December 31, ditto.

Jan. 6, 1898, few diphtheria organisms found.

January 8, culture failed to show growth of diphtheria bacillus.

January 13, diphtheria organisms quite plentiful.

January 20, organism again found.

January 21, few diphtheria bacilli mixed with pus cocci; guinea-pig inoculated with 0.7 c.c. of twenty-four-hour-old culture in glycerin broth; died in thirty-six hours; characteristic lesions noted, and organism isolated from point of inoculation.

February 11, found diphtheria colonies sparingly.

February 15, no diphtheria bacillus found.

February 27, diphtheria organism present.

March 1, ditto.

March 6, none found.

April 10, diphtheria bacillus present.

May 30, none found.

June 10, ditto.

June 15, ditto.

Antiseptic throat washes were used during treatment and convalescence, but in spite of this, virulent diphtheria organisms were found with only occasional failures, for four and one-half months after outbreak of the disease.

Case 2.—Mrs. J., aged 30 years, mother of Case 1, was taken with a headache on Dec. 25, 1897, and developed slight sore throat with scattered white patches in the same; no special cause for alarm, but diphtheria suspected on account of presence of other case four weeks before.

December 24, diphtheria bacilli demonstrated in abundance.

December 31, bacillus diphtheriae readily demonstrated.

Jan. 6, 1898, white patches almost entirely disappeared; abundant growth of diphtheria organism on culture.

January 13, ditto on two different swabs.

January 28, very few present.

February 2, diphtheria bacillus very frequent.

February 11, sparingly present.

February 20, doubtful.

February 27, bacilli present.

March 1, ditto.

April 10, ditto.

May 30, absent.

June 10, ditto.

The organism was present three and one-half months after development of case, but case was not quarantined.

Case 3.—Miss P. G., Milwaukee, aged 24, was taken sick March 24, and confined to room for one day; early clinic diagnosis suspected diphtheria; this diagnosis later not confirmed; case not quarantined; bacteriologic examination made.

April 13, diphtheria bacilli numerous.

April 20, found in considerable numbers.

April 27, ditto.

May 2, ditto.

May 9, ditto.

May 16, guinea pig inoculated with 0.9 c.c. of fresh culture, the animal died in fifty-two hours; diphtheria bacillus isolated from point of inoculation.

In all of these cases it is easy to see how the disease might have been distributed to other persons if especial care had not been taken to prevent such dissemination. In case of the boy, his return to school after the usual period of convalescence would have given exceptionally favorable opportunity for the further spread of the disease among other school children. In the case of the two adults, the relative insusceptibility of the individual prevented the typical development of the disease, but the virulence of the disease germ was attested by animal experiments, and it is easy to see how the disease might have been unwittingly distributed by the convalescents long after every symptom of the disease had disappeared.

These cases are by no means exceptional. Corroborative evidence is constantly accumulating which indicates that the germ may persist in a virulent condition for many months after convalescence. Such cases undoubtedly explain how diphtheria sometimes

breaks out in apparently a sporadic manner. The disease is simply sporadic because, at the time, we may not happen to have all the data at hand that would permit of the establishment of a causal relation between one case and another.

Another important lesson that such cases teach us is the value of a bacteriologic control of these matters. So long as we were forced to rely on merely clinic observation, so long mistakes in diagnosis were possible, but by means of the accurate scientific methods that have been inaugurated at the present time, it is now possible to determine the character of these various throat affections with accuracy, and at the same time trace them farther until the disease germ has been thoroughly and effectually eliminated.

It would be impossible to maintain a rigid quarantine for any such length of time as was covered by the above cases. But it is possible to determine the conditions as they actually exist from time to time, and if the disease germ persists for a long period, to use such precautions as will diminish the possibility of the spread of contagion.

AMPUTATION THROUGH HIP-JOINT.*

REPORT OF TWO SUCCESSFUL OPERATIONS BY WYETH'S BLOODLESS METHOD.

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The following is a report of two successful hip-joint amputations performed by the writer on the same morning, at the S. F. Polyclinic wards of the City and County Hospital.

John L., aged 40, married, a sailor, with no history of heredity nor syphilis, had suffered for the past three years from hip-joint disease, resulting in ankylosis of both hip- and knee-joints, and which had been treated by extension and various palliative measures during this time. The gluteal muscles were atrophied from disuse and the gluteal fold obliterated. There was 6 cm. of shortening. On Jan. 19, 1899, five or six incisions were made on the outer and inner side of the thigh and buttock, evacuating a great amount of pus which emanated from the hip-joint, which was resected two weeks later. At this time it was found that the acetabulum was badly diseased. The patient's condition was gradually getting worse; the sinuses showing no tendency to repair, together with the ankylosis of the knee-joint and the diseased acetabulum, made it imperative to do something to save the patient's life. He was so weak that he could not raise himself in bed and, as his leg had been useless to him for a number of months, amputation at the hip-joint was decided on, and was performed on March 16, by a modified Furneaux Jordan method, using Wyeth's method of hemostasis.

The temperature after the operation never went above 101. The sutures were removed on the eighth day, primary union taking place excepting in the track of the drainage-tube. At the present writing there is still an opening following the track of the drainage-tube, due to the diseased acetabulum. The muscles were badly distorted as a result of prolonged disease, accounting for the irregularly shaped stump as seen in the photograph.

* Read at the Twenty-ninth Annual Meeting of the Medical Society of the State of California, April, 1899.

The second amputation was done for a chronic osteomyelitis of the femur and tibia. George M., aged 23, single, a cook, gave a tuberculous history; grandmother died of tuberculosis; history of suffering from a stiff and painful knee for the past three and one-half years, which has gradually gotten worse. He had been admitted to the City and County Hospital on four different occasions, during which time palliative treatment had been resorted to. On December 1 resection of the joint was performed and it was found that the entire medullæ of the tibia and femur were diseased. These were curetted at the time of the resection, and a drainage-tube passed from the femur near the trochanter down to the tibia, the drainage-tube emerging from openings drilled through both bones. Primary union was obtained, but the track of the drainage-tubes showed no tendency to repair. There was repeated abscess formation, the tissues again becoming markedly indurated, necessitating a reopening of the joint, which presented evidence of a progressive disorganization extending down into the tibia and up into the femur. At this time the outer half of the tibia was removed and found filled with débris. The high temperature persisting, and knowing the condition of the femur, it was decided as the only remedy, to amputate the hip-joint.

The Furneaux Jordan operation was performed, the bone being sawed below the lesser trochanter, where the medulla at the point of section and extending to the head of the bone was found to be puriform. Ex-articulation was made with comparative facility, being absolutely bloodless. Temperature was normal, never going above 100 after the operation. Primary union was obtained and sutures removed in eight days. The patients were out of bed on the twelfth day, and on the twenty-first day they were photographed standing on one leg. Wyeth's operation was quite satisfactory, the operation being practically bloodless.

Amputation at the hip-joint has always been considered one of the formidable operations in surgery, and the evolution of this operation up to the present period is most interesting. The first idea of this operation originated with Morand, who practiced it on the cadaver in 1738. In this he was supported by many men belonging to the French school, but it remained for Lacroix in 1748 to make the first hip-joint amputation in a case of ergot gangrene, and was merely the separation of devitalized tissue by scissors, proving fatal on the eleventh day.

In 1773 Perault¹ removed the thigh for traumatic gangrene resulting in recovery. In reality the birth of the hip-joint amputation was the result of the French Revolution, as in 1794 Blandin performed the operation three times with one recovery. Larrey performed it seven times, all unsuccessful.

In 1815 Gutrie² reports one successful amputation at the hip for gunshot wound. The first successful operation in this country was made by Brashear, in 1806, in Kentucky, on a male of 17 years, in which he established a principle in hip-joint amputation since made use of in almost all operations at this region, viz., the incision extending from the greater trochanter, along the outer border of the bone and joining the circular incision below. The bleeding is controlled by a tourniquet, and the vessels are tied as the operation advances.

The Furneaux Jordan is but a modification of this operation. Dr. Mott³ made the next successful operation of this kind in the United States, in 1824. Since

that time the operation had been repeatedly made, but in recent years the mortality accompanying this operation has been very great. Ashurst⁴ tabulated 633 cases with an average mortality of 64.1 per cent. at the very lowest calculation, so that any method that would tend to diminish hemorrhage, shock, and as a consequence, mortality, was to be hoped for.

In 1860 Pancoast, at the Pennsylvania Hospital, made a hip-joint amputation on a man 35 years of age, controlling the blood by means of a tourniquet, compressing the abdominal aorta below the umbilicus, this being the first time that the tourniquet was used for this operation. Lister, apparently without any knowledge of Pancoast's case, performed this operation soon after by aid of a similar tourniquet, with the same good result.

Dr. Frank Woodbury of Philadelphia compressed the common iliac artery with the fist inserted into the bowel.

Davy⁵ advocated the use of a lever made of some smooth substance, eighteen to twenty-two inches in length, introduced into the rectum, and the common iliac artery compressed against the pelvic brim.

Jordon Lloyd⁶, advocated a method of elastic compression, which has been adopted by English surgeons in general. Jacobson, in his operative surgery, speaks very strongly in favor of the Jordon Lloyd method, which consists of a stout rubber bandage two yards long, passed between the thigh and trunk, having its center between the anus and the tuberosity of the ischium. A rubber bandage of appropriate size is then laid over the termination of the external iliac artery, and the ends of the rubber bandage now being steadily and firmly drawn upward and outward to a point above the center of the iliac crest, sufficiently tight to stop all femoral pulsation, the first part of the bandage passing over the roller and running parallel with Poupart's ligament, the posterior part passing across the sacrosciatic notch and compressing the branches of the internal iliac. This requires a trusted assistant, as there is evidently a decided tendency to slip, for which the author makes considerable provision.

Trendelenburg⁷ advocates the use of a steel needle, 38 cm. long, 6 mm. broad, biconcave on cross-section, inserted just below the anterior iliac spine and carried in the direction of the perineum, passing between the neck of the femur and the vessels, and emerging on the inner side of the thigh near the perineal crease, then by means of a rubber ligature a figure-of-eight is formed around the skewer. The flap is then made, the vessels tied and the bone ex-articulated. The needle is again introduced behind the bone, the rubber ligature is again applied, and the posterior flap completed.

In 1886, Muscroft⁸ employed a similar method.

Myles of England⁹ advised a steel skewer passed through the thigh, the point entering one inch below Poupart's ligament, going external to the femoral, and internal to the neck of the femur, emerging a little above the gluteal fold. A rubber cord formed the figure-of-eight; amputation and lateral flaps.

Heuter and Parker¹⁰ made an incision below the anterior superior spine, prolonged downward to the intramuscular septum between the sartorius and rectus. Through this incision, the lower blade of a pair of curved clamp forceps are introduced under the vessels, and the upper blade makes compression against the vessels upon the skin from without.

Thomas¹¹ punctures the skin in two places, one immediately below Poupart's ligament, about one inch external to the pulse, and the other two inches to the inner side of the same, immediately below the pubic spine. An aneurysm needle, threaded double, is then passed through both openings, and their threads are then tied over a pad applied against the vessels. Thomas operated on three cases successfully in this way, and was well satisfied with his method of hemostasis.

Macewen¹² advocates compression of the abdominal aorta under the umbilicus, by means of the fist applied against the vertebral column through the abdominal wall, and states that he has used this method for over fifteen years in all operations requiring hemostasis, with gratifying results. The artery can also be commanded during the operation by manual compression of the femoral, or by securing the vessels before they are divided, as is recommended by Larrey, when making lateral flaps.

McBurney¹³ advocates direct intra-abdominal finger compression of the common iliac artery, incising the abdominal wall as in his appendicitis operation, about one and one-half inches internal to the anterior superior spine, and the finger is introduced through this incision and compression made. He reports three cases operated on successfully. It remained for Wyeth to work out his new principle for bloodless amputation of both shoulders and hip-joints, which is possibly a modification of the Trendelenburg method. This was first applied by him in 1885¹⁴ for sarcoma of the humerus. He conceived the idea of tissue transfixion by using steel mattress needles, with a rubber tourniquet, operating bloodlessly and successfully. In 1890, his first operation¹⁵ at the hip-joint was made by this method, which established a new principle of hemostasis, since adopted by many surgeons, whereby the mortality, once so great, has been reduced from one of 64.1 per cent. to 15.9 per cent. reported from 69 cases tabulated by Wyeth¹⁶. He reports 69 cases

performed by this method, with 11 deaths. Of the 11 fatal cases, 5 had suffered extensive injury with hemorrhage and were profoundly shocked from the putrefaction of one or both extremities, the factor in these cases being the hemorrhage prior to operation, no hemorrhage occurring during or subsequent to the operation, and in none the precautions of salt infusions or the intravenous injections of salt solution, strongly advocated by the author, had been resorted to. Two died from the shock, one twelve and the other twenty-two hours after the operation; one of sepsis twenty-six days after; one of shock twelve hours after, as a result of prolonged exhaustion from sepsis. Wyeth's own fatal case was due to some cause not readily accounted for. In the 40 cases of sarcoma operated on, there were 4 deaths, giving a mortality of 10 per cent. In 23 cases of bone disease, there were 3 deaths.

Erdman¹⁷ states that from January, 1884, to January, 1894, there were 18 hip-joint amputations done in the New York hospitals, with 8 deaths, making a mortality of 44.4 per cent. Of these, 7 were done by Wyeth's method; all recovered, leaving 8 fatal cases out of 11 done by other methods, giving a mortality by other methods used of 72.7 per cent.

In the statistics which the writer has tabulated, there have been 28 cases collected since Wyeth's statistics, dating from 1896, with 3 deaths, giving a mortality of 10.7 per cent.; of these cases 16 were done by the Wyeth bloodless method, with 2 deaths, giving a mortality of 12.5 per cent. by this method.

The following is a list of hip-joint amputations, tabulated by the writer since Wyeth's statistics were published in the *Annals of Surgery* (xxv, 1897, 127), where he reports 69 cases, with a mortality of 15.9 per cent. The writer has collected 16 cases, which, when included with Wyeth's cases, give a combined mortality of 15.28 per cent. In the opinion of the writer, the mortality of the cases collected by him since 1896, operated on since the time when hypodermoclysis has been generally resorted to, shows that this precaution accounts for the diminished death-rate.

Thomas, *Lancet*, 1898, i, 1112: 3 cases, caused by sarcoma, femur osteomyelitis, fem. injury; own method; recovered.

Noble, *Annal. Surg.*, 1898, xxvii, 753: 1 case, boy, 21 years, osteosarcoma; Wyeth method; died from shock; 1 case, man, 26 years, tub. cox; Wyeth method; recovered; 1 case, man, 39 years, tub. cox; Wyeth method; recovered.

Brush, *N. Y. Post-Grad.*, 1897, xii, 615: child, 11 years, sarc. fem.; Wyeth method; recovered.

Shears, *Clinique*, Chicago, 1897, xviii, 520: 1 case, hip-joint; Wyeth method; recovered.

Coley, *Annal. Surg.*, 1897, xxix, 110: 1 case, boy, 6 years, sarc. fem.; Wyeth method; recovered; 1 case, girl, 13 years, sarc. fem.; Wyeth method; recovered; 1 case, man, 49 years, sarc. fem.; Wyeth method; recovered.

McBurney, *Annal. Surg.*, 1897, xxviii, 129: 3 cases sarcoma; McBurney method; recovered.

Willy Meyer: 1 case; McBurney method; recovered.

Abbe: 1 case; McBurney method; recovered.

Briddon, *Annal. Surg.*, 1898, xxvii, 514: 1 case, boy, 15 years, sarc. fem.; Wyeth method; recovered; 1 case, man 33 years, tub. cox.; Wyeth method; recovered.

Sherman, *Pacific Med. Journal*, June, 1898, 362: 8 amputations, 4 tubercular cox., with 2 deaths; one died a few hours after, the other died of tuberculosis subsequently, and two living; 4 sarcoma, one died a few hours after the Wyeth operation, 1 lived thirteen weeks and died of septicemia, another lived a year, 1 well after eight years. Of Sherman's cases, 6 were done by the Wyeth method.

Levison: male, 40 years, tuber. cox.; Wyeth method; recovered.

Levison: male, 23 years, osteomyelitis; Wyeth method; recovered.

There have been many methods suggested for hip-

joint amputations. Farabœuf mentions that 45 operations have been devised, but there are but 3 or 4 that are now done, two in particular, both of these being mere modifications of the original operation, done by Dr. W. Brashear in 1806, the first and most generally recognized being the Furneaux Jordon method, which was first described by Furneaux Jordon of Birmingham in his "Surgical Inquiries," in 1880, and possessing the following advantages over the other methods:

1. By removing less of the body, the shock is correspondingly diminished.

2. Abundant room is afforded for compression of the common femoral, the gluteal and sciatic arteries remaining untouched.

3. Sepsis is averted, as the wound is quite remote from the anus, and hence more easily kept clean.

4. It produces a good stump, and at times permitting the use of an artificial limb, although the later advantage does not hold good in practice. In this operation the Jordon-Lloyd method of hemostasis is advised.

The second method, as advised by Wyeth, is a modification of the Furneaux Jordon method, and differing in that the stump is shorter, the section through the muscles being made at the level of the trochanter minor, the skin flap longer.

The last to be mentioned is that of transfixion, the great advantage of which is the rapidity with which it can be carried out. With three assistants, this operation can be made in twenty seconds, its disadvantages being the great wound surface resulting, and as a consequence imperfect drainage, and great tendency to bleeding, due to the oblique section of the thick muscles in this region.

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12. *Annals of Surgery*, 1894, Vol. i, p. 1.
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Correspondence.

Sanitation the Keynote of the Berlin Congress.

PARIS, June 4, 1899.

To the Editor:—The recent international tuberculosis congress at Berlin, while it announced no discovery of new remedies, new therapeutic processes or new antagonists to the "white fiend," so called, was not without beneficial results in diverting attention from the quest of drugs and antitoxics to the bountiful provisions which nature herself offers the human race for its protection, and the separation, more or less complete, of the victims of their own imprudence or their culpable contamination by their fellows.

The belief that consumption is an inheritance from sinful ancestors to the third and fourth generation back, whom unhappily we can only curse and die, need no longer banish hope and hang like the pall of death over the young, so often exceptionally gifted. Hereditary predisposition can not be gainsaid, but the child of the tuberculous parent has a chance to reconstruct with fair promise of success the worm-eaten timbers of its father's house.

Nevertheless, consumption remains the disease most to be dreaded which afflicts humanity. It is a baneful blight, to be shunned with greater care than the maladies which offend sight and smell. It is breathed unconsciously into the lungs

in crowded vehicles and apartments, and creeps beneath a lady's skirts which at the behest of fashion, sweep the dirty thoroughfares. Vanity, ignorance and indifference invite its entrance to live and grow, devour and destroy enfeebled and predisposed bodies—but even these may be saved, and the problem before the Berlin congress was to determine how.

It has been pretty well understood that the insidious bacillus can not be reached and destroyed by any fire-extinguisher process—through internal antitoxic medication or by antiseptic inhalation—but its habitat can be made untenable and the victim thus be indirectly rid of its unwelcome presence.

Hitherto this has only been sought to be accomplished by removal to the various health resorts in Europe and America, inaccessible to any but the wealthy, on account of distance and expense, and each of these has had enthusiastic advocates and each been able to boast of undoubted good accomplished and of lives spared for long years of health and happiness.

The Germans have been pioneers in the effort to establish asylums where even the poor may be received without having to go far from home or be subjected to expense for care and maintenance. Over fifty sanatoria for tuberculous patients have already been established in Germany, and as many more are in process of installation by the government and by private enterprise, where unknown and others are received, and with such satisfactory results that Fränkel, the father of the congress, Leyden, and other authorities on tuberculosis advise their multiplication all over the country. Altitude, hygienic conditions and temperature are of less consequence than the absolute purity of the atmosphere, secured by secluded wooded sites, with exposure to sunlight and consequent comparative dryness of soil. Careful attention to diet, physical exercise, proper clothing and scrupulous cleanliness of body, bed and dress, are the means by which the *physical resistance* of the individual to bacillary invasion is increased. The mere removal from the overcrowded, unclean and ill-ventilated living, working and sleeping apartments hitherto occupied, with good food in abundance, exposure to sunlight and the isolation of the sick, are practically the only therapeutic agents on which to depend.

If this congress shall accomplish nothing else, it will have done well if it awaken attention to the serious menace to the public health from tuberculosis and the necessity for sanitary provision against its spread. The man who expectorates in a vehicle or public resort does not merely violate public decency, but commits an offense for which he should be punished. Health-board warnings and placards in street cars avail nothing if not enforced. So long as women sweep infected sputa with their dresses, they will suffer with tubercular disease of their genital organs and communicate it; so long as the dust of dried sputa is disseminated and inhaled in public vehicles, every passenger is endangered. Men and women, especially women, are urged to form associations for the rigorous suppression of indiscriminate spitting, and boards of health will do better service to the community if they direct all their efforts toward the prevention of tuberculosis, and leave small-pox and yellow fever to take care of themselves. The segregation of those already affected in local sanatoria, as advocated at the Berlin congress, will ultimately check the progress of this frightful scourge, and add immensely to the sum total of human happiness.

A. L. G.

A Protest.

CLEVELAND, OHIO, June 16, 1899.

To the Editor:—I am informed by a correspondent in Iowa that my name is being used in a circular concerning a quack cancer cure called "Vitalia." Any such use of my name is absolutely unauthorized and an outrage on common business honesty. I presume legal redress is impossible or the indecency would not have been committed. Would it be asking too much of you to publish my protest? Not perhaps that many may be misled by my name, but to put others on their guard who are no doubt being similarly victimized. The animus of the thing is probably an attempt at revenge for an editorial criticism which I wrote in the *Cleveland Journal of Medicine* a year or more ago, warning the profession of the methods of the concern which exploits this "cure."

Very respectfully, P. MAXWELL FOSHAY, M. D.