had her etherized and made a rapid incision into the abdomen, lifted the walls as the patient was raised into Trendelenburg's posture, saw that the mass was a fibroid, that the uterus was probably pregnant at about three months, and immediately closed the abdomen, the time of the abdominal operation from the first cut to the tying of the last suture being exactly four minutes. The cervix was then seized with double hooks, and rapidly and forcibly dilated against great resistance with Wylie's steel dilators until one finger could be forced through the os and to the fundus of the uterus. The uterine cavity was found to be somewhat altered in shape and encroached upon by the fibroid, which was interstitial. A small ovum was found at the fundus of the uterus above the fibroid and was easily dislodged and extracted. The placenta was nearly formed, the fetus was probably crushed during the manipulation, at all events was not seen. The patient was put to bed with a pulse of but little over 100, and of much better quality than before the operation. On her recovery from ether the pulse had fallen to 90, and her expression was much less drawn and anxious.

It is worthy of note that the pulse was not varied a beat by the abdominal incision. Her next temperature was normal, the pulse at the same time 86. She never vomited again, took solid nourishment within three days, and went home a fortnight later, having gained greatly in flesh and appearance during her stay in the hospital. I saw her on January 12th in thoroughly good health. The involution of the uterus made the fibroid much larger than it had appeared at the time of the operation, and much more thoroughly subperitoneal. It was now about the size of a large hen's egg, and almost its entire substance projected beyond the uterine wall.

These two cases, though so dissimilar in their nature, to my mind illustrate particularly well at once the harmlessness of a mere abdominal incision and the great assistance which the knowledge gained in this way may prove to the surgeon in attacking the disease by the vaginal route. In the first case the diagnosis was uncertain and the vaginal method of attack seemed unwise, if not impossible, until I was in possession of the information gathered from the abdominal incision. In the second case the patient's condition was so bad that any prolonged and deliberate operating would in my judgment have been almost certainly fatal, and the conditions were such that without the information gained by a glimpse into the abdomen I should have regarded any forced and rapid work as most unwarrantably reckless.

TWO CASES OF TETANUS, BOTH TREATED WITH ANTI-TETANIC SERUM, BOTH FATAL.

REPORTED BY JOHN HOMANS, M.D.,
Visiting Surgeon to the Massachusetts General Hospital, Boston.

W. McD. and J. B. S., railroad employees, were brought to the hospital on the 21st and 23d of March, 1898, respectively. One had been run over on the Albany Railroad twenty minutes before entrance, and the other on the New York, New Haven & Hartford Railroad two hours before. Both were in a state of extreme shock forbidding any operative procedures beyond tying vessels and removing tourniquets.

They were unintentionally put in adjoining rooms. The first-named had both legs crushed and the second

one leg. On the 23d McD. had improved enough to submit to amputation of the legs, and on the 25th J. B. S.'s thigh was amputated. The flaps sloughed more or less. Both suffered considerable pain.

On March 30th McD. complained of stiffness of jaw; on the 31st there was less stiffness, but there was some pain on swallowing, and he complained that his face was sore.

April 1st there was pain in the right stump, which twitched frequently; tetanic symptoms increased; he got, at 1 p. m., 40 c. c. tetanic antitoxin, and at 8 p. m., 40 c. c. (Roux).

April 2d, sharp spasmodic pains in the right stump; little sleep; one mild general convulsion. In morning less marked rigidity; asked for beer, which he swallowed. At 2.45 p. m., 60 c. c. antitoxin (procured from the Massachusetts Board of Health). Spasms less marked in p. m., but occurring every few minutes. At 8 p. m., 120 c. c. antitoxin (State Board of Health).

April 3d, fair night; several hours sleep, but cried at times from pain in stump. Temperature rose. Spasms more frequent. In a. m. muscles of neck more relaxed. Swallowing easier; takes considerable liquid nourishment. At 3 p. m., 60 c. c. antitoxin. Spasms became more frequent; tendency to opisthotonos, but not marked. Slight spasmodic contraction of arms. Passes urine with difficulty. Temperature in a. m., 105°; later it fell to 101°. Pulse good.

April 4th, patient slept about four hours during night from the effects of morphia and chloral. Temperature in a. m., 102°. Spasms frequent; neck muscles less rigid; mouth opened one inch, and chin could be brought nearly to sternum by flexing head on trunk. Spasms increasing in intensity. At 11.30, chloroform inhalation to relieve pain and spasms. Quiet for half an hour, when spasms returned. At 2.30, 60 c. c. antitoxin; and at 8 p. m., 60 c. c. antitoxin. Chloroform at 1 a. m. Temperature at 5 a. m., 104.2°. At 5.30 urine passed involuntarily. At 9 a. m. temperature 105.4°; only partially conscious. Pulse more rapid and feeble. At 3.55 died quietly, not in spasm. At time of death the wounds were clean and healthy.

J. B. S.'s thigh was amputated on March 25th one and a half inches above the joint. On the 27th his condition had markedly improved, but there was some sloughing of the flaps.

On April 1st, at 4 a. m., nine days after the accident and seven after the operation, he complained of difficulty in opening the mouth and of stiffness of the neck. At 8.30 the mouth could be opened only half an inch, and swallowing was difficult; this increased during the day, as did the rigidity of the sternomastoids. At 1 p. m. 25 c. c. of tetanus antitoxin were given, and at 8 p. m. 55 c. c. The wound was bathed in foul pus.

At 2.30 a. m. on April 2d general convulsions began, and during the night rigidity of the thorax. The patient became cyanotic, the pulse weak and irregular. At 9.30 a. m. an attempt to swallow water brought on spasm of the glottis and extreme cyanosis. Death occurred at 12 m.

The bacteriological reports are appended:

Cultures on blood serum made from stump of leg of W. McD. on April 1, 1898. In twenty-four hours a luxuriant growth liquefying the medium. After ninety-six hours in the incubator, microscopic examination of cover-glass shows the typical pinhead rods of the tetanus bacillus. Many other bacilli and many coccus forms are seen. The

growth in the culture of a spore-bearing rod has so far prevented the isolation of the tetanus bacillus in pure culture.

Cultures on blood serum made from stump of thigh of J. B. S., on April 1, 1898. In twenty-four hours a luxuriant growth, made up for the greater part of round, yellow colonies, and showing a slight amount of liquefaction of the medium. After one hundred and twenty hours in the incubator, microscopic examination of cover-glass shows a few of the typical pinhead rods of the tetanus bacillus. Many other bacilli and many coccus forms present. A spore-bearing rod present in the growth has so far prevented the isolation in pure culture of the tetanus bacillus.

These cases present many points of interest, as bearing upon the efficacy of the antitoxin treatment, and also of the advisability of amputation in the treatment of tetanus. In regard to the last point, amputation is advocated by no less an authority than Rose as the most effective method of treatment of tetanus, since it most thoroughly gets rid of the focus of infection. The question might be asked, Of what use can amputation be after the symptoms have appeared, if in these cases, in both of which it was performed, seven days before the symptoms appeared, it apparently had no effect? The answer is, that in both cases the condition of shock contraindicated operation until two days after the accident, and the tetanus bacilli had probably been allowed to gain a firm foothold in the tissues. The amputations were performed without thought of prophylaxis against tetanus; and the flaps, which by their sloughing and suppuration gave evidence of infection with pyogenic bacilli, were undoubtedly infected with tetanus bacilli above the point where amputation was performed. Therefore, these cases cannot be said to militate against amputation in the treatment of tetanus in suitable cases.

With regard to the antitoxin treatment, the first case received on the second day after the symptoms appeared 80 c. c. of Roux's antitoxin, on the fourth day 180 c. c. Of antitoxin prepared by the State Board of Health he was given on the fifth day 60 c. c., and sixth day 180 c. c. The second case received 80 c. c. (State Board of Health) on the day the symptoms appeared. Both these cases were apparently unaffected by the antitoxin. The cases belonged rather to the acute than the chronic form of the disease, the type of cases in which the antitoxin treatment has given the least favorable results.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D.

(Continued from No. 20, p. 471.)

THE SURGICAL TREATMENT OF PERFORATING TYPHOID ULCER.

FINNEY²⁰ from a study of 52 cases of perforating typhoid ulcer treated by operation (six of these are now reported for the first time) finds that:

(1) Of all the so-called diagnostic signs most reliance is to be placed upon the development of a severe attack of abdominal pain coupled with nausea and vomiting, and a marked increase in the number of white blood-corpuscles.

²⁰ *Annals of Surgery*, March, 1897; *Medical News*, April 17, 1897, p. 497.

(2) The surgical is the only rational treatment of perforating typhoid ulcer.

(3) There is no contraindication to the operation, surgically speaking, save a moribund condition of the patient.

In performing this operation three things are to be done: first, to find and close the perforation; second, to empty and cleanse the peritoneal cavity; third, to effect and maintain a thorough drainage. The most satisfactory operation is performed as follows: an oblique incision six inches long is made in the right iliac region. The cecum, which is always to be recognized by its longitudinal bands, is the guide to the ileum. From it as the starting-point the coils of ileum are systematically drawn out through the abdominal wound, while one assistant wipes the intestine as it is withdrawn with gauze wrung out of a hot salt solution, and another assistant keeps it warm by means of hot towels. All of the infected intestine, even to the duodenum if necessary, should be thus treated. The whole of the peritoneal cavity should then be wiped systematically with gauze wrung out of hot salt solution, attention being directed especially to the pelvic region. Usually irrigation is unnecessary, but the intestines before they are replaced should be thoroughly irrigated and wiped dry. The first coils should be last replaced and the sutured portion left next to the abdominal wound. Bismuth gauze should be packed around this coil and introduced into the pelvis if necessary. By this means good drainage is insured and escape of feces is provided for in case of extravasation. The abdominal wound should be tightly closed except where the drains escape, and if distention follows operation the bowels should be moved early and thoroughly by calomel in broken doses, followed by salts, and, if necessary, a high turpentine and soap-suds enema. If stimulation is necessary, more reliance is to be placed on hypodermics of strychnia, enemata of several ounces of hot, black coffee, and the transfusion into the cellular tissues under the breast of a quart or more of the normal salt solution, than on any other remedies.

A METHOD OF UNITING THE DIVIDED INTESTINE.

G. Lenthal Cheate²¹ states that this operation has been planned upon experiments performed on the dead, and upon one in a living, animal. He, therefore, ventures to hope that the present publication will be regarded only as a preliminary note, and not as the result of matured investigations. For, although the single operation upon a living animal was perfectly satisfactory, there are many points of importance that require full elucidation; and until further investigations into the matter are completed he does not care to say that the method here suggested is likely to emerge from a post-mortem and experimental success into a definite surgical procedure. This want of completeness, he states, will be manifest in the following description.

After the removal of the affected segment of the intestine by a section exactly transverse to the longitudinal direction of the bowel and its V-shaped piece of attached mesentery, the open ends of the gut lie requiring suture. Through all the coats forming the wall of each free end, a longitudinal incision is made, and in each case it should be situated exactly opposite that part of the bowel to which the mesentery is attached. The length of each incision

²¹ *Lancet*, May 22, 1897, p. 1403.