetid odor; the action of the heart was irregular and the sounds indistinct. In four days she received 52,000 units of antitoxin. Urticaria and arthralgia caused some considerable discomfort. No paralysis developed. The patient was discharged well in thirty-nine days. From the rapid spread of the membrane in the two days before admission to the hospital it is evident that this was an extremely virulent attack of diphtheria. The conclusion that the girl would have died if antitoxin had not been given in large doses is justifiable.

CASE VIII. A man, eighteen years of age. He had been ill three days before admission, with sore throat, headache and vomiting. When seen, there was considerable prostration; a profuse nasal discharge; marked enlargement of the cervical glands; hypertrophied tonsils covered with a thick membrane; an extremely fetid odor to the breath. The action of the heart was regular, but somewhat weak. This patient had 50,000 units of antitoxin in four days. The throat cleared in three days, but as the nasal discharge continued, two additional doses of antitoxin were given. The man made a good recovery and was discharged in thirty-five days. Urticaria and arthralgia did not cause much discomfort in this case. The patient did not have paralysis. Albuminuria was a transient symptom. In this case, if the toxin of diphtheria had not been antagonized by large doses of antitoxin, judging by experience, paralysis would have been a very prominent symptom. Six months after leaving the hospital this man was well.

CASE IX. A man, nineteen years of age. He had been ill three days when admitted. On examination, the following condition was found: Enlarged cervical glands with great tenderness; a profuse nasal discharge; tonsils greatly enlarged, meeting in the median line, and covered with thick diphtheritic membrane; uvula covered with membrane; profound prostration. Prognosis unfavorable. This patient had 90,000 units of antitoxin in five days. The throat cleared in three days; the nasal discharge diminished; the offensive odor of the breath was not so marked. The patient was discharged well in thirty days. Albuminuria was not pronounced. There were no complications of serious import due to the use of antitoxin. Urticaria and arthralgia, although present, did not cause a great amount of discomfort.

CASE X. A man, age thirty-four years. He had been ill four days when admitted. There was very extensive diphtheritic membrane on each tonsil; the uvula was covered; there was a profuse nasal discharge; the cervical glands were much enlarged; there was marked prostration; the pulse was feeble and irregular; there was some dyspnea; the voice was husky. The clinical picture he presented was that of a patient moribund from an attack of diphtheria. The condition of the man seemed absolutely hopeless, but acting on the principle that no person ill with diphtheria should be considered beyond help, 8,000 units of antitoxin were given; a second dose of 4,000 units was given in three hours and repeated every four or six hours until 92,000 units had been administered. In four days there was a marked improvement in the condition of the man. In five days the throat was clear of membrane. He made a good recovery, was discharged well in twenty-six days. He, however, had post-diphtheritic paralysis about three weeks after his discharge. Recovery from this, however, has been complete, and at the present time, one hundred and thirty days after the commencement of the attack of diphtheria, this patient is well; therefore, the statement cannot be made with truth that he has suffered any ill effects from the large dose of antitoxin.

CASE XI. A woman, whose age was forty-eight years. She had been ill five days. On entrance, the tonsils, posterior pharyngeal wall, uvula and soft palate were covered

with a thick diphtheritic membrane. There was also a patch of membrane on the lower lip. The cervical glands were enlarged. The patient was aphonic; there were frequent attacks of dyspnea, so that at one time operative interference was imminent. She was unable to swallow, and was therefore nourished by the rectum. The prostration was profound. In five days 48,000 units of antitoxin were given, 12,000 units being administered the first day. At the end of the fifth day the throat was practically clear, the general condition of the patient much improved. The cervical glands suppurated. For two or three days the slightest possible trace of albumin was found in the urine. Urticaria and arthralgia caused a certain amount of annoyance. There was no special heart complication, although at one time the action of the organ was irregular, as is always the case in severe attacks of diphtheria. Post-diphtheritic paralysis ensued, but was not sufficient at any time to cause great anxiety. This certainly cannot be considered a mild attack of the disease. If a less amount of antitoxin had been given, the patient would have died, without doubt. It is of interest to note that four other members of this family had diphtheria, but as antitoxin was given early in the course of the disease, only small

South Dept. - Municipal Hosp. - Belvidere Hosp. - Asylums Board

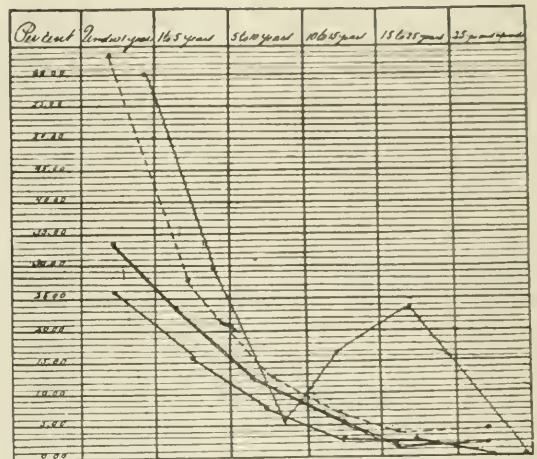


CHART E. Percentage of mortality, by age, of diphtheria at the South Department, Boston City Hospital, 1899; Municipal Hospital, Philadelphia, 1899; Belvidere Hospital, Glasgow, 1898, and Asylums' Board Hospitals, London, 1898.

doses were required. This woman had a tedious convalescence, but was discharged well. Seven months from the date of the attack she was in good health.

Many more cases might be cited in which large doses of antitoxin were given with satisfactory results, but enough has been said to prove that small doses of antitoxin are of little avail in the treatment of grave types of the disease; that in order to obtain the best results the serum must be heroically administered. It is true that all of the patients to whom large doses of antitoxin have been given have not recovered, but so many of them have that one must be convinced that large doses are imperatively demanded in very severe cases. When death has occurred, it has been from nerve degeneration or from sepsis. In no instance was there any injurious effect produced by either the large or small doses of antitoxin. Albuminuria, although present in many cases, cannot be attributed to the serum, as albuminuria is one of the most frequent symptoms in diphtheria. Heart com-

plications of a serious nature have not been so frequent in the 7,657 patients treated at the South Department as would have been the case in a like number treated without antitoxin. Paralysis, although occurring in the severer cases, has not been so prominent as it would have been in an equal number of cases treated without antitoxin. Urticaria and arthralgia are certainly very annoying complications, but they do not imperil the life of the patient, and are, therefore, not worthy of being considered an argument against the use of the serum. It has been observed that the serum from certain horses caused a larger percentage of urticaria than that from others. There is no explanation of this fact. It is to be hoped that in the future there may be some way of eliminating this troublesome symptom. The time in which an urticaria may appear varies from ten minutes after the injection of antitoxin to three weeks. Abscesses after the injection should be of rare occurrence, and when they do appear are an indication of some error of technique in the sterilization of the syringe or in the quality of the serum. In the last 1,500 injections given at the South Department, an abscess occurred twice.

It must be conceded that diphtheria at the outset is a local disease caused by the bacillus of diphtheria. The constitutional symptoms are the result of the extension of membrane and the formation of toxin. If the local process can be stopped, if the membrane can be prevented from extending, the life of the patient will be saved. Although different remedies were used to prevent the extension of membrane before the advent of antitoxin, the death rate from diphtheria remained about the same until the introduction of antitoxin. Before the days of antitoxin there was no method of limiting the extension of the membrane. It is true that the membrane could be torn off, leaving a raw surface, but the organism of diphtheria would not be destroyed, and therefore the membrane would re-form. The number of different applications to the diphtheritic membrane was so great as to prove that no one of them was satisfactory. No germicide can be of sufficient strength to effectually destroy the bacilli of diphtheria without causing destruction of the mucous membrane, and thus opening a fresh field for the growth of the organism. In the light of our present knowledge regarding the etiology of diphtheria, there can be no more unscientific method of treating the disease than by the application of caustics to the membrane, with the hope of destroying it. The experiments of Roux and Yersin proved conclusively that the bacilli of diphtheria would not grow on intact mucous membrane, and, therefore, the less the throat of a patient ill with diphtheria is abraded the better.

Of the 7,657 cases of diphtheria treated in the five years that the South Department has been open, 772, or 10.08%, required operative interference. In about 100 instances there were marked laryngeal symptoms, but operative interference was not required, the stenosis being relieved by antitoxin. The use of steam for the relief of the stenosis has been discarded except in cases of tracheotomy, because it was found that the relief was not sufficient to offset the debilitating effects of the steam on the patients. The sublimation of calomel was tried in many cases, but without satisfactory results, as the patients almost invariably required operation. To discuss the rela-

tive advantages of intubation as compared with tracheotomy would prolong this paper to an unseemly length, but a death rate of 34% in intubation cases as compared with the death rate reported in tracheotomy cases shows conclusively the advantage of intubation over tracheotomy.

From a comparison of the health reports of Boston before and after the introduction of the antidiphtheritic serum; from a comparison of the health reports of other cities; from a study of hospital reports; from a clinical observation of nearly 8,000 cases of diphtheria, the following conclusions are justifiable:

(1) That the ratio of mortality of diphtheria per 10,000 of the living was very high in Boston previous to 1895.

(2) That the ratio of mortality per 10,000 has been very materially reduced since the introduction of antitoxin.

(3) That the percentage of mortality in the South Department is lower than that of any of the hospitals taken for comparison.

(4) That since larger doses of antitoxin have been given the death rate has been materially reduced, this reduction having occurred in the apparently moribund cases.

(5) That no injurious effect has followed the use of the serum.

(6) That to arrive at the most satisfactory results in the treatment of diphtheria, antitoxin should be given at the earliest possible moment in the course of the disease.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

IV. CASE OF MYASTHENIA GRAVIS PSEUDOPARALYTICA.

BY W. E. PAUL, M.D., BOSTON.

A. P., an American woman, twenty-three years of age and three years married, came to the clinic in Dr. Walton's service.

Family history.—One maternal uncle is insane. Nothing further appears in the ancestry on either side, beyond neurotic tendency in the father's family.

Personal history.—In early childhood she suffered from scarlatina, but made an uncomplicated recovery. Occasionally there was some stomach trouble, but if ill she recovered promptly. The catamenia appeared at fifteen years, were somewhat irregular, and accompanied with moderate pain. She gave up going to school on account of "fainting spells" in the morning. The first of these attacks occurred at sixteen years of age; she felt as though she would like to lie down and sleep, but did not lose consciousness. The last attack occurred at about the time of her marriage. Six months after marriage she took ether and had the left breast removed by Dr. Harrington for a cystic tumor. A year after this operation she gave birth to a healthy boy after a retarded but natural labor. No septic symptoms developed and a good convalescence followed. There were perineal and cervical lacerations; these were repaired two and one-half years later, under ether, by Dr. Campbell. She did not nurse the child, but cared for him besides attending to

the household duties. Her environment was of a character to disturb somewhat her peace of mind, and on one or two occasions she lost self control.

Clinical history.—Eight months before presenting herself at the hospital, and eighteen months after her confinement, while taking the part of a Japanese girl in private theatricals, she stooped low, in a line with a number of other performers; at a given cue all the line were to resume the standing attitude; but the patient could not rise, and asked for help. She was ridiculed a bit and then assisted to stand. In the final performance she received assistance from her comrades on either side and suffered no further disability. Ascending stairs became difficult; in boarding a car she could not lift her feet without assistance. If merely helped in the usual way by taking her hand or arm she would be pulled forward and fall on her face. This loss of muscular power was of brief duration. Crossing the knees at times required assistance. She could usually walk on a level, but stepping up was frequently difficult. In spite of her myasthenic symptoms she attended to her housekeeping and cared for her baby.

Transient weakness in the arms next appeared; at times they would drop like lead without sensory disturbance; her husband had to support them when she arranged her hair; to insert a hat pin she rested the elbows on the mantel. In playing the piano both hands tired easily. She would sometimes have to drag the baby to her lap rather than lift him clear. Once when attempting to take him from his crib it was impossible to straighten up until assisted. She refrained from handling fragile objects. There was difficulty at times in buttoning, and ability to do millinery and embroidery was lessened. The attacks of weakness became more frequent. These symptoms were of short duration and came on usually after severe use of those muscles in which weakness or complete loss of power developed. She not infrequently fell backwards on the stairs, and on one occasion when near the top the legs gave way and she fell with the baby in her arms, sliding down several steps without injury. Transient diplopia occurred in the course of the disease and it was noticed at times that when she looked up the head was thrown back, indicating ptosis. The muscles of mastication escaped. There was lack of expression in the face, and the laugh seemed incomplete. The voice at times was nasal and somewhat indistinct, though not lowered. Words were correctly chosen and speech was never really lost. One day the words ran together and the lips seemed powerless, but holding the upper lip with the fingers obviated her difficulty. Swallowing was sometimes awkward, and in the later stages this difficulty became serious. The neck muscles sometimes suddenly gave way so that the head required support.

The symptoms became more frequent, and involved on several occasions very nearly all of the voluntary muscular system. One evening six months before death, after climbing the stairs safely, she fell to the floor unable to move or speak, but finally succeeded in attracting attention by tapping the floor with her heel. Later, in attempting one day to step up on the piazza, she fell in a heap and had to be carried bodily into the house. In a third instance, five weeks before death, she fell helpless at the top of the stairs. After a few moments she regained control of her muscles in

each instance; some drowsiness followed the last attack, but no unconsciousness.

The most serious symptom to develop was choking, the first attack occurring about six months before death. At the commencement of a meal, the first attempt to swallow water caused strangulation; she became cyanosed and unconscious, but revived at the end of about thirty minutes. A month later after taking two swallows of water without trouble, the third choked her. Cyanosis and unconsciousness followed, and Dr. Campbell, who was present, seriously considered tracheotomy. Such attacks and the accompanying apprehension impaired nutrition materially, but there was no local atrophy. Her mind remained clear. Palpitation and dyspnea occurred, but were not prominent symptoms.

There was no numbness or prickling. Appetite and digestion were good. The disposition was unaltered; the catamenia reappeared after confinement and did not modify the symptoms. The sphincters were unaffected; there was no spasmodic movement, stiffness, or tenderness. Emotional excitement aggravated the disturbance.

During the last few months of life the attacks of weakness became more frequent and profound, yet, when seen in the intervals, she gave no impression of serious illness. The bulbar symptoms became more pronounced and at one time rectal feeding was practised; but the ability to swallow food and liquids returned while at the Boston City Hospital, some months before death. Toward the end she was sometimes unable to roll over or to sit up in bed, showing involvement of trunk muscles.

The ocular symptoms also increased, but there were remissions with apparent normal muscular balance. Exposure to cold did not aggravate the condition, as a rule; but once, on leaving the cars after a journey, she became helpless on encountering the chill of a March air. Three days before death she was able to try on a dress, and two days before death she sat in a chair and swallowed without trouble. At this time she complained of palpitation, and of a sharp pain in the right iliac region. The lungs filled up but became clear again after several hours; there was temporary inability to spit out or swallow the secretions. Death occurred eighteen months after the first symptoms.

Autopsy, by Dr. G. B. Magrath, revealed macroscopically nothing pathological in the nervous system or the musculature. The microscopical examination of the cord and brain will be reported later.

Examination (eight months after the first symptoms).—Of medium size and well nourished, the patient was rather indifferent and calm in manner. Her color was good, but the blood was not investigated. No marked weakness of voluntary muscles appeared at the time of examination. The gait was normal; she could raise either foot to a chair seat, but required some slight assistance to mount the chair. The grasp and various movements of the fingers and arms were made easily, with apparent normal strength. She talked, swallowed water, and used her ocular and facial muscles with no sign of paresis. Objectively no change in sensation to touch or pain could be discovered. No tenderness existed over the muscles or nerves. Vision and hearing were undisturbed and the fundus was normal. The visual field was not limited, and there was no diplopia. Romberg's symp-

tom was absent. The knee jerks were both normal; no attempt was made to tire this reflex; the pupils were equal and reacted to light and accommodation. The urine was 1.014 and showed a trace of albumin. Unfortunately, an electrical examination was omitted, so that no data exist as regards a "myasthenic reaction." This reaction obtains when a faradic current tetanizing the muscle tires it in a brief time so that no further contraction is elicited by this current; a rest of one or two minutes restores the normal reaction.

This case presents a profound motor disturbance with the symptoms varying in duration, severity and anatomical location. It developed eighteen months after confinement and, apparently, no other factor can be discovered that would bear a possible etiological relation to the symptoms. The patient grew worse steadily and death ensued in eighteen months. Sensory disturbance was absent excepting slight pains in the arms and knees, and the feeling of something grasping the throat. No atrophies developed. The sphincters did not fail. The mind was clear. The autopsy revealed nothing of a pathological nature in the cord or brain.

Diagnosis.—The diagnosis of this case requires the consideration of hysteria, bulbar paralysis, polioencephalitis, general asthenia, as well as myasthenia. A general asthenia resulting in death would progress steadily. Polioencephalitis as the sole condition or as a complication is thrown out by the transient character of the symptoms, by lack of atrophies, and a negative autopsy. Bulbar paralysis existed at times as a part of the clinical picture, and such cases have been called "asthenic bulbar paralysis." The variation in symptoms, the lack of local atrophies, and the distribution of the myasthenia to muscles other than the bulbar group, render it impossible to classify this case as one of pure bulbar paralysis.

Such cases have undoubtedly been many times mistaken for hysteria or other psychoses; possibly some of the deaths attributed to hysteria might have had a clinical history not unlike this. There was nothing of a decided hysterical character about this patient, and no stigmata were present. Possibly the drowsy attacks of her school life, apparently not epileptiform, represented precursors or equivalents of the myasthenia, but this question is purely speculative.

The symptom complex entitled "myasthenia gravis pseudoparalytica" by Jolly, or "myasthenia gravis" for short, is strikingly exemplified by this history. Other names for the diseases are "asthenic bulbar paralysis," "Erb's Disease," "Erb-Goldflam," and "Hoppe-Goldflam, symptom complex." Only 60 or 70 cases, with a mortality of over 33%, have been described in the literature; and the subject of these notes is the first case in which the diagnosis has been made in this clinic.

Pathology.—This case offers no new help toward determining the location of the lesion, nor does it throw light on the agent or agencies that cause the symptoms. Two recent writers¹ have studied the disease exhaustively, and sum up their views as follows: "What we suggest, then, is that a toxin, probably of microbic origin, circulates in the blood, and acts selectively upon the lower motor neuron, so as to modify its functional activity. This change in functional ac-

tivity is such that the lower neuron soon becomes exhausted by transmission downwards of stimuli, whether originating in an act of the will or started by the faradic current. As to which part of the (lower) neuron the poison acts on primarily one can only vaguely surmise; but we lean to the view that it is upon the axon." For the evidence adduced to support these views, the reader is referred to the original article, to which a comprehensive bibliography is appended.

Medical Progress.

REPORT ON PROGRESS IN OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

ANTENATAL DIAGNOSIS.

BALLENTYNE¹ contributes two lectures to the subject of antenatal diagnosis, which he says should include the discovery of normal and of plural pregnancies, of fetal death, of diseases and monstrosities of the fetus, of hydramnios, and of morbid conditions of the placenta, all of which should be kept in mind in examining the pregnant patient, and there is an increasing probability that the diagnosis may be well established under favorable circumstances with care and skill. He says that the diagnosis of the antenatal morbid state is best accomplished by taking up the following lines of investigation in order: (1) The previous medical history of the mother, both general and sexual, must be inquired into, as there are certain circumstances which may be regarded as commonly preceding the development of the morbid states in pregnancy; (2) the past history and present state of the father and the family history of both sides ought to be taken into account, for there are fetal diseases and embryonic deformities which appear to be hereditarily transmitted; (3) the maternal symptomatology during the pregnancy which is in progress must be carefully investigated; (4) a very complete physical examination ought to be made of the maternal organs and especially of the abdominal viscera; (5) the fetus should be fully examined by the hands, ear, cephalometer and the Röntgen rays, and, finally, the maternal blood and urine should be subjected to chemical and microscopical investigation. He has been impressed by the frequency with which women with disastrous obstetrical histories have also previously suffered from neuroses of various kinds, from tubercle, alcoholism, syphilis, kidney trouble, rheumatism and gout. It does not necessarily follow that these medical conditions of the mother have so altered the ova as to prevent healthy development or that her system is so altered as to be unable to react in a healthy fashion to the contents of her uterus. Rather that the morbidity and the bad medical history are results of the common cause, heredity. This is supported by the fact that the same laws of transmission apparently govern the medical conditions which preside over malformations, morbiparities, etc. The maternal reproductive history is of importance as regards the menstrual habit and type, the conditions of the mother as to marriage, and with regard to the histories of previous pregnancies. The paternal medical and reproductive history is important, espe-

¹ Campbell and Bramwell: Brain, Summer Number, 1900.

¹ British Medical Journal, 1900, vol. 1, pp. 1458 and 1525.

cially with regard to the age, the use of alcohol, and the presence of many diseases, for it seems certain that paternal morbid states are potent in inducing antenatal pathological conditions. The influence of paternal alcoholism has not yet been fully worked out, but attention is called to Sullivan's contribution that total abstinence on the part of the father does little, if anything, to improve the prospects of the unborn infant so long as there is maternal alcoholism. Family medical history is necessary, as morbid states are not infrequently hereditary, but not always of the same kind. There is a striking tendency in some families toward multiple pregnancies, to monstrosities, and to the reproduction of certain malformations. With respect to maternal symptomatology the closest scrutiny must be given to all the symptoms of the mother during pregnancy. The very fact that the diagnosis of pregnancy is not easily made is presumptive evidence that there is an abnormal pregnancy, and further, the very ease with which we recognize that there is the normal symptomatology of gestation is indirect evidence that intra-uterine affairs are progressing in a natural way. The patient may complain of deviations from the normal in all the symptoms and conditions of pregnancy, but the symptomatology must be normal to prove positively that the fetus is developing normally. We must also inquire into symptoms not connected with the pregnancy but which may have been present during the pregnancy, such as erysipelas in the mother which has been followed by a streptococcus endocarditis in the fetus, or traumatic injuries to the mother may be transmitted to the fetus. After the history and symptomatology of the pregnancy have been obtained it is necessary to proceed to an exhaustive physical examination of the maternal and fetal organisms, and in the case of the mother it will be important to examine not only the reproductive organs but also the other bodily systems, as the circulatory and respiratory. During labor it is important to determine abnormalities in the fetus in order to decide questions of operative procedure.

HYDATID MOLE IN A VIRGIN.

Bock² relates the case of a child, age twelve years, living well cared for and under conditions which rendered her virginity above suspicion. Two months after her twelfth birthday the first period occurred; clots were passed without pain. At the second period there was pain and a clot was passed which was covered with a white membrane forming a perfect cast of the uterus. On microscopical examination the cast proved to be endometrium with uterine glands and ciliated epithelium. Thus already the child suffered from membranous dysmenorrhœa, which was repeated at the third period. The fourth was extremely painful, being only a slight show for three days, then a typical hydatid mole was expelled. Its base measured over three-quarters of an inch. It was made up of vesicles arranged like rows of beads; each vesicle was full of a transparent serosity; the wall was made up of loose fibrocellular tissue with many veins. The vesicles varied in size; the smallest were of the dimensions of a pinhead, the largest as big as a pea. The succeeding periods have all been normal, since the expulsion of the mole four years

ago. Bock suspects some relation between the membranous dysmenorrhœa and the mole. A piece of the diseased endometrium or menstrual decidua may have remained behind and undergone a pseudoplacental change. Jacobs has already asserted that the hydatiform mole may develop independently of gestation, and Bock's case, in his opinion, proves that theory. Keiffer suspects that there may be more than one variety of hydatiform mole.

PROTRACTED GESTATION.

Phillips³ reports a case of protracted gestation in a primipara, who ceased menstruating on August 24th, who indulged in sexual intercourse only on one occasion, on September 6th, and in whom labor did not begin until July 13th, or three hundred and twenty-three days after the cessation of her last period and three hundred and ten days after the date of coitus. He says there is not the slightest doubt that no menstrual period occurred subsequent to that in August. The case is exceptional and interesting, and is equalled by only a limited number of cases scattered through obstetric literature.

(To be continued.)

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of October 16, 1900, the president, DR. ALFRED WORCESTER, in the chair.

DR. C. M. GREEN read a paper entitled

THE VALUE OF THE HOT-WATER IMMERSION BATH IN THE TREATMENT OF THREATENING PUERPERAL ECLAMPSIA.¹

DR. W. E. BOARDMAN: The suggestion, while not new, is an attempt to emphasize the advisability of a practice that time has shown valuable in the treatment of convulsions in children. In the cases read we do not know for certain that convulsions would have occurred in the absence of the baths. As it was they did not, and no ill effects followed from the baths. I fancy in cases where the symptoms occur early in pregnancy the liability to miscarriage as an effect of the baths would not be so great as in the later months. The remedy is simple and almost always applicable, and I can see no possible bad effects except that of possibly inducing labor. My experience with eclampsia has happened to be very limited. In the few cases I have seen in private practice no preventive measures were used. Though now much more common than formerly the observation of pregnant women is not yet as universal as it should be.

DR. H. E. MARION: I am thoroughly in sympathy with the hot baths. I have used them perhaps indiscreetly before the viability of the child, but in such circumstances have kept the patient in the baths only a very short time. No ill effects have followed.

DR. G. W. W. BREWSTER: As to the question of the advisability of the use of pilocarpine in suppres-

² British Medical Journal, 1899, vol. ii, p. 18. Epitome of Medical Literature.

¹ See page 624 of the Journal.

³ The Lancet, January 13, 1900.

sion of urine, while I have had no experience with it in puerperal eclampsia, I do remember a case in which Dr. Richardson had performed nephrectomy, in which I gave pilocarpine to relieve the tension on the other kidney, with the result that the patient was nearly lost through edema of the lungs.

DR. F. A. HIGGINS: I am glad to hear this paper, as we do not generally hear enough of prophylaxis. I have once or twice been induced to operate against my will in cases in which had prophylaxis been more carefully carried out the result might have been otherwise. Jardine has recently published a series of 23 severe cases with a mortality of only 4, in which he used injections of saline solution with the addition of one drachm to each pint of acetate of potassium, a suggestion which is certainly worth bearing in mind.

DR. M. H. RICHARDSON: While I no longer see cases of puerperal eclampsia, I do see many cases in which it is desirable to increase the flow of urine by other channels than the bladder. I remember a case of nephrectomy in which the patient was kept alive for many days by the elimination of fluid through the skin. I have often been impressed by the success of diaphoresis in treating anuria following such cases as division of strictures, etc.

DR. F. W. TAYLOR: Until last year I had begun to think that a patient need not die of eclampsia, having had a number of successful cases. Since then I have lost 2. The hot water treatment accomplishes two results that in certain circumstances are most desirable—it helps elimination of fluid and favors emptying the uterus. As to pilocarpine, I have seen good results and bad results. In 1 case the woman probably would have lived had the dose been smaller, as forty-eight hours after the administration of $\frac{1}{2}$ of a grain she died with consolidation of the lungs. In another case, however, it worked most favorably with good diaphoresis lasting two or three days after its use.

DR. J. L. HILDRETH: Prophylaxis seems to me even more important than actual treatment, and one would expect that the best results would follow the use of the hot water baths.

DR. G. H. WASHBURN: I agree with the last speaker as to the importance of preliminary treatment. Absolute milk diet and rest have carried several threatening cases on for weeks for me and even through labor. There is danger in relying too much on the amount of urine passed—the amount of urea should be kept sight of. Dry heat has usually worked very satisfactorily in my hands. I have always avoided pilocarpine since, when house officer at the City Hospital, I saw 2 cases, 1 of which died of edema.

DR. H. D. ARNOLD: In some cases I have seen pilocarpine in small doses act very well as an adjuvant to the hot air treatment.

DR. C. M. GREEN: As to the use of hot air compared with that of hot water, I have seen many cases that did not respond well to hot air and which did seem unpleasantly affected by it. Hot baths are of course applicable only, under ordinary circumstances, to ambulant patients rather than the comatose. I would emphasize that I regard the hot water treatment as especially suited to cases with profound symptoms, yet I do not wish to give the impression that I would put every such case into hot water; it

would be only when they do not respond to other treatment. Its greatest use will be in hospital cases where there has been no chance to keep the patient for several weeks on appropriate treatment and diet, and where energetic treatment is demanded at once.

DR. M. H. RICHARDSON read a paper entitled

REMARKS UPON QUESTIONS ARISING DURING THE REMOVAL OF FIBROIDS, WITH ESPECIAL REFERENCE TO THE TECHNIQUE OF THE OPERATION.²

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED meeting, December 10, 1900, the president, DR. ROBERT F. WEIR, in the chair.

SPINAL ANESTHESIA.

The discussion on this subject was opened by DR. J. LEONARD CORNING, who read a paper on

THE NEUROPHYSIOLOGICAL ASPECT OF THE SUBJECT.

He gave a brief résumé of the manner in which, by induction and experiment, he found that cocainization of the spinal cord was possible and practicable. Having discovered that cocaine had a chemical affinity for the sensory nerves, he reasoned that it also had this affinity for the sensory conduction portions of the cord and demonstrated the correctness of his supposition upon animals. By injecting a cocaine solution within the membranes of the spinal cord of a young dog he produced inco-ordination of the posterior extremities which lasted for two hours, while the forelegs remained unaffected. It was conceivable, however, that if the quantity of the drug had been larger the inco-ordination might have extended to them also. He continued his experiments until he arrived at a stage where, in the human subject, he produced anesthesia of the cord by deliberately puncturing the membranes in the lumbar region and depositing a cocaine solution directly upon the cauda equina.

The fear had been expressed by some that poisonous effects, more or less permanent, might perhaps be produced by this use of cocaine. He did not think there need be any apprehension of this, and recalled the fact that there was the same talk when cocaine was first used as a local anesthetic. It was entirely possible that when cocaine was employed upon the peripheral nerves a considerable quantity of the agent might reach the central system. Incidentally Dr. Corning referred to some of the objectionable features attending intraspinal cocainization. The frequent defecation and urination that had been noted could be avoided, he thought, by first thoroughly emptying the lower bowel and the bladder. As to vomiting, this was not peculiar to this form of anesthetization, and the same precaution as to previous abstinence from food should be taken as when other anesthetics were used. He urged the necessity of rigid asepsis, and said, in conclusion, that modifications of technique would no doubt be made from time to time.

DR. GEORGE R. FOWLER read a paper on

SPINAL ANALGESIA IN GENERAL SURGERY.

His experience now embraced 81 cases, which he had divided into the following classes: Class 1: op-

² See page 619 of the Journal.

erations involving the peritoneum, 26; Class 2: operations on the trunk and genitals not involving the peritoneum, 34; Class 3: amputations, 5; Class 4: operations on the lower extremities not included in the above, 13; Class 5: unclassified operations, 3. Among the operations in the first class were abdominal sections for acute and chronic appendicitis, vaginal hysterectomy, abdominal hysterectomy, double oöphorectomy, incarcerated hernia and ectopic gestation. In 5 of the cases the analgesia was incomplete. In all of the cases of abdominal section there was some sort of a mishap, and in 1 instance such violent peristaltic action occurred that there was imminent danger of intussusception. Among the conditions operated for in the second class were varicocele, hydrocele and fistula in ano. In 1 or 2 cases general anesthesia had to be resorted to. Of the amputations 1 was at the hip joint, 1 of the thigh, at the middle third, for elephantiasis, and 2 of the toe for gangrene. Among the operations in Class 4 were arthrotomy at the knee joint, wire suturing for fractured patella, and ligation of the internal saphenous vein. The 3 unclassified operations were costal resection, nephrectomy, and incision of the abdominal wall for dermoid cyst.

The point usually selected for the puncture was the space between the third and fourth spinous processes, but occasionally the space above or below was chosen. A double needle was generally used, in order to avoid occlusion of the instrument. One minute was taken for the injection. The cocaine solution should always be freshly made. In the disagreeable symptoms occasioned it seemed to make no difference whether a large or small quantity of the drug was used. One-quarter or $\frac{1}{2}$ grain of cocaine was employed, according to whether short or more prolonged analgesia was desired. The position of the patient seemed to make very little difference, but, as a rule, he thought the Sims position the most satisfactory to the patient. In all the cases, with 2 exceptions, there was analgesia of the parts below the level of the umbilicus for at least forty minutes. Failure to induce analgesia, he believed, was due to failure to inject the cocaine solution into the spinal canal. From his very first case, on September 8th last, he had employed a preliminary injection of cocaine at the seat of injection. He also was in the habit of making a slight incision, with a view to prevent possible infection from the skin.

Among the unpleasant consequences of the procedure were vertigo, nausea, vomiting, increase of temperature, pallor, cold, and involuntary defecation and urination. That all these were due to the drug he was not willing to admit. In all cases there was a rise of temperature, the degree of elevation varying in different instances. In 1 patient it went up to 106.8° in less than four hours. Pronounced chills occurred in only 4 cases. Increased pulse rate alone seemed to be due to the nervousness of the patient. There was apparently some relation between nausea and vomiting and the circulation, and where the heart was at all weak it was advisable to give $\frac{1}{10}$ grain of strychnia hypodermically. In all but 1 case the defecation occurred during vomiting. It was his practice to order a purge the night before. In 1 case of hemorrhoids, however, in which no preliminary precautions were taken, there was no defecation, vomiting or urination. He had found that all the dis-

agreeable symptoms had materially decreased since he had adopted the plan of using a preliminary hypodermic injection of $\frac{1}{10}$ of a grain of strychnia.

Beyond mere hearsay he had no information in regard to deaths being caused by this procedure. While in Paris last summer he had heard rumors of fatal cases. Tuffier was repeatedly quoted in this connection; but in 1 of his cases the autopsy showed cardiac and pulmonary lesions, and he had distinctly stated that death was not due to cocaineization. His own cases were not selected cases, and cardiac, pulmonary and renal lesions were disregarded. In 1 instance gangrene of the lung was actually present. In many of his cases a general anesthetic could not have been employed. It had been proposed to associate other drugs with cocaine, in order to diminish the effect of the latter, and the plan had been tried; but he could not see that any less injurious effects resulted than from cocaine alone. In spite of his favorable experience with cocaineization he was by no means entirely satisfied with the method. He held with Dr. Keen that the ideal one, in addition to perfect safety, will include unconsciousness as well as anesthesia. The vomiting and defecation, the shock itself and the patient's own feelings are serious objections to the intraspinal injection of cocaine, and he thought it more probable that the ideal anesthetic would be a general rather than a local one.

DR. S. MARX read a paper on the

OBSTETRICAL AND GYNECOLOGICAL ASPECT OF THE SUBJECT.

In opening, he said that Dr. Fowler had exactly voiced his sentiments. His original experiments were commenced last April, but they failed because he did not get cerebrospinal fluid. At last there was 1 case in which he did get fluid. The injection was followed by vomiting and symptoms resembling locomotor ataxia. He was badly frightened at first, but was relieved afterwards when the woman gave birth to a child without knowing that the child had been born. She could not be convinced till she heard the baby cry. Intraspinal cocaineization was then employed in the case of every woman confined at the hospital, for experimental purposes only. It was far from his thought, however, to recommend this procedure in every obstetrical and gynecological operation. It was a serious matter. The injection once inside the cerebrospinal tract, its effects were beyond the operator's control. He had used it, he thought, in about 125 cases. Two of the cases were absolute failures, and in 1 other the anesthesia was incomplete. As to the matter of failure, this might be absolute or relative. Thus, the failure might be only apparent, and psychic sensitiveness (fear) was a prominent element. In a case of strangulated hernia in an old lady suffering from chronic bronchitis and emphysema, the patient complained at some times of pain, and at others, not. This was undoubtedly a psychic or apparent, not a real, pain.

In all these cases Dr. Marx said he had obtained cerebrospinal fluid, and unless he did get fluid he would not inject cocaine. In 1 instance that he had heard of the needle went in further and further until it had penetrated the peritoneal cavity. This was a danger that he had not thought of. As to the symptoms, which had been so admirably described by

¹ British Medical Journal, Aug. 25, 1900.

Dr. Fowler, they were so absolutely regular that he could not regard them as due to the cocaine itself. It had been found that they occurred in cases where cocaine was not used, as well as in those where it was. Thus, in control cases where a saline injection was employed the vomiting, etc., resulted, but not anesthesia. He was convinced that it was the loss of cerebrospinal fluid which caused the symptoms. In a case of coceyodynia (before cocainization) there were chilliness, headache, rise of temperature, vertigo, and nausea and vomiting, and they disappeared when the fluid ceased to escape. From his experience he believed that these symptoms could be anticipated and prevented by the use of drugs, such as bromides. It was his conviction that they were simply nervous phenomena, or, in other words, due to shock. He would recommend one large dose of bromides at the beginning, and if this was not sufficient, caffeine, etc., later, as the symptoms arose. The vomiting was the same as in general anesthesia.

As to the dose, he believed that too large a quantity of cocaine was generally employed. In his opinion, $\frac{1}{8}$ grain was ample, and in many cases $\frac{1}{2}$ of a grain would be quite sufficient. The anesthetic effect was not apparently increased by using a large amount. As a rule, the analgesia extended from the umbilicus down; occasionally it started from the level of the nipple. Eucaine, in his experience, was utterly valueless as an anesthetic. Experiments seemed to show that it was of great advantage to have the solution injected as nearly as possible of the same specific gravity as the cerebrospinal fluid. The effect upon the labor was absolutely *nil*. If the anesthesia was complete there was no necessity of bearing down. If he were asked if he had observed no bad effects, he would reply that he had seen some very unpleasant symptoms, but they were evanescent, and he did not fear them. He believed that we were too prone to attribute every untoward circumstance to the cocaine. As to the indications for its use in labor, it was of the greatest service in very prolonged first stage. Under its influence dilatation of the os proceeded with great regularity.

In gynecology this procedure had but a small field. It would never supplant general anesthetics, but in cases where the latter could not be employed it was of great value. He had known personally of no deaths from it, and did not believe that the reports of fatal cases were well substantiated. Its use was absolutely contraindicated in two classes of individuals: (1) Those on whom cocaine has no effect, and (2) the highly neurotic.

DR. S. ORMOND GOLDAN read a paper on

INTRASPINAL COCAINIZATION FROM THE ANESTHETIST'S STANDPOINT.

Since reporting his first series of 20 cases, he said he had had 11 others, making 31 in all. These later cases were not materially different from the others. In general, his experience included more successes than failures. He recognized the desirability of finding out and anticipating the causes of failure, such as the solution not being good, using too large a needle, withdrawing the needle too soon, etc. After eliminating all these, he had still had some failures. In obstetrics he thought cocainization had no advantage over chloroform, which in this field was acknowledged to be safe. In surgery it was too dangerous, and

convenience could never be preferred to safety. Ether, preceded by nitrous oxide gas, was our safest anesthetic. Cocainization was the least safe, and it should be resorted to only in cases where from renal or cardiac disease a general anesthetic was inadmissible.

Sometimes cocaine was so perfect in its results that the bad effects were *nil*. If in all cases it acted thus happily, it would leave nothing to be desired. But, he asked, is not this true of other anesthetics also? Sometimes anesthesia by cocaine was not extensive enough. In such cases a second injection, smaller in quantity, might be given without bad result. He did not think it safe, however, to resort to a third injection. Instead of this a general anesthetic should be given, and under these circumstances a less quantity than usual was required. A quick return to consciousness depended, as a rule, upon the quantity of the anesthetic administered. Recently it had been proposed to employ cocainization in the cervical portion of the cord. This meant introduction of the needle not only into the subarachnoid space, but into the cord itself. No matter how fine the needle, it would be attended with great risk. Remote complications were to be feared which were not liable to be met with in the lower cord. To inject into the cervical cord would involve the risk of affecting the medulla oblongata and causing instant death. In his cases he never failed to get fluid before proceeding with the injection.

Dr. Goldan then briefly described his last 11 cases. In Case 27, where cocainization was employed for the removal of a tuberculous testicle, the anesthesia extended up to the lower ribs. In Case 28 two injections were necessary. They were given between the fourth and fifth vertebrae, on account of an ankylosed condition of the spine, which had resulted from a fall from a window. In Case 29, where a celiotomy was to be performed, absolutely no anesthesia was produced. In Case 30 the patient was highly neurotic. Perfect anesthesia was obtained, but just as the needle was about to be withdrawn the patient gave a sudden movement which bent the instrument double. Fortunately, it was of gold, and did not break. In Case 31, the last case, the patient was also highly neurotic. Here, again, there was perfect anesthesia, but, in spite of it, it was found necessary to administer a general anesthetic, on account of increasing hysteria.

DR. V. P. GIBNEY said the range of orthopedic operations was small. Cocainization had been regarded not as favorable in children as in adults, and he had therefore as the subjects for its use patients fifteen or sixteen years old. He had experienced no difficulty in finding fluid. In 1 case a second injection was required. In another no analgesia resulted in an hour, but in this same patient successful analgesia was secured a week later. Two or 3 osteotomies were performed under the influence of the cocaine injections, and the analgesia was so complete that the patients laughed at the idea of any pain. It seemed to him that in this procedure we now had at our command a very useful means of anesthesia. He had met with 1 or 2 instances of nausea and headache, but he saw no reason to attribute these to the cocaine. Dr. Marx had stated that the method was contraindicated in those individuals who do not respond to cocaine in any form; but how were we to

determine this fact? He had been under the impression that every one could be cocaineized.

Dr. E. H. GRANDIN said that his experience was limited to 3 cases, the details of which he had given on another occasion. The first 2 were in his own practice and the patients were both neurotic Italian women. The injections were made by an expert, and there was no analgesia after periods respectively of twenty-nine and nineteen minutes. The third case was that of an apathetic Irishwoman in the service of a colleague at St. Mark's Hospital, who was operated on for strangulated hernia. The cocaineization was done by an expert, but the patient complained of more or less pain during the whole operation, which lasted thirty minutes. From his experience, therefore, he was rather skeptical in regard to this measure. In the first place, it was an uncertain method. In the twenty to twenty-five years that he had been cognizant of anesthesia he had never known ether or chloroform to fail to anesthetize, and what we wanted was certainty. He had been told that this method was preferable to ether because ether may affect the kidneys. But who knew but what cocaine might affect the cord? Chloroform was objected to on account of its effect upon the heart; but might not cocaine also affect this organ?

He did not think its use justifiable in obstetrics. Parturition was a physiological act, and he did not feel that we had a right to subject a woman in labor to a possible injury to the cord. In tedious first stage large doses of chloral could be used if necessary, and later on chloroform was our most efficient resource. In gynecology, nitrous oxide gas was very useful for minor operations, if any anesthetic at all was called for. As to major operations, he did not like the idea of the patient's retaining consciousness, and he believed it would be impossible to maintain the Trendelenburg position, for instance, for a sufficient length of time. In conclusion, he said that he had been misquoted in his remarks before another society. He had not made the positive statement that cocaineization was already damned, but that if the statistics of 5 deaths in 100 cases are correct, the method was damned.

Dr. RAMON GUTERAS said that he had in an off-hand way mentioned to Dr. Grandin that in 125 cases of Tuffier 5 of the patients had died. He had since looked the matter up in the *Medical Bulletin*, the organ of the International Medical Congress. Tuffier did report that in 125 cases 5 patients died. Of these 5, 1 died from asphyxia, and it was thought that the other 4 could be attributed to other causes than the anesthetic. From this report he judged that Tuffier thought the 1 death was due to cocaineization. At the autopsy congestion of the lungs was found. He had seen some of Tuffier's cases himself while in Paris. It seemed to him that there was a good deal of shock, and that the consequences were more serious than with other anesthetics. When any new method was brought forward, however, there were always a number of doubting Thomases, and he did not think any positive conclusions should be arrived at until the whole matter had been very carefully investigated and sifted. When Morton first attempted to produce anesthesia with sulphuric ether it was a failure, and the measure was received with much opposition in Boston. But now ether was everywhere acknowledged to be the greatest anes-

thetic that we have. If cocaineization was to be compared with the latter he thought it should be with ether administered by the rectum, which was attended with more or less danger, because we cannot control its action. So cocaine, once within the spinal canal, was beyond our control. Its field, he believed, would be found to be comparatively limited. In conclusion he gave the statistics of cocaineization presented by various operators at the recent congress.

Dr. W. S. BAINBRIDGE said that he had made a considerable trial of the method in children with a view to testing its efficacy in this class of subjects. He knew of no instance in which it had previously been used with a child as young as eleven years. The patients in whom he employed it ranged from two and one-half to nineteen and one-half years. His first 7 cases were all successes. Analgesia was perfect, and there were no dangerous symptoms. It was a novel sight to see little girls playing with dolls while their legs were being broken or an umbilical hernia was being operated on. He also made experiments for the purpose of comparing the efforts of eucaïne with cocaine, and in some instances tried different methods on the same child. In a patient two years and eight months old, suffering from incarcerated hernia, two injections of cocaine were given. Partial analgesia was obtained, but not sufficient for the operation. In the same patient, two weeks later, eucaïne was tried, and proved entirely successful, though there was some vomiting at first. His experiments had led him to conclude, however, that, as a rule, the analgesia is not so complete from eucaïne as from cocaine. There was no difficulty in introducing the needle in children. He agreed with Dr. Fowler that the unpleasant consequences noted from this method were not due to the cocaine, since other solutions injected within the spinal canal produced the same disagreeable symptoms, but no analgesia.

Dr. F. KAMMERER said that he had 40 cases in the field of general surgery. From the outset he had employed as small a dose of cocaine as possible, usually $\frac{1}{10}$ grain, and rarely over $\frac{1}{2}$ grain. It might perhaps be on this account that he had had a certain proportion of failures—in 4 out of the 40 cases. He had found the method well adapted for genito-urinary surgery, but not so serviceable in intra-abdominal work. He had seen some symptoms which were alarming, such as violent changes of pulse, but had had no deaths. Perhaps for the reason that he used such small doses, the after symptoms had been very slight. He could not agree that the disagreeable symptoms referred to were due to pressure. If this were the case, why should we not have them after lumbar puncture? Neither did he believe that the operation caused shock. In 1 case this occurred an hour after the operation. This was certainly a very interesting method from a physiological point of view, and one also of great practical importance. He believed that in general a great many deaths following an operation are really due to the anesthetic. To ether only 1 death in 17,000 cases was attributed. He thought this was a great mistake, and that a considerable number of deaths after operations were caused by the ether employed. While accidents are liable to happen, he was convinced that cocaineization had a distinct field, and that it should be given a careful trial.

The president, Dr. WEIR, said it was a well recognized fact that there were fads and fashions in sur-

gery as well as in medicine. Many could recall the enthusiasm which had been aroused by Dieulafoy's aspirator and Esmarch's bandage, which had since died out; and this method might perhaps share the same fate. The interest in Tuffier's demonstrations during the recent congress in Paris was most intense, and the subject seemed to have taken hold of the Americans to a greater extent than any other nationality. Tuffier himself said that he had had 5 deaths, and that 1 of them was due to the method. The questions that presented themselves were, "Is it as safe as ether?" "Is it applicable to cases where, on account of cardiac or renal conditions, etc., we cannot give ether?" The foreigners contended that it was not yet proved as safe as ether. He had tried it in 10 cases at the Roosevelt Hospital. In 3 eucaine was employed, and it failed miserably. In 1 or 2 of the others he was for a time on the "anxious bench," and he had to confess that he had not felt so disturbed by anything of the kind for many years. So far, this procedure had not presented itself to him in a very encouraging way. At the New York Hospital since ether was first introduced, in 1847, there had been 1 death from the anesthetic in 3,000 cases. He had collected the figures of cord anesthesia, and found that in 400 recorded cases there were, including Tuffier's 5, 8 deaths altogether. All admitted that it was apt to be attended with serious and dangerous symptoms, and this should deter us, he thought, from rushing in and using it in such small operations as circumcision or the amputation of a toe. He did not see why we should speak of cocaine as being so very safe in this connection, since its use in other ways was acknowledged to be attended with considerable risk. He did not wish to pose as being distinctly opposed to the method, but he believed that a word of caution might be useful at the present time, and, at all events, a sufficient period must be allowed to elapse before any definite judgment could be passed upon it.

Recent Literature.

Physical Diagnosis of Diseases of the Chest. By RICHARD C. CABOT, M.D., Physician to Out Patients, Massachusetts General Hospital; Assistant in Clinical Medicine, Harvard Medical School. With 142 Illustrations. New York: William Wood and Co. 1900.

The number of books on auscultation and percussion which have recently appeared inclines one to be particularly critical toward each new volume, so few have seemed adapted to the purpose for which they were written, the use of students. The endeavor to smooth their way by condensing facts about the physical examination of the thorax into the smallest possible space has resulted in leaving the impression that all are of equal value and importance in arriving at a diagnosis. The method admits of no shading. This error has been avoided by Dr. Cabot, and consequently the student gets an idea of perspective in which the various signs take their proper place. This entails a larger volume, but the additional pages could not well be spared. In the preface, he says he has written it because he has not been able to find any small work on the subject which does not contain glaring errors, while the correct books are too large. He has just-

ified himself by his success, and has avoided the "well-worn myths" of which he speaks, but such a statement challenges criticism of his own work. While he writes with enthusiasm and directness, he also appears at times to have written with haste, and to have allowed some statements to appear which, for the sake of clearness, would bear modification. We doubt, for instance, if all physicians are yet ready to advise the resort to the aspirating needle in differentiating between cardiac enlargement and pericardial effusion in obscure cases, which he seems to do by implication in saying that "the diagnosis can be made only by puncture."

Each subject is fully discussed, and the recent additions to the physical signs of disease incorporated, but the chapters on the muscle sounds, adherent pericardium and atelectasis, deserve special mention, since they usually receive inadequate treatment.

It is altogether the best book in English with which we are acquainted, and while primarily intended for students, older practitioners will read its pages with profit. It is well printed on excellent paper and is profusely illustrated. Occasionally some of the illustrations seem unnecessary, in that they add nothing to the clearness of the description in the text, of which the two cuts on "Accidents to be Avoided in the Use of the Stethoscope" are examples. In a second edition, which it is quite safe to prophesy, it will be possible to correct a number of typographical errors, one or two of which are sufficiently serious to alter the sense.

Ulceration of the Bladder. Simple, Tuberculous and Malignant. By E. HURRY FENWICK, F.R.C.S., Surgeon to the London Hospital; Surgeon and Pathologist to St. Peter's Hospital for Urinary Diseases; Consulting Surgeon to the West Herts Infirmary. London: J. & A. Churchill; Philadelphia: P. Blakiston's Son & Co. 1900.

Mr. Fenwick gives what is justly the keynote of the spirit of this interesting brochure in its short preface in saying that "each fact has been fairly criticised, and probably will stand the test of time and experience. . . . The treatment which he suggests is not only open to criticism, but will undoubtedly be greatly modified as our knowledge of antitoxins increases and serotherapy improves," and certainly one could not ask of an author a fairer or fuller critical comment than that with which he examines the results of the very valuable observations which are embodied in this little volume. It is probably not too much to say that Mr. Fenwick is one of the most, if not the most, expert of endoscopists in the profession. He has devoted much time to this work, and has had an unusual experience in it; whatever he puts forward, therefore, has a special claim to attention, and in this instance, as on former occasions, the attention is well repaid.

The observations recorded rest for the most part on endoscopic examinations of bladders in which there were lesions associated with ulcerative processes. He is a believer in the existence of solitary ulcer of the bladder having a like character to that of perforating gastric ulcer. It occurs on the posterior wall of the viscus near the ureteral orifices, results in cicatricial formation and consequent deformity of the part affected, is slow to heal, and of rare occurrence.

The routes of invasion of tuberculous disease are

discussed with much intelligence, and some rather original suggestions are offered.

Amongst the most instructive parts of the work are the sources of error that occur in connection with cystoscopic examinations. Amongst these may be noted the difficulties in gauging the size and progress of an ulcerated surface at different examinations. The author points out that the withdrawal or approach of the prism of the cystoscope to an object diminishes or magnifies its size correspondingly, and that it is almost impossible to place the prism at the same spot at different examinations, and so to be sure that it is at the same distance from the ulcer on both occasions, and the same is true of the variations in appearance of objects according to variations in the angle produced by different positions of the tube; furthermore, the size and depth of an ulcerated surface will vary according to the degree of tension of the bladder surface upon which they have their seat, and this is changed according to the amount of the bladder contents, and the degree of elevation of the pelvis. If these factors are not identical at each examination, the degree of variation in the size of the ulcer is surprisingly great. If an ulcer be examined in a fully distended bladder it will appear as a flat erosion; if the fluid be now withdrawn it will gradually assume the look of a projecting, rolled Hunterian, chancre-like sore.

Some of the author's statements in connection with inflammation (tuberculous or otherwise) of the kidney toward the end of the volume are of much interest, and require, perhaps, more faith than the practitioner not skilled in the use of the cystoscope will be possessed of, in order to credit. Thus, "If the cystoscopist finds an irregular-shaped, caked, and patulous ureteral orifice, he may diagnosticate destructive changes in the kidney of that side. If no renal tumor can be felt on that side, and he notices that the ureteral orifice is as described above, and that it is also *displaced*, he may diagnosticate without hesitation a retracted, inflamed and adherent kidney, with probably one or more small cortical abscesses in the upper end of the organ." Yet when the author's reasons are detailed upon which these assertions are based, it is difficult not to share his views.

The monograph is one suited more particularly to the specialist than to the general practitioner, though it must be found interesting to all classes of the profession.

Eye, Ear, Nose and Throat. A Manual for Students and Practitioners. By WILLIAM LINCOLN BALLENGER, M.D., Assistant Professor of Otolaryngology, Rhinology and Laryngology in the College of Physicians and Surgeons, etc., Chicago; and A. G. WIPPERN, M.D., Professor of Ophthalmology and Otolaryngology, Chicago Ear, Nose and Throat College. Illustrated. Philadelphia and New York: Lea Brothers and Co. 1900.

This belongs to a series of so-called pocket textbooks. It is too large for a pocket and too small for a textbook. For the student or practitioner who needs a short résumé of the numerous subjects of the title this manual has certain attractions. Many of the morbid conditions are treated with a conciseness suggestive of a medical dictionary, others are given in more detail. The section on the eye is conservative, that on the ear, practical, that on the nose

and throat, strenuous. As an example of the latter, we find under such common affection as spurs of the septum, adenoids, peritonsillar abscess, a series of the most distressing symptoms, of which one or more may undoubtedly occur in some cases, but their form of presentation is such as to give an erroneous impression of the average case. Treatment in most cases is active and hopeful, but is it not contrary to our present views of pathology to cauterize the stump of a polypus after removal?

The book has about 500 pages, of which a discussion of the eye is contained in 170 and of the ear in 100. There is much in it that is good, concise and clear. It is not supposed to contain much that is original; what little there is is out of place. Such brief summarizing suggests superficial study; but the book, if properly used, will be of value.

The American Illustrated Medical Dictionary. A New and Complete Dictionary of the Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry and the Kindred Branches, with Their Pronunciation, Derivation and Definition. By W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the University of Pennsylvania Hospital, etc. Philadelphia and London: W. B. Saunders & Co. 1900.

There is already no lack of medical dictionaries of varying size and completeness, but we confess that this latest one attracts us anew, both by its form and matter. It is of medium size, containing 770 pages, and its definitions are brief. Certain words are treated at greater length and short descriptions given of the prominent symptoms of diseases, and of the functions of organs. Tables and diagrams are used extensively and with excellent effect. The binding of the book is sumptuous and no pains have been spared to make the pages as attractive in appearance as the covers. Although we do not quite agree with the author that "physicians and students have long felt the need of such a work," we are quite ready to admit that the book will find a useful place in the hands of physicians and others.

Stringtown on the Pike. A Tale of Northernmost Kentucky. By JOHN URI LLOYD, author of "Etidorhpa," etc. Illustrated. New York: Dodd, Mead & Co. 1900.

The author of "Stringtown on the Pike" has written a book which will do much to keep alive the traditions of one of the most deeply interesting States of the South. He clearly knows whereof he writes and has a fund of information regarding the details of negro life and superstition, which lend to his pages a decided charm. The book deals largely with certain primitive types of the negro, types which we fear are growing less with the advance of civilization, and one gets a glimpse into the inner working of the negro mind which is of very considerable psychological interest. As is to be expected from the character of the story, the text abounds in dialect, which it requires some attention to render easily intelligible to the average reader. The book is attractively illustrated, chiefly with photographic reproductions, and both the binding and the presswork are a credit to the publishers. We would cordially recommend Mr. Lloyd's book to all those who are likely to find an interest in a characteristic and little described type of primitive American life.

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TWENTIETH CENTURY CEREBRAL PHYSIOLOGY.

SOME months ago there appeared in a New York medical contemporary two remarkable papers on certain brain functions and anatomical structures. One of these papers, which was profusely illustrated, was entitled "Rampancy, the Fervor of the Forehead." We read it with interest and no small degree of expectancy as to the possible light it might throw on subjects of vast interest to the human race. Our quest for knowledge resulted in disappointment, or at least in a painful sense of our inability to grasp the conceptions of the author. For example, however much we were edified by the following statements, we were impressed with an increasing consciousness of our own ignorance of recent work on the nervous system. "Life is rampancy. Take the body: the whole body is a series of ramping tissues, while the highest, the supreme or pro-ramp, the acme, is that of the neck and head; the ramp heavenward or skyward—for example, the neck of swan, fowl, or stallion. The ramp of the head is a secondary characteristic." And again: "When the master pats his dog on the head this lobule" (the metopic lobule of the author) "is touched—the creature ramps. The cavalry soldier and his horse are tied by this lobule as by an invisible navel cord. The generous steed is rampant to serve, to die if need be. By patient study of the brain, accepting what we find, we must acknowledge that the heart of the non-immortals—that is, those who have not the *logos*; for instance, "man's best friend," the cow; that master philanthropist, the dog, and that leader of man through the ages, the lamb—have also the heart in the right place." And finally we are told that "The subject of this brief essay is the localization of the greatest thing in the world, the greatest thing—indeed, in final analysis, the only thing, for it is the alpha and omega, the oldest and youngest of the gods, Eros, Agape, Philia, Spes, Caritas, Humanitas. It is the alpha and omega, the all in all."

All this may be true and based on a profound knowledge, but what does it mean? We confess that the "rampancy," as a recognized scientific fact, has not yet penetrated New England. We were inclined at the time of the appearance of this and its companion paper to enter a plea of ignorance and ask for light. We refrained, thinking that our contemporary knew whereof it wrote, and that in due time the mystery would be solved through the attention such a paper would attract among recognized experts. Our hope was disappointed, and the matter, important as it is, had passed from our mind. It has been unexpectedly revived by the appearance in a no less esteemed Philadelphia contemporary of another article by the same author, which bears the title, "The Struggle for Like Lobule." This would seem to indicate that New York is no longer to be the sole possessor of these secrets of brain structure, and that the new knowledge is slowly spreading westward. Unfortunately for us, this new paper in no way elucidates the preceding.

The following is clearly enough expressed, but so far as our intelligence goes carries with it no meaning: "I confess that my study of the brain of ruminants has led me to a different conclusion" (it is unnecessary to the sense to quote the previous conclusion), "which is, that these lobes are vital, belong not to the three higher senses, but are rather of the animus of the physique; that in the bull, *Bos taurus*, for instance, these lobes hold the animus of the bull tongue, and bull throat, and of the bovine corporosity, and the power of reproducing and propagating the bovine race. They can be nothing else. The rational inference is that in *homo*, a being that in many respects resembles this far from ignoble animal, these lobes have the same significance; that in them we are to seek the spirit of substantial living and lusty thriving, and sound propagating; in short, the root, stalk, and flower of the vegetative life. The dissection, preparation, casting, and photographing of the brains of something over a hundred ruminants have convinced me that the posterior spheres in *bos* and *homo* are homologous."

This is also illuminating to dull minds: "The sphenoidal pole is gustatory, of this the evidence is conclusive. This stoma-looking lobule with its cross incision is the image of the glossopharyngeum, can be nothing else than the cerebral head of the glossopharyngeal nerve, together with associate centres. It is the chef and criterion, the lobule of the banquet. In its labyrinths are the spiritual representatives of the bountiful table of nature or of art. The opposing pole, the occipital, the united gyri fusiformis and lingualis, with terminal bulbs or ramps or lobules, from the superior or middle temporal, or the third occipital or from two or all three of them, is the lobus genitalis. Its shape in primates is more or less palliform, and this form made up of stemons, ramps, or stamen-like or serpens-like double curves. This, then, is the "burning bush," the ever budding "rod of Jesse,"

the fleur de lis "fairy tree," etc., the soul and maintenance of the life of the race, as its polar opposite, the sphenoidal pole, a veritable lobus succulentius, is the spiritual supporter or nourisher of the life of the individual."

It is perhaps not necessary to quote more, although it is furthest from our intention to do any injustice to the writer of these somewhat revolutionary ideas by partial quotation. To show our spirit of fairness, however, we add the following bit of information: "I do not see how it is possible, in the light of comparative anatomy, for the under surface of the brain to represent anything very lofty or spiritual. It seems to me rather as the soul of the vegetative life. . . . Succulence and corpulence are the main characteristics in the physique *et morale* of the domestic swine, as of the stall-fed ox, and these spirits swell and fill the lowest parts of the brain, just as salience and insolence are the two striking features in the physique *et morale* of the wildcat, which two spirits rise to the highest point of the brain."

In fact, these papers are so filled with ideas which are new to us that we are compelled to admit that the progress of the study of cerebral function in New York and Philadelphia has gone far beyond our boldest conjecture. We regard the future with some trepidation, however, if such startling acquisitions of knowledge have already been made as these narrated in two of our most trustworthy contemporaries. It occurs to us also that it would have been kinder to suppress these ideas at least until the world at large is better prepared to receive them. What is written is naturally beyond editorial control, but publication carries with it a responsibility. It is, on the whole, a wise policy to refuse absolute nonsense.

THE ARMY BILL AND THE MEDICAL DEPARTMENT.

THE bill for the reorganization of the army as sent to the Senate at Washington shows a surprising discrimination against the medical corps. It is generally recognized that the best administrative ability, the most thorough knowledge of hygienic and sanitary principles and details, the best medical and surgical technical skill are of the first consequence for the safety and well being of troops on active service and for the successful issue of a campaign. Our soldiers should be able to feel that they have these on their side whenever the emergency arises. It is also very well known that no profession, not even that of arms, requires from its foremost representatives a higher order of intelligence, a longer or more expensive training, than does that of medicine.

Now, either our national representatives expect to get something for very much less than its recognized value, or else they really think that what is not good enough for anything else is good enough for the U. S. Army. For the former attitude they should

be too shrewd, for the latter too patriotic. The object lessons of the Spanish War, the campaigning in the Philippines, the South African War, are too immediately present as examples of the importance of a first-rate medical department to permit of even so poor an excuse as ignorance.

Now what does the proposed army bill, if not amended — and we are glad to learn there is a good prospect that it may be amended — what does it offer the Medical Department?

The Medical Department is graded for rank, promotion, and, in consequence, for pay, below every other department and special corps of the army, and, second lieutenants excluded, is graded below the line. Compared with staff departments having captains but no lieutenants (Quartermaster's, Subsistence and Pay Department), each officer in these departments in order to reach a colonelcy has to pass through thirteen and one-half files, while an officer of the Medical Department has to pass through thirty-nine files. Compared with those special corps and departments having lieutenants, while a medical officer has to pass through thirty-nine files, an officer of ordnance has to pass through but sixteen and one-half, an officer of engineers above the grade of second lieutenant has to pass through but seventeen files, and including the grade of second lieutenant has to pass through but twenty-two files.

A medical officer to obtain a colonelcy has to pass through three times as many files as an officer of the Quartermaster's, Subsistence or Pay Department, through more than twice as many files as an officer of the Engineers or Ordnance, and more than one and one-half times as many files as even an officer of the Signal Corps.

But aside from the total ratio of files to pass to a colonelcy, and consequent promotion and rank, the Medical Department is strongly discriminated against in the higher grades, those gained only after long service, and consequently most deserving of reward. An officer of the Medical Department having gained the grade of major after having to pass through approximately two or three times as many files as an officer of the other staff corps, to gain a colonelcy has to pass through nine files, while officers of the other staff corps, having officers below the rank of major, have to pass through but four and one-half files in all corps, except the Engineers, where but six files have to be passed. Thus to gain a colonelcy, after reaching a majority, officers of the medical corps have to pass through twice as many files as do officers of other staff corps, the Engineers excepted, and through one-half times more files than do officers of this latter corps. The discrimination against medical officers, compared with ranking officers of the line, is equally striking. Officers of the line having gained a majority have to pass through but four files to a colonelcy against a medical officer's nine. Even compared with the line of the army, while strongly discriminated against in the higher grades (nine to four files above captain), if the second lieutenants are excepted, medical officers have less rapid promotion than do officers of the line; the line having but thirty-three to thirty-four files to a colonelcy, against the Medical Department's thirty-nine files.

But not only is the proposed grading of the Medical Department unjust, as compared with other staff and special departments, but it will seriously impair the future of the corps, in that, by materially reducing the emoluments, it will, in the future, offer too small inducements to that bet-

ter class of professional men whose entry to the corps maintains its efficiency.

Under the present grading of the corps, with twenty-one files to gain for each majority, the average length of time required to reach that grade is eighteen years. With the proposed grading of thirty files to each majority, it will take an average of twenty-five years' service to obtain even this grade. The consequence will be that officers will serve in the junior grades much beyond a length of time consistent with the attainments of members of a trained profession, and few men of attainments in the medical profession will enter upon a life career offering so few opportunities for advancement. This especially, when after having attained a majority by this long service, they are still discriminated against in the higher grades, and have to pass through many more files to obtain a colonelcy than do officers of any other special corps or officers of the line.

To, in part, equalize the Medical Department with the other staff corps, it would seem no more than just and wise certainly to at least equalize them with the Engineer and the Signal Corps, especially as these corps resemble the Medical Department, in that they are, in part, made up of enlisted men.

NEWSPAPER EXAGGERATION.

In certain daily papers during the past few days has appeared in conspicuous type a much exaggerated statement regarding the presence of influenza in Boston. It was stated, for example, that the hospitals were overcrowded with sufferers from the disease, and that even the private rooms were taken by the more well-to-do sufferers. As a matter of fact the wards of the Boston City Hospital are at present far from full, and there is no indication whatever of the overcrowding suggested by our somewhat too ardent contemporary. That there is a certain amount of influenza prevalent is both probable and natural; that it has reached epidemic form is untrue. Protests, no doubt, in such matters are quite unavailing, but it is at least a satisfaction to express one's feeling of utter disapprobation at such means of making copy. Unfortunately such reports, reduced to print, have a far-reaching effect upon the minds of the ignorant and unreasoning classes in the community, and so unquestionably do harm by exciting a quite unnecessary fear. It is to be hoped that editors and reporters may finally be awakened to a true sense of their privileges and duties in dealing with a too readily receptive public.

MEDICAL NOTES.

ANNOUNCEMENT OF COMMITTEE ON SCIENTIFIC RESEARCH, AMERICAN MEDICAL ASSOCIATION.—The Committee on Scientific Research of the American Medical Association desires to announce that it has available the sum of \$500 for the assistance of researches to be undertaken in the next six months, and that the money will be appropriated if applications be received within the month of January, 1901. Applicants should state clearly the character of the research

to be undertaken, and the facilities at their command, addressing Dr. H. C. Wood, chairman, 1925 Chestnut Street, Philadelphia, Pa.

SIR WILLIAM HUGGINS, PRESIDENT OF THE ROYAL SOCIETY.—Sir William Huggins, who succeeds Lord Lister as president of the Royal Society, shares with Sir Joseph Hooker, a past president, the record of having received three of the society's gold medals. Sir William was elected a fellow in 1865, and has served five times upon the council. He is a K.C.B., D.C.L. of Oxford, LL.D. of Cambridge, Edinburgh, Dublin and St. Andrews, Hon. F.R.S.E., F.R.A.S., etc. The remaining letters of honor occupy seven lines in the Royal Society's calendar.

VITAL STATISTICS OF MASSACHUSETTS.—We have lately received and shall publish next week an important paper, read at a recent meeting of the New Jersey Sanitary Association, on "The Practical Use of Vital Statistics," in which to our regret and mortification, but not altogether to our surprise, we find the present vital statistics issued by Massachusetts held up as a warning and an example of what to avoid, rather than cited as a notable standard of the best, as would formerly have been the case.

VITAL STATISTICS OF HAVANA.—Major W. C. Gorgas, chief sanitary officer of Havana, gives a most favorable report of the death rate in that city for the month of November. There were 444 deaths, less than during any month during the preceding ten years. The number of cases of yellow fever has, however, been large for this time of the year, due chiefly to recently arrived immigrants. The fever is, however, decreasing, and it is thought will disappear by the middle of December.

WOODBIDGE TREATMENT OF TYPHOID FEVER.—It is said that the Woodbridge method in the treatment of typhoid has not stood the test of experience. The opportunity of testing his method, accorded Dr. Woodbridge at the Fort Meyer Hospital, gave a mortality of about 10%, as contrasted with a mortality of about 7% by usual methods.

RESIGNATION OF DR. ANITA NEWCOMB MAGEE.—Dr. Anita Newcomb Magee, Acting Assistant Surgeon, U. S. Army, in charge of the Army Nurse Corps, has tendered her resignation to the War Department. The resignation has been accepted, to take effect December 31st. The position will hereafter be abolished.

PASTEUR DEPARTMENT AT THE BALTIMORE CITY HOSPITAL.—The College of Physicians and Surgeons of Baltimore has established a Pasteur Department at the Baltimore City Hospital, for the preventive treatment of hydrophobia.

"A DEATH FROM HYDROPHOBIA."—We are informed that the death from hydrophobia reported in our issue of December 13th occurred after an illness of four days and not of two days, as there stated.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, December 19, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 155, scarlatina 26, measles 26, typhoid fever 24.

TWO CENTENARIANS.—Mrs. Angelique Galipeau recently died in Northampton, Mass., in the one hundred and fourth year of her age. Mrs. Galipeau was born in Montreal, January 25, 1797. Her father is said to have died at the age of one hundred and one, and her mother at one hundred. Mrs. Galipeau was married four times. She was remarkably vigorous until recently, and at her birthday celebration in 1898 she sang and took part in the dancing. Captain Jonathan A. Norton, aged more than one hundred and four years, died last week in East Lee, Mass. He was born August 1, 1796, and had been a tradesman, a farmer, a soldier, a poet and an inventor. He was probably the first man to make matches in Berkshire County. He was commissioned a captain of infantry by Governor Brooks. When sixteen years of age he was drafted for the War of 1812, but was not allowed to serve. Two of his sons served in the War of the Rebellion.

CHANGES IN THE FACULTY OF THE YALE MEDICAL SCHOOL.—The recently published Yale University catalogue announces the following changes in the medical faculty: Dr. Otto G. Ramsay, of Baltimore, has succeeded the late Prof. James Campbell as professor of obstetrics; Russell H. Chittenden, director of the Sheffield Scientific School, has succeeded Prof. Benjamin Moore as professor of physiology; F. S. Hollis has succeeded W. H. Parker as instructor in chemistry, and Dr. Percy D. Littlejohn has taken the place of Dr. W. H. Crowe in the medical clinic. The only changes in the courses of instruction are the additions of recitations and hospital work in Dr. Robert E. Peck's clinical dispensary work in neurology and a series of six lectures by Dr. Shepherd on "Life Insurance Examinations."

CHILDREN'S DEFORMITIES DISCUSSED AT A MEETING OF THE BOSTON PHYSICAL EDUCATION SOCIETY.—Physical deformities in school children was the subject discussed at the last meeting of the Physical Education Society. Statistics have shown that only 13% of school children assume correct positions habitually while studying. The papers were discussed by Drs. Sargent, of Cambridge, and Stone and Fitz. of Boston. Many of the malformations in school children were attributed to defective furniture. It was pointed out that very little was known as yet of the physical endurance of children, a great deal of their restlessness being due probably to inability to stay in one position long, from mere lack of strength.

PROPOSED HOSPITAL FOR TUBERCULOSIS AT PROVIDENCE, R. I.—Providence is said to be engaged in an agitation regarding the establishment of a hospital for tuberculosis. The State Board of Health

has lent its support to the movement. Being a State board, this body proposes to induce the General Assembly to vote it the sum of \$200,000 to establish the hospital and thereafter to provide the means for its continued support. The Providence Medical Society and the Rhode Island Medical Society have both appointed committees to further the plans of the State Board of Health.

POSSIBLE NEGLIGENCE OF WALTHAM, MASS. DOCTORS.—A notice from the Waltham Board of Health has been sent to all the physicians in the city informing them that they must report all cases of typhoid fever as soon as they find them. Negligence has been claimed in failing to report a certain case of typhoid occurring near the Cambridge water supply.

A CASE OF SUSPECTED SMALLPOX AT WATERTOWN, MASS.—A woman recently from Nova Scotia is supposed to have contracted smallpox there. Examination by several physicians justified her removal to the contagious hospital.

Correspondence.

UNUSUAL PREVALENCE OF IMPETIGO CONTAGIOSA.

BOSTON, December 17, 1900.

MR. EDITOR: Permit me to call the attention of your readers to the unusual prevalence of impetigo contagiosa in adults at the present time.

This affection has been very common among children in schools and crowded tenements for several years, often associated with pediculosis capitis, and has been occasionally seen upon the faces of adults in the form called staphylococchia by French dermatologists. Within the last two or three months these cases have increased greatly in number, especially in private practice. It affects chiefly the shaven parts of the face of young men, spreading from this region to cheeks and forehead, and downwards upon the neck.

It rarely shows itself upon the hands and lower limbs, common seats of the disease in young children. In three instances I have observed it upon the scalp in men, chiefly on parts free from hair. The lesions in adults differ, as is well known, from those in children, being larger, varying in size from a dime to a quarter of a dollar. The crusts are not so heavy, and they are often much more numerous.

The history of contagiousness is frequently a striking feature in these cases. A young man says his roommate is affected in a similar manner, or the young lady with whom he is intimate. He knows several persons having it who shave at the same barber shop, or who work in the same factory. I have in a few instances treated several adults in one family. It is especially prevalent now among students in a university in this vicinity.

It is without doubt easily communicated from person to person by direct contact, and indirectly by using the same towel, soap, shaving apparatus and garments; possibly also by the infection of towels and clothing at the laundry.

Fortunately it is a disease easily controlled. The staphylococci and streptococci which produce it are destroyed by such simple applications as sulphur, salicylic acid, and boric acid in ointment form, or by a mild wash of corrosive sublimate. Of chief importance is the careful disinfection of every article which has come in contact with the affected skin. The mere dipping of such articles, towels, brushes, razors, etc., in hot water is not sufficient for this purpose, for this reduces the temperature of the

water to an ineffective degree. They must be thoroughly boiled.

It is to call attention to the importance of such precautionary measures in households, schools, gymnasiums and barber-shops that I send this communication.

Very truly yours,
JAMES C. WHITE, M.D.

METEOROLOGICAL RECORD

For the week ending December 8th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps:—

Date.	Barometer.		Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weth'r.		Rainfall in inches.	
	Daily mean.		Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.		
S... 2	30.23		40	43	36	83	77	80	N.W.	N.	4	4	F.	O.
M... 3	30.24		44	51	35	83	72	78	W.	S.W.	4	9	O.	O.
T... 4	29.70		45	49	41	82	68	90	S.W.	E.	5	31	O.	E.
W... 5	29.52		38	49	28	100	56	95	N.W.	N.W.	20	10	O.	O.
T... 6	30.12		32	38	26	79	75	77	N.W.	W.	9	4	O.	O.
F... 7	30.17		40	43	37	63	61	62	S.W.	S.W.	11	4	O.	O.
S... 8	30.04		33	37	29	78	80	79	N.W.	N.	9	4	F.	C.

* O, cloudy; C, clear; F, fair; G, fog; H, hazy; S, smoky; R, rain; T, threatening; N, snow. † Ind on ea trace of rainfall. — Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 8, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York	3,437,202	1134	331	21.96	18.69	1.32	1.94	4.93
Chicago	1,698,575	—	—	—	—	—	—	—
Philadelphia	1,293,697	376	103	25.00	13.30	.26	1.86	6.65
St. Louis	575,238	—	—	—	—	—	—	—
Baltimore	508,957	160	39	16.30	14.42	1.88	1.25	2.50
Cleveland	381,768	—	—	—	—	—	—	—
Buffalo	352,377	—	—	—	—	—	—	—
Cincinnati	325,902	—	—	—	—	—	—	—
Pittsburg	321,616	101	39	20.79	12.87	5.94	2.97	4.95
Washington	278,718	—	—	—	—	—	—	—
Milwaukee	285,315	—	—	—	—	—	—	—
Providence	175,597	60	13	25.00	11.62	3.32	—	3.32
Boston	560,892	202	48	28.21	14.35	2.47	.99	7.42
Worcester	118,421	34	14	23.52	20.58	—	2.94	2.94
Fall River	104,863	—	—	—	—	—	—	—
Lowell	94,869	31	9	9.69	25.76	—	3.22	—
Cambridge	91,886	19	5	31.66	15.78	—	—	10.52
Lynn	68,513	16	1	31.25	6.25	—	—	—
Lawrence	62,559	13	6	23.07	23.07	—	7.69	—
New Bedford	62,412	20	7	10.00	—	—	5.00	—
Springfield	62,059	24	5	37.53	4.16	—	4.16	4.16
Somerville	61,643	28	10	32.13	10.71	7.14	—	10.71
Holyoke	45,712	15	5	20.00	6.67	—	—	6.67
Brookton	40,063	4	1	—	25.00	—	—	—
Haverhill	37,175	13	2	—	7.69	—	—	—
Salem	35,656	11	5	36.36	—	9.09	—	—
Chelsea	34,072	10	3	10.00	—	—	—	10.00
Malden	33,664	5	1	20.00	—	—	—	—
Newton	33,587	5	2	20.00	—	—	—	20.00
Fitchburg	31,531	8	3	12.50	12.50	—	—	25.00
Taunton	31,036	8	1	12.50	—	—	—	—
Gloucester	26,121	7	1	—	—	—	—	—
Everett	24,336	11	9	18.18	36.36	—	—	—
North Adams	24,200	7	3	14.28	—	—	—	—
Quincy	23,899	9	4	55.55	22.22	—	—	11.11
Waltham	23,481	8	—	25.00	12.50	—	—	—
Pittsfield	21,766	—	—	—	—	—	—	—
Brookline	19,935	—	—	—	—	—	—	—
Chicopee	19,167	1	—	—	100	—	—	—
Medford	18,244	4	3	25.00	—	—	—	—
Newburyport	14,478	4	—	25.00	—	—	—	—
Melrose	12,962	5	1	20.00	—	—	—	—

Deaths reported 2,363; under five years of age 677; principal infectious diseases (smallpox, measles, diphtheria and croup,

cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 532, acute lung diseases 376, consumption 281, diphtheria and croup 115, typhoid fever 40, diarrheal diseases 35, cerebrospinal meningitis 15, whooping cough 12, scarlet fever 10, measles 7.

From whooping cough New York 6, Philadelphia 3, Boston, Cambridge and Salem 1 each. From cerebrospinal meningitis New York 4, Everett 2, Baltimore, Boston, Lawrence, Somerville, Salem, North Adams, Quincy and Medford 1 each. From typhoid fever New York 21, Philadelphia 7, Pittsburg 3, Baltimore and Boston 2 each, Worcester, Lowell, Lawrence, New Bedford and Springfield 1 each. From scarlet fever Pittsburg 4, New York 3, Philadelphia, Baltimore and Boston 1 each. From measles New York 4, Pittsburg, Worcester and Holyoke 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending November 24th, the death rate was 17.6. Deaths reported 3,924: acute diseases of the respiratory organs (London) 322, diphtheria 76, whooping cough 68, fever 65, measles 58, diarrhea 46, scarlet fever 38.

The death rates ranged from 10.0 in Norwich to 24.3 in Salford: Birmingham 17.0, Bolton 23.2, Cardiff 10.5, Derby 20.3, Gateshead 20.0, Halifax 16.1, Leicester 14.5, Liverpool 21.9, London 17.2, Manchester 21.0, Newcastle-on-Tyne 15.8, Nottingham 20.4, Portsmouth 15.2, Sheffield 20.4, Swansea 20.3, West Ham 14.1.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING DECEMBER 13, 1900.

AUSTIN, H. W., surgeon. Detailed as medical officer in command of the national quarantine service on the Delaware Bay and River. December 5, 1900.

MEAD, F. W., surgeon. Granted leave of absence for one day. December 7, 1900.

CRAIG, R. C., acting assistant surgeon. Granted leave of absence for seven days from December 19th. December 13, 1900.

WALERIUS, M., senior hospital steward. Granted leave of absence for seven days from December 4th. December 4, 1900.

CASUALTY.

JAMES CRAGG, senior hospital steward, died at Key West, Fla., December 2, 1900.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, December 26, 1900, at 8 P. M.

Papers: Dr. E. S. Boland, "Report of Three Cases of Hernia in Children Cured by Use of the Yarn Truss."

Dr. C. H. Hare: "Report of a Cesarean Section for Placenta Previa."

Drs. Frederick Coggeshall and John W. Lewis will each report "A Case of Placenta Previa."

Business: Election of a chairman for the ensuing two years. W. H. GRANT, M.D., Secretary, 419 Boylston St.

RECENT DEATH.

PETER F. CURLEY, M.D., one of the best known physicians in Newport, R. I., died last week after an illness of some two months. He was born in Newport in 1861, received his degree from the Albany Medical College in 1883, practised two years in Albany, two in Providence and since 1887 had been in Newport.

BOOKS AND PAMPHLETS RECEIVED.

Report on State Hygiene. By Granville P. Conn, M.D. Reprint. 1900.

The Good Nurse. By James H. McBride, M.D., Los Angeles, Cal. Reprint. 1900.

Tuberculosis in Pennsylvania. By Guy Hinsdale, A.M., M.D., Philadelphia. Reprint. 1900.

The Tale of a Field Hospital. By Frederick Treves. Illustrated. London, Paris, New York, etc.: Cassell & Co., Ltd. 1900.

Is Internal Antisepsis Possible? By Thomas E. Satterthwaite, M.D., Consulting Physician to the New York Post-Graduate Medical School and Hospital.

A Manual of Surgical Treatment. By W. Watson Cheyne, M.B., F.R.C.S., F.R.S., and F. F. Burghard, M.D., and M.S. (Lond.), F.R.C.S. In seven volumes. Vol. IV. The Treatment of the Surgical Affections of the Joints (including Excisions) and the Spine. Philadelphia and New York: Lea Brothers & Co. 1901.

Original Articles.

OPERATIVE TREATMENT OF GOITRE.¹

BY J. COLLINS WARREN, M.D., BOSTON.

THE operative treatment of tumors of the thyroid gland appears to be indicated in rapidly growing tumors in young persons in whom the medical treatment has been ineffective. As soon as the tumor has reached a size sufficient to cause pressure symptoms the operation becomes urgent.

It is in young married women under these conditions that I have performed the majority of my operations.

The operation consists either in the removal of a limited portion of the gland, such as an isolated lobe or a more or less independently growing adenomatous mass of solid gland tissue, or in the enucleation of a cyst.

The incision which I have adopted is U-shaped, one or both of the arms being used according to circumstances—usually it is not necessary to complete the entire sweep of the letter, as the lobe on one side is smaller than on the other; a portion or the whole of the more normal lobe should be allowed to remain according to circumstances. The incision through the skin usually divides one or more large veins. They should be secured with forceps before division if possible, as they are liable to retract beneath the skin and to be overlooked in the final treatment of the wound.

In order to reach the surface of the tumor the edge of the sternomastoid muscle should be sought for and that muscle, which is thin and flattened, must be drawn aside. Occasionally it is necessary to divide the sternohyoid and sternothyroid and also the omohyoid muscles, and there is no harm in so doing, as they can readily be sutured after the extirpation if desired. These muscles can, however, be drawn aside and the different layers of connective tissue covering the capsule are then divided. This releases pressure over the tumor and it begins to rise up from the depths of the wound and become more superficial. When the capsule has been reached care should be taken not to injure it with the knife, as the resulting hemorrhage is hard to control.

In order to lift the tumor from its bed the tissue holding down the upper and outer margin of the lobe should be clamped and divided, the edge of the lobe drawn gently forward, and an effort made to secure the superior thyroid artery. The tumor can now be lifted easily forward and towards the median line in order to disclose the inferior thyroid artery. The recurrent laryngeal nerve lies in close contact with this vessel and is directly behind it. It is not readily found, and in securing the artery care should be taken not to clamp the surrounding tissues too generously, as the nerve may thus be included in the ligature. By keeping close to the surface of the tumor and avoiding wandering between outlying layers of connective tissue, this complication may be avoided. The entire mass of the tumor is now reflected over to the opposite side of the neck and the attachments of the gland to the anterior wall of the trachea are brought into view. In order to free these the knife

must be used. The dissection may be continued to the opposite side of the neck and the smaller lobe removed in much the same way as the larger one. Care should, however, be taken to leave a portion of the gland behind to avoid the production of an operative myxedema. The amount necessary for this purpose need not be large, and when I have occasion to include both lobes of the gland in the operation I have found that a mass about the size of an English walnut is amply sufficient for the purpose.

It is not, however, necessary to remove such a large proportion of the gland in the majority of cases, as a division of the lobe operated upon at the point of its junction with the isthmus is usually sufficient. In this case the opposite lobe either does not increase in size after the operation or grows gradually smaller.

There are many cases reported in which total extirpation of the thyroid gland has not been followed by myxedema, but this is accounted for by the presence of accessory glands near the arch of the aorta, at the side of the trachea, or between it and the esophagus, or near the hyoid bone. It is not justifiable, however, to count upon the existence of any such glands, and a portion of the thyroid gland itself should therefore always be allowed to remain.

All vessels should be tied with scrupulous care. The material I prefer for the purpose is fine silk, as it is much less likely to slip than any of the forms of animal ligature. The neck is so supple and movable a region that the chances of such a mishap are greater than elsewhere, especially when there is much vomiting during the recovery from the anesthetic. It is well, therefore, to take the precaution to give a subcutaneous dose of morphine either before or directly after the administration of the anesthetic to prevent vomiting and to keep the patient quiet. A tight dressing cannot be applied in this region, and the nurse should therefore be instructed to watch for vomiting and to exert gentle manual pressure upon the wound during the act. On one occasion, owing to a neglect of this precaution, I was summoned hastily an hour or two after the operation to arrest a serious hemorrhage which, on opening the wound, appeared to have originated from a comparatively unimportant vessel.

The edges of the wound had better be brought together with silkworm gut and one provisional stitch taken at the most dependent point to allow a small gauze wick to be inserted as far as the deeper portions of the wound. The object of this precaution is not to avoid sepsis, but to prevent a distention of the walls of the wound by serum or blood clots and thus avoid the danger of sudden pressure on the trachea. This danger will be greatly increased by tight bandaging. The dressing should therefore be so applied and should consist of such materials as will give support without causing pressure. For this purpose the horse-collar dressing may be applied; rigidity being given to the collar by paper or pasteboard, pressure and counter pressure being thus exerted on the jaw and clavicles. Fixation of the neck and head may be secured by the application of the ordinary tin internal angular elbow splint to the neck, the head being secured firmly to the upright arm of the splint, while the horizontal arm is bandaged to the shoulder. (Figs. 1 and 2.) The gauze wick should be removed at the end of twenty-four hours and the stitches can ordi

¹ Read before the Surgical Section of the Suffolk District Medical Society, November 7, 1900.

narily be removed a few days later, and the wound edges can then be covered with cotton and collodion, all further bandaging being abandoned.

Enucleation is an operation which should be reserved for small solid adenomata or cysts which are easily separated from the surrounding gland tissue. I have not found hemorrhage troublesome in any of these operations. It is better, if possible, to avoid opening the cyst wall during its removal, for in large



FIG. 1.



FIG. 2.

cysts if a vein be injured it is difficult to secure. The time has gone by when the surgeon should be content to open such a cyst and pack it with gauze. The cyst should be attacked externally and not internally.

Resection of a large wedge-shaped piece of the gland on one or both sides has been recommended by Mikulicz. The remaining portions of the gland tissue are brought together by subcutaneous sutures. Reinbach reports 80 cases of resection by this method, with a mortality of 3.75%.

EXOPHTHALMIC GOITRE.

I have operated upon but 2 cases of this disease and my experience has not been encouraging. In the first case there was an exceedingly stormy convalescence, due apparently to the absorption of thyroid juice from the stump of the portion of the gland left behind. The temperature rose the first evening to 106° F. and the pulse to 202, but the wound healed by first intention. This patient has been from time to time since under Dr. Putnam's observation. Her health was only partially restored by the operation. In the second case the patient passed through several days of convalescence without bad symptoms of any kind. On the fourth day, however, during a sudden attack of tachycardia she died.

I have never tried division of the isthmus; it is possible that relief may be obtained from pressure upon the trachea in an otherwise inoperable case in this way. It is said to be followed by some atrophy of the lateral lobes. Unless the isthmus were well defined it would seem best not to adopt this method, as extensive incisions without extirpation might lead to various undesirable complications.

In regard to the mortality of the operation, in my own experience with benign goitre other than Graves's disease, I have had but one death and that was due to heart failure at the close of an operation for the removal of an enormous goitre of twenty years' standing. As a rule, goitres in this region of the world do not attain an exceedingly large size and the operation for their removal appears to be one attended with little danger if the ordinary precautions above referred to are observed. Reverdin collected 6,103 cases with a mortality of only 2.88%.

I have never observed a recurrence of the tumor after operation, although Brunner reports cases collected from literature in which there were 31% of recurrences, 18% recurring on the operated side and 23% on the opposite side.

I have never performed division of the cervical sympathetic. The operation is intended chiefly for the vascular form of goitre. Jonnesco reports 10 cases operated upon by this method for Basedow's disease; 6 were cured and 4 improved.

Operations upon cases of aberrant goitre are reported from time to time. Hofmeister reports such a tumor under the skin of the breast. I have operated upon a thyroid growth between the base of the tongue and the epiglottis—the point of origin of the thyroglossal tract of His.

In regard to the anesthetic, I have always been able to use ether. Many surgeons prefer local anesthesia and this is strongly recommended by Kocher when the pressure symptoms are strongly marked. Many formidable operations have been performed with cocaine anesthesia without causing suffering to the patient. A 1% solution is sufficient for the purpose.

In advising the operative treatment of this disease it should be remembered that many cases yield to medical treatment. Kocher makes the somewhat surprising statement that 90% of the cases which come into the hospital at Berne are so improved by medical treatment that operation is not necessary. He does not consider that thyroid extract gives any better results than preparations of iodine.

Since the thyroid treatment of goitre has been em-

ployed I have had comparatively few cases sent to me for operation, but I have seen quite a number of cases in which the treatment has produced no effect. Thus far I have failed to see any beneficial effects myself in the use of the drug and I am not personally cognizant of a single case in which it has effected a permanent cure.

STATISTICS OF OPERATIVE TREATMENT OF THYROID TUMORS.*

BY LINCOLN DAVIS, M.D., BOSTON.

SIMPLE GOITRE.

THERE has been a rapid decline in the mortality of operations for simple goitre during the last fifty years. In 70 operative cases reported before 1850 Kocher¹ placed the mortality at 40%; in about 400 operations between 1850 and 1883 it fell to less than 15%; and finally in the period since 1883, in 6,000 operative cases, the mortality is under 3%.

These latter figures are quoted from J. Reverdin,² of Geneva, who reported before the French Congress of Surgery in October, 1898, the largest and most complete collection of operative cases of goitre, excluding malignant and exophthalmic goitre, which exists in the literature. His exact total is 6,103 cases, of which 2,120 were derived from the literature; the remainder were obtained through personal communications. There were 176 deaths, a mortality of 2.88%. The number of operations reported since the publication of Reverdin's great collection is altogether too insignificant to affect his figures. These figures, however, dating back to 1882, and including all kinds of cases, with the two exceptions before mentioned, treated by a large number of surgeons, employing a variety of methods, are very naturally surpassed by the latest statistics of certain notable individual operators in this line of work.

Kocher³ in 1895 reported 1,000 cases of goitre before the German Congress of Surgery. Of these 870 were benign, with 11 deaths, a mortality of 1.37%. Some were *in extremis* when operated upon; 5 died as the immediate result of the operation, 3 died of Basedow's disease, 2 of infection, and 1 death was due to chloroform. In 1898⁴ he reported 600 additional cases, prefacing his statistics with the statement that 90% of the cases coming to his clinic were so benefited by medical treatment as to require no operation. Of 556 cases of benign goitre which were operated on in this last series, there was but a single fatality, and that due to chloroform; mortality, 1.8%, about one-thirtieth of the mortality of his first 100 cases reported in 1883. Since the latter date, his total number of operations for simple goitre is 1,426, with 12 deaths, a mortality of .84%. Partial extirpation of the gland was performed in the great majority of cases.

At the German Congress in 1896, Bruns⁵ reported 400 operations for goitre dating back to 1883, with a mortality of 1½%. He had no deaths in his last 150 cases. Girard,² of Berne, reported in 1898 545 cases, with 6 deaths, a mortality of 1.1%.

Socin,² of Bâle, stated in 1898 that in his last 200 cases he had 1 death from pneumonia, a mortality of .5%. He is an advocate of the method of enuclea-

tion. Kronlein⁶ in 1892 reported 200 cases without a single death.

In this country and in England the disease is comparatively rare, and operations consequently few. Martin⁷ collected 182 cases of goitre from the reports of five hospitals in Philadelphia for ten years down to 1897; only 5 of these cases were operated on, with 1 death. The records of the Massachusetts General Hospital show 37 operations for simple goitre, with 2 deaths.

In considering the mortality of the various operative measures and the causes of death, the statistics of Reverdin are again quoted. In 3,408 operations of which he has details there were 118 deaths, distributed as follows:

137 total extirpations	26 deaths,	18.98%
1212 partial extirpations	42 "	3.46 "
1276 enucleations	10 "	.78 "
343 resections	23 "	6.66 "
438 other methods	17 "	3.88 "

The mortality of the 1,276 enucleations is practically that of Kocher in his 1,426 cases, in the majority of which he performed partial extirpation. In 96 of the 118 fatal cases the causes of death were known. Forty-five were of respiratory origin divided as follows: Pneumonia, bronchopneumonia and bronchitis, 32; asphyxia, 10; fatal lesions of recurrent laryngeal nerves, 3. Twelve cases were due to collapse and shock. There were 19 cases of fatal hemorrhage; none of these followed enucleation. Thirteen deaths were due to sepsis, 3 deaths from tetany, 1 from myxedema.

In the whole literature Reverdin knows of 9 published cases of death due to entrance of air into the veins.

Deaths due to anesthetics are not infrequent. Kocher reports 2 from chloroform. He uses local cocaine anesthesia in the majority of cases.

Post-operative complications.—Marked elevation of temperature following operation has been noted by a large number of observers. Bergeat⁸ states that only 3 histories out of 249 cases showed absence of fever in convalescence, although the usual course of wound healing was nearly perfect. This phenomenon, called thyroid fever by Berard, is ascribed by him to absorption of thyroid secretion set free at the time of operation.

Symptoms of what is now called cachexia strumipriva, following total thyroidectomy, were first noted by Reverdin⁹ in 1882. The condition was further described and named by Kocher the following year. The committee of the Clinical Society of London, in preparing its report on myxedema¹⁰ in 1887, collected 277 cases of intentionally complete thyroidectomy for simple goitre, in which the patients recovered and were kept under observation. In 69 cases, or 25%, cachexia strumipriva of a more or less severe type developed. Out of more than 550 cases of partial thyroidectomy, in which the patients recovered and were followed up, 6 only showed distinct symptoms of myxedema, a little more than 1%. Since the appearance of this report the operation of total thyroidectomy has been practically abandoned, except for malignant disease. Reverdin's statistics give a like percentage of cachexia strumipriva in total thyroidectomy, and a percentage of less than .5 in partial extirpation. Kocher reports 4 cases of myxedema in 1,600 operations for goitres of all kinds, including malignant disease, .25%.

* Read before the Surgical Section of the Suffolk District Medical Society, November 7, 1900.

Tetany is more common; it occurred 5 times in 137 total thyroidectomies, in Reverdin's series, 3.64%. Fourteen cases followed all other operations, less than .5%. Koehler reports a case of tetany following ligation of the four thyroid arteries.

Disturbance of phonation as the result of injury to the recurrent laryngeal nerves occurred 57 times in 1,212 partial extirpations, 4.7%, and 11 times in 1,276 enucleations, .86% in Reverdin's collection. Koehler's percentage is 7 in 900 cases. It proved temporary, however, in all the cases of benign goitres.

Recurrence.—All operations in use at the present day are liable to recurrence since total thyroidectomy is proscribed. Of 146 cases of simple goitre operated in Czerny's clinic, which were followed from one to eleven years after operation, 30, or 20%, had recurrence.¹¹ Kopp¹² re-examined 103 cases operated on by Roux, of Lausanne, after an interval of from one and one-half to six years. He found 36 cases where the remaining portion of the gland had increased in size, in 19 to a slight extent only. Of these 36 cases, 13 were operated on by Socin's method and 20 by Koehler's. The statistics of Bruns are more favorable; he reports 800 cases of Socin, Krönlein, Kappeler and his own, out of which less than one dozen required secondary operation for recurrence.

MALIGNANT GOITRE.

The surgical treatment of malignant disease of the thyroid gland has not taken part in the great advance made in the treatment of simple goitres. Koehler's mortality in 1883 was 25%, and it is 33% in his last report in 1898. Thirty-three cases operated in Czerny's clinic gave a mortality of 15%. Five cases were free from recurrence up to four and one-half years.

Sarcoma is rarer and more fatal than carcinoma. Tiffany,¹³ in 1897, collected 16 cases of sarcoma which were operated on, all with fatal results. Without making special search I have found 3 more reported cases in the literature,^{14 15 16} and 3 in the records of the Massachusetts General Hospital; all fatal.

EXOPHTHALMIC GOITRE.

Tillaux was the pioneer in the surgical treatment of this condition, performing thyroidectomy as early as 1860.¹⁷ He has had many followers.

Schulz¹⁸ published in May, 1900, the largest collection of operative cases of exophthalmic goitre to be found in the literature to date. He gives the results of 319 operations as follows: Cured, 175, 51%; improved, 89, 28%; unimproved, 13, 4%; died, 41, 13%. There are three principal operations in use at the present time: (1) Removal of a portion of the thyroid gland; (2) ligation of thyroid arteries; (3) resection of cervical sympathetic nerves.

In Schulz's collection there are 177 cases in which a portion of the gland was removed with cure in 102, 57%; improvement in 47, 26%; no improvement in 4, 2%; death in 24, 13%. One hundred and forty-nine of the cases were followed up. The causes of death are not tabulated in this collection. The operation, in addition to the dangers attaching to any thyroidectomy, seems to present a special gravity in this disease. A considerable number of sudden deaths, either during or after the operation, have been reported.^{19 20} These deaths are ascribed by many to acute poisoning

from absorption of the secretion of the incised gland.

The principal exponent of ligation of thyroid arteries is Koehler, who has tied three arteries in 49 cases of exophthalmic goitre, with 5 deaths. In 34 cases, reported in 1895, there was cure or improvement in 31. Rydygier has tied all four arteries in 22 cases. Cure or improvement resulted in 20; no improvement in 2; no cases of myxedema or tetany followed the operation.²¹ Kopp, however, reports a case in which only three arteries were tied, followed by tetany and death. In 81 cases²² treated by this method the mortality is 8½%.

Section of the cervical sympathetic nerves was first performed for exophthalmic goitre in man by Jaboulay,²³ of Lyons, in the spring of 1896. Jonnesco,²⁴ of Bucharest, is perhaps the principal exponent of this method; at the Thirteenth International Congress this year he reported 126 resections of the cervical sympathetic nerves; 15 of these cases were of exophthalmic goitre. His operation is total bilateral resection of the nerve with its three ganglia. In his last case he even removed the first thoracic ganglia. He reported 6 cases as completely and definitely cured of all symptoms after the lapse of from two to four years. There were 4 lasting improvements. In the 5 later cases the immediate results were excellent, but sufficient time had not elapsed to speak of the final result. He has had no fatal cases. In 35 cases reported by other surgeons²⁵ there are 5 reported cures, 20 cases of notable amelioration of all symptoms, 4 cases not improved, and 6 deaths: 2 from pneumonia; 1 from delirium tremens, 1 sudden unexplained death on the table, 1 after secondary operation five weeks later, 1 from cachexia. Total number of cases treated by this method 50, with a cure in 11, 22%; improvement in 29, 58%; no improvement in 4, 8%; death in 6, 12%.

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INFLUENZA IN ST. PETERSBURG.—Influenza has appeared in epidemic form in St. Petersburg.

NEOPLASMS OF THE THYROID GLAND.¹

BY CHARLES G. LUMSTON, M.D., BOSTON.

IN looking over my notes I find that I have had under my care 42 cases of neoplasm of the thyroid gland, divided up as follows: One case each of sarcoma and carcinoma of the thyroid gland, 12 cases of parenchymatous goitre, 14 cases of colloid goitre, 4 cases of cystic goitre, 7 cases of adenoma of the thyroid gland, and 3 cases of strumitis. Of these cases 31 were operated on Professor Kummer, the remainder by myself.

With the exception of the malignant cases, the principal symptom complained of by the patients which required relief was dyspnea, while hoarseness and dysphagia were less frequently prominent; palpitation of the heart was noted frequently. In many of our patients a careful treatment with iodide compounds had been carried out before the operation, which had only produced a slight improvement in the condition, or none at all.

The dyspnea complained of by the patients, the degree of which appeared to be very often in decided disproportion to the size of the goitre, has often been explained at the time of operation, when it was found that the goitre had become retrosternal in its development, and produced a very marked compression of the trachea. This compression was shown by a flattening of the trachea, either laterally or anterior posteriorly, and in the majority of cases the organ was displaced and formed more or less of a curve which also diminished its calibre. We have never met with the so-called softening of the trachea as far as we can recollect.

In operating, we occasionally employ the angular incision of Professor Kocher, and more frequently his transversal incision. The latter incision has the great advantage of leaving linear cicatrices which are easily hidden by the clothes. It certainly must be admitted that it gives less working space than the angular incision, and on several occasions we have been obliged to make a second oblique incision, but much space can be made if, after the transversal incision, the superficial muscle and aponeurosis are peeled back with the skin as far as the sternum and upwards as far as the cricoid cartilage. By thus proceeding, the transversal incision will often allow the surgeon to deliver a very large goitre.

In most cases we have not divided the sternomastoid muscle, but have simply split up the tissues in the median line from the sternum to the larynx in cases of very large goitre, and if the delivery of the neoplasm through this opening was not possible, one or several lateral nicks in the sternomastoid muscle were necessary and in some instances we have penetrated between the sternothyroid and the sternohyoid muscle.

In cases of very large goitre, where it was impossible to draw it out on account of vascular or fibrous adhesions, we were obliged to divide both sternomastoid muscles in order to bring the neoplasm into view and to ligate the vessels *in situ*. To extirpate the goitre, we performed enucleation in those cases where the growth was composed of cystic or colloid masses, but in the much more numerous class of cases of involvement of the entire lobe, with the formation

of multiple foci of colloid or cystic formation, extirpation of the entire lobe was resorted to, and if necessary enucleation of one or several nodules situated in the isthmus or in the other lobe was performed.

We operated on one patient who several years previously had had enucleation performed by another surgeon, and she came to the hospital on account of a recurrence which had produced the same respiratory trouble that was present before the former operation. In this case we performed a total extirpation of one lobe, and the patient remained in excellent condition, but a few years after the operation a nucleus of disease had appeared in the remaining lobe, which had increased considerably in size, and it is a very interesting point to notice that for all that respiration had remained perfectly unimpaired.

I have notes of another similar case which is quite as instructive. A young girl underwent a total extirpation of the right lobe of the thyroid gland on account of very difficult respiration; the respiratory symptoms completely disappeared in spite of a recurrence of the goitre in the left lobe which was very pronounced. Thus it is demonstrated, and Kocher has already insisted on this fact, that when once the trachea has been completely freed on one side by the total extirpation of one lobe of the thyroid, a recurrence may occur in the other lobe, and the trachea remaining free on one side will never be compressed by the newly formed goitre so as to produce difficulty in respiration. This in no way applies to enucleation, because after this operation the trachea remains surrounded on both sides by thyroid tissue, and consequently a recurrence of the neoplasm would probably produce symptoms which would necessitate total extirpation.

An anatomical study of our preparations distinctly demonstrated how little enucleation was indicated in those cases where we performed total extirpation of one lobe, because they consisted in diffuse colloid degeneration, with formation of small and large cysts, each one of which could never have been enucleated alone, and which if allowed to remain in place would very easily have given rise to a recurrence of the affection. We consequently believe that enucleation is an excellent operation for those rather rare cases of cystic formation and simple colloid foci, and also that it is applicable in cases of recurrence after total extirpation of one lobe has been performed. But all things considered, total extirpation, in our way of thinking, is by far the better operation in the large majority of cases of goitre. Total extirpation has, nevertheless, one great drawback, and this is the possibility of wounding the recurrent nerve. It is usually considered that the most dangerous point for wounding this nerve is at that point where it crosses the inferior thyroid artery, and near which this vessel is ligated.

I think that I can be affirmative in stating that in every case where this nerve was injured it was at another point than that which we have mentioned, because I find that in all of our cases it is expressly noted that the inferior thyroid artery was carefully isolated, and that it alone was included in the ligature. Several times the recurrent nerve was quite visible, and we were able to note that it remained perfectly intact while tying off the inferior thyroid artery, but for all that, after the operation the patient presented symptoms of paralysis of this nerve. Another point at which the recurrent nerve is very

¹ Read before the Surgical Section of the Suffolk District Medical Society, November 7, 1900.

much exposed to wounding during the total extirpation of a lobe, and which, according to our way of thinking, is the point where we wounded it, is the posterior lateral aspect of the trachea where the recurrent nerve passes before it enters into the larynx, and in detaching the gland from the trachea it is easily wounded, and in our future operations we shall follow the advice of Kocher, which is to leave a bit of thyroid tissue at this place in order to avoid the nerve at this point.

After having made a careful hemostasis with fine silk, we immediately close the incision, and union by first intention has usually been the result. In 1 case a small abscess formed six days after the operation, but was well in a few days. In 2 instances, once in a case of strumitis typhosa, and in another which we will relate, the ligatures were eliminated *en masse*.

I unfortunately have not been able to find the complete notes of the case of typhoid strumitis, but the history of the case was briefly this. A young girl of eighteen or nineteen years, during her convalescence of typhoid fever, noticed that her throat began to swell. The swelling slowly increased and she began to run a temperature, and on account of the respiratory symptoms to which the tumor gave rise, operation was performed a few weeks later. Convalescence was uninterrupted. An examination of the thyroid gland showed that it was an ordinary vascular strumitis, and cultures taken from the substance of this gland revealed a growth of Eberth's bacillus.

The other case to which I referred was one where we removed by extirpation the right lobe and the isthmus of the thyroid gland, and at the time of operation it was noticed that the left lobe was extremely small and there was present a small pyramidal process which was left intact. The silk ligature which had been placed on the isthmus set up a suppurative process which lasted five months. The fistula which resulted was opened up and a silk ligature was removed, after which the wound healed definitely in a few days. After the operation this patient presented a change in the general condition, which, in all probability, could be classed as one of strumipriva cachexia. The patient was very nervous, slept badly, cried easily and would get very angry at the slightest cause, and with all this her memory diminished; she often did not know what she was doing, but she never had what could be termed a true nervous attack. She was weak, pale, the eyes had a languid expression, the skin of the face appeared puffed, but a careful examination of all the viscera and the urine revealed nothing abnormal. In the cicatrix of the incision in the median line, a fistula was present, while to the left of the trachea a small mass could be made out by palpation which corresponded to the left lobe of the thyroid gland. This was very small, as I have stated, at the time of operation, but it had evidently atrophied since under the influence of the suppurative process. Since the extraction of the ligature and the cessation of the suppuration, this little mass slowly increased in size, and a year and a half after the operation it was found to be about the size of an almond. The nervous symptoms disappeared, as well as the anemia, and the patient was feeling in excellent health.

This case appears to us most instructive, inasmuch as it points out the necessity of great prudence in ex-

cising the thyroid substance. The left lobe had particularly attracted our attention, on account of its small size, at the time of the operation; the pyramidal process which was present in this case, and which we did not touch, was also very thin, and by the aid of suppuration the remains of the thyroid gland became momentarily insufficient for the thyroid function, which is so necessary for general good health.

Consequently, should we ever meet with a similar case we should not employ ligatures *en masse*, or any other which might favor suppuration, and we should also preserve as large an amount of normal thyroid tissue as might be possible. Enucleation, if it is sufficient to remove the totality of the diseased tissues, would be the most economical operation, but in those frequent cases where this operation would be insufficient we would recommend a resection of the diseased portion of the lobe, preserving the healthy part. At any rate, the experience of the case just mentioned should warn us to examine the condition of the other lobe before performing a complete excision of the diseased side, and only perform this operation when the other lobe is sufficiently large to prove itself sufficient for its necessary functions. The influence of the removal of the thyroid functions on the general health was demonstrated in another of our cases where a nearly complete excision of the thyroid tissue was performed for carcinoma of the gland, and which was followed by tetany. Curiously enough, this unfortunate post-operative complication got better after a metastasis of the neoplasm in the neighboring lymphatic glands took place.

The following case is interesting on account of its rarity. I refer to sarcoma of the thyroid gland, but as this case has already been published in the *Philadelphia Monthly Medical Journal* for May, 1899, I will be very brief. The patient, a German, age forty-seven, had had a small movable goitre about the size of a lemon present about six months. She was treated for three months with thyroid extract without any apparent benefit, and was then lost sight of. She returned, however, about a year and a half later, stating that for about ten weeks the tumor had begun to increase in size. Examination showed that the left lobe of the gland had attained the size of an apple; its surface was still quite smooth and it was movable. The skin covering it was normal, and there were no dilated subcutaneous veins. On account of its rapid growth a diagnosis of malignant transformation was made and the growth was removed. The patient made a perfect recovery and was discharged ten days after the operation. The microscopical examination showed a typical follicular goitre the upper part of which had become invaded by a spindle-cell sarcoma in the septa dividing the vesicles of the gland. A focus of sarcomatous tissue was found in the lower part of the gland. The operation was performed on November 8, 1898, and the patient died of generalized sarcomatosis in April, 1900.

The last case that I should like to report is interesting, inasmuch as it shows how a goitre may become infected during the progress of an acute infectious disease, as occasionally occurs in ovarian cystoma. The patient was a woman forty-seven years of age. During her first pregnancy, which occurred about twenty-three years ago, the patient noticed that a tumor developed low down on the left-hand side of her neck, and which gave rise to quite sharp pains.

This tumor gradually increased in size, more especially after her second pregnancy, and finally attained nearly the volume of a grape-fruit. The growth did not produce any difficulty in respiration or in swallowing, and the patient did not notice any change in the nature of her menstruation, which was still quite regular.

In February, 1890, while recovering from a severe attack of influenza, she noticed that without any appreciable cause the tumor began to rapidly increase in size, especially in its upper portion, from which it had slowly sent out a prolongation which reached the angle of the lower jaw. Since the month of March the tumor remained stationary, but was the seat of very severe pain. The pain continued, and became more and more acute. During the last three weeks the skin covering the most projecting point of the upper prolongation had become red. The pain, which in the beginning only was present in the evening, was now practically constant. The patient has no recollection of having had chills or fever, she does not perspire, and there was no diarrhoea. Other than she suffered somewhat from indigestion and was not of a robust constitution, there was nothing of special note.

The left side of the neck was occupied by a tumor nearly the size of the patient's head. In shape it was irregular; inferiorly it formed a large projection which extended over to the right side, covering the trachea and the lower part of the larynx, and rested upon the sternum and the left clavicle; it extended to the entire left side of the neck, which it completely filled up, and extended upwards under the chin and jaw to its left angle. The skin presented a few dilated subcutaneous veins, and on the lateral external surface above the middle of the tumor a large projection was noticed, the skin covering it being of a bright scarlet, and it appeared that the tumor was just about to ulcerate through the integuments at this point. The skin was hot, especially where it was reddened, and all about it was quite an extensive inflammatory edema. The left sternomastoid muscle was pushed backwards. The tumor was elastic, somewhat soft, and fluctuation could be detected everywhere within it. In the lower aspect two nodules could be palpated which seemed to belong to the tumor. The larynx was pushed somewhat aside and the carotid artery was pushed backwards and pulsated exactly over the external margin of the tumor. The neoplasm was movable over the deeper structures.

All various treatments having been essayed without effect, and as the tumor continued to increase progressively in size, and as alarming symptoms supervened, an operation was undertaken on February 13, 1891. An incision was carried over the inflammatory area, and a small quantity of thick pus was evacuated. The tumor did not collapse, and when the finger was introduced into the cavity made by the incision, it came upon a friable tissue but not into the large cavity of the growth. The incision was then extended down to the sternum obliquely, and as the pretracheal muscles were stretched out over the growth, they were incised and the neoplasm was exposed. A trocar was introduced into the growth, which gave issue to a certain amount of pus which was different from that first evacuated.

The capsule of the neoplasm was incised, and the growth was enucleated with the finger, a task difficult to accomplish on account of very dense adhesions. Above, the wall of the cyst ruptured all of a sudden

and gave issue to a certain amount of pus. It may possibly have been by this route that the inflammation had extended upwards towards the skin. The loss of blood was insignificant. Above, at the point of the projection, a grayish mass was found about the size of an egg, and which had infiltrated the cellular and muscular tissues. With the scissors and curette, it was removed piecemeal without, however, being completely taken away. This mass extended towards the upper part of the cavity of the cyst, although no positive communication between the two could be found. The tissue composing it did not bleed. The middle part of the cyst was sutured to the skin and above and below it was packed with iodoform gauze. The patient made an excellent recovery.

I have purposely made no mention of Dr. Jaboulay's treatment by desiccation of goitres after having exposed them to the air through an incision, as I have personally no experience, but the reports that come from Lyons since this treatment has been in vogue would lead me to adopt it in those cases where there was some contraindication to extirpation or enucleation.

THE PRACTICAL USE OF VITAL STATISTICS.¹

BY FREDERICK L. HOFFMAN, ESQ., NEWARK, N. J.

VITAL statistics, in the words of Dr. Newsholme, "is the science of numbers applied to the life history of communities and nations," and this definition being accepted, we are on the outset confronted by a matter of general importance, since there are none of the people of this State so high or so low but that to them life has its value in direct proportion to its duration. Time was when mankind believed that those "whom the gods love die young," but this doctrine of fatalism no longer prevails in the light of modern medicine and sanitary science, for both of these efforts for social betterment and the amelioration of the conditions under which the people have to live could not exist but for the modern science of vital statistics, than which there is no field of research more promising of useful and practical results.

It has been necessary for me to confine myself in this discussion to mortality statistics, since even a superficial consideration of the other branches of the science, dealing with the statistics of marriages, divorces and births, would consume more time than I have at my command. But, manifestly, the mortality statistics must needs be looked upon as the most important branch of the science, since they affect more directly the interests and the welfare of the living people of this State. Although I readily recognize the great social value of the statistics of marriages, divorces and births, I personally have had but little opportunity to investigate these subjects.

My discussion as to the data of human mortality will be largely confined to the conditions as they exist in the State of New Jersey, and as they are made plain to us by the facts already in our possession through the efforts of the State Board of Health since 1878. Data of some historic value have been collected for previous years, but as regards the State as a whole, we have no information of scientific value for years previous to 1878. For some of the counties, especially for Essex, we have information of value for

¹ Read before the New Jersey Sanitary Association.

years as far back as 1859, in a report on the "Health and Mortality of Newark, N. J.," by Dr. Edgar Holden, for the period 1859-1878. Another valuable paper on the "Climatology and Diseases of Essex County," is to be found in the *Transactions of the Medical Society of New Jersey* for the year 1887, in which also the vital statistics for years previous to 1878 are incorporated in considerable detail. Since 1878 and to June 30, 1899, there have been recorded in this State 550,955 deaths, and of these records and their practical value it is my intention to speak to you this evening.

The essential facts known to us as to this large number of deaths are: (1) The year of occurrence; (2) the ages of those dying, by certain specified groups of years; (3) the sex; (4) the causes, arranged according to reasonably well defined groups of diseases; (5) the locality, with a reasonable degree of precision. More details would, of course, be desirable, more accuracy would be of great value, but on the whole, as the information has been made public, it is of practical value to the State, to the medical profession and to the public at large. The information available is sufficient to approximately indicate the rise or fall of the general death rate and the corresponding increase or decrease in the longevity of the people of this State. The information is not as useful as it could easily have been made had those in charge of the registration and publication of these statistics been more liberally supported by the State in their arduous efforts, but even in their present condition they are a valuable means of indicating to us the steady progress which has been made in this State during the past twenty years. It is but proper that mention should be made of one to whom we are largely indebted for the good work which has been done during a large part of this period, namely, Dr. Ezra Hunt, formerly the secretary of the State Board of Health.

Our information as to the mortality in this State is supplemented by the census reports made for the past fifty years on the mortality of the United States, but in particular by the life tables of New Jersey, which have been incorporated in the census reports of 1880 and of 1890.

A careful study of this available body of information, really the vital history of the people of this State, is indeed not only a most interesting subject, but one of great promise of practical results. The first fact which is impressed upon us by a study of the life tables of the two census years mentioned would indicate that the sanitary progress, of which we hear so much, has not affected as large a proportion of our population as is commonly supposed to have been the case. Unquestionably, immense progress has been made and almost wonderful results have been accomplished in the direction of diminishing the mortality of children under the age of fifteen years. As an illustration I may mention the fact that if we take the three years 1879-1881 and compare them with the last three years, 1897-1899, we have only 24,208 deaths under twenty years of age in the latter period against 28,880 deaths under twenty years during the earlier period of our history, although during the same years the population has almost doubled itself. But this gain in longevity at earlier ages has not been made at the ages past middle life, and we have a pertinent illustration in support of this theory in the two

life tables for New Jersey published in 1880 and 1890, showing that while in 1880 the expectancy of life at the age of twenty-five was thirty-nine and eight-tenths years, in 1890 it was only thirty-seven and four-tenths years; that while in 1880 at the age of fifty the expectancy was twenty-two and three-tenths years, in 1890 the expectancy was only twenty-one years. In other words, the mortality at older ages is today higher than it was twenty, or even ten, years ago. I cannot burden this paper with statistics on the subject, but I hope to add a series of tables in an appendix to this paper when the same is finally published in the *Transactions* of the association.

At present it is impossible to point out definitely and precisely the causes responsible for the unquestionable increase in the mortality at ages above twenty. We have not for this State the detailed information as to the causes of death which would be necessary for a thorough and complete study of the subject. I understand that these imperfections will be largely done away with in future reports under the new law, according to which the Bertillon system of classification will be adopted, and I sincerely trust that together with this improvement in disease classification there will come a corresponding improvement in the collection of more detailed information as to the ages at death. To make our vital statistics of more practical value, the ages at death, together with the corresponding causes, must be given for single years under the age of five and for five-year periods over the age of five. It is only in this manner that we can arrive at a definite conclusion as to the age incidence of disease and the causes which are responsible for the present excessive mortality at ages over twenty. But what is most needed in addition to a more complete registration of causes and ages is detailed information as to the occupations at death. At present we have absolutely no knowledge as to the relation of disease occurrence in different occupations, and it is in this direction that the greatest practical value of vital statistics finds its logical explanation.

As the result of frequent and comprehensive investigations, I am satisfied that there is no subject deserving of more thorough investigation and study on the part of our physicians and those in charge of the sanitary interests of our different towns and cities than the intimate relation which unquestionably exists between occupation and mortality. There are in this State trade centres where industries of a special order are carried on on a very large scale, and as such we may mention the pottery and rubber industries in Trenton, the glass industry in Southern New Jersey, the hat industry in Orange and Newark, and the silk industry in Paterson, yet, as far as our information goes, we know nothing of determining value as to whether these industries are responsible for the increased mortality at ages over twenty of which I have spoken. It is true, and we may speak of this with pride, that special investigations have been made by disinterested students of the subject, and that reports of great value have been published in the annuals of the State Board of Health and of the State Bureau of Labor Statistics. No reports of any other State boards of health contain such precise and satisfactory information as to the diseases of workmen employed in the principal industries of the Commonwealth. Commencing with 1878, we have in the reports of the State Board of Health a series of valuable

papers on the diseases of hatters, of potters, of glass-workers, of rubber workers, etc. Commencing with 1889 and terminating with 1895, we have in the annual reports of the State Bureau of Labor Statistics exceedingly valuable and suggestive inquiries into the trade life of workmen, not only in the principal manufacturing industries, but also in other dangerous and unhealthy occupations. Very little in this direction has, however, been done for the past ten years, and it is my plea to you at this meeting that our special efforts in this direction should not be relaxed, or that we should be satisfied with what has been done in the past, but that we should enlarge our scope of inquiry, supplement our limited body of observed facts with a large body of statistics collected by the State Board of Health as to the diseases of working men employed in the useful and productive trades and industries of this State.

Valuable as the investigations of the State Board of Health and of the State Bureau of Labor are to those who are most interested in the subject, they fall short in that they have not the support of a large series of observed facts to be found in the death certificates of those whose lives have terminated in this State during the past twenty years. I would urgently recommend that for practical use in our vital statistics, we should have in the future a detailed and comprehensive table, showing for all of the principal occupations or industries the causes of death according to age periods. That this task is not impossible, or even very difficult, is illustrated in the excellent reports of the health officers of Sheffield and Blackburn, England. These reports can well serve as a model for our own State Board, should it appear to be possible and feasible to undertake the construction of occupation mortality tables. I am fully aware of the inherent difficulties which accompany such inquiries; I fully realize the difficulty of obtaining exact information as to the occupation at death, but it is not for us to be discouraged by such difficulties, but for us who are really and vitally interested in the collection and publication of such statistics to solve the difficulty, and that this difficulty can be solved all of us know who are familiar with the excellent and useful reports published under the direction of the Registrar-General of England every ten years. In certain directions an improvement of our present statistics is easily possible. There should first be added to the death certificate a second question as to occupation, stating the industry or trade in which decedent was engaged at the time of his or her death. To explain to you the meaning of this point, I will say that at present a death certificate may contain a statement of the occupation of decedent at the time of his death as that of a moulder, but unless it is stated that he was a moulder in a pottery, he would be classified among iron moulders or stove moulders, as the case might be. Similar cases could be mentioned, as for instance, engineers, where we have no information as to whether decedent was a stationary engineer, employed on a railway, or possibly a civil engineer, but if the second line is added referring to our first illustration, it would have been stated that decedent was a moulder in a pottery, and his death in that case would have been accurately classified. I would, therefore, suggest that the State Board should adopt a new death certificate, in which the first line referring to the occupation would merely ask the question as to "oc-

cupation at death," the second line would ask the question, "industry or trade at death," and by an answer to these two questions we would obtain the accurate and necessary information demanded for the best interests of the working people of this State. A third question could be added which would materially increase the value of these statistics, which, however, is not of quite so much importance as the second question which I would like to have added to our present certificate. It would be desirable to have a definite statement as to whether decedent at the time of his death was an employer or an employé. Manifestly, it is a very different matter whether decedent was the owner of a pottery or a working potter at the bench. If we could obtain this information we would very materially enhance the practical value of the vital statistics of this State.

But a further decided and material improvement in this direction is possible through a co-operation between the Bureau of Labor Statistics and the Bureau of Factory Inspection. The reports of the latter are at present of practically no value for the study or solution of questions pertaining to the trade life and disease or accident liability of men employed in the unhealthy or dangerous industries of this State. I can conceive of no practical reason why so large an amount of routine information should be published which can serve no useful purpose except (and the reports are practically limited to this information), that of record, and why the energy and effort expended in this direction should not serve the more useful purpose of placing before the people of this State information of value as to the real sanitary condition of factories and the health factors affecting our working people in the same manner as this has been done for so many years in the reports of the Board of Factory Inspectors of Great Britain. Many of the reports of the factory inspectors of different States are in this respect of far greater value than the reports published by our own Board of Factory Inspectors, and I believe that if the subject were thoroughly investigated by a committee of the legislature or by disinterested citizens of this State, there would be inaugurated an improvement which would make it possible for those who are interested in the subject to realize fully the present state of factory life in this Commonwealth. It would be possible on the basis of the statistics and supplementary information collected by the co-operation of the State Board of Health, the State Bureau of Labor Statistics, and of the State Board of Factory Inspection, to produce a body of indisputable facts, on the basis of which it would be possible to frame more scientific rules and regulations by which our working people engaged in the most useful pursuits of life could be better protected than they are at the present time, and as they fully deserve to be.

These statistics of mortality by occupations, and the supplementary information as to the sanitary state of our factories, would have a secondary practical value to a large number of physicians, who in the light of published facts and on the ground of their own experience, verified and supplemented by such facts, would realize the almost boundless and at the present neglected opportunity for the study of diseases of working people employed in dangerous and unhealthy occupations for the purpose of developing special ability, which in time will give us a class of medical specialists of the diseases of workmen, as

we now have such specialists for diseases of the eye or ear, and for other parts of the body. Certainly no class of specialists is more urgently needed and none are likely to make more rapid progress in their own material welfare. The increase in general intelligence among our working people today, justly considered the most advanced industrial workers in the world, will soon create a distinct demand for more satisfactory and reliable advice on matters pertaining to illness and casualties directly the result of the industries in which our people are engaged. The advice of such specialists will be respected, and men will act thereon, and if necessary change their occupation, or change to another branch of their occupation less dangerous or injurious than the one in which they may be engaged, and in which they may have developed diseases in their incipient stages, not sufficiently advanced to be beyond improvement or complete recovery. Much has already been done in this direction by a few devoted and intelligent physicians, but most of all by such men as Dr. Arlidge, the English authority on diseases of men employed in the potteries. There will come a time when we will coin a new term in medicine and speak of industrial medicine, just as we today speak of industrial chemistry, and both sciences or arts will indeed be most closely allied to each other.

I have limited myself to this one illustration of the value and utility of vital statistics, for unless we have more accurate information and a larger body of collected data as to the diseases of our working people, supported by accurate and extensive statistics as to the deaths in different occupations and the ages at which the deaths occurred, the development of industrial medicine will not be possible. What is true of the necessity of such statistics for the purpose of industrial medicine, is equally true of all other branches of medical inquiry into the longevity of our people as affected by other determining factors, such as surface geology, proximity to forest areas, of sea-shore and mountain climates, and many other factors which unquestionably have a direct influence upon the health of the people of this State. To enhance the practical value of the collected vital statistics would require in every locality a sincere and genuine interest in the local phenomena and the factors making for a long or a short life.

We, unfortunately, have developed, first, but little of this local spirit of inquiry, and, second, but little public appreciation and demand for published data as to the local health conditions. In curious contrast to the excellent work which has been done by the State Board of Health for so many years in publishing practical and useful information for the State as a whole, the local boards of health in New Jersey have published practically nothing of value, with the notable and recent exceptions of the cities of Asbury Park and Montclair. Some advance has also been made in the city of Newark, but none in proportion to the immense interests which are involved. For our other large cities, especially for Trenton, Camden, Jersey City, Paterson and Orange, we have no health reports in such detail as they are required for the best interests of the people of these cities. There is absolutely no reason why the cities of this State should not follow the example of other large cities in this country and publish annually a separate health report con-

taining detailed information very much along the line as this has been done in so excellent a manner by the health officer of the city of Montclair, today perhaps the healthiest suburban city within fifty miles of the city of New York. In few States in this Union is it possible to supplement such local reports by all the necessary information as to geology, climate, water supplies and industrial statistics as this is possible in New Jersey. No other State in the Union has so thoroughly equipped a geological survey in the hands of men who have given primary consideration to matters of immediate and practical importance, while at the same time not neglecting matters of remote importance. Our State Weather Service has published reports of a very high degree of usefulness, and as regards the State Bureau of Statistics, it has also contributed its share of information of value to the health officer in supplementing his conclusions as to the local conditions making for a long or a short duration of life. It is much to be regretted that the reports of the State Bureau of Factory Inspection cannot be included in this praise of our State departments of supervision and investigation of subjects directly or indirectly affecting public welfare.

I cannot refrain on this occasion from calling your attention to a matter directly connected with the extension or development of the practical utility of vital statistics, and which but for urgent necessity I would gladly have left out of consideration, for in a measure it is to me a painful duty. You are all aware that in this State our vital statistics are in the first instance collected by the city clerks, and while there are certain reasons why this should be the case, in the light of the development of modern preventive medicine it is no longer desirable that this duty should fall to a class of men totally unfamiliar with the medical aspects of the data they are expected to register for the use of medical practitioners and sanitarians. This is not as it should be, and I urgently recommend that early steps be taken tending to a change in the law, and transferring this important duty from the city clerks to the local board of health or to a medical registrar of vital statistics, especially appointed for that purpose. In certain other States we have a still more antiquated system by which the Secretary of State is made the custodian of the vital statistics and under his supervision the statistics are compiled, published and analyzed. This is contrary to the purpose of collecting vital statistics, since one totally unfamiliar with the essential requirements and needs of the science cannot be expected to do justice to the task imposed upon him. In consequence of this anomaly, vital statistics are in many States collected without due skill and proper consideration of important details, while at the same time they are not in time placed before a trained medical observer for immediate consideration, verification and correction. Gross errors must needs result from so antiquated and unwarranted a practice, which owes its origin to a time when certificates of marriage, birth and death served merely the legal purpose of establishing proofs of identity, but at the present time the legal aspect of these certificates is but subordinate to the far more important one of the State supervision of the public health, and hence the urgent necessity that the duty of collecting vital statistics in the first instance be transferred from the city clerk to the medical officer

of health, or to a duly appointed medical registrar of vital statistics.

I cannot do better than illustrate the importance of this point by a reference to a slightly different matter, which at the same time will make clear to you the inexpediency of placing the collection, and, even worse, the analysis, of vital statistics in the hands of a State officer not directly connected with the sanitary administration or the preservation and improvement of the public health of the people of a State. Curiously enough, the illustration of which I shall make use is furnished by the State from which you would least expect so sorry an exhibition of ignorance and perversion, if not desecration, of a high public office, and at the same time of such utter indifference, if not contempt, of public requirements and public needs. In the State of Massachusetts vital statistics are also in the first instance collected under the authority of the Secretary of State, and it is by the authority of this same officer that the returns are annually published and analyzed by some one designated for this purpose. For forty-nine years, ending with 1890, this duty had been delegated to men trained in public health matters, to men thoroughly familiar with the science of vital statistics, to men deeply interested in the development of the highest degree of accuracy and skill, combined with a desire to make the vital records of the State attain to as high a degree of public utility as possible. During these forty-nine years the science of vital statistics had been more highly developed in Massachusetts than in any other State of the Union, and the registration reports edited by the foremost men and authorities in the science of vital statistics had reached a point of public approval such as has never yet been attained by any other State of this country. One would have expected where so high a degree of public utility had been reached and where this important duty of study and analysis of the vital records had been developed to the complete satisfaction of the public, as expressed in the medical journals and other competent channels of public opinion, that it would have been impossible to ruthlessly destroy or to tear down the work of earnest men for half a century. Yet without warning, without right, without justice, the Secretary of State in 1891 transferred this important duty away from the secretary of the State Board of Health to an unknown individual, who has since to the discredit of Massachusetts made the registration reports of that State not only a sorry evidence of his own ignorance, but an evidence of the indifference of the intelligent people of Massachusetts to an act of iniquity on the part of a high officer of State such as is, probably, without a parallel in the history of vital statistics in the civilized world. The registration reports of Massachusetts, as they have been issued since 1890, contain not hundreds but thousands of errors, the majority of which are inaccuracies and misstatements, which even a high-school graduate trained in simple arithmetic would not be expected to make. The reports are full of fallacies, full of discrepancies, and are today a discredit to the people of Massachusetts, and a discredit to the science of vital statistics, and a direct step backward in the development of the point to which I have called your attention, namely, the development and extension of the practical uses of the science of vital statistics.

I would not have spoken of this perversion of a high

public duty, and of the undoing of the good work of able and earnest men for half a century, were it not that I believe it to be our duty to recognize dangers which confront us in this State as much as they are present in every other community. I believe that it is only by the strictest vigilance exercised on the part of the public and of individuals who have the best interests of the people at heart that so difficult a task as the one in which you are engaged can be carried successfully onward from year to year. The results which follow the efforts of sanitarians are always remote, and more often benefit future generations than the people of the time who have to bear the immediate burden of expense. Hence this digression into a chapter of vital statistics, which to my mind records the most unfortunate and shameful betrayal of a public trust.

In conclusion, I may be permitted to touch once more, if ever so slightly, upon the value of vital statistics to the people of this State in other directions than the specific one of the inquiry into the diseases of the working people employed in the different industries recognized to be either unhealthy or dangerous, or both. We are in the last year of a century which marks a progress in sanitary science during fifty years such as has not been made during all the thousands of years of civilization which have preceded it. I believe it is not going too far to say that at no time in the world's history have the people been housed as well, have they been nourished as well, and have they in all respects lived as long and as well as the majority of our people do at the present time. But the problem which will confront us in the twentieth century more than in the nineteenth is the enormous growth of our large cities and the immense aggregation of millions of people upon a small area, such as we find to be the case in Greater New York, Greater Philadelphia and even Greater Newark. The census returns for 1900, as far as they have been published, disclose a tendency of which I believe the people of this State should take early advantage, namely, the tendency of recent times on the part of the more intelligent people to leave the large cities and settle in the more healthy and more advantageous portions of the surrounding territory, where under semi-rural conditions they can enjoy a degree of happiness and health such as under the best conditions is not possible in the crowded centres of population. I believe that this tendency will become more confirmed, will become a more definite phase, during the next quarter of a century and that it will prove of benefit to the people of this State, who from New York and Philadelphia will draw the best elements of the population as a new class of suburban residents in far greater numbers than has ever been the case before. But public intelligence has now reached a degree of development very considerably above that which prevailed a quarter of a century, or even a decade ago. Today, more than at any time in the past, do people inquire into the health factors of a community and the conditions making for a healthy and a long life, and only in proportion as our cities and country sections hold out inducements in this direction, and make clear beyond the shadow of a doubt that our State is healthy and advantageous from this point of view, will we attract in the very near future the overflow of the intelligent and desirable population of New York and Philadelphia, which will do much to aid us in the

more rapid development of this State. I believe I am not going too far when I say that on the basis of my own investigation and my own personal inspection of nearly every part of Northern and Southern New Jersey, I am warranted in the emphatic assertion that this State offers advantages for the health seeker and the home seeker such as cannot be found within a hundred miles of any other large city of this country. We have a State offering every variety of natural advantages, the seashore, the mountains, proximity to large forest areas, and even a lake country such as England itself has little more of beauty and attraction to boast of. You cannot extend the practical utility of vital statistics in a more beneficent direction than by giving strong encouragement to the local health officers of our cities and towns, and to all our physicians practising in the different sections of this State, in collecting and publishing the actual facts as they pertain to the longevity of the people of this State. Just in proportion as we thus demonstrate the practical value of vital statistics to the people at large, shall we gain for our State an increasing degree of public approval, which is so desirable and so fully deserved.

Clinical Department.

TWO CASES OF PERFORATING DUODENAL ULCER WITH SUBPHRENIC ABSCESS.

BY J. C. PEGRAM, JR., M.D., PROVIDENCE, R. I.

CASE I. Mr. C. O., age fifty-six, farmer. Had never had a day's illness till ten years ago, when he had an attack of stomach trouble, which was followed by a slow recovery lasting over a period of two years, since when he has been well. On the evening of December 8, 1899, Mr. O. ate heartily of pork and beans. During the night he was kept awake by a dull unlocalized pain in the abdomen. The following morning he was better, but still not feeling well; he drank a cup of coffee and went to his work. At ten in the forenoon he was seized with a violent pain in the right side of his abdomen; he was carried home, where he was seen soon after by Dr. Ford, but was in such pain that a good history was not obtained; however, the fact was elicited that the bowels had moved but once in three days, and only to a slight extent then; up to this time he had not vomited.

Physical examination by Dr. Ford showed a well developed and nourished man; face flushed and covered with perspiration; expression anxious, tongue coated and moist, arteries sclerotic, heart and lungs negative. Abdomen flat and rigid as a board; on palpation it was extremely tender throughout, particularly in the left groin and right hypochondrium.

Morphine for pain, hot fomentations to the abdomen, efforts to move the bowels by copious enemata, was the treatment begun. Following one of the enemata numerous small scybala of fecal matter were passed in a medium of thin, foul-smelling feces. The pain persisted, relieved only by morphia, the abdomen gradually changing from its rigid state to a condition of distention. On December 11th, at 5 p. m., I saw the case in consultation with Dr. Ford. At that time he presented for examination a pinched and anxious expression, coated and furred tongue, a fairly good pulse, temperature 99°, abdomen distended, tympani-

tic, tender and quite rigid. There had been no good movement of the bowels, and he had been vomiting all day, after a large dose of Epsom salts. There was no peristaltic movement of the bowels to be made out. The following morning his condition remaining about the same, I sent him into St. Joseph's Hospital, resolved to give him the one chance that relief of a possible strangulation might bring, due to whatever cause. Operation disclosed a perforated duodenal ulcer, with sharp, thickened edges, admitting the end of the forefinger, and lying on the anterior wall, near the pylorus, there was a subphrenic abscess holding at least two quarts of fluid containing small particles of food; this was evacuated. No attempt was made to close the ulcer, but instead to wall it off with gauze. The man died thirty-six hours later of his general peritonitis. On securing the duodenum and pylorus for examination through the incision post mortem, and laying the duodenum open, a scar of an old healed duodenal ulcer was found on its posterior surface on the same plane as the one which perforated.

CASE II. This case was seen at autopsy table, and I report it by permission of Dr. White, of the Rhode Island Hospital Medical Service.

Hospital records give the following history: A. J., age thirty-nine, painter, entered the hospital February 6, 1900.

Past history.—Has had asthma for two years. For the past year he has been losing flesh and strength steadily.

Present illness.—For two weeks he has had attacks of pain in his abdomen, and his bowels have not moved freely. No vomiting; kept at his work. A few hours before entrance to the hospital he was seized with severe pain in the epigastrium which radiated down into the right iliac fossa. Perspired freely; vomited and almost collapsed. He was brought to the hospital in the ambulance.

Physical examination.—Well-developed and fairly-nourished man. Expression anxious; tongue clean; pulse weak; knees drawn up and abdomen scaphoid; abdomen tender, especially in right iliac fossa; heart sounds inaudible; lungs negative; no blue line on the gums; urine negative. Temperature 95°, pulse 55, respiration 20.

He was stimulated; hot turpentine stupes to the abdomen; enemata. Following day he was decidedly worse; became delirious; pulse rapid and weak, and temperature rising to 102.5°. Bowels had not moved; abdomen had become distended; operation considered useless; patient gradually failed and died next day, February 8th, at 10.50 a. m. At death, temperature 105°, pulse 145, respiration 28.

Autopsy.—Reported by Dr. J. Perkins. Body well nourished; abdomen distended and very rigid. On making incision through abdominal wall a large amount of free gas escaped, and the walls collapsed. This gas would not ignite. There is much thin, brownish fluid in the abdominal cavity of fecal odor and appearance. Over the upper surface of the right lobe of the liver, and over the diaphragm, and that portion of the abdominal wall which comes adjacent to the liver, there is a thick, fibrinous and purulent exudate. Along the ascending colon the tissues are edematous, and to some extent hemorrhagic. There is a round opening in the upper anterior part of the duodenum, almost touching the pyloric orifice, about one centimetre in diameter, with thickened edges,

through which fluid, like that free in the abdominal cavity, is flowing. The kidneys, spleen, liver and stomach are normal; lungs are greatly distended and contain much air, otherwise normal. Heart normal; head not opened.

Diagnosis. — Perforating duodenal ulcer with sub-phrenic abscess. General peritonitis.

It is impossible to imagine two cases more alike one another in their pathological anatomy, and Dr. Perkins's description of Case II serves perfectly for Case I, with the single exception that Case II had no scar of previous healed ulcer.

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 7, 1900,
DR. FRANCIS S. WATSON in the chair.

DR. J. C. WARREN read a paper entitled

OPERATIVE TREATMENT OF GOITRE.¹

DR. LINCOLN DAVIS read a paper entitled

STATISTICS OF OPERATIVE TREATMENT OF THYROID TUMORS.²

DR. J. J. PUTNAM: I have listened with great interest to both these papers, and this large array of statistics is certainly very imposing, and will be very valuable. There is no subject which is more fascinating than that of the diseases with which the thyroid is associated, and, indeed, the study of the functions of the thyroid altogether, and also none which is more obscure. It is certainly true in spite of all the immense research which has been devoted to it that today the physiologists are by no means agreed as to what the thyroid is for, and in many directions we have to be content to take clinical facts without adequate scientific explanations. So far as I know, the point with regard to the cause of the sudden death to which Dr. Warren and Dr. Davis have referred is not cleared up, and that is a need which is very greatly felt. If I am not mistaken, the chance that it is due in some of these operations to absorption of the thyroid juice suggested itself to us as a plausible theory through observation of the case Dr. Warren operated on before it had been noted elsewhere, and it certainly seemed plausible in that case because the gelatinous secretion was oozing from the wound on the neck; nevertheless, that theory does not seem to be generally accepted, and, indeed, if that was the common cause of death I do not know why the same result should not occur oftener after operations for simple goitre. Several observers still believe that edema involving cardiac nerves and the pressure of ligatures is the cause of death rather than the absorption of secretion. From that point of view, it is important to note that death occurs at different periods after the operation in different cases. In the case to which Dr. Warren first referred, where the temperature went up so high, and the patient seemed to hover between life and death with an ex-

ceedingly rapid pulse for one or two days before the symptoms began to ameliorate, these unfavorable effects showed themselves almost immediately, but in the other case I think it was four days, and then death occurred rapidly. It would seem strange that if the thyroid secretion affecting the fresh wound was going to be operative, it should not have exerted its effects earlier.

The part of the subject with which I am most familiar is that of Graves's disease, although the only operations I have seen are those which Dr. Warren has performed. I have, however, had one somewhat interesting experience with a case of simple goitre in a lady past middle life who had been bothered with great difficulty in breathing. I have given her thyroid preparations for about two years, and although the size of the goitre has certainly not materially diminished, — as Dr. Warren said, it has not been much in his cases, — the difficulty of breathing has been very much relieved, so that she has been practically not troubled with it at all since she first began to take the remedy. She feels ordinarily much more comfortable, but when the dose is increased beyond a certain point she is very nervous, restless and distressed.

As regards Graves's disease, I think the etiological study of that affection is very interesting, but satisfactory conclusions are still lacking. The theory of its thyroidal origin has certainly gained ground, but should not be accepted as absolute until we can explain the greater liability of persons with neurotic tendencies, or can show why medication with thyroid preparations on the one hand, or partial thyroidectomy on the other hand, sometimes turns out very well indeed, while at other times they seem to do no good.

The number of operations for Graves's disease, as Dr. Davis has shown, has risen to the hundreds, and with the result that every one would be in favor of operating were it not for the unfortunate mortality of 13%; and, as far as I know, there seems to be no way of foretelling what cases will be the ones to result unfavorably. For that reason I think everybody feels that it is not to be done lightly until other things have been tried. And the impulse thus given to the search for remedies has led to some interesting results. In the first place, although the thyroid preparations used so largely do not perhaps as a rule accomplish very much, still the point is interesting that they do not seem to do the patients the harm one would think they would if these diseases are due to hyperthyroidization, and only that, but in many cases they have been of positive benefit. Of course this is not so much against the theory of "altered thyroid secretion," as against that of hypersecretion, pure and simple. But, then, if we have to assume that we are dealing with an altered secretion, it is doubtful whether we ought to apply the arguments drawn from hyperthyroidization experiments. Another point is that occasionally the "sympathetic" operations result so well. Dr. Mixer did one on a very serious case which unfortunately ended unfavorably. A number of them have been said to give good results, and yet the thyroid itself is not touched. And then it seems to me, in looking over all the cases I have had to do with, and seeing how this kind of electricity works in one case and that kind of electricity in another, and this treatment and the other treatment give good results, that the essential thing is to strike a blow

¹ See page 647 of the Journal.

² See page 649 of the Journal.

at some part of the morbid chain of symptoms, — absolute rest, or working on the thyroid, or the cardiac nerves, or psychical influences of a quieting sort, operations in the nose, removal of pelvic tumors, each and all seem to be of service if only they can give a new "set" to the symptoms and processes concerned. It is my private opinion that thyroid operations do not do very much more than that. In looking over the literature this afternoon, I see that Eulenburg, one of the prominent Berlin physicians who has had to do with this disease very largely, thinks that operation should be resorted to only when serious local conditions resulting from the presence of the tumor exist, and that, in the great majority of cases, treatment of other sorts can be relied on to bring about more or less amelioration.

DR. MIXTER: There are a few practical points I wish to speak of in connection with removal of the thyroid and thyroid tumors. You see a great many cases, and upon very few of them is it necessary to operate. Because a person has an enlarged thyroid it is not always best to operate, and it seems to me that the question of decision as to operation or non-interference is of more importance and requires more judgment, and, if I may say so, more surgical knowledge than the mere removal of the tumor. I do not believe in the removal of large thyroids merely for cosmetic purposes. When we have a fairly rapidly growing tumor, however, it seems a good case for operation, although it is not interfering seriously with the health of the patient.

As regards the technique of the operation, mention has been made of injury to the inferior thyroid nerve and its effects. I have seen the thyroid nerve divided with serious results, and I have also, in a very considerable number of cases, seen the patient come out of ether where the surgeon feared that the inferior thyroid was injured on account of the loss of voice and trouble in breathing. This is not uncommon, I think, as all persons who have operated on thyroid tumors will testify, and it is due to pulling, and, perhaps, temporary pressure on the nerve. It disappears inside of a week. Another thing that should be remembered is that the relation of the inferior thyroid nerve and artery is not constant. Sometimes the order is reversed, therefore it is my rule never to tie a mass of tissue in this neighborhood, but to isolate all vessels before they are tied.

As regards operation for exophthalmic goitre, I think the statistics in this part of the country are not large. The only operation I have ever done — I have been asked to operate a great many times and have refused — was done on a patient Dr. Putnam has referred to where I resected the sympathetic ganglia. It is a most beautiful anatomical operation. You can find and remove the sympathetic much easier on the living than on the cadaver. The case I tried it on was a desperate one, and the operation was done at the urgent request of the boy's family. The operation was begun with the pulse about 180, and before I got through it was over 200. The patient died in the course of twenty-four hours. The other operations for exophthalmic goitre I have not done. I have certainly seen relief in a small number of cases from thyroid remedies. I have not followed these cases, because I do not consider that when they are to be treated in that way they are surgical cases. They are cases that should go to the neurologist.

DR. MUNRO: It seems absurd in the face of the thousands of cases of Kocher and others to report half a dozen. One young girl I have operated on twice for simple cyst. She had the growth first on the right side, and that was easily removed by enucleation. Three years later she appeared with a smaller growth on the left, and that came out in as easy a manner as the first one. She has had no recurrence since then. There is still another operated on, not for any exophthalmic symptoms, but more because of the mechanical discomfort. The tumor was a simple adenoma and shelled out as easily as in the first case.

Another case was that of an adenoma in a woman thirty-five years old, but much more difficult to dissect out. The capsule was adherent in all directions, so adherent to the thyroid cartilage that it could not be removed without taking off the cartilage itself. It was curetted and dissected out until practically all removed; it was hard, immovable, much more like a carcinomatous growth, but the pathological report was simple adenoma. Whether there has been any recurrence within the last year I do not know.

There is another case that Dr. Monks and I shared together. A woman came to me with a tumor of the thyroid of nine months' duration, considerable enlargement on both sides, no cardiac symptoms, but pressure symptoms. Soon after, Dr. Monks at the Carney Hospital removed a large part of the swollen left lobe, but a portion he had to leave. Three months later she came back with a marked recurrence and then entered the City Hospital in Dr. Monks's service and he operated again for recurrence, and operated still again three months later, the patient dying a few days after the last operation. There was no pathological examination, but it was evidently a malignant growth.

A carcinomatous case has been of interest to me. A woman came with a history of a small movable lump starting many years before in the region of the thyroid, but recently growing hard and troublesome. The tumor was hard, firmly fixed, $2\frac{1}{2}$ inches in diameter. At the operation nothing was attempted except to relieve her dyspnea. It was found impossible to remove the whole growth. It went below the sternum, involving the trachea and all the muscles. The muscles and as much of the growth as we could get at were removed. About the trachea was found a solid ring of growth that shut it up to about the size of a small quill. She was very much relieved by the operation, but came back two months later with recurrence and I did a tracheotomy. The growth had increased so much that we had to cut through a lot of hard, cork-like tissue to get room to put the tube in. After operation I sent her home to Cape Breton, and supposed after a month or two that she had died, but two years afterwards I had an express package in which was the original tracheotomy tube, with a request to send a duplicate, and saying that the patient had worn the tube all this time, but that it had rusted through and was causing irritation. While the tube was here the patient choked and died.

DR. MARCY: I hardly know any subject more interesting to surgeons today, and necessarily we must look to Europe for most of the instruction. In this country the occurrence of the disease is such that we are necessarily rather limited in our experience. I can add very little from my own experience, which is limited to 5 or 6 cases. I think we gain something in

this, as in any other operations, by closing the wound primarily without drainage and sealing with iodoform collodion. It takes off pressure and permits of an ease of condition to the patient which is marvellously in contrast with holding the neck by a fixed bandage. I think it is a decided step as to the comfort and as to the subsequent success of the operation. All the cases on which I have operated have made easy primary recoveries without suppuration. I have had 1 malignant case in which the tumor had reached considerable proportions, and I dissected very thoroughly the entire glandular processes on both sides. Primary union followed, but the disease recurred in a few months and the patient died. I must think that we are still in a tentative condition in reference to this subject, and that we are necessarily students of those surgeons abroad who must be our masters, and yet it occurs to me most forcibly that the history of surgery of the thyroid already points clearly, as in surgery of some of the abdominal organs, to the fact that the cases are doing so much better in the matter of primary recovery and subsequent cure because the surgeon does not wait until extreme conditions exist, as in the earlier days. Dr. Mixer propounds the most important question, I think, as to when we shall operate, and also the study of the case, as Dr. Putnam tells us, is of vast importance. It seems to me we are not quite prepared to lay down any rule except that we are not to wait too long, until we find we are handicapped in the matter of the conditions because the patient herself or himself is in such a sad condition that recovery is not very probable.

DR. TENNEY: It was my good fortune while in Switzerland a year ago to have a conversation with Theodore Kocher, of Berne, on this subject, though I did not see him operate on any thyroids. His results are remarkable, but due fully as much to his accurate personal knowledge of anatomy from the cadaver, and pathology from examinations of specimens, as to his careful technique. In the majority of cases he removes only one side of the gland, crushing the portion of the isthmus left to get it within a single ligature. Silk is the only ligature material which he buries, and in closing the wound he leaves drainage for twenty-four hours.

In almost all of his cases he has used cocaine—a 1% solution—in children as young as twelve years and in adults over seventy years, and he has never had an unpleasant symptom or a failure to get complete anesthesia under cocaine. As an anesthetic next to cocaine he prefers bromide of ethyl followed by ether.

Accessory thyroids have been mentioned. The most constant of these is the pyramidal process which extends upwards from the isthmus, covered by the depressors of the hyoid bone. This has been studied by different men, but the largest list of statistics published has been from one of the Paris laboratories. Soja investigated 143 cadavers, and found it present in 109. The gland is so vascular that it is much collapsed after death, and our dissecting-room cadavers show it badly. Where it was especially well preserved, I have investigated 38 and found the pyramidal process 4 times. Normally, it is a very small affair here, but it may be much larger in glands found in Paris, where many of the subjects are Swiss, or from Southeastern France. If it be present in 109 out of 143 cadavers, it is certainly not frequent enough to

rely on when one comes to consider the removal of the whole gland.

As to operation on the cervical sympathetic nerve, the three ganglia which appear in the neck seem to have fairly well defined "spheres of influence." The superior has much to do with the eye, and I believe there have been some brilliant operations recently in the removal of this ganglion for the relief of glaucoma. The middle ganglion is the one whose fibres seem to be distributed largely along the inferior thyroid artery to the thyroid gland, while the inferior sends its fibres to the heart. There are 36 cases collected by Dr. Alfred Gordon, of Philadelphia, and reported in the *Philadelphia Medical Journal* of June 23d, in which some portion of the cervical sympathetic was removed for exophthalmic goitre. There was no death. In all the cases, with 1 exception, there was either improvement or complete recovery, and the difference between complete recovery and improvement seemed to be very largely a question of the amount of the cervical sympathetic removed. Where the two upper ganglia were completely removed on both sides, or two on one and one on the other, the results were better than where less radical operation was carried out. Dr. Gordon's theory seems very reasonable, that the condition is largely central, in the floor of the medulla, and that the removal of these ganglia serves in some way to interrupt the currents from the medulla to the orbit, thyroid gland and heart.

DR. CHARLES G. CUMSTON read a paper on
NEOPLASMS OF THE THYROID GLAND.³

Recent Literature.

A Textbook of Histology. Including Microscopic Technique. By A. A. BÖHM and M. VON DAVIDOFF. Edited with extensive additions by G. CARL HUBER. Authorized translation from the second revised German edition by HERBERT H. CUSHING. Pp. 501, with 357 illustrations. Philadelphia: W. B. Saunders & Co. 1900.

We quote only a part of the cumbersome title page, which would be much improved if three-fourths of what it now contains were omitted. But the essential part, the text, is as excellent as the title page is awkward. The Böhm-Davidoff Textbook in the German edition is already widely and favorably known, for it gives clear and comprehensive descriptions of the histological structure of the organs, based in many cases upon human material; it gives also a good selection of illustrations, and a very admirable series of technical directions for preparing histological specimens. The translator's share in the American edition deserves cordial praise, for his rendering is both accurate and idiomatic, so that one has no sense of the German text behind the English. The American editor has introduced many changes, especially in the way of additions. Of the additions, a goodly proportion are taken from Dr. Huber's own special line of work, the study of the innervation of tissues and organs, a part of histology which, although important, is too often slighted in textbooks. Further ad-

³ See page 664 of the Journal.

ditions are noticeable, two of which may be specially signaled, namely, the results of two fine American investigations, that of Mall upon the spleen and of W. S. Miller upon the lung, thus rendering the descriptions of these organs at once more accurate and more comprehensible. Finally, the publishers have done their part creditably, and for the care bestowed upon the printing of the figures in the text all who use the work will be grateful. The book closes with an excellent index.

This new candidate for medical and scientific favor is unquestionably a textbook of the first rank, having been carefully written by thorough masters of the subject, and in certain directions it is much superior to any other histological manual. One welcomes the attention paid to the development of the tissues, especially as a prophecy of the time when the entire treatment will be based on the development, for histogenesis alone can offer the clue to the structure and pathology of the adult organs. One welcomes, too, the new account of the spleen to replace the traditional obscuration of the structure of this organ. Many other points of merit might be enumerated, but we must content ourselves with calling explicit attention to the long and admirable series of technical directions, the variety and thoroughness of which alone ought to suffice to render the book indispensable in every laboratory.

The book has some defects, which should be removed. The text throughout is somewhat lacking in conciseness, and does not always so present the subject matter as to render comprehension easy to a beginner.

Mallory's various stains, Weigert's resorcin-fuchsin stain for elastic tissue, and the useful applications of the Cox-Golgi method need to be added. None of the best microtomes, except the Thoma Jung, are described. Some of the figures are coarse, a few almost crude, as, for example, Figs. 136, 153, 196, 202, 316, 330, and should be replaced. The most defective section is probably that on the uterus, which omits altogether the menstruating and pregnant conditions of the organ from consideration. This omission is inexcusable. The needs of practical medicine make it further desirable to include in a new edition descriptions of the placenta, chorion, amnion and umbilical cord. These four parts are the only ones of the human body which frequently come into the practitioner's hands in a fresh and perfectly normal state.

To conclude, the work is to be warmly recommended, for it is thorough, scientific and trustworthy. We hope that it will be received with such general favor that a new edition will soon be necessary.

A Practical Treatise on Genito-Urinary and Venereal Diseases and Syphilis. By ROBERT W. TAYLOR, A.M., M.D., Clinical Professor of Venereal Diseases at the College of Physicians and Surgeons (Columbia University), New York; Surgeon to Bellevue Hospital and Consulting Surgeon to City (Charity) Hospital, New York. Second edition. One volume. Pp. 720, with 135 engravings and 27 full-page plates. New York and Philadelphia; Lea Brothers & Co. 1900.

When "Taylor on Venereal Diseases" was published in 1895 the medical public was provided with a most complete and exhaustive résumé of the subject in a book of 1,000 pages. Dr. Taylor's great ex-

perience and his ability as a medical writer made the book a standard for books of its kind and for the past five years it has been so recognized. The present volume is that book renamed, remade and thoroughly revised and brought up to date. That this has been successfully accomplished, and that the book has been at the same time reduced nearly one-third in size, is enough to show the amount and character of the labor expended upon the present edition. The author's aim has been "to present an up-to-date, practical and compact treatise." In order to accomplish this, many subjects are treated so briefly as, at first reading, to somewhat astonish the expert in genito-urinary diseases. For example, the endoscope, the cystoscope, the Bottini instrument, the various methods for collecting urine from the two kidneys separately, the various operations commonly performed on the kidneys, bladder and prostate are all, each in its proper place in the text, summed up in a few words of careful explanation, clearly indicating the writer's opinion that such special lines of work are not proper subjects for extended consideration in a book of this kind. In the same way the chapter on the seminal vesicle and its diseases consists of a single page, but the common inflammations of the vesicle as complications of gonorrhoea receive careful and adequate consideration in the pages devoted to that disease. In such ways as this the practitioner is given a perspective of the relative importance, to him, of various much-exploited conditions and procedures—a perspective which the author's long experience renders of the greatest value. The sections on treatment are refreshingly concise and practical, and one is glad to notice the absence of those many pages of prescriptions and general directions with which so many books are cumbered.

Paper, type and illustrations are all good and the publisher has earned his share of the book's success.

Rhinology, Laryngology and Otology, and their Significance in General Medicine. By E. P. FRIEDRICH, M.D., Privat Docent at the University of Leipzig. Authorized translation, edited by H. HOLBROOK CURTIS, M.D., New York. Pp. 335. Philadelphia and London: W. B. Saunders & Co. 1900.

The object of the author is to describe those lesions of the nose, the throat and the ear which are either caused by or are intimately associated with disease in some other part of the body, or with a general disease. This task he has performed admirably, and has given both to the general practitioner and to the specialist a book for collateral reference which is modern, clear and complete. He has carefully avoided all temptation to enter the field of therapeutics. The arrangement of the chapters is more from the side of general medicine than from the special regions. It is, for instance, easier to learn what to look for in the ear or nose in typhoid fever than it is to find what diseases might be present to account for epistaxis as a symptom.

The book is divided into twelve chapters and an appendix. Under the head of diseases of the respiratory organs is included the effect on the lungs of nasal obstruction and disease of the upper respiratory tract, and an excellent résumé of disturbances in the ear by way of the Eustachian tubes. Chapters on conditions in the upper air passages and the ear which may be looked for in cases of circulatory, digestive,

renal, infectious and chronic constitutional diseases are of equal interest to the general practitioner and the specialist. The description of tuberculosis and lupus, and of syphilis, as they appear in the nose, throat and ear, while not intended to cover the ground thoroughly, gives the essential features in a much more acceptable form than is found in many of the special textbooks. The relation of the sexual organs to the nose is briefly and seriously discussed, with an attempt to pick out the good from Fliess, but risking only a small paragraph from Mackenzie. The chapter on relation between diseases of the eye and the nose is a good summary of a subject which has been much discussed in the past few years. A most excellent chapter on nervous diseases reviews the whole subject of nerve supply of the larynx and the effect of different lesions of the nervous system upon the upper respiratory tract and the ear. Local manifestations in *tabes dorsalis* receive special attention. A section on "ictus laryngis," or laryngeal vertigo, appears to have strayed from this chapter into the chapter on chronic constitutional diseases.

Perhaps the most interesting part of the book is the appendix, where we find under "nasal reflex neuroses" all of the vexatious problems which such a title implies. In the appendix, also, the irritation of certain of the cranial nerves by inflammatory processes in their vicinity, a subject which is too often neglected, receives its due attention.

The editor of this English translation is to be complimented especially for having introduced the work to English readers, and also for the manner in which he has done it.

Chirurgie du Foie et des Voies Biliares. Par J. PANTALONI (de Marseilles). Pages 626, avec 348 figures dans le texte. Paris: Institut de Bibliographie Scientifique. 1899.

This book is devoted to the study of the operative work done in hepatic surgery. The aim is to write a complete review of what has actually been done surgically in the treatment of the liver, this organ being considered either as a special organ or as a biliary apparatus. Untried or theoretical procedures have been left unconsidered. The author does not attempt to deal with untested opinions.

The book is divided into four parts as follows: Part I. Operations on the liver as a whole, hepatic surgery proper; Part II. Operations on the hepatic ligament, portal and hepatic vessels; Parts III and IV. Operations on the biliary system, subdivided into (1) general biliary surgery, (2) special biliary surgery, according as the system is considered as a whole or in part.

The book is quite systematically arranged, each chapter presenting the same classification. The subject is defined, and synonyms, if any exist, are given. Then follows a brief historical résumé, then a description of the operation, the topographical anatomy involved, its technique, the instruments required, dressing, etc. Next is described the results and possible complications; finally, the indications for the procedure under discussion. This method, with its paragraph headings in heavy type, makes a book quite convenient for reference and comparison of subjects. It is also well indexed both as regards subjects, authors and illustrations.

A review of the text shows the volume to be an ex-

haustive treatise of the subject except as regards some minor details. For example, it would be interesting to know, in some cases, more details relating to "after treatment" and as to time required for recovery, especially during the immediate post-operative period, also as to immediate results and, again, in other instances as to end results. In other respects the work is fully done. Many operations are here described which do not usually appear. Of these one notes the operations on the hepatic arteries and veins; the hepatic ligaments; injection of the bile ducts; biliary anastomoses, atypical operations on the gall bladder; hepatic enterostomy and cholangiostomy.

The subjects are abundantly illustrated, notably the chapter on hepatic sutures and the operations on the biliary ducts. The discussion of the indication for the various operations described is a feature of the work. It is the part which is of interest to the physician as well as the surgeon, the book as a whole being devoted to the question of operative surgery. The author has tried to attract more attention to the efforts of modern surgery in this field, and to results that are too often lost sight of. He hopes that by reading these pages, where are stated and discussed the indications for each operation, a clear idea will be obtained of what has been accomplished; that convinced in their turn doctors will not allow their patients to reach the last stages of cachexia before considering the benefits derived from a skillfully performed operation.

The Physical Signs of Pulmonary Disease. The Sphygmograph in Clinical Medicine. By GRAHAM STEEL, M.D., Lecturer at the Owens College, Manchester. Philadelphia: P. Blakiston's Son & Co. 1900.

The publication of these tiny manuals is an illustration of the unwise separation of subjects from their natural accompaniment. Following such a plan, a complete consideration of the subject of physical examination would require at least half a dozen volumes, and judging from the present example there would be no great demand for such a library.

Diseases of the Tongue. By HENRY T. BUTLIN, F.R.C.S., D.C.L., Surgeon to St. Bartholomew's Hospital, etc., and WALTER G. SPENCER, M.S., M.B., F.R.C.S., Surgeon to the Westminster Hospital. Pp. 475, with 8 chromolithographs and 36 engravings. London and New York: Cassell & Co. 1900.

The medical profession will heartily welcome this, the second edition of Butlin's manual on "Diseases of the Tongue." The first appeared in 1885 and was reprinted without alteration in 1890. It is now enlarged, not only by the addition of new chapters and additions to the text, but also in the size of the book and the type. An excellent chapter on the anatomy of the tongue has been added. The chapters have been more or less rearranged, and the various morbid conditions brought under general headings, grouped as much as possible according to pathology rather than gross appearances. In the former edition, for instance, wandering rash and syphilitic plaques appear together. Now the former is under chronic superficial glossitis and the latter under syphilis, a much better arrangement. A few subdivisions have been added to include recent advances, such as the bacterial infections under glossitis. The author presents the results of his accumulated experience, as in

the treatment of leucoma, and especially in the surgery of malignant disease. The whole subject of malignant disease has been rearranged, enlarged, and the pathology illustrated.

The 8 excellent colored plates are reproduced in this edition and a few cuts in the text added.

As a whole the book is too well known to need any indorsement. In the most satisfactory way it fills a place which needs to be filled. Its present form is in better keeping with its character than the original edition. A critic must content himself by saying that the paper, though good for half-tone illustrations, is too highly polished for reading, and that the stiffness of the plates interferes with the turning of the leaves.

Clinical Studies in Vice and in Insanity. By GEORGE R. WILSON, M.D., Medical Superintendent, Mavisbank Asylum, Edinburgh. Pp. 225. New York: The Macmillan Company; Edinburgh: William F. Clay. 1899.

This book's chief claim to merit is the author's careful, and in the main successful, endeavor to explain the pathology of drunkenness according to the results of the most recent research in the histology and degeneration of the cortex. He regards true drunkenness as a disease which primarily affects the purposive functions. Its lesion is in the nature of a tonic degeneration which begins in the highest dendritic systems of the cortex and may be regarded as the immediate effect of alcohol on the minutest structures in them. From this as a starting point he deduces logically and in true pathological sequence its immediate and remote effects as a progressive disease. Several interesting cases of alcoholism reported in minute detail and in an entertaining vein serve to illustrate the writer's views of the relations of drunkenness to heredity, environment, natural qualities and vicious tendencies. This part of the volume decidedly enlarges one's conception of alcoholism as a degenerative disease and is an instructive and modern presentation of the subject. The rest of the book is devoted to a meagre and desultory consideration of certain aspects of insanity, with reports of a few cases. This portion is of little or no value as a contribution to our knowledge of the disease, but is the vehicle for the author's views on various mooted questions, which are full of originality, acumen and sound common sense.

The book itself might be improved by a less lurid cover and more accurate proof-reading.

The Care of the Consumptive. By CHARLES FOX GARDNER, M.D. New York and London: G. P. Putnam's Sons. 1900.

This is ostensibly a book for the laity and as such is quite worthy of commendation. In these days of inflammatory proclamation and scare-head lines on the danger of infection from the tuberculous individual it is a comfort to have a brief book dealing plainly with the elements of the pathology and the leading principles of prevention and treatment that can safely be put in the hands of those afflicted with the disease or those whose lot it is to be caretakers of such. The various aspects of diet, exercise, climate and outdoor treatment are intelligently presented, and there is a closing chapter on Colorado considered as a Mecca, and taking too encouraging a view, it seems to us, of the opportunities for patients finding ready means of livelihood as soon as their health is reasonably good.

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ANNUS MEDICUS MDCCC.

THE past year has been characterized rather by the prosecution of researches begun before than by any notable discoveries in matters pertaining to medical science. Investigations on the etiology of malaria have led to preliminary conclusions of moment, and the more difficult question involved in the investigation of the cause of cancer has been taken up with renewed interest both in America and Europe. Studies on infectious diseases, and notably on those prevalent in the tropics, have been productive of certain positive results. A peculiar opportunity has been offered to American physicians for the study of plague and yellow fever, owing to their occurrence in regions which are now more or less under the jurisdiction of the United States. The war in South Africa has again, as in the late Spanish-American War, afforded an ample, if unexpected, opportunity of studying the relation of typhoid fever to the conditions of camp life. An ample literature has also grown up within the year relating to the effects on the human body of various sorts of bullets, and of the treatment of bullet wounds. Much knowledge of permanent value has been gained by the study of these subjects, made, as it has been, by men of the first ability. The Chinese embroglio, with the peculiar difficulties for the troops engaged, incident to a trying climate, has been instructive from the medical point of view, as showing the possibilities of modern camp sanitation. The year has shown a general advance in every department of medicine, and particularly in those broad fields of research which look toward the discovery of the cause, and hence the prevention, of epidemic disease.

PLAGUE.

In British India during the month of December, 1899, the plague epidemic, which had been prevalent for some months, showed a marked decline, but in February, 1900, the number of deaths had again increased and by the middle of March had assumed alarming proportions. The epidemic reached its

climax in the second week of April in Bombay. This unfortunate city was the seat of a most extensive epidemic, even surpassing in severity and duration that of the winter of 1897-1898. For many weeks the deaths numbered 100 daily. There was also a simultaneous epidemic in Calcutta, the deaths numbering from 75 to 100 a day. In Kurrachee, India, the epidemic was of a much milder type, and by the middle of March, when the disease is usually at its height, only a few cases were reported. The disease spread far and wide into the Bengal Presidency, and for one week 4,725 deaths were recorded. Lord Curzon, Viceroy of India, did everything in his power to encourage the natives to submit to inoculation, with a considerable degree of success. It is significant to note that in one section the natives requested inoculation without external pressure. The increasing heat seemed to have very little effect in decreasing the epidemic, as is usually the case, and in its twenty-fourth week the disease showed no tendency toward abatement. The concealment of many cases, and especially the flight of certain natives from the towns to country districts, militated against the efforts of the government, and increased the spread of the disease. By the end of June the total number of cases for all India was 277,000. This epidemic in India was peculiar, in that it was accompanied by an increase rather than by a decrease of other contagious diseases. The prevalence of famine may stand in some relation to this fact. In the middle of February plague appeared in Aden, Arabia. At the end of fifty-two days, 290 cases had been reported, with 208 deaths. The infection was probably brought from India by cargo, or through the instrumentality of ship rats.

In Japan the epidemic began in the latter months of 1899, and the strictest quarantine was enforced against travellers. Early in January 2 new cases were reported in Osaka, but by the end of January the epidemic was fairly at an end. Osaka was the seat of the greatest number of deaths, because of its location and lack of sanitation.

During January there was an outbreak of plague in Oporto, Portugal, limited, however, to that city. Relatively few cases were reported. On April 4th a steamer from Oporto to Rio Janeiro, Brazil, landed a man with his wife and child, who took up their residence in the city, in a house already occupied by many persons. These new arrivals brought soiled linen and other clothing, which was removed from their trunk. On April 8th some of the tenants of the house were taken sick. The first death that occurred was classified as due to lymphangitis perniciosa. As more cases developed the real cause was suspected. The patients were isolated, and others who had been exposed placed under observation. Bacteriological examination demonstrated the existence of plague. No widespread epidemic followed these preliminary cases.

In Honolulu, Hawaii, plague made its appearance in December, 1899. January 1, 1900, 8 new cases

were reported and a little later the disease developed in fatal form with lymphatic involvement. The focus of the disease was supposed to be limited to Chinatown, and the attempt to eradicate it by burning infected buildings led to the accidental destruction of a much larger district. Fifteen thousand dollars was appropriated for the shelter of persons released from quarantine. These measures met with success, and after March 1st only 1 death was reported. The total number of cases had been 68; of the deaths following 30 were Chinese, 7 Japanese, 15 Hawaiians, and 3 whites.

On account of trade communications San Francisco and all other ports of the Pacific Coast were strictly quarantined. In spite of this, the existence of plague in Chinatown, San Francisco, was reported May 21st and a week later there had been 8 or 9 cases, all among the Chinese. House to house inspection and inoculation led to a checking of the disease. In December, 1900, it is reported that cases are still appearing in the city. Through its chargé in Washington, the Japanese Government joined the Chinese Government in a protest against the compulsory inoculation of Japanese and Chinese in San Francisco with antiplague serum, on the ground that if such inoculation were necessary to prevent the extension of the plague, it could not be contemplated that any discrimination should be practised against the Japanese and Chinese; the rule must be general, and include Caucasians as well as yellow men.

September 1st plague made its appearance in Glasgow, and at that time 80 cases were reported. An admirable quarantine and rigid medical supervision led to the gradual but complete eradication of the disease. It never attained alarming epidemic proportions.

In addition to the more important outbreaks narrated above, the disease appeared in sporadic form in various widely separated parts of the world. In Manila, Philippine Islands, an outbreak occurred, resulting in the death of 119 Chinamen and 66 Filipinos. In Persia there was an outbreak in the Javanrood district near the Turkish frontier, with upwards of 195 deaths. The feared epidemic of plague in Durban, South Africa, was causeless.

The general experience of the year from many reliable sources is that, as prophylactic, Haffkine's fluid for inoculation is the most potent and lasting. In the report of the Indian Plague Commission on Haffkine's Antiplague Inoculation, published in the *British Medical Journal*, February 24, 1900, it is stated, with regard to the feasibility of adopting a general policy of inoculation in India, that: (1) Experience gained hitherto has shown that it is very seldom possible to get a large proportion of the inhabitants of an uninfected place inoculated; (2) it has been possible, where the inducements of exemption from segregation and eviction have been offered, to get a large proportion of an infected place inoculated quickly. (3) it has been possible in one place — Mysore City

—even where no inducement that touched the great mass of the people could be offered, to get a considerable proportion of the inhabitants of an infected place inoculated quickly; (4) it has been possible also to induce a large proportion of particular communities, such as the Khojas of Bombay and Karachi, to be inoculated under the influence of their leaders.

The commissioners finally recommend that, under the safeguards and conditions of accurate standardization and complete sterilization of the vaccine and the thorough sterilization of the syringe in every case, inoculations should be encouraged wherever possible, and in particular among disinfecting staffs and the attendants of plague hospitals.

In the Bombay Presidency, in British India, the value of the Haffkine prophylactic is noted in a series of observations as follows:

	Number.	Cases.	Deaths.
Inoculated	147	2	0
Non-inoculated	172	12	6
Inoculated	147	3	0
Non-inoculated	127	10	6
Inoculated	71	8	3
Non-inoculated	64	27	26

These figures show that, in addition to affording a very large proportion of protection against the disease, the mortality was reduced by 80 or 80%. An instance of the average mortality is afforded by the statistics showing that in the city of Hubli the mortality among those not inoculated reached the appalling figure of 657 per 1,000 of those attacked. Further, in the cities of Bombay and Moffusil the following figures are given:

	Inoculated.	Cases.	Deaths.
Bombay	8,200	18	2
Moffusil	429	7	0
Non-inoculated . . . . .	....	26	24

The duration of the immunity conferred was stated to be several months and this immunity was much increased by a second or even by a third inoculation.

Considerable investigation has been undertaken during the year regarding the possible relation of rats to the spread of the disease, with the general result of demonstrating that rats often serve as an intermediate host for the bacilli. Experiments have shown that rats easily become infected, and dying, are a prolific source of the spread of the disease. Its prevention, therefore, consists in destroying infected rats, and in carefully inspecting travellers by land and sea. In every country where plague has occurred a systematic destruction of rats has been attempted. In Aden a reward of 1 cent a rat was offered, and in Hawaii a bounty of 25 cents, with the appointment of a professional rat catcher by the Board of Health. The method of extermination by poison did not usually prove a success. In Japan 3,000 rats were killed in one week.

SMALLPOX.

Smallpox has not been a widespread disease during the year. In December, 1899, there was an outbreak in Mexico, which continued during the following three months. By the end of April there had been 298 cases with 166 deaths in the city of Mexico. In Vera Cruz it was also epidemic, but in less degree. From the Mexican border during the winter came constant reports of travellers detained for suspicious symptoms which often proved to be smallpox. Along the line of the Mexican International Railroad the disease was much in evidence. On the United States side, however, vaccination, done by the United States Sanitary Guards, was efficient and the disease gained little headway. A constant interchange of visits between the Mexican and Texan side proved a prolific source of infection. All Pullman trains were detained thirty-four hours in passing from Mexico into Texas, and thoroughly disinfected with formaldehyde, remaining tightly closed for eighteen hours. Throughout the Southern States during the winter there were a considerable number of sporadic cases. A severe epidemic occurred in Louisiana. By the end of February there had been 2,257 cases, while in one town, St. Landry Parish, there were 782 cases, with a large percentage of deaths.

In early January in Columbia, Ala., there were 32 well-marked cases in negro adults, and the slight epidemic which followed was confined to the negro population. Several cases were reported in Georgia, and the source of infection there was undoubtedly cotton shipped from infected ports. The Kansas City Board of Health ordered a quarantine against Kay County, Okla., January 19th, where there were said to be from 400 to 600 cases. In fact, a number of cities and towns in Kansas were infected from this source, and smallpox was epidemic in various parts of the State. In Illinois there were many cases, but no epidemic. The epidemic in Tacoma, Wash., began in the following manner: A young girl from Seattle, where there had been a few sporadic cases, visited in a physician's family in Tacoma. He noticed that she had a suspicious eruption and at once quarantined both the patient and his daughter. In spite of this precaution, within a few weeks 150 cases of the disease had developed. A few sporadic cases only occurred in San Francisco, Cal., owing to the rigid quarantine against Mexican travellers.

The steamer *Ohio* arrived at Nome, Alaska, on the 20th of June with 2 well-marked cases of smallpox on board and by July 10th 22 cases were reported. A house to house inspection was at once instituted and what promised to be an epidemic was averted. There were also a few cases reported at Dawson City.

In Canada an epidemic of smallpox began as early as August, 1899, at St. Phillippe de Neri, and gradually spread through different sections of the country, lasting until February. The origin of the disease was here traced to a tramp, who while suffering from a mild form of the disease went from place to place,

sleeping in stables and railway stations. In Ontario an epidemic appeared about the middle of January, the greatest number of cases being in Essex County.

Smallpox was more or less prevalent throughout Russia during the summer, but only in St. Petersburg attained epidemic form. In that city there were 460 cases during June, July and August.

In Marseilles, France, a slight epidemic occurred, limited to the month of March, also slight ones in one or two English towns, with 83 cases in London.

In Bombay, India, smallpox prevailed coincidentally with plague, though in much less degree.

The usual number of sporadic cases have occurred in various parts of the world. Boston and its vicinity have not been wholly exempt, though the disease has never reached epidemic form. The following experience of the steamship *New England*, sailing from Boston to the Orient, is of interest. The circumstances were briefly as follows: The steamer sailed February 1st, from Boston, with an excursion party of 425 persons, whose destination was the Orient. While at Rome smallpox appeared, which probably had broken out a considerable time before the vessel reached the port of Naples, where passengers were landed for the Italian sightseeing. The excursionists were on shore, sightseeing, and the captain of the steamer, seeing the desirability of prompt action, sailed for Liverpool without his passengers, after having disembarked their luggage. Several of the members of the party have since died of smallpox, and for a time something approaching a panic prevailed. The excursion naturally has come to an untimely end, to the discomfort and annoyance of all concerned.

The usual opposition on the part of certain fanatical persons against vaccination continues to prevail both in this country and abroad. The proper enforcement of vaccination has, in many instances, been rendered difficult, and this fact has, no doubt, often prevented the rapid extermination of the disease. In England the antivaccination element has been particularly in evidence, and a heated controversy has resulted, much of which has been aired in the English medical journals.

The increase in the number of vaccinations in all England, however, for the year 1899, as compared with that for 1898, was 33.8%.

YELLOW FEVER.

Of the three important epidemic diseases of the tropics, plague, cholera and yellow fever, the manifestations of the last during the past years have been least widespread. In January, 1900, the report regarding the yellow-fever situation for the month preceding gave the following statistics: New cases 70, deaths 22, recovered 30, under treatment 25. Of the patients, 23 were Americans and 50 Spaniards. Six of the former died and 10 of the latter. Experts hold that the difference in the ratio of deaths was due to the use of alcohol. Comparison of the whole year

with the ten preceding years is favorable, but the last three months of 1899 were unfavorable. The December record of deaths from 1890 to 1899 is 11, 17, 32, 10, 24, 19, 225, 17, 13, 22. The yearly totals for the same period are 327, 363, 362, 512, 418, 560, 1,540, 1,056, 162, 103. It is of interest that the records show that, in spite of favorable weather since September 1st, the situation has been worse than during the corresponding period of the Spanish occupation. The explanation offered is the great influx of Spanish immigrants who were not acclimated and who were huddled in the lower quarters of the city. They were badly nourished and were unable to resist the disease. One prominent fact is the failure of house disinfection to kill the germs of the disease. Every house in the city has been disinfected several times. Those familiar with the conditions are not surprised at these facts. The introduction of proper methods of sanitation will no doubt gradually overcome the disease.

During January, February and March there were but 39 new cases, while in April not a case was recorded. The general sanitary condition of the city was excellent. Pending a threatened outbreak at Cienfuegos, a careful inspection was instituted, but the fever at that port was limited to 7 cases on board the training ship *Lancaster*. Through the strenuous efforts of Col. Samuel M. Whiteside, commander of the Department of Santiago and Puerto Principe, up to September practically no yellow fever had occurred since December. The greatest possible precautions have been taken by cleanliness and disinfection to prevent the disease, which the result has amply justified. This fall, however, it was reported that yellow fever prevails in Havana to a greater extent than at any time since 1897. For the week ended September 15th there were 9 deaths. The week ended September 22d also showed 9 deaths, while there were 19 during the week ended September 29th. The Marine Hospital reports show a total of 49 deaths for August. The filthiness of Havana harbor is regarded as one of the essential causes of the continuance of the disease, in spite of active sanitary measures within the city.

The condition regarding yellow fever in the Philippines has, on the whole, been very favorable. A report from Major W. C. Gorgas, of the medical corps, chief sanitary officer at Manila, states that while the death rate for April was 482, there were no deaths from yellow fever, the first month so favored since May, 1899, and the only month when there were no deaths from this disease during the past ten years, with two exceptions, February and May, 1899. In general, yellow fever has not been a prominent factor in the diseases of the Philippines.

In Mexico yellow fever was epidemic, the cases numbering by May 1st 730, with 353 deaths. In Vera Cruz, however, by the last of April it was reported that the epidemic had been checked.

In South America, from Argentina there is no report of yellow fever after November 30, 1899, but in Colombia, at Barranquilla, there were 21 deaths in

June; at Rio de Janeiro, Brazil, yellow fever was epidemic in February, March and April, but by the end of May it was practically at an end.

During the summer a slight outbreak occurred at the Soldiers' Home in Hampton, Va. Apart from the few inevitable cases in the Southern States, the disease has not, however, appeared in the United States in threatening form. It appears, in fact, probable that our present knowledge of the disease will ensure us against epidemics in the future, which a few years ago were so great a source of anxiety.

Etiology.—The opinion is gaining ground, and is already accepted by many bacteriologists, that Sanarelli's bacillus is the cause of the disease. The general conclusions which have been reached are as follows:

That the bacillus icteroides, discovered by Sanarelli, is the specific agent of yellow fever. That micro-organism injected into certain animals, especially dogs, reproduces symptoms and lesions strikingly analogous to those observed in man. The toxin of this bacillus produces in animals the same effects as the microbe. The injection of this toxin into 5 individuals reproduced in man typical yellow fever, accompanied by its symptoms and anatomical lesions. The serum of individuals attacked with yellow fever agglutinates cultures of the bacillus icteroides. The bacillus has a prolonged vitality both in air and water (fresh and sea). It is certain that it is the same in the soil. Moulds favor its development. These facts confirm conditions that have been known a long time. They explain the reawakening of yellow fever a long time after the extinction of an epidemic, and the longevity of the disease aboard vessels in bad hygienic conditions. No new prophylactic measures have come out of this knowledge of the etiology of the disease. As formerly, the prevention of yellow fever consists in applying the measures of isolation and of disinfection, and of improving the hygienic conditions.

The rôle of the mosquito as a conveyer of the infection has also been studied, but with results much less conclusive than in the case of malaria.

CHOLERA.

In India while the plague and smallpox epidemics victimized Bombay, a cholera epidemic was causing one-sixth as many deaths in Calcutta as the plague itself. The disease seems to have limited itself to these cities, and although at Omam, in Turkey, sporadic cases are mentioned, there was no epidemic.

MALARIA.

During the past year much interest has centred in the study of the relation of mosquitoes and malaria, with results of a positive character. A large number of experiments have been made by competent observers in various malarious districts and a general unanimity of opinion prevails that mosquitoes of the genus *Anopheles* are chiefly concerned in the transmission of the disease. According to the researches of Bastianelli and Bignami, a single mosquito may infect an individual, and in fact, several individuals, for they have found numerous parasites in the salivary glands of mosquitoes by whose bites they have experimentally produced malaria in healthy subjects.

They have also made a study of the mosquitoes of very malarious districts in Italy, where almost the only genus is the *Anopheles*. In the months of June and July only 3% of the mosquitoes examined were found infected with the parasites, while those caught far from any habitation were found free from malarial infection. They concluded from this that the few malarial infected mosquitoes met with here acquired the parasite from persons who were suffering from relapses of malaria. They also reported the following interesting observations: A number of harvesters were housed in a big granary. In this on June 23d, only 1 mosquito was found. On the 24th, 8 mosquitoes were found, and on July 1st, 366. Of these 90 were examined and only 3 were found to be infected, but subsequently the number of the infected mosquitoes rapidly increased. At another place 42 laborers were housed in huts on an estate. On July 2d, out of 7 mosquitoes only 2 were found infected. On July 17th, 15 mosquitoes out of 32 were found infected, and on July 20th, 11 mosquitoes among 17 contained the malarial parasites. Mosquitoes captured during the same period in the stables of the estate or at a distance were found free from infection as a rule. At the end of July or early part of August, nearly all of the men who had lived in the huts during this period had become affected with malaria. They think that malaria should be regarded by the authorities as an epidemic or contagious disease and treated accordingly.

Professor Celli, director of the Institute of Hygiene at Rome, has traced the cycle of the infection, for the maintenance of which, in Italy at least, man is essential.

Beginning with the great multiplication of mosquitoes at the end of June or the early part of July, it is found that some of these are infected by the malarial parasite. They convey the infection to man, thus bringing about the great increase in the number of attacks of malaria observed in July and August, but sometimes continuing into the fourth quarter of the year. During the first and second quarters of the following year the malarious cases met with are generally recurrence of the infections contracted in the third or fourth quarters of the preceding year, and it is by these recurrent cases occurring even as late as June, when the mosquito once more becomes active, that the infection is again transmitted to the insect, and a new epidemic started.

Both Celli and Koch lay great stress on the part which the cultivation of rice plays in favoring the multiplication of mosquitoes. "The more rice fields," Koch reports, "there are in the neighborhood of a place, and the nearer they are, the greater the abundance of mosquitoes;" and Celli observes that it is well known that the "formation of rice fields causes the reappearance of malaria where it had become extinct, and where it already exists they are a very active focus of production." Rice is best cultivated on low lands subject to occasional inundation, but where inundation cannot be depended upon very copious artificial irrigation is resorted to.

An experiment which is also likely to prove conclusive was one undertaken by two English observers, Drs. Sambon and Low, under the direction of Dr.

Patrick Manson, who have lived in the malarious region of the Roman Campagna in a mosquito-proof hut. Retiring to their house at night when the mosquitoes bite, the observers have remained wholly free from infection, although the peasants in the neighborhood were all suffering from the disease. A visitor to this unique house writes in the *Journal of Tropical Medicine*:

I was in the Campagna when the rains set in and every one said, "Now is your time, you will all get fever." Two of us purposely went out in the rain and got soaked to the skin, but we disappointed our neighbors for we got no fever. On going into Ostia in two or three days' time, however, we found practically every one down with it. They crawled out of their houses looking the picture of woe and misery, and gave us their hot, feverish hands to feel. The explanation of this is of course evident, the inhabitants are all malariated, and chilling caused by the rain determined an explosion of fever.

Manson's experiments with infected mosquitoes and Koel's investigations were also important and demonstrative. Work undertaken in other parts of the world has been confirmatory of these results. Much remains, however, to be done in studying more thoroughly the habits of the mosquitoes and particularly in finding adequate means for their extermination. The following simple and somewhat self-evident conclusions have been reached: (1) The avoidance of the neighborhood of native houses—the perennial source of malaria parasites; (2) the destruction, so far as practicable, of *Anopheles'* breeding pools, (3) and principally, protection from mosquito bite.

TUBERCULOSIS.

The recognition of the fact that tuberculosis is highly preventable and in many cases a curable disease has led to an entire change of front in the attitude of the community toward it. As a consequence, institutions have come into existence for the rational treatment of tuberculosis, at first regarded with suspicion, but now rapidly being accepted as a necessary part of the hospital system. A new impetus has evidently been given to this tendency in New York State, through the report from a committee of the State Board of Charities. This committee strongly recommended the establishment of local sanitariums, as the most efficient means of combating the disease, rather than crowding tuberculosis patients into one or two large institutions, possibly at considerable distances from their homes. Such a plan appears possible, both from the point of view of expense and ease of management.

In New York there has been some discussion as to whether the new State Hospital for incipient tuberculosis, for which there is an appropriation of \$50,000, should be situated in Dannemora, in the Adirondacks. The completion of a new ward for the insane at Bellevue Hospital will render possible a much more adequate isolation of patients suffering from tuberculosis than has heretofore been possible in New York City. The *New York Medical Journal*

states that Dr. Louis Bazet, a member of the San Francisco Board of Health, has entered upon a vigorous campaign for the establishment of a separate hospital in San Francisco for the care of patients suffering from tuberculosis.

It is reported that arrangements are being made to establish a National Baptists' Home for Consumptives in Denver, Col.

The Iowa State Board of Health has placed tuberculosis on the list of infectious diseases, and recommended that persons afflicted with it and infected premises be dealt with accordingly. In a pamphlet issued this year are numerous suggestions and instructions for dealing with the disease. This somewhat recent attempt to institute a quarantine against tuberculous patients in some of the other Western States, as well as Iowa, met with the condemnation which it was the general opinion of the medical press it deserved, and the recent action of the Boston Board of Health that hereafter pulmonary and laryngeal tuberculosis shall be included in the list of diseases of which compulsory notification is required met with much criticism. In England the subject of sanatoria for tuberculosis has received much attention and several have been established recently; in general there is an increasing tendency everywhere to found sanatoria both at public and private expense.

There has recently been founded in France, according to the *British Medical Journal*, a society for the protection of the people against tuberculosis by popular education. It proposes to diffuse a knowledge of the means of preventing the disease by pamphlets, circulars, leaflets, placards, pictures, articles in the newspapers and popular lectures.

ETIOLOGY OF CANCER.

During the past year an active interest has been taken in the investigation of the parasitic origin of cancer, both in America and Europe. The early work of Ruffer, Pianese, Sanfelice, Plimmer and others has been subjected to critical analysis, with the following general conclusions as outlined by Nichols, working under the bequest of the late Caroline Brewer Croft to the Surgical Department of the Harvard Medical School. Certain bodies have been found in the cells of malignant tumors, of varying morphology and staining reaction, which certain observers have believed to be parasites and the cause of cancer. In two instances animals inoculated with blastomycetes have developed epithelial tumors, analogous to cancer in man, but the actual causal relation is not proved. The theory that cancer is due to a parasite is not yet proved. Nichols has studied a variety of tumors to determine if characteristic bodies are constantly present. His investigations are still in progress. The whole subject is one of great difficulty, but the preliminary work is encouraging for future results of more definite character than have yet been attained.

THE WAR IN SOUTH AFRICA.

"This war has been a war of surprises," writes Mr. Treves. "The casualties have been higher than

the gloomiest ever dreamed of and there was no reason to anticipate that the outbreak of enteric fever would assume the enormous proportions it has assumed." War was declared in October, 1899, and the stubborn resistance with which the Boers met the British in South Africa soon led to no little criticism of the British Government and the War Office for alleged lack of preparation. Whatever shortcomings, however, were brought to light, one branch of the service, the Royal Army Medical Corps, seems early in the war to have been more than equal to its arduous duties.

After the battle of Colenso, Sir William MacCormac writes: "In all the details of the necessary movements of the sick and the wounded, no army has ever been so well provided as ours now in the field. At this battle the wounded were taken directly to the hospital train and their wounds dressed extremely well under fire. At the field hospitals at Chieveley, about 400 yards outside the fire zone, some 800 patients were treated during the day, December 15th. The surgeons on duty began their work at 3 A. M., and were still at it in the evening without food or rest. As soon as the men were treated at the field hospitals, the hospital trains took them rapidly to the base." The heroic services of the medical force and of the 2,700 ambulance bearers is mentioned with the highest praise. The rapid healing of the bullet wounds was also a great source of satisfaction. Both the Mauser and Lee-Netford bullets made wounds that were small, clean and little disposed to suppurate, and wonderful recoveries from injuries were reported.

But as the war continued, disease and wounds made great havoc in the army. During the long siege at Ladysmith, dysentery and typhoid fever were the cause of many deaths.

In November the garrison consisted of 572 officers and 12,924 men. In March it had been reduced to 403 officers and 9,761 men. The admissions to hospital numbered 10,668, including 1,766 cases of enteric fever, and 1,857 of dysentery. The deaths were 600, including 393 from the former disease and 117 from the latter. The patients in hospital on March 1st numbered 1,996, 708 of whom were suffering from enteric fever, 341 from dysentery, and 189 from wounds. Other figures are as follows: Died of wounds, 59; killed in action, 18 officers, 193 men; killed in assaults and sorties, 17 officers and 160 men; killed by the bombardment, 2 officers, 33 men; wounded in assaults and sorties, 45 officers, 352 men. In November there were in Ladysmith 5,309 horses and 4,539 mules. At the end of the siege the horses numbered 2,900, of which only 500 were effective, and the mules 3,713. The rations which in November were issued for 40 days were, towards the end, made to extend over 120 days.

Both enteric fever and dysentery broke out also among the relieving forces. At Kimberley, where there were 20,000 men in garrison, both typhoid fever and scurvy appeared, the latter disease chiefly among the natives.

In Natal there was much sickness from the same causes.

The *Times* on June 27th published a letter, dated Capetown, May 29th, from Mr. W. Burdett-Coutts, in which he alleges that the medical arrangements in South Africa have failed to keep pace with the epidemic of typhoid fever, which has caused a very large number of cases of illness, especially among the troops in and about Bloemfontein. He gives a graphic and very distressing account of the overcrowded condition of a field hospital used as a stationary hospital in Bloemfontein.

The charges contained in this letter were so grave as to cause a protest from many sources. Among others Mr. Treves made a most vigorous protest against what he regarded as Mr. Burdett-Coutts's unwarranted and untrue strictures against the medical arm of the service. A parliamentary inquiry was ordered, which so far as we know is still pending. Inoculation against typhoid, which was extensively, though not universally, practised among the troops, has led to no definite conclusions as to its efficiency.

Shortly after the occupation of Pretoria, the following statistics were published:

Of the officers in South Africa 72.1 per thousand were killed or died from wounds; 30.6 per thousand of the officers died from disease, while of the men 19 per thousand were killed or died from wounds, and 31.3 died from disease. These statistics not only illustrate that while the officers and men have suffered approximately equally from disease, the risks of the officers in action have been greatly disproportionate, and also that the rate of mortality in South Africa is much greater than it was in the Franco-German War.

These statistics are also of interest:

Up to September 28th, 15,655 cases of typhoid fever had occurred and of these 3,642 had died and 9,128 had been sent home as invalids. A total of 267,311 men, exclusive of officers, were engaged in the war. On December 1st there were 210,293 in South Africa; up to November 30th there had been killed 3,018, wounded 13,886, died of disease or wounds or accidentally killed 7,786, and in hospitals in South Africa on October 2d, 11,927. No fewer than 7,541 not invalids had returned to England, while 35,548 had returned as sick and wounded, including those who had died on the passage.

NECROLOGY. — UNITED STATES, 1900.¹

John S. Cook, M.D., of Hackettstown, N. J., died January 1st, aged 73.

John Cargill Shaw, M.D., professor of diseases of the nervous system at the Long Island College Hospital, Brooklyn, N. Y., died January 23d.

Ernest G. Metcalfe, M.D., of Brooklyn, N. Y., died February 2d, aged 49.

A. P. Richardson, M.D., died at Walpole, N. H., February 3d.

A. J. Billings, M.D., of Freedom, Me., died February 7th, at Belfast.

Edward Lorenzo Holmes, M.D., former president of Rush Medical College, Chicago, died in Chicago, February 11th.

Edward F. Martin, M.D., twenty years connected with the New York City Board of Health, died February 24th.

Clarence Edwin Beebe, M.D., of New York, died March 1st.

¹ Deaths are recorded by months.

Harriet P. Bill, M.D., of New York City, died March 7th, in New Hampshire. Dr. Bill has been resident physician of the Sherborn Reformatory and of the Child Hospital on Staten Island.

Oliver Payson Hubbard, professor emeritus of chemistry and pharmacy at Dartmouth College, died in New York City, March 9th, aged 90.

Samuel H. Pennington, M.D., of Newark, N. J., the oldest living graduate of Princeton University, died March 14th, aged 94.

Arthur A. Beebe, M.D., died March 16th, in Boston, aged 28.

John Cooper, M.D., said to have been the oldest practising physician in Brooklyn, died March 29th.

George H. Conklin, M.D., the oldest practising physician in Suffolk County, N. Y., died April 12th, aged 89.

Fessenden Nott Otis, M.D., chiefly known for his work on venereal disease, died at New Orleans, May 24, aged 75.

Charles H. Mersereau, M.D., of New York, died May 2d, aged 37.

Matthew M. Bagg, M.D., of Utica, N. Y., died May 3d, aged 83.

Landon Carter Gray, M.D., of New York, died May 8th, aged 50.

Charles Herbert Voorhees, M.D., of New Brunswick, N. J., died May 13th.

Alfred H. Lindström, M.D., of Boston, died May 17th, at the Massachusetts General Hospital, aged 31.

E. O. Shakespeare, M.D., of Philadelphia, died suddenly June 1st, aged 54.

Paul Gibier, M.D., of New York, died June 9th, from injuries inflicted by an accident, aged 49.

William Pierson, M.D., one of the most prominent physicians of New Jersey, died in Orange, June 12th.

Benjamin Douglas Howard, M.D., of New York, died June 21st, aged 63.

Louis Arcularius, M.D., a prominent German physician in New York, died July 1st, aged 62.

Alexander J. C. Skene, M.D., of Brooklyn, N. Y., died July 4th, aged 62.

John Ashurst, M.D., of Philadelphia, died July 7th.

Franklin Booth, M.D., of Long Island City, died August 19th.

Alfred Stillé, M.D., LL.D., of Philadelphia, died September 24th, aged 86.

William S. Ward, of Newark, N. J., died September 1st.

J. M. Da Costa, M.D., LL.D., of Philadelphia, died September 12th, aged 68.

Hunter H. McGuire, M.D., LL.D., died in Richmond, Va., September 19th, aged 65.

Lewis A. Sayre, M.D., died in New York City, September 21st, aged 80.

James Hart Curry, M.D., a physician in Westchester and Putnam Counties, New York, died September 24th.

Samuel Smith Purple, M.D., a former president of the Academy of Medicine and one of the most venerated members of the profession in New York, died September 29th, aged 78.

Joseph L. Cutler, M.D., a leading surgeon of Alleghany County, N. Y., died October 14th, aged 71.

Wm. R. Larkin, M.D., a prominent Harlem, N. Y., physician, died October 15th, aged 42.

Laurence Turnbull, M.D., of Philadelphia, died October 24th. His reputation was made chiefly by his work on the ear.

Moses C. White, M.D., professor emeritus of pathology in the Yale Medical School, died October 24th, aged 81.

Edward R. Squibb, of Brooklyn, N. Y., the well-known manufacturing chemist, died October 26th, aged 81.

J. K. Phillips, M.D., of Bangor, Me., died November 5th, aged 42.

Henry Drury Noyes, M.D., an eminent ocellist of New York, died November 12th.

Horace Tracy Hanks, M.D., of New York, died November 18th, aged 64.

Rufus P. Lincoln, M.D., of New York, died November 27th, aged 59. He was eminent as a laryngologist.

Francis Charles Plunkett, M.D., of Lowell, Mass., died November 29, 1899.

J. H. Fruitnight, M.D., well known for his work on diseases of children, died December 18th, aged 49.

George H. Elliot, M.D., of New York, died in Manchester, N. H., December 17th, aged 55.

Charles F. Taft, M.D., died in Mount Vernon, N. Y., December 18th, aged 66. He was the first physician to reach the side of President Lincoln after he had been shot in Ford's Theatre, Washington.

NECROLOGY. — MASSACHUSETTS MEDICAL SOCIETY, 1900.

Milton Wilder Hall, M.D., M.M.S.S., died in Roxbury, January 9th, aged 51.

Austin Marsh, M.D., M.M.S.S., died February 2d, at Carlisle, Mass. He had been a member of the society since 1839.

William Henry Howe Hastings, M.D., M.M.S.S., died in Boston, February 16th.

Edward Augustus Perkins, M.D., M.M.S.S., died in Boston, February 20th, aged 72.

George Morrill French, M.D., M.M.S.S., of Malden, died at Suncook, N. H., February 23d, aged 45.

Frank Walker Graves, M.D., M.M.S.S., died in Woburn, March 13th, aged 58.

George Pinkham Bartlett, M.D., M.M.S.S., of Woburn, died March 27th, aged 49.

Paul Augustine Staekpole, M.D., M.M.S.S., died in Dover, N. H., March 28th, aged 86.

George Washington Warren, M.D., M.M.S.S., died in West Boylston, April 22d, aged 81.

Charles Carroll Street, M.D., M.M.S.S., died in Boston, May 7th, aged 64.

John Richardson Bronson, M.D., M.M.S.S., died in Attleboro, May 9th.

Philemon Eveleth, M.D., M.M.S.S., died at Marblehead, May 14th, aged 54.

Luther Blodgett Morse, M.D., M.M.S.S., died in Watertown, May 26th, aged 79.

Gardner Carpenter Pierce, M.D., M.M.S.S., of Ashland, died May 18th, aged 62.

Elisha Chenery, M.D., M.M.S.S., died in Boston, August 1, aged 70.

William Henry O'Hearn, M.D., M.M.S.S., died in Lawrence, June 4th, aged 30.

William Francis Howard, M.D., M.M.S.S., died in Lawrence, June 15th, aged 31.

Benjamin Webber Bartlett, M.D., M.M.S.S., died in Rowley, August 6th, aged 50.

Moses Warren Kidder, M.D., M.M.S.S., died in Waltham, August 15th, aged 72.

James Henry Robbins, M.D., M.M.S.S., died in Hingham, August 22d.

John Francis Ryan, M.D., M.M.S.S., died in Roxbury, September 1st, aged 29.

John Langdon Sullivan, M.D., M.M.S.S., of Malden, died September 5th, aged 73.

Robert Francis Forrest, M.D., M.M.S.S., of Cambridge, died in Watertown, September 18th.

Lawrence Mervin Gould, M.D., M.M.S.S., of Hyde Park, died in Portland, Me., October 7th.

As shown above there have been but 24 deaths in the Massachusetts Medical Society during the year. Seven of these had reached or passed their seventieth year and one had attained the age of eighty-six years. Three deaths occurred under thirty-two years of age.

NECROLOGY. — GREAT BRITAIN, 1900.²

William MacNeil Whistler, M.D., born in the United States, died in London, February 27th. He was senior physician, London Throat Hospital.

Major Walter Kiddle, M.D., R.A.M.C., born in 1864, was killed by the frontier tribes while serving with the Burmah-China Boundary Commission, February 9th.

Thomas Purcell, M.D., died suddenly February 9th.

Sir Thomas Grainger Stewart, M.D., F.R.C.P.E., F.R.S.E., LL.D., born in Edinburgh, 1837, died February 3d. He was one of the most brilliant lecturers in the University of Edinburgh.

William Mareet, M.D., F.R.S., F.R.C.P., died in Luxor, Egypt, March 4th.

George Vince Ellis, F.R.C.S., emeritus professor of anatomy, University College, London, died April 25th, at Gloucester.

Sir Robert Douglas Maclagan, M.D., F.R.C.P., F.R.C.S.E., LL.D., died in Edinburgh, April 5th.

Sir William Overend Priestley, M.D., LL.D., M.P., died April 11th, aged 70.

R. Glasgow Pattison, B.A., M.B., B.Ch., F.R.C.S.I., died April 11th.

Lieutenant-Colonel C. J. H. Warden, M.D., I.M.S., died July 28th.

Daniel John Leech, M.D., D.Sc., F.R.C.P., died July 2d, aged 60. He was a distinguished therapist.

Richard Hamilton Cowan, M.R.C.S., died October 6th, aged 42.

Sir Henry Aeland, Bart, K.C.B., M.D., F.R.S., died in October, aged 85.

Arthur Symons Eccles, M.B., C.M., M.R.C.S., died in London, October 22d, aged 45.

Richard Benjamin Anderson, F.R.C.S., died in London, November 8th.

Alexander George Davey, M.D., S.B., L.R.C.P., M.R.C.S., L.M.L.S.A., died November 5th, aged 63.

Francis John Boxwell Quinlan, M.D., F.R.C.P.I., died in Dublin, November 8th, aged 65.

Dennis Embleton, M.D., F.R.C.P., died November 12th, aged 90.

Richard Neale, M.D., died in November, aged 72. He was editor of the *Medical Digest*.

Deputy Surgeon-General George Mackay, M.D., died in Edinburgh, November 20th, aged 80.

G. Hutchinson Milnes, B.A., M.D., died in Plymouth, November 20th, aged 41.

DEATHS OF PHYSICIANS IN SOUTH AFRICA.

Captain William Fleming Hopkins, of enteric fever.

Captain Henry Esmonde Dowse, of the Royal Army Medical Corps, died at Bloemfontein, May 5th, of remittent fever, aged 32.

Hugh Arnold Bryant, M.R.C.S., Eng., L.R.C.P., at Bloemfontein, from enteric fever, on June 7th, aged 33.

Surgeon-Lieutenant-Colonel James Stevenson Forrester died on board the steamer *Dunera* on June 18th; he went out to South Africa on January 20th to take charge of the Princess Christian Hospital Train for Natal.

Lieutenant Edmund Leonard Munn, of the Royal Army Medical Corps, died at Boshof, May 23d, of enteric fever.

Major Charles Pope Walker, M.B., R.A.M.C., from dysentery at Ladysmith, January 5th.

William Chapman Grigg, M.D., M.R.C.P., died from enteric fever at Wynberg, South Africa, March 12th.

Richard Truman Fitz Hugh, M.B., London, died of enteric fever at Dulfontein in South Africa, in July.

Sir William Stokes, M.D., F.R.C.S.I., died of pleurisy at Pietermaritzburg, South Africa, August 18th, aged 61.

The following deaths of distinguished physicians, chiefly in Europe, have occurred during the year :

Julius Althaus, M.D. (Berlin), M.R.C.P. (Lond.), who was a voluminous writer, chiefly on electrical treatment and disorders of the nervous system; Dr. Heinrich Laudahn, director of the Lindenburg Asylum, Cologne; Dr. Korsakoff, professor of mental diseases in the University of Moscow; Dr. Apostoli, Paris; Dr. Birch-Hirschfeld, professor of pathology and pathological anatomy at the University of Leipsic; he was born in May, 1842, and after many years of comparative obscurity he was elected to the chair of pathology at Leipsic in 1885, in place of Cohnheim; Dr. Porfíxicio Valiente y Delmonte, who was chief of the Medical Department of the Cuban Army in the late revolution, and at the time of his death Alcalde of the city of Santiago de Cuba; Dr. Van Millingen, of Constantinople, a well-known ophthalmologist; Dr. Amenille, formerly a president of the Société Médico-Chirurgicale; Prof. Rudolf Ritter von Limbeck, physician to the Rudolfstiftung, Vienna, aged 39; Dr. G. Planchon, member of the Académie de Médecine and director of the Ecole Supérieure de Pharmacie, Lyons; Professor Bose, head of the Surgical Clinic of the University of Giessen, aged 60; Dr. Alphonse Milne Edwards, professor of zoology in the University of Paris, aged 62; Dr. Reinhold Long, of Berlin, one of the foremost medical jurists in Germany, aged 65; Dr. J. Chéron, former professor of zoology at Strassburg, and for the last thirty years physician to the St. Lazare Infirmary, Paris; Dr. Leopold Grossman, head of the Ophthalmological and Otological Department of the St. Johannes Hospital, Buda-Pesth; Dr. Mathias Hieronymus Saxtorph, professor of surgery in the University of Copenhagen; Alfred Fisher, L.R.C.P. (Edin.), M.R.C.S. (Eng.), at Liverpool; Prof. Josef Gruber, of Vienna, distinguished as an otologist; Dr. E. M. Shirtliff of Newlands, Ryde, the honorary secretary of the Isle of Wight District of the Southern Branch of the British Medical Association; Lieut.-Col. Archibald Adams, M.D., and F.R.C.S.I., Indian Medical Service, and administrative medical officer, Rajputana, died at Mount Abu, India, May 20th, aged 50; Prof. Lorenzo Bruno, senator of the Kingdom of Italy, and formerly physician to King Victor Emanuel; Dr. Adolfo Murillo, dean of the Medical Faculty of Santiago de Chile and president of the Scientific Society of Chile; Dr. Tito Ambroni, of Milan, described as "patriot, veteran and explorer," aged 90; Dr. Anton Tschurtschenthaler von Helmheim, professor of pathology and pharmacology in the University of Innsbrück, aged 83; Dr. Gombault, of Paris, for many years a collaborator of Charcot's, aged 59; Dr. Lanzet, chief surgeon to the hospital of Marseilles; Dr. Latrille, deputy professor in the Medical School of Poitiers; Dr. F. E. Aub, member of the Bavarian Chamber of Representatives,

² Arranged by months.

a prominent sanitarian and medical reformer, aged 63; Dr. L. Tomaszewski, medical director of the Nicolaus Hospital, St. Petersburg, and founder of the St. Petersburg Association of Specialists in Children's Diseases, aged 68; Dr. Hugo Bergcat, a well known laryngologist of Munich, aged 41; Professor Ollier, of Lyons, France, died in that city, early in December, aged 75; Dr. Gustave Peltier, of Sedan, who served as surgeon to the hospital of that town in the Franco-Prussian War, and was the author of numerous contributions to the *Progrès Médical*; Dr. Ant. Ferreira França, sometime professor of surgical pathology in the Medical Faculty of Rio de Janeiro; Dr. Apollinaris Podres, professor of surgery in the University of Charkow, aged 47; Dr. Bernhard Spinola, director of the Charité Hospital, Berlin, aged 64; Dr. Duplony, sometime director of the Medical Department of the French Navy; Prof. Eugene Boeckel died in Strassburg, in March; Dr. L. H. Petit, for twenty years assistant librarian of the Paris Faculty of Medicine, died in Mentone, in March; Dr. Cadet de Gassicourt died in France, in July; Dr. Max Schäfer, of Bremen, died in July while mountaineering in the Alps.

MEDICAL MEETINGS AND CONGRESSES. — UNITED STATES.

The ninety-fourth annual meeting of the Medical Society of the State of New York was held January 30th and 31st, and February 1st, in Albany, N. Y. The annual meeting of the Suffolk District Medical Society, commemorating the fiftieth anniversary of the society, was held in Boston, April 28th. The Association of American Physicians met at Washington, D. C., May 1st, 2d and 3d. The twenty-fourth annual meeting of the American Dermatological Association was held in Washington, D. C., May 1st, 2d and 3d. The meeting of the American Surgical Association was held in Washington, D. C., May 1st, 2d and 3d. The twenty-fifth annual meeting of the American Gynecological Society was held in Washington, D. C., May 1st, 2d and 3d. The American Neurological Association met at Washington, D. C., May 1st, 2d and 3d. The thirty-third annual meeting of the American Otolological Society was held May 1st in Washington, D. C. The ninth annual meeting of the Association of Military Surgeons of the United States was held May 31st, June 1st and 2d, in New York City. The forty-ninth annual meeting of the American Association for the Advancement of Science was held in New York City, June 25d to 30th. The twenty-fifth annual meeting of the American Academy of Medicine was held at Atlantic City, N. J., June 2d and 4th. The annual meeting of the Massachusetts Medico-Legal Society was held June 12th, in Boston. The tenth annual meeting of the American Electro-Therapeutic Association was held September 25th, 26th and 27th, in New York City. The forty-eighth annual meeting of the Maine Medical Association was held in Portland, June 13th, 14th and 15th. The annual meeting of the American Medical Association was held in Atlantic City, June 5th, 6th, 7th and 8th. The annual meeting of the Massachusetts Medical Society was held June 12th and 13th in Boston. The fiftieth anniversary of

the Middlesex East District Medical Society was observed the last week in October. The American Association of Obstetricians and Gynecologists held its thirteenth annual meeting in Louisville, Ky., September 18th, 19th and 20th. The Mississippi Valley Medical Association held its twenty-sixth annual meeting, October 9th, 10th and 11th, at Asheville, N. C. The eighty-seventh annual meeting of the Vermont State Medical Society was held at Rutland, October 11th and 12th. The twelfth annual meeting of the Tri-State Medical Society of Alabama, Georgia and Tennessee was held in Chattanooga, October 11th, 12th and 13th. The meeting of the Southern Surgical and Gynecological Association was held at Atlanta, Ga., November 13th, 14th and 15th.

MEDICAL MEETINGS AND CONGRESSES. — FOREIGN.

The German Congress of Medicine held its annual meeting at Wiesbaden in April. The British Medical Association held its sixty-eighth annual meeting in Ipswich, July 31st, August 1st to 3d. The Thirteenth International Congress of Medicine was held in Paris, August 2d to 9th. The Tenth International Congress of Hygiene and Demography was held in Paris, August 10th to 17th. The German Scientific and Medical Congress held its annual meeting in Aachen, beginning September 17th. The Fifteenth Congress of the Italian Surgical Society was held at Rome, October 27th to 30th. The second annual meeting of the Italian Society for the Study of Malaria was held at Rome. This society was founded in 1898.

MEDICAL NOTES.

THE SIZE OF LONDON. — An impression of the size of London is gained from the statement that in 1899 the killed and wounded in the London streets are said to have numbered 9,891, of whom 207 were killed outright. No battle in the South African War can show so large a total of losses as this list of casualties in the streets of London. The number of persons killed and wounded in the celebration of the return of the London volunteers equalled the losses of the British in any engagement those soldiers took part in.

A TRAGIC DEATH. — It has transpired that a mechanic was locked in one of the ballast compartments of the steamship *St. Paul* when she was launched five years ago. The skeleton has just been found in the hull of the vessel, which is undergoing repairs.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, December 26, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 135, scarlatina 31, measles 29, typhoid fever 18.

REQUEST TO CAMBRIDGE HOSPITAL. — By the will of the late Mrs. Harding, of Cambridge, \$20,000 is left to the Cambridge Hospital.

METEOROLOGICAL RECORD

For the week ending December 15th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Baro- meter		Ther- mometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.		Rainfall in inches.	
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.		8.00 P. M.
S...9	29.72	30	43	18	77	85	81	S.W.	W.	18	22	O.	C.	.03
M...10	30.24	16	23	8	74	70	67	W.	S.W.	11	9	C.	C.	
T...11	30.03	28	31	23	75	100	88	S.	W.	5	8	O.	N.	
W...12	30.16	25	30	20	57	69	63	W.	S.	10	5	C.	C.	
F...13	29.73	36	48	24	75	69	72	S.W.	W.	18	18	O.	C.	
S...14	30.18	20	32	9	68	72	70	N.W.	N.W.	16	12	C.	C.	
S...15	30.45	28	8	18	81	74	78	N.W.	N.	9	7	O.	C.	

* O, cloudy; C, clear; F, fog; G, fog; H, haze; S, smoky; R, rain; P, threaten-
ing; N, snow. † Total as trace of rainfall. ☉ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 15, 1900.

CITIES	Estimated popu- lation.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and group.
New York	3,437,202	1132	281	23.66	17.21	1.05	2.47	3.97
Chicago	1,698,575	—	—	—	—	—	—	—
Philadelphia	1,333,697	—	—	—	—	—	—	—
St. Louis	575,238	—	—	—	—	—	—	—
Baltimore	508,957	163	39	28.19	12.87	1.83	2.45	3.06
Cleveland	381,768	—	—	—	—	—	—	—
Buffalo	352,377	—	—	—	—	—	—	—
Cincinnati	325,902	—	—	—	—	—	—	—
Pittsburg	321,616	96	34	28.10	14.57	5.20	7.28	3.12
Washington	278,718	—	—	—	—	—	—	—
Mitwaukee	285,315	—	—	—	—	—	—	—
Providence	175,597	68	21	24.58	14.70	5.88	2.94	1.47
Boston	560,892	176	54	29.28	16.14	2.15	1.08	8.60
Worcester	118,421	33	9	9.63	16.05	—	3.21	—
Fall River	104,863	—	—	—	—	—	—	—
Lowell	94,869	24	10	8.34	20.85	—	—	—
Cambridge	91,886	39	10	33.32	19.98	—	6.06	9.99
Lynn	68,513	—	—	—	—	—	—	—
Lawrence	62,551	23	13	13.07	4.35	—	—	8.70
New Bedford	62,412	25	15	8.00	28.00	—	—	—
Springfield	62,079	21	9	19.04	14.28	4.76	4.76	—
Somerville	61,643	16	6	25.00	12.50	—	—	—
Holyoke	45,713	—	—	—	—	—	—	—
Brockton	40,963	6	2	66.66	—	—	—	16.67
Haverhill	37,173	8	—	25.00	12.50	—	—	—
Salem	35,656	12	1	16.67	—	—	—	—
Chelsea	34,072	5	1	—	—	—	—	—
Malden	33,664	8	2	37.50	—	—	—	12.50
Newton	33,587	15	—	6.67	—	—	—	—
Fitchburg	31,531	7	3	14.29	28.56	—	—	—
Taunton	31,036	7	1	—	28.56	—	—	—
Gloucester	26,121	7	1	28.56	—	—	—	—
Everett	24,336	8	4	37.50	25.00	—	—	—
North Adams	24,200	7	3	28.56	28.56	—	—	14.29
Quincy	23,879	3	—	—	—	—	—	—
Waltham	23,481	—	—	—	—	—	—	—
Pittsfield	21,766	—	—	—	—	—	—	—
Brookline	19,935	—	—	—	—	—	—	—
Chicopee	19,167	3	3	—	—	—	—	—
Medford	18,244	3	1	—	—	—	—	—
Newburyport	14,478	6	—	—	16.67	—	—	—
Melrose	12,962	5	1	20.00	40.00	—	—	—

Deaths reported 1,943; under five years of age 524; principal infectious diseases (smallpox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 449, acute lung diseases 309, consumption 253, diphtheria and croup 79, typhoid fever 48, diarrheal diseases 29, whooping cough 12, scarlet fever 9, cerebrospinal meningitis 7, measles 3.

From whooping cough New York 3, Pittsburg, Providence, Boston and Everett 2 each, Brockton 1. From cerebrospinal meningitis New York 5, Boston and Haverhill 1 each. From scarlet fever New York 6, Boston 2, Pittsburg 1. From measles New York, Pittsburg and Boston 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending December 1st, the death rate was 18.0. Deaths reported 4,017: acute diseases of the respiratory organs (London) 436, diphtheria 89, whooping cough 71, measles 71, fever 55, diarrhea 42, scarlet fever 27.

The death rates ranged from 9.1 in Croydon to 26.9 in Sunderland: Birmingham 20.3, Bradford 16.3, Cardiff 12.3, Derby 18.8, Hull 15.7, Leeds 17.3, Liverpool 22.9, London 17.9, Manchester 20.8, Newcastle-on-Tyne 19.1, Nottingham 17.0, Portsmouth 16.3, Sheffield 17.8, Swansea 19.3, West Ham 13.8.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE TWO WEEKS ENDING DECEMBER 22, 1900.

- J. W. PEARSON, pharmacist, ordered to the naval academy.
- J. C. PRYOR, assistant surgeon, detached from the "Albatross" on reporting of relief and ordered home to wait orders.
- C. S. BUTLER, assistant surgeon, detached from the "Independence" and ordered to the "Albatross."
- J. B. DENNIS, assistant surgeon, detached from the "Wheeling" on reporting of relief and ordered home to wait orders.
- C. N. FISKE, assistant surgeon, detached from the Naval Hospital, Mare Island, Cal., and ordered to the "Wheeling."
- W. M. WHEELER, passed assistant surgeon, detached from the "Kearsage" and ordered to the "Alabama."
- T. W. RICHARDS, passed assistant surgeon, detached from the "Alabama" and ordered to the Bureau of Medicine and Surgery, Navy Department.
- F. L. PLEADWELL, passed assistant surgeon, detached from the Bureau of Medicine and Surgery and ordered to the "Kearsage."
- R. E. LEDBETTER, assistant surgeon, detached from the "Constellation" and to the "Monongahela."
- J. A. MURPHY, assistant surgeon, detached from the "Solace" and to the "Don Juan Austria."
- JACOB STEFF, assistant surgeon, detached from the "Solace" and to the Cavite Naval Station.
- M. V. STONE, assistant surgeon, detached from the "Yosemite" and to the "Isle de Luzon."
- J. C. THOMPSON, assistant surgeon, detached from the Naval Hospital, Cavite, P. I., and to the "Solace."

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the society will be held at the Medical Library, 19 Boylston Place, on Monday, December 31st, at 8.15 P. M.

Subject: "Gonorrhoea."
Papers: Dr. Benjamin Tenney, "Gonorrhoeal Infection,"
Dr. Oscar Richardson, "Practical Laboratory Diagnosis of Gonorrhoea."
Dr. F. G. Balch, "Acute Gonorrhoea"
Dr. W. L. Burrage, "Gonorrhoea in Women."
Dr. Gardiner Allen, "Chronic Gonorrhoea."
Dr. C. L. Scudder, "The Seminal Vesicles in Gonorrhoea."
Dr. J. B. Blake, "Gonorrhoeal Prostatitis."
Dr. Paul Thorndike, "The Sociological Problem of Gonorrhoea."

ARTHUR K. STONE, M.D., Secretary, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, January 2, 1901, at 8.15 o'clock.

Paper: "Movable Kidney," by Dr. Francis S. Watson. Discussion by Drs. C. B. Porter, G. G. Sears and F. B. Lund.
F. G. BALCH, M.D., Secretary, 279 Clarendon Street.

RECENT DEATHS.

J. H. FRUITNIGHT, M.D., consulting physician to St. John's Guild and a well-known pediatric specialist, died on December 18th. He was born in New York, November 9, 1851, and was graduated from Bellevue Hospital Medical College in 1875.

CHARLES S. TAFT, M.D., the first physician to reach the side of President Lincoln after he had been shot in Ford's Theatre, Washington, died at Mount Vernon, N. Y., on December 18th. He was born in New York in 1835, and shortly after the outbreak of the Civil War entered the army medical service, in which he continued until fifteen years ago when he was retired.

GEORGE H. ELLIOTT, M.D., of New York, died at the home of his father in Manchester, N. H., on December 17th, at the age of fifty-five. He was a graduate of the University of Denver and served in the Civil War with the 7th New Hampshire Regiment.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the New Hampshire Medical Society at the One Hundred and Ninth Anniversary, held at Concord, May 31 and June 1, 1900. Concord, N. H. 1900.



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