TRANSACTIONS OF THE PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, January 6, 1896.

The President, THOMAS G. MORTON, M.D., in the Chair.

SUBSTITUTION OF MUSCULAR BELLIES IN TRAUMATIC RUPTURE OF EXTENSOR MUSCLES IN THE FOREARM.

DR. JOHN B. ROBERTS presented a man, aged thirty-four years, who, in September, 1895, had sustained an injury to his left forearm by its being caught between the cross-head and end of guide of a pumping engine. While the forearm near the wrist was held, pressure on the back of the wrist forcibly flexed that joint. When he was admitted to the Methodist Hospital, shortly after the accident, the forearm was much swollen and discolored. No dislocation or fracture was apparent. Motion of the fingers was greatly impaired.

Under treatment the swelling disappeared, but the fingers remained flexed and stiff; extension was particularly defective. The patient had an attack of what seemed to be typhoid fever during the time that the arm was under treatment. On October 1, the hospital notes say that the arm had ceased to be swollen and showed a tendency to turn to the ulnar side with the fingers partly flexed.

When first seen by Dr. Roberts, in November, at the lower end of the radius there was a great deal of thickening both on the dorsal and palmar aspects, involving the region of the carpal bones. There was no thickening at the lower end of the ulna. The fingers were flexed at the metacarpo-phalangeal joints and could not be extended, showing that the common extensor muscle of the fingers was not acting. He had flexion of the second and third phalanges, but both flexion and extension of the first phalanges of the fingers were greatly impaired. Extension of the second and third phalanges was very

feeble. Motion of the thumb was good except flexion of the distal phalanx. There appeared to be no impairment of sensation.

Massage and passive motion were ordered, but at the end of a month of this treatment such slight improvement had taken place that an exploratory incision was made about four inches long in the median line over the carpus and metacarpus, which revealed the ends of two tendons bound down and deeply embedded in a mass of scar tissue. Careful dissection disclosed the fact that the tendons which lay on top of the annular ligament were the torn ends of muscles passing under the annular ligament. The muscles had been ruptured and the torn ends turned over and pushed downward on top of the annular ligament, so that their extremities pointed towards the fingers. Investigation proved that the extensor of the index and the portion of the common extensor of the fingers which goes to the index made one of the tendinous masses, while the other was the tendon of the portion of common extensor which goes to the ring-finger. These were dissected loose, turned up so that they occupied their normal position and inserted the first tendon into a slit made in the belly of the extensor of the second phalanx of the thumb, and the second tendon into the belly of the adjacent portion of its own muscle,—namely, the common extensor of the fingers. The tendons were held in their new positions by careful suturing. Previously a search for the bellies belonging to the torn tendons had been made by means of an incision carried farther up the forearm. No muscular tissue which had originally formed the belly of the ruptured muscles was found.

At the junction of the upper and middle thirds of the forearm, in the mass of muscles coming from the external condyle there was a good deal of cicatricial tissue. This was evidently the degenerated muscular fibres which had formerly been attached to the tendons which had been found turned down over the annular ligament.

The patient's arm was encased in a plaster-of-Paris splint with the wrist strongly extended so as to prevent undue tension on the sutures used to stitch the tendons in their new positions. The patient wore the splint for two weeks. He, about five weeks and a half from the operation, had better extension than before the operation, though it is not very great. Treatment with electricity and massage was ordered to enable the muscular bellies, which are now attached to the tendons going to the fingers, to assume the duties of their new *rôle* in such a manner as to give him some useful extension to the fingers.

It is now about three months since the operation, and the man has nearly complete extension of the fingers and almost complete flexion, though both movements are comparatively feeble. He has obtained, however, useful control of the fingers, which will, without doubt, gradually become much stronger.

DR. ROBERTS added that he had been for years much interested in the subject of grafting the tendon of an injured muscle into a neighboring sound muscle. He recalled the case of a child who, some years ago, had been cut with glass and had thumb-drop. It seemed useless to hunt for the tendons going to the thumb, but he did look for them and got hold of them, and sutured them together, with the result that the child had fair use of the thumb. Last winter a child came to him who had an injured finger due to a cut by glass. He made an incision and groped around, but could not find any particular tendon. He, however, sutured the parts that he could bring together, and the child had almost perfect extension of the finger. He feared that many surgeons have neglected this sort of work, particularly as the operation is secondary.

TRAUMATIC RUPTURE OF THE BICEPS MUSCLE OF THE ARM, WITH OPEN FRACTURE OF THE INTERNAL CONDYLE OF THE HUMERUS.

DR. JOHN B. ROBERTS presented a man, twenty-eight years of age, who was admitted to the Methodist Hospital on December 11, 1895, with a longitudinal wound six inches long in the middle line of the front of the left arm just above the bend of the elbow. The limb had been injured by being caught between the bumpers of two railroad cars. The ragged end of a torn muscle, evidently the biceps, was seen through the wound, and the bicipital fascia was laid bare. Careful examination showed that the internal condyle of the humerus had been split off by an oblique line of fracture running into the joint. It was evident that the injury had torn nearly the whole thickness of the biceps muscle, and that the muscular fibres so torn had retracted into the upper part of the arm. The incision was extended upward for six inches to uncover the retracted fibres. The small portion of muscle untorn, which was about as thick as a little finger, was found to be the central portion of the biceps. The main mass of the muscle was drawn downward and sutured to its tendon

with catgut. These sutures were applied very much as in the ordinary method of teno-suture. A counter-opening was made on the back of the arm and a drainage-tube inserted because of the probable septic character of the wound, though sterilization was attempted. The wound was then sutured and the limb placed with the elbow flexed and the hand supinated so as to relax the biceps.

The next day it was necessary to remove some of the stitches because of the swelling due to sepsis. A plaster-of-Paris splint was applied to the back and internal surface of the arm in such a way as to keep the hand and arm in the position just described.

The patient has done well, the wound at the present time, January 17, being a superficial ulcer, and the patient having considerable action at the elbow-joint.

CASE OF CHOLEDOCHOTOMY.

DR. JOHN B. DEAVER related the following case: A woman, aged forty years, had been suffering from slight attacks of biliary colic for seventeen years. These attacks, though not characteristic of cholelithiasis, were preceded by pain in the hepatic region, constipation, and gray-colored stools, and unaccompanied by jaundice. Two years prior to the operation the symptoms became more pronounced and characteristic, the attacks lasting from one to four hours and occurring at shorter intervals, never lasting longer than four hours. Six months after the symptoms became more pronounced a slight attack of jaundice was noticed, which passed off in a few days. Three months preceding the operation the patient had an attack of what was supposed to be intermittent fever, which unquestionably was of septic origin. From this time she suffered from continuous pain,—*i.e.*, in the region of the gall-bladder. She was decidedly jaundiced.

May 12, 1895, an incision was made over the right semilunar line, four inches in length, commencing at the lower border of the ribs. The lower border of the liver, exposed, was held upward by an assistant. The gall-bladder was surrounded by numerous adhesions, but was found to be free from stones. The cystic and hepatic ducts were next examined and found empty. On palpating the common duct by the finger, introduced into the foramen of Winslow, two stones were felt, one near the duodenal end of the duct and the other just below the junction of the hepatic ducts. The wound was then thoroughly packed with gauze to protect the

peritoneum, and the common duct was opened by passing one finger behind the duct under the stone at junction of the cystic and hepatic ducts; having thus fixed the common duct, it was incised and the stone lifted out with a pair of stone forceps. Considerable difficulty was experienced in dislodging the second stone, which was removed, however, with a long pair of narrow-bladed forceps. A drainage-tube was introduced into the opening made in the common duct, through which a considerable quantity of light-colored bile escaped. The wound was packed with gauze around the drainage-tube and the skin incision closed at the point where the drainage-tube and the gauze emerged. Superficial antiseptic dressing required constant changing on account of the free escape of bile. An uninterrupted recovery followed.

COMBINED CHOLECYSTOTOMY AND CHOLEDOCHOTOMY.

DR. DEAVER related also the following case: A woman, sixty years of age, was admitted to the medical service of the Philadelphia Hospital with an acute attack of biliary colic and jaundice. After one month of treatment, during which symptoms persisted, she was transferred to the surgical service, and on October 31, 1895, an incision six inches in length was made to the inner side of the right seminular line extending downward, which was subsequently enlarged to eight inches, owing to the great amount of superficial fat. After opening the peritoneum the gall-bladder was easily found. It was free from adhesions.

Digital examination of the gall-bladder and ducts at this point disclosed the presence of one large and several small stones in the bladder, but failed to discover any obstruction in the ducts. The gall-bladder, after being surrounded by gauze, was opened at the fundus, and held up by two sutures. About twenty stones and fragments were removed, the largest measuring one-half an inch in diameter.

After the evacuation of the gall-bladder, Dr. Deaver passed his finger through the foramen of Winslow, and detected thus a stone one-half inch in diameter in the common duct, near the junction with the duodenum. After enlarging the parietal incision in the upward direction, he was able to pass his finger partly behind the stone, but sufficient fixation could not be obtained to open the duct. After repeated attempts this was accomplished in the following man-

ner: The intestines were walled off from the field of operation by gauze packing, and held out of the way by a retractor consisting of a strip of silver two inches wide by twelve inches long. This was passed into the wound and (with the aid of illumination from an electric head-light) so placed that the end of the retractor was beneath the duct. The finger reinserted was then able to grasp the stone and hold it in position. Guided by touch, a scalpel was carefully passed down and an incision an inch in length was made in the duct in the line of its long axis. By aid of the forceps the stone was removed. The retractors were withdrawn, a drainage-tube passed into the duct and surrounded by gauze, which was left *in situ*. The fundus of the gall-bladder was anchored to the edges of the parietal wound and drained in a like manner. The external incision was closed by deep suture of silkworm gut, and superficial sutures of silk. An aseptic dressing of gauze and cotton placed over the whole. This was changed in three hours, when it was found saturated with bile and slightly blood-stained. The second dressing was made in six hours, and showed only bile.

Heavy and frequent dressings were required, as they were rapidly saturated with bile. The gauze packing was removed at the end of three days, and drainage-tubes at the end of one week, leaving a biliary fistula, which discharged freely. The stools were large, formed, and clay-colored, and the jaundice disappeared. The patient fell into a semi-comatose state on the tenth day after operation, from which she never roused. She died November 20. No autopsy.

A bacteriological examination of contents of gall-bladder was made by Dr. Albert A. Ghriskey, who reported that no bacteria were found in the stained preparations examined microscopically, and that inoculations made in glycerin agar-agar, kept in the thermostat at the body temperature, proved negative.

This case corroborated the observation of Fenger that the prevention of regurgitation of bile from the common duct into the gall-bladder is due to a ball-valve action of the stone in or near the cystic duct, which explains why the gall-bladder is found small and empty in cases of movable stone in the common duct. The reporter agreed with Fenger that the effect of this ball-valve action on the symptoms and course of cases of choledochus-stone is to cause intermittent attacks of retention of bile and jaundice when the stone is lodged immediately above the duodenal opening of the common duct, and to cause atrophy and shrinkage of the gall-bladder when the stone is lodged in or immediately below the cystic duct.

CASES OF CHOLECYSTOTOMY.

DR. DEAVER also related the history of two additional cases of removal of calculi from the gall-bladder, as follows:

(1) A woman, aged thirty-one years, was admitted to the German Hospital, September 25, 1895, with a history of having suffered for the previous two years from dyspepsia and occasional attacks of jaundice, with constipation and frequent violent cramp-like pain in her right side over the hepatic region, spasmodic in character, and disappearing usually after free evacuation of the bowels. She was somewhat jaundiced at time of admission. Had pain on pressure over the liver, and just below the costal margin on right side a small, hard mass could be outlined. An incision made over this mass, and the gall-bladder exposed, pulled into wound and packed around with sterilized gauze. Longitudinal incision was then made into the gall-bladder, and a small quantity of mucus and gall-stones, mostly small, to the number of sixty-two, was removed. Examination for obstruction in common duct was negative.

The incision in the gall-bladder was closed by Lembert sutures, and abdominal wound approximated by interrupted sutures. Uninterrupted recovery followed.

(2) A woman, aged thirty years, was admitted to the German Hospital, January 8, 1896, who for the three years previous had suffered from gastric disturbance and a continuous dragging pain, increased by walking or coughing, which was located over the liver. She had never been jaundiced; had never had any cramp-like pains; her bowels had been usually regular. Palpation over hepatic region showed some tenderness, and at the ninth costal cartilage a large mass, tender on pressure, and dull on percussion, could be made out. Incision over this mass revealed a distended gall-bladder. This was brought into the wound and packed around with sterile gauze and aspirated, a pint or more of muco-pus being withdrawn. An incision was then made into it, and thirty-eight gall-stones, most of them of large size, were obtained. Examination for obstruction in common duct negative. The incision in the gall-bladder was closed by Lembert sutures, and the abdominal wound approximated. Uninterrupted recovery followed.

CHRONIC APPENDICITIS COMPLICATED BY ACUTE COLITIS.

DR. DEAVER related the following case: A woman, twenty-one years of age, was admitted to the German Hospital, February 19,

1896, suffering from dysentery. For the previous year she had been suffering more or less continuously from gastric disturbances, though these had never affected the regularity of her bowel movements. Nine days before admission she began to have frequent stools (six to ten daily) which, at first serous and mucous, had later the appearance of chopped spinach and were streaked with blood. This condition lasted for six days, when she had a spasmodic pain in her right iliac fossa, marked tenderness, violent vomiting, and increase in the number of stools, these being as numerous as fifteen to twenty-five per day, continuing thus for three days previous to admission. When admitted her temperature was 102° F., pulse-rate 108. The abdomen was distended, particularly on the right side; rigidity was general, but more marked over the right rectus muscle. There was exquisite tenderness over McBurney's point, while rectal and vaginal examination was negative other than eliciting pain due to the inflamed rectum. The stools were greenish, semisolid, had streaks of blood through them, and averaged twenty daily.

Owing to the weakness of the patient, the state of the bowels, and the absence of general peritonitis, an immediate operation was considered inadvisable. She was therefore placed at absolute rest in bed with an ice-bag over her right iliac fossa and given a strict milk diet. Upon this treatment she improved somewhat in strength; the number of passages decreased to eight to twelve daily (though of the same character as before), the temperature fell to 99° F., and the distention and rigidity partly diminished, so that palpation over the appendix demonstrated not only great tenderness, but also an enlarged organ. On the morning of the third day after admission she had another violent attack of pain in the right side, whereupon an operation was performed at once. The following was found: the appendix was five inches long, much distended, the contents being mucopurulent. The appendix contracted markedly upon exposure after removal. It pointed south-east, was somewhat twisted upon its base, and had attached to it a few slight adhesions.

For the first two days after operation the patient had three stools daily, which, however, contained no blood and soon lost their spinach-like appearance. From that time on one healthy stool occurred daily, and, twelve days after operation, she had entirely recovered, having none of the dyspepsia which was probably the first symptom of the appendical infection. Dr. Deaver said that he believed that many cases of colitis supervening upon a chronically

diseased appendix are due to bacillary infection (colon bacillus), and that permanent relief against subsequent attacks can only be offered by the removal of the diseased appendix.

BILATERAL OPERATIONS FOR RADICAL CURE OF HERNIA.

DR. DEAVER presented a man, aged twenty-eight years, who was admitted to the German Hospital, January 15, 1896, with the following history: He had had a small, left-sided, inguinal hernia for several years, when, on the morning of admission, he was struck upon the abdomen by a heavy barrel and immediately there followed an increase in size of the hernia and much pain in its area. The pain increased as did the size of the hernia; vomiting set in and he was referred to the hospital. Four hours after admission he was submitted to operation for the relief of strangulation; the omentum, dark, congested, and almost gangrenous, was tied off; the bowel, which was almost black, enveloped in hot cloths until free circulation was established and then replaced, and the Bassini method of radical cure was followed in completing the operation.

The patient made an uninterrupted recovery, and was to have been discharged January 17, but on the afternoon of January 16 he got up for the first time. He coughed hard a couple of times and in the evening complained of pain in his right inguinal region. On examination a small inguinal hernia on the right side was detected. The same symptoms as in his first attack developed,—namely, pain, vomiting, and great tenderness over the irreducible mass; operation for strangulated hernia was again performed, and a precisely similar condition found on the right as was presented on the left side. The Bassini method for radical cure was again applied, and the patient discharged, finally cured, February 8, 1896.

Stated Meeting, February 3, 1896.

THE LIGATURE IN OÖPHORECTOMY.

DR. CHARLES B. PENROSE read a paper with this title, for which see page 35.

DR. JOHN B. DEAVER thought the method advised by Dr. Pen-