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VOL. V.

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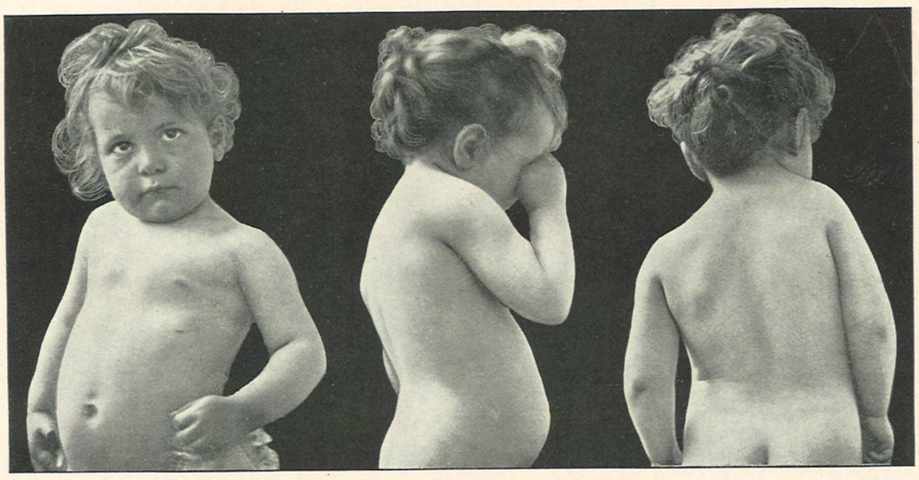

FIG. 1.—Case I, Congenital elevation of scapula.

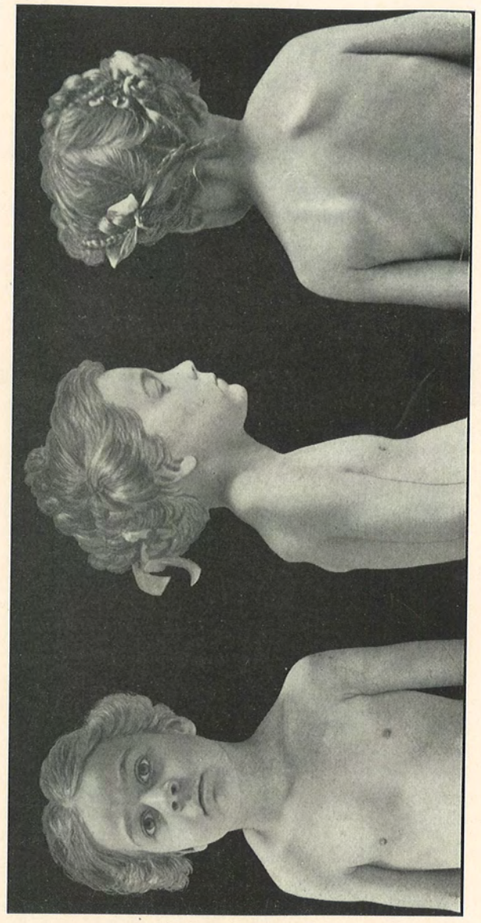

FIG. 2.—Case II. Congenital elevation of scapula.

TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING, JANUARY 3, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

CONGENITAL MISPLACEMENT OF THE SCAPULA.

DR. JOSEPH M. SPELLISSY reported two cases of congenital misplacement of the scapula that he saw during the past year.

Case I was that of a girl, seven years old, seen in June at the University Hospital, and referred to Dr. C. L. Leonard, of the X-ray Department, because the nature of the anomaly was not recognized. Suggestion was made at the time that the abnormality might be due to the presence of a cervical rib. The patient was not seen again till November, when the X-ray plate was seen for the first time and the condition understood.

Case II, that of a girl aged eight years, was seen during August at the Orthopædic Hospital. The condition existing was recognized by inspection at once, and three months prior to diagnosis by X-ray of the first case.

The speaker termed the condition "congenital misplacement of the scapula" because there is no apparent luxation of any joint. The right scapula is placed on top of the shoulder, and the inferior angle very much elevated in contrast to the inferior angle of the scapula of the other side. The joint relations of the humerus and scapula are perfect.

This condition necessitates some distortion either of the relations of the clavicle with the sternum; or of the clavicle with the acromion; or in the shaft of the clavicle, or, most probably, of all three combined. Careful inspection and palpation of the parts involved and study of the skiagraph deny that there is luxa-

tion of the clavicular joints. The fact that fracture of the clavicle is accompanied by dropping of the scapula renders the supposition of old and unrecognized fracture untenable. The shape and size of the clavicle and scapulæ affected, when compared with their fellows, hardly permits them to be classed as malformations; yet the manner in which they are assembled must be admitted to be a malformation which is best described as a misplacement, and which must have originated in utero.

There is no history of traumatism. In the second case, the deformity was noted at the age of three. At this period the child had a painful swellling of the neck; it was treated by the family physician, who denied that the condition was due to parotitis. No positive opinion was obtained. Here, also, there is no history of traumatism.

SUTURE OF THE ACROMIOCLAVICULAR ARTICULATION FOR DISLOCATION.

Dr. W. B. Hopkins presented the case of a Swedish sailor, twenty-three years of age, admitted to the Pennsylvania Hospital, June 10, 1901. Four months before he had been injured in the left shoulder by falling from aloft. Examination showed complete dislocation of the acromial end of the left clavicle (Fig. 1). The joint was exposed by an incision five inches in length, and after preparing out the bones a suture consisting of seven strands of silkworm gut was inserted through four drill-holes, as shown in the accompanying diagram. Tension on the suture completely corrected the deformity, and a knot on the outer side held the bones firmly in place. The subsequent history of the case was without incident, the wound healing promptly. After retaining the arm to the side for three weeks, the patient was discharged cured.

The speaker's object in reporting this case, he said, was to illustrate complete dislocation of the acromial end of the clavicle; to show a suture which seems to be the most effective one for the complete correction of this dislocation; and to emphasize the importance of taking, when practicable, a plaster cast of all dislocations in order to emphasize the deformity. Fig. 2 shows the index-finger of the operator thrust completely under the clavicle. An incision, five inches long, was made over the shoulder. In order to get at the bones well for the application of drills, the

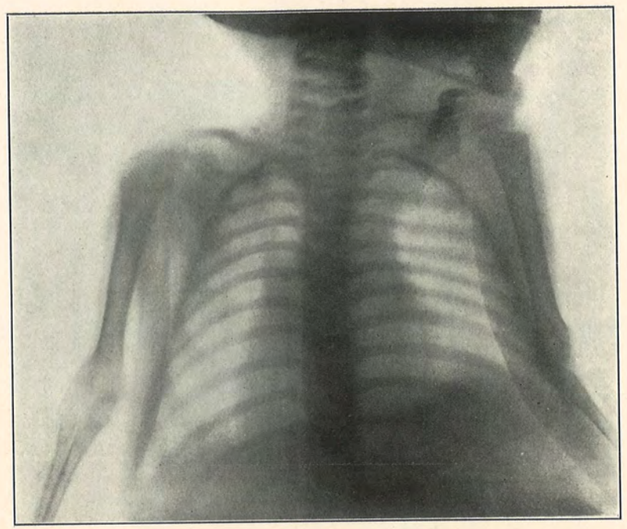

Fig. 3.—Case I, Congenital elevation of scapula. (Radiograph by C. L. Leonard, M.D.)

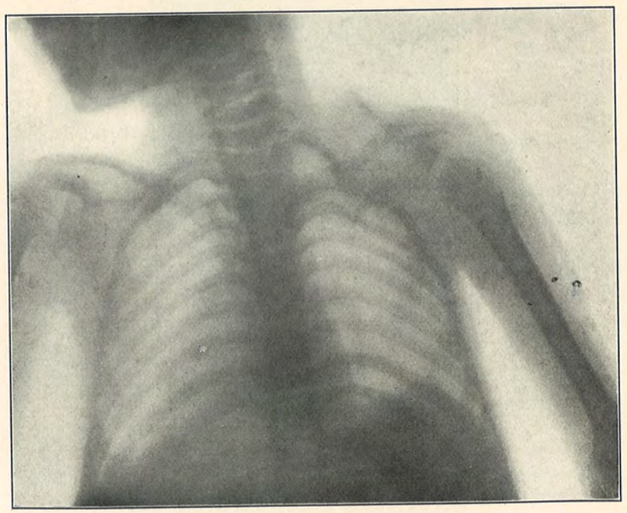

Fig. 4.—Case II, Congenital elevation of scapula. (Radiograph by C. F. Mitchell, M.D.)

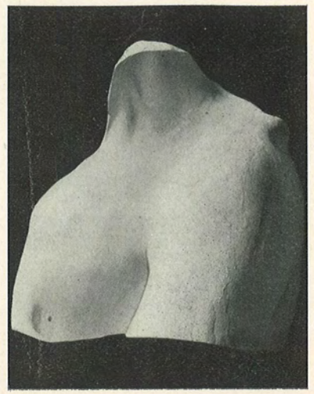

FIG. 1.—Plaster cast showing dislocation of acromial end of clavicle.

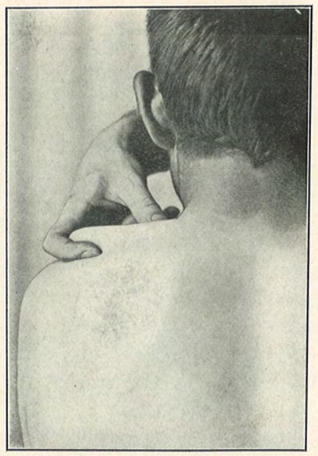

FIG. 2.—Dislocation of clavicle.

joints had to be quite freely exposed. After that was done, a suture, which may be described as an X-shaped suture, was used, consisting, as shown in Fig. 3, of seven parts of heavy silkworm gut, carried through holes made in the following manner: A drill-hole was made at a point a quarter of an inch from the extremity of the bone into the centre of the articular facet; another one, from a point three-quarters of an inch farther forward, emerging from the same central orifice. The other holes at corresponding points were drilled in the acromion to the centre of its clavicular facet. Traction made upon the suture brought the articulation into nice apposition. The central hole in the clavicle was situated farther forward and downward than the one in the acromion, so that when the knot was drawn tight the tendency was to over-correction, the acromion becoming more promi-

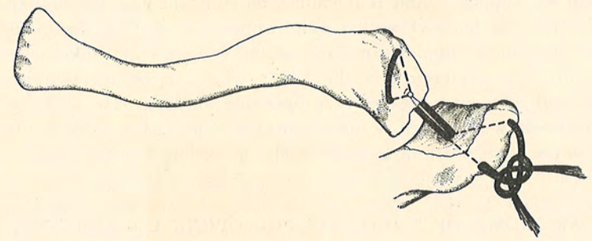

FIG. 3.—Showing X suture for acromioclavicular dislocation.

nent than on the sound side. The suture was drawn tight and tied with a knot over the acromion, so that the latter should be over the side of the shoulder rather than over its summit. This precaution was taken in order to avoid irritating pressure from loads carried on the shoulder, as the knot was a large one.

DR. JOHN B. ROBERTS said that he had long thought that if he came across a case of dislocated clavicle that seemed to need more than ordinary treatment, he would simply nail the fragments together subcutaneously.

DR. J. M. SPELLISSY said that he had the privilege of seeing this case at the period of its luxation and later during convalescence, and desired to bear testimony as to the perfect result obtained. The deformity was absolutely reduced and kept controlled. At a slight distance the scar was undiscernible. On

examining and manipulating the joint subsequent to suture, no separation could be effected.

Dr. H. A. Wilson said that there are many cases of disability, following the wearing of apparatus for effecting an acromioclavicular ankylosis, which are due to the prolonged use of the apparatus.

Dr. R. H. Harte thought that in this case there was no alternative but to do what was done. When you come to examine the acromion and the clavicle, it seems a wonder that they do not give way much more frequently than they do. We see many fractures of the clavicle, but seldom a dislocation of the acromial end, which was so very marked in this case. We have here in this joint two bearing surfaces which are very narrow, and consequently, when dislocated, there is a great tendency for the deformity after reduction to reappear; and if it cannot be controlled by keeping the patient upon his back with a weight upon the shoulder, he should not hesitate to employ suturing, as Dr. Hopkins did. As to the suture, his preference is the silver wire carried through and through, two openings at each opposing surface. He preferred the silver wire, which he used with the expectation of removing it in the course of four to eight weeks, according to circumstances.

CARCINOMA OF THE PENIS FOLLOWING CIRCUMCISION.

Dr. W. L. Rodman presented a man, thirty-four years of age, who was circumcised last February. Soon thereafter he noticed a small red spot in the cicatrix, and in the course of time a typical epithelioma developed on the dorsum of the penis. The speaker amputated the penis well behind the glans. The patient having a good-sized penis, it was not necessary to go back to the crura. There was also seemingly a metastasis in the inguinal glands of the left side. The enlarged glands were removed, together with the fat in both groins. What seemed to be metastases was an irritative enlargement of the glands, and there was no evidence of carcinoma in the lymph nodes. The man has no trouble in micturition; his pain has left him entirely, and since he went home, less than three weeks ago, he has gained nine pounds in weight. He has erections, and has a fairly good-sized penis at the present time. The end of the organ was covered over by a natural skin covering. The wound united per primam.

The speaker further said that he was able recently to get a report upon two cases of epithelioma of the penis operated upon by him in 1891 and 1895, respectively; and both of them are entirely well at the present time.

The interesting features in connection with this case of epithelioma of the penis presented are, first, the age of the patient; and, secondly, the possible development of epithelioma in a recent cicatrix.

SARCOMA OF THE PAROTID.

Dr. Rodman presented a man, aged thirty-five years, who noticed a swelling nine years ago underneath the ear, which progressed slowly. In 1894 it was the size of a pigeon's egg, and the tumor was then removed. For two years after excision there was no return of the growth. Then it began to grow slowly. The patient seemed never to suffer except with stiffness of the neck. The growth was the size of a small orange when it was removed six weeks ago.

The two points in connection with this case were that the overlying lymph-nodes were quite extensively enlarged and involved. Of course, that is occasionally seen in sarcoma growing from glands. The next point of interest is that the operator was able to remove the growth and the lower half of the parotid without inflicting very much damage to the facial nerve. The patient can do everything except whistle.

No attempt was made to prevent suppuration in this case; it was rather invited. The wound did suppurate. The speaker thought there is no doubt that sarcomas which suppurate freely at the time of operation are less likely to recur than when the wounds unite per primam.

Dr. John H. Gibbon had been interested in an article on the subject of growths of the parotid gland by Butlin, in which he says that the majority of cases diagnosed as sarcoma of the parotid were in reality cases of endothelioma. This was borne out recently in a case which he had operated on for a recurrence. Dr. Da Costa had operated on this patient a year or eighteen months previously for a growth which was diagnosed as sarcoma of the parotid. This growth returned after a year. Dr. Coplin examined it, and said that this growth was an endothelioma, although previously diagnosed by the pathologist as sarcoma.

Dr. Rodman said that it is true that many pathologists claimed that certain sarcomata are really endotheliomata; but this is true of lymphosarcomata and alveolar growths, where there is a reticulated substance and always a small round-cell element. In this case it was a typical spindle-cell growth. Examination was made by Professor MacFarland. There was quite a lot of cartilage in the tumor which is characteristic of spindle-cell sarcomata. There could be no doubt about this being a spindle-cell growth, and it could not possibly be an endothelioma.

ABSCESSES IN THE RIGHT ILIAC REGION, AND OTHER LESIONS NOT OF GYNÆCOLOGIC OR APPENDICEAL ORIGIN MISTAKEN FOR APPENDICITIS.

Dr. Joseph M. Spellissy read a paper with the above title, for which see page 7.

ABSCESSES IN THE RIGHT ILIAC REGION, AND OTHER LESIONS NOT OF GYNÆCOLOGIC OR APPENDICEAL ORIGIN MISTAKEN FOR APPENDICITIS.[1]

WITH REPORTS OF ONE HUNDRED AND NINETY-FOUR CASES, WITH LESIONS OF TWENTY VARIETIES OF STRUCTURE AND SIXTY-EIGHT SPECIES OF LESION, NOT ONE OF THE NUMBERED CASES OF APPENDICEAL ORIGIN AND ALL SO MISTAKEN; SEVEN CASES HITHERTO UNREPORTED.

BY JOSEPH M. SPELLISSY, M.D.,

Surgeon to St. Joseph's and the Methodist Hospitals; Assistant Surgeon to the Orthopædic Hospital and Orthopædic Department of the University Hospital; Out-Patient Surgeon to the Pennsylvania Hospital.

In reporting, in 1899, some "Iliac Abscesses Non-Spinal in Origin," the President of the Philadelphia Academy of Surgery, Dr. De Forest Willard, said, "At the present day it is well to remember that an individual may have pain and inflammation even in the right iliac region without having appendicitis, and that a woman may have a pelvic abscess which is not due to tubal disease." The present inquiry could not have a better introduction.

Beside the danger of overlooking gynæcologic and appendiceal inflammation and abscess,—a danger now ably exploited,—there is also a less heralded diagnostic peril, namely, that of mistaking as gynæcologic or appendiceal the many other varieties of abscess occasionally met in the iliac fossa, and it is to this topic of diagnosis that this paper is devoted.

The comparative infrequency with which abscesses within the scope of this paper sufficiently resemble those stated to be

[1] Annual Address in Surgery.

outside of it, as to make differential diagnosis difficult, makes all the greater the probability of failures in discrimination, when this resemblance does occur, because its multiform possibilities of error are not kept in mind.

In verification of the liability to this mistake and towards its prevention, by placing its instances in view, attention will be invited: First, to an enumeration of the tissues in the right iliac fossa and its neighborhood that may become inflamed or abscessed themselves, or that may serve as reservoirs or as media of conduction for the pain or the pus of other tissues primarily inflamed, though, possibly, distant. Secondly, to the illustration of the misleading symptomatic resemblances existing between these lesions. This illustration will be supplied by abstracts from cases published in the past four years; by brief histories of five cases hitherto unreported that have been most kindly contributed to this inquiry by other observers; and by notes of two cases that came under the speaker's care and in one of which he was at fault.

ANATOMY OF THE ILIAC FOSSA.

The iliac fossa has as its skeletal foundation the internal surface of the iliac portion of the innominate bone. This surface is bounded above by the iliac crest and below by the ilio-pectineal line. The ilium articulates posteriorly with the sacrum, a small portion of the base of which is continuous with the concave surface of the iliac fossa. Externally and below, the ilium contributes to the formation of the acetabulum and articulates with the head of the femur. Like other bones, the ilium is covered with periosteum, and cartilage and ligament contribute to the formation of its joints. The iliac fossa is chiefly covered by the iliac muscle which arises from it, and it is partly covered at its internal portion by the psoas magnus. Both the psoas muscles, the great and the small, arise from the bodies of the vertebræ, and the anterior surfaces of these muscles are in relation with the kidney and ureter. The psoas parvus is inserted in the pectineal eminence of the iliac bone, but the

psoas magnus is inserted in the lesser trochanter of the femur, and in its transit thither is in relation with the capsular ligament of the hip-joint. These three muscles are covered by the iliac fascia. The psoas muscles in the iliac fossa are in relation with the genito-crural and anterior crural nerves, and anteriorly with the common and external iliac artery and vein, and these vessels with the ureter which passes into the true pelvis close to the sacro-iliac joint. The spermatic vessels are anterior to all these structures, and anteriorly and in the lower portion of the fossa the vas deferens is internal to them. The external iliac glands form a chain round the external iliac vessels and communicate by their lymphatics with the femoral glands below and the lumbar glands above. All these structures are covered by parietal peritoneum which forms the internal and anterior wall of the iliac fossa and is continuous with the internal margins of the crural and internal abdominal rings, with the investment of the spermatic cord and, when they exist, with the covering of hernias, and also with the mesentery, mesocæcum, meso-appendix, and meso-ascending colon. This fossa normally contains the organs which these prolongations of peritoneum have just been enumerated as attaching, and also the omentum. Pathologically, the liver, gall-bladder, and kidney may descend into this fossa. The crest of the ilium gives attachment to the erector spinæ, quadratus lumborum, latissimus dorsi, transversalis, and internal and external oblique muscles. The contents of this fossa are walled off anteriorly by the rectus abdominalis and by the last three muscles named; and these muscles—the external and internal oblique and transversalis—are pierced by the ilio-hypogastric and ilio-inguinal nerves,—the ilio-hypogastric first piercing the psoas and passing in front of the quadratus lumborum, and the ilio-inguinal first piercing the psoas and then passing in front of the quadratus lumborum and the iliacus.

All of the tissues enumerated are subject to inflammation, and, as the following illustrative cases will show, most of them to inflammation or abscess which has, on occasion, been mistaken as being of appendiceal origin.

INDEX TO ILLUSTRATIVE CASES.

Anatomical Classification.[1]

I. Bones and Joints.
(1) Vertebræ, Tuberculous Osteitis. Case I.
(2) Sacrum and Ilium, Tuberculous Osteitis. Case II.
(3) Ilium and Femur, Tuberculous Osteitis. Case III.

II. Lesions of Muscles.
(1) Iliacus, Myositis. Case IV.
(2) Psoas, Myositis. Case V.
(3) External and Internal Oblique, Myositis. Case VI.
(4) Abdominal, Myositis. Case VII.

III. Nerves.
(1) Ilio-Hypogastric and Inguinal, Neuralgia. Cases VIII, IX.
(2) Lumbo-Abdominal, Neuralgia. Case X.
(3) Sympathetic, Neuralgia, Pneumonia, Pleurisy. Cases XI to XXIII.
(4) Hysteria. Cases XXIV to XXX.

IV. Glands.
(1) Precæcal, Adenitis. Case XXXI.
(2) Retrocolic, Adenitis. Case XXXII.
(3) Retroperitoneal, Adenitis. Case XXXIII.
(4) Abdominal, Adenitis, Syphilitic. Case XXXIV.
(5) Tonsillitis. Case XXXV.

V. Peritoneum.
(1) General, Serositis. Case XXXVI.
(2) Omental, Peritonitis. Case XXXVII.
(3) Tubercular, Peritonitis. Cases XXXVIII, XXXIX.

VI. Vestiges and Diverticula.
(1) Vitello-Intestinal, Infection and Abscess. Case XL.
(2) Testicular Funicular, Infection and Abscess.
(3) Meckel's, with Obstruction. Cases XLI to LIX.

VII. Colon.
(1) Impaction. Case LX.
(2) Perforation following Impaction. Case LXI.
(3) Perforation from Foreign Body. Case LXII.
(4) Malignant Disease, Carcinoma. Cases LXIII, LXIV.

VIII. Cæcum.
(1) Foreign Body, Orange Pulp. Case LXV.
(2) Enteroliths. Case LXVI.
(3) Intussusception, Ileocolonic. Case LXVII.

[1] Numbers are affixed only to the cases that have been erroneously diagnosed as appendicitis.

(4) Ulceration, Perforative. Cases LXVIII to LXX.
(5) Perforation and Malignant Diseases. Case LXXI.
(6) Tumors, Fibromyoma, Carcinoma, Sarcoma. Cases LXXII to LXXVI.

IX. Ileum.
(1) Foreign Body, Piece of Bone. Case LXXVII.
(2) Lead Ileus. Cases LXXVIII to LXXX.
(3) Acute Inflammation with Localized Peritonitis. Case LXXXI.
(4) Chronic Inflammation with Adhesions. Case LXXXII.
(5) Perforation. Cases LXXXIII to LXXXVII.
(6) Typhoidal Ulceration of Peyer's Patch. Cases LXXXVIII to XCIX.
(7) Malignant Disease, Soft Sarcoma, Lymphosarcoma. Cases C, CI.

X. Duodenum.
(1) Perforative Ulceration. Cases CII to CXLII.

XI. Stomach.
(1) Perforative Ulceration. Cases CXLIII to CXLVI.
(2) Gangrenous Polyp.

XII. Abdominal Cavity.
(1) Foreign Body, Ligature. Case CXLVII.

XIII. Hernia.
(1) Properitoneal, Littré Variety. Case CXLVIII.
(2) Into Fossa Duodenojejunalis of Treves. Case CXLIX.

XIV. Spleen.
(1) Splenitis. Case CL.

XV. Pancreas.
(1) Pancreatitis. Case CLI.

XVI. Kidney.
(1) Floating Kidney. Cases CLII, CLIII.
(2) Hydronephrosis. Case CLIV.
(3) Pyonephrosis. Case CLV.
(4) Perinephritic Abscess. Cases CLVI, CLVII.
(5) Calculus. Case CLVIII.

XVII. Ureter.
(1) Abscess. Case CLIX.
(2) Gonorrhœal Ureteritis. Case CLX.
(3) Calculus. Cases CLXI to CLXIII.

XVIII. Prostate.
(1) Gonorrhœal Inflammation. Case CLXIV.
(2) Acute Epididymitis.

XIX. Liver.
(1) Subhepatic Abscess.

XX. Gall-Bladder and Ducts.
(1) Dilatation. Case CLXV.
(2) Rupture. Case CLXVI.
(3) Cholecystitis. Cases CLXVII to CLXXII.
(4) Empyema. Cases CLXXIII to CLXXVI.
(5) Cholelithiasis. Cases CLXXVII, CLXXVIII.
(6) Cholelithiasis and Dropsy. Case CLXXIX.
(7) Cholelithiasis and Cystitis. Cases CLXXX to CLXXXVII.
(8) Cholelithiasis and Empyema. Cases CLXXXVIII to CXCII.
(9) Cholelithiasis, Empyema, and Abdominal Abscess. Case CXCIII.
(10) Gall-Stones in and Obstructing the Intestines. Case CXCIV.

ILLUSTRATIVE CASES.

BONES AND JOINTS.

Vertebræ.—For permission to report the following hitherto unreported case, the writer is indebted to Dr. T. G. Morton.

Case I.—A woman aged thirty-six years, married, with negative family and past history, began to complain, nine months before, of pain in the right lower abdominal quadrant. This symptom gradually grew worse and a lump developed there. It pointed, and eight weeks prior to her admission to the Pennsylvania Hospital, the diagnosis of appendiceal abscess was made, and an incision above Poupart's ligament on the side evacuated a large quantity of pus. The discharge from this cavity continued to be profuse, and the patient was sent to the hospital suffering from hectic fever, emaciation, and a lost drainage tube in the abscess cavity. As the abscess opening was quite free, and the patient much exhausted by her journey and grave condition, she was kept under observation ten days. During this period her condition at first somewhat improved, but the temperature continued hectic, the discharge very profuse. Vaginal examination was negative; inspection and palpation of the spine were negative. The patient was in bed and too weak to undergo examination of the spine by manipulation. The exploration of the abscess cavity proved its walls to be within reach of the index-finger, except at its bottom, where a sinus led backward and slightly upward. The lost drainage tube was discovered by the Resident, Dr. Cross, and removed by him. Upon consultation with Dr. Le Conte, it was concluded that the diagnosis lay between appendicitis, psoas abscess, and abscess of tube or ovary. Exploratory operation was decided upon and performed with Dr. Le Conte's assistance. Under ether anæsthesia, the incision was enlarged about five inches upward and backward, along the crest of the ilium, so that, if the abscess should prove extraperitoneal, the peritoneum might not be needlessly entered. The cavity was found to extend backward and upward, to be extraperitoneal, and about eight inches in extent. It was found to be within the sheath of the psoas muscle. The patient's condition was so bad that the cavity was packed, and no further exploration made. Previous conditions became aggravated and the patient died six days later. The autopsy not only confirmed the operative diagnosis of psoas abscess, but discovered that the latter was of vertebral origin, and, though of considerable extent, was unaccompanied by deformity.

Sacrum and Ilium.—To Dr. J. Chalmers Da Costa the writer is indebted for the notes of the following hitherto unreported case.

Case II.—A man of twenty-three years, a foreigner, was left at the Jefferson College Hospital with a history of pain of some weeks' duration in the right lower abdomen. He exhibited on examination an abdomen that was rigid in the right lower quadrant, and contained a mass discernible on palpation and dull on percussion. There was much gastric disturbance, and there was elevation of temperature. The diagnosis of appendicitis was made. Dr. Da Costa operated, found the appendix normal, and drained an abscess arising from disease in the sacro-iliac joint.

Ilium and Femur.—Dr. John G. Clark, who saw this hitherto unreported case as consultant and operator, has kindly furnished the writer with the following notes.

Case III.—A woman aged about forty-three years, who had borne four children and did her own housework, had suffered with pain, considerable leucorrhœa, and marked uterine prolapse for

six months. At the end of this period, Dr. Clark saw the patient in consultation, and found the uterus fixed in the pelvis and connected with an inflammatory mass which filled up the right pelvic quadrant, and pointed at McBurney's point. There was board-like hardness of the rectus muscle, and retraction of it occurred on palpation. There was pain in the right abdomen running down the back of the right thigh, but not affecting the knee. This pain had been mistaken for sciatica. The hip-joint was not examined, and there was no complaint that led to suspicion concerning it. The patient was at this time in bed. The abdominal mass lay between the uterine and the pelvic wall and pushed the uterus to the left; the mass was distinctly fluctuating, and it extended as high as McBurney's point, and it pointed there. The case was diagnosed as pelvic abscess of tubal or appendiceal origin. Removal to a hospital and immediate operation were advised. This was refused, but consent was given, a week later, to operation at the patient's house.

Under ether anæsthesia, an incision over McBurney's point evacuated a quart of thick, yellowish pus. The abscess sac was found to communicate with a jagged opening into the acetabulum. The abscess was extraperitoneal. It was drained by gauze, and weight extension applied to the right leg for six weeks. The patient was ambulant in three months. The fistula closed in six months. With the exception of a slight limp, the patient's gait was very good. There was about an inch and a half shortening, no indication of marked fixation, and the patient was able to resume her laborious household duties.

Revised diagnosis: Purulent osteitis of the hip-joint with perforation of the acetabulum.

LESIONS OF MUSCLES.

Iliacus Muscle.—Case IV.—The President of the Academy (*Proceedings of the Philadelphia County Medical Society,* October, 1894), as already alluded to, reported four iliac abscesses, non-spinal in origin. He says: "I have seen a number of these pus accumulations either from direct or indirect violence," and again, "In the majority of cases a rupture of some fibres of the iliacus probably takes place, suppuration follows, and the pus slowly makes its way downward towards Poupart's ligament." He remarks of one of the cases he

reports: "The pus was at first believed to have originated from an appendicitis, but this supposition was afterwards proved ungrounded."

Psoas Muscle.—For the notes of this hitherto unreported case the writer is indebted to Dr. Taylor, Senior Resident at St. Joseph's Hospital.

Case V.—A woman aged thirty-six years, with a negative family history, and a recent past history of vague pains in the back and shoulders, was admitted to this hospital with hectic temperature and complaint of pain in the right lower abdominal quadrant, but not limited to McBurney's point. There was at first no swelling, but there was tenderness on deep pressure, and this tenderness was not most marked at McBurney's point. There was no muscular rigidity. The thigh could not be fully extended and was partially flexed. Five days after admission to the hospital, she was operated upon for appendicitis. The appendix, though normal, was removed, and a fluctuating mass was found beneath the parietal peritoneum of the right iliac fossa. This abscess cavity was drained through thigh and abdomen, and existed within the sheath of the psoas muscle. The patient made complete recovery, but the note is wanting whether the vertebræ were at fault. The promptness and completeness of recovery suggest that it was probably purely muscular in origin. Revised diagnosis should be that of psoas abscess.

External and Internal Oblique.—Case VI.—Sonnenburg (*Berliner klinische Wochenschrift,* 1897, xxiv, 810) reports the case of a boy, aged seventeen years, whose trouble had been primarily diagnosed as appendicitis. At his last attack, he complained of pain in the lower part of the right side of the abdomen, and a week later, immediately following a bowel movement, he was seized with violent pain in the right lower quadrant of the abdomen. He exhibited a little fever, a good pulse, slight abdominal distention, and a hard mass on the right side extending from the outer border of the rectus to the outer border of the abdomen. Tenderness existed over this mass, and dulness on percussion was continuous with that of the liver in the axillary line, but not in the mammillary. The diagnosis was then made of acute appendiceal abscess. On operation an abscess was discovered, but it was confined between the external and internal oblique muscles. The pus was yellowish-white, odorless, sterile, and containing muscle fibres. The peritoneum was normal and unopened. The patient recovered, and the diagnosis was revised to chronic interstitial myositis of the abdominal wall.

Case VII.—J. A. Hopkins (*New England Medical Monthly,* April,

1900, 121) reports the case of a woman whose past history was not stated, and whose symptoms suggested appendicitis. She exhibited pain in the right iliac fossa, and she suffered from swelling and tenderness. The possibility of appendicitis was kept in mind, but the diagnosis was limited to that of abscess of the abdominal wall. She was treated expectantly with poultices, and the sequel proved the abscess limited to the abdominal wall.

NERVES.

Iliohypogastric and Inguinal.—R. T. Morris (*New York Medical Journal,* 1899, i, 469) says that some of the diagnoses made primarily and erroneously as appendicitis are neuralgias of the ilio-inguinal and iliohypogastric nerves of the right side, and that in these cases procrastination is requisite for correct diagnosis.

CASES VIII, IX.—Janeway (*Medical Record,* 1900, lxxvii, 897) says that neuralgias of the nerves of the right side of the abdomen (involving the lower abdominal nerves) can usually be recognized by close observation, but within his knowledge two operations in two cases had been undertaken for the removal of the appendix, but were uncompleted, because of its healthy condition in each instance, the misleading symptoms being ascribed to neuralgias of unknown cause.

He also comments upon neuralgias in cases of right-sided pneumonia being referred to the right iliac fossa, and likewise mistaken for appendicitis.

Lumbo-Abdominal.—CASE X.—Albert Abrams (*Occidental Medical Times,* 1898, xii, 281) reports that in a case diagnosed as appendicitis and recommended for operation, a local anæsthetic in the form of a freezing mixture was sprayed over the sensitive nerves at their exit from the vertebral column. The appendiceal symptoms, including a circumscribed sensitive swelling in the ileocæcal region, disappeared, and the diagnosis was revised to that of lumbo-abdominal neuralgia.

Sympathetic Neuralgia in Diseases of Lung and Pleura.—CASES XI to XXI.—Mirande (*Thèse,* Paris, 1900) reports ten cases of disease of the lung and pleura, which at the period of invasion were diagnosed as appendicitis. Pain and other symptoms referred to the iliac fossa were typical and pronounced. The chest symptoms seemed of secondary importance. Yet in all these cases—in some at operation, in others at autopsy—the appendices were found to be normal.

CASE XXII.—Brewer (ANNALS OF SURGERY, 1901, xxxiii, 601) reports a case of Dr. Evans, seen in consultation by Drs. Janeway, Bull, and Brewer. They concurred in the opinion that the case was one of peritonitis due to appendicitis or cholecystitis. The post-mortem examination showed that not only the appendix, but the abdominal organs were free from inflammation, and that the case was one of pneumococcic septicæmia.

CASE XXIII.—Morris (*New York Medical Journal,* 1899, i, 470) reports a case upon which he operated for appendicitis—the exploration of the abdomen was negative and the case proved to be one of pneumonia. He later saw a case with similar symptoms in which the diagnosis of pneumonia was correctly made.

Hysteria.—CASES XXIV to XXX.—Morris (*New York Medical Journal,* 1899, i, 470); Thalamon (*Bull. Soc. Méd. des Hôp.,* 1897, xiv, 430); Rendu (*Bull. Soc. Méd. des Hôp. de Paris,* 406, 1897); Nothnagel (*Wiener klinische Wochenschrift,* 99, 387); Brissaud (*Bull. Soc. Méd. des Hôp. de Paris,* 97, xiv, 414). Seven cases in all exhibited the symptoms of appendicitis and were so diagnosed, three of these cases were operated upon. They all proved to be cases of hysteria.

GLANDS.

Adenitis, Precæcal.—CASE XXXI.—Gérard Marchant (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 77) reports three cases, two with previous attacks, and one with a single attack, primarily diagnosed as appendicitis, tubercular appendicitis, and subacute appendicitis respectively. The first had pain in the interval. The second was a typical attack of appendicitis, but exhibited no fever in the last attack. The third was unaccompanied by fever or vomiting, but had persistent pain in the right iliac fossa. The first exhibited tumor in the cæcal region and was tender to the touch; in the second an irregular, elevated mass of firm consistency and movable, was very sensitive to the touch, and believed to contain the appendix. The signs of the third case are unstated. The operation in each instance discovered the appendix and cæcum to be apparently normal, but enlarged glands were discovered in all three cases and enucleated in the first two. In the second case a large suppurating gland was removed by curette and cautery. Each case recovered, and microscopic examination showed the appendix in the first case to be normal and in the second and third cases to be slightly inflamed. The glands in the first instance were caseous; in the second they were probably tubercular. The revised diagnosis in the first case was precæcal adenitis, without appendicitis.

Adenitis, Retrocolic.—CASE XXXII.—Bazy (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 133) reports the case of a girl, aged seventeen years, with a previous history of one attack of appendicitis, in which she suffered severe pain in the right iliac fossa She had but slight elevation of temperature, and exhibited a large mass sensitive to the touch situated in the right flank and iliac fossa. The earlier diagnosis of appendicitis was approved, but on operation the colon was found slightly congested. No mention is made of the condition of the appendix, but behind the peritoneum hard and firm masses were found in the retrocolic region. Prolonged suppuration ensued followed by recovery. The revised diagnosis is specifically stated to be retrocolic adenitis without appendicular lesion.

Adenitis, Retroperitoneal.—CASE XXXIII.—Reynier (*Bull. et Mém. de la Soc. de Chir de Paris,* 1900, xxvi, 169) reports the case of a man suffering from intestinal obstruction, and exhibiting a mass in the right iliac fossa The diagnosis was appendicitis. Upon operation a mass of caseous glands was found extending back to the vertebral column. The patient died, and at the post-mortem his appendix was found to be normal. Revised diagnosis: intestinal obstruction due to large, broken-down glands.

Adenitis, Syphilitic.—CASE XXXIV.—R. Condamin and J. Voron (*Arch. Prov. de Chir.* 1900, ix, 311) reports the case of a girl, aged seven-

teen years, who for two years had suffered abdominal pain, sometimes on the left and sometimes on the right side In the June of 1899 she contracted a labial chancre, and later developed secondary symptoms. In October she suffered from severe pain in the right iliac fossa; she exhibited tenderness there and vomited once. Other appendiceal symptoms were wanting. The pain lasted for months, for a while without influence on her general health, but latterly she did badly. Examination in January showed great tenderness over McBurney's point; the abdominal wall was rigid; no mass was detected; vaginal examination was painful in the posterior cul-de-sac. She also exhibited secondary specific eruptions. Diagnosis was made of appendicitis with possibly a retrocæcal abscess, but operation discovered the appendix and abdominal organs to be normal, with the exception of the glands, which were slightly enlarged. She recovered from the operation, but not from her symptoms prior to it. Mercurial inunctions were instituted, and all symptoms disappeared. The revised diagnosis being syphilitic adenitis in the right iliac fossa.

Tonsillitis.—Case XXXV.—Janeway (*Medical Record,* 1900, lvii, 898) reports that he saw a case for a complication in which the diagnosis of appendicitis had been proved in error by operation, the subsequent course of the case proving it to be one of tonsillitis.

PERITONEUM.

General Peritonitis.—Case XXXVI.—R. T. Morris (*New York Medical Journal,* 1899, i, 470) reports the case of a boy of ten years with a history of recent measles, who was suddenly seized with all the symptoms of acute peritonitis. The diagnosis was made of appendicitis with general suppurative peritonitis. Operation discovered the peritoneum thickened, infiltrated, but not reddened, and its cavity filled with viscid lymph, but the appendix normal. A protracted recovery was followed by an attack of meningitis accompanied by pleurisy and pericarditis. The diagnosis was revised to general serositis sequent to measles.

Omental.—For the notes of the following hitherto unreported case, the writer is indebted to Dr. T. G. Morton.

Case XXXVII.—A woman was admitted to the Pennsylvania Hospital with a history of one day's illness, four days of absolute constipation, and of an eight years' right-sided inguinal hernia. She had vomited twice on the day she was admitted to the hospital. Her abdomen was enormous, she had pain in the appendiceal region, and was so tender there that palpation for a mass could not be performed satisfactorily. She appeared to be in a condition of shock. The diagnosis of appendicitis was at once made and followed by incision under ether in the appendiceal area. The appendix was found to be normal and was left undisturbed.

The cause of trouble was a large mass of omentum weighing about two pounds, which was in a gangrenous condition. This mass was ligated and removed. The woman's condition forbade further exploration. Distention followed the operation. Constipation remained absolute for three days, when her bowels yielded to two minims of croton oil given in quarter-minim doses. She died later on that day.

T. H. Manley (*Journal of the American Medical Association,* 1901, i, 1547), speaking of appendicitis in children, says among other things that in tubercular peritonitis, when limited to the mesentery or parietal peritoneum, and associated with intestinal paresis or ascites, it cannot be determined, prior to operation, whether or not the appendix is involved. Often have operations revealed no lesions of this organ. The acute fulminant type of tubercular peritonitis begins in the peri-appendiceal lymph tissue contiguous with the cæcum.

Tubercular.—Case XXXVIII.—R. T. Morris (*New York Medical Journal,* 1899, i, 469) reports the case of a young woman suffering from recurrent attacks of appendicitis for two years, which upon operation in the interval and removal of the appendix was discovered to be miliary tuberculosis, and the diagnosis was so revised, the appendix being found normal, excepting that its peritoneal coat, like the rest of the peritoneum, was studded with miliary tubercles.

Case XXXIX.—R. T. Morris (*New York Medical Journal,* December 22, 1900, 1093) reports two cases diagnosed as appendicitis, but which proved on operation to be suffering from tuberculous peritonitis; the appendices, not being particularly involved, were not removed.

VESTIGES AND DIVERTICULA.

The following quotation from the "American Text-Book of Surgery," 1899 (p. 760), written for its bearing upon appendicitis, applies with equal force to the cases reported under the above heading: "There can be no question that those structures which remain to us as functionless vestiges of parts once useful in our prehistoric ancestors are possessed of low vitality and but feeble resisting powers."

Vitello-Intestinal Vestige.—Case XL.—Friend (*Philadelphia Medical Journal,* 1899, iv, 181) reports the case of a girl, aged thirteen years, having a history of alternate constipation and diarrhœa. Her condition was primarily diagnosed as having being due to appendicitis or a strangulated intestine. She exhibited at her last attack, twenty-three days before, nausea, constipation, and a sudden violent pain in the abdomen. There was no vomiting, and the bowels later were moved by enemata. Improvement resulted until injudicious eating provoked nausea, vomiting, and an

intense umbilical pain, followed by a purulent discharge from the umbilicus. Upon operation general peritonitis was discovered, but no strangulation and no pus; the appendix was slightly congested, and behind it was found an abscess. She died, and microscopical examination of the appendix pronounced it normal. The diagnosis was revised to iliac abscess due to infection of the vitello-intestinal vestige through the intestine.

Testicular Funicular.—The writer is indebted to Dr. Wm. C. Lott for the notes of this hitherto unreported case.

A boy, aged sixteen years, kicked in the right iliac region at 9 A.M., while playing football, woke up at midnight with a chill followed by fever, sweating, nausea, vomiting, and sharp abdominal pain, most severe in the right iliac region, where there was much tenderness. Diarrhœa ensued on the following day, and he was admitted to the Presbyterian Hospital on the evening of the second day, on which he suffered less pain, but still exhibited tenderness. His temperature on admission was 100.6° F. and his pulse 112. A distinct mass was discernible in the right iliac fossa, just below McBurney's point. In this region there was dulness on percussion as far as the median line. There was no discoloration of the skin and the mass was evidently within the abdomen. While these symptoms pointed to appendicitis, that diagnosis was withheld on account of the clear traumatic history. Operation was performed by Dr. Lott assisted by Dr. Porter on the morning of the third day. The following entry in the history was personally made by Dr. Lott.

"A mass of tissue was found extending down to and apparently entering the internal abdominal ring. This mass contained the abscess, which was discovered after some searching and evacuated. It is my belief that the apparently fibrous mass composing the walls of the abscess was the incompletely obliterated tissues of the funicular process of the peritoneum which covers the testes and cord in embryo, and which sometimes remains in the abdominal cavity after the descent of the testes. The appendix was found rather low in the pelvis, was dangling freely in the cavity, and was absolutely normal. It was removed because of its proximity to the abscess." The cavity was drained, and the patient recovered. Diagnosis: traumatic peritonitis arising in the unobliterated funicular process that covers the testes in embryo.

Diverticula.—Cases XLI to LIX.—These may be summarized as eighteen cases in which a primary diagnosis of appendicitis was revised at operation or post-mortem examination to that of intestinal obstruction due to trouble involving Meckel's diverticulum. Fifteen of the cases were operated upon, of these eight were fatal. The total mortality was ten. In two of the eighteen cases the result was unrecorded. These cases are reported by the following observers:

Schmidt: *Deutsche Zeitschrift für Chirurgie,* 1899, xliv, 144.
Routier: *Bull. et Mém. de la Soc. de Chir. de Paris,* 1897, xxxiii, 645.
Bergman, cited by Sonnenburg: *Berliner klinische Wochenschrift,* 1897, xxiv, 810.
Morton: *Lancet,* i, 452, February 17, 1900.
Gildersleeve: *Medical News,* 1898, 392.
Carminiti, *Gaz. degli. osp. c. delle Chiriche,* November 18, 1900.
Guinard: *Bull. et Mém. de la Soc. de Chir. de Paris,* 1898, xxiv, 189.
Nicholson: *New York Medical Journal,* 1900, June 23.
Thurstan: *Lancet,* ii, p. 1799, December 22, 1900.
Mintz: *Deutsche Zeitschrift für Chirurgie,* xliii, 301.
Elliot: *Boston Medical and Surgical Journal,* 1894, cxxx, 586.
Alberti: 71. Vers. d. Nat. u. Aerzt., München, 1899.
Dennis: Two cases cited by Gildersleeve, *Medical News, loc. cit.*
Mixter, cited by "Dennis's Surgery," Vol. iv, p. 296.
Fowler: "Appendicitis," 1894.
Picque: *Cong. Franc. de Chir.,* 1897, xi, 480.
Darnall: *New York Medical Journal,* p. 62, January 12, 1901.

COLON.

Impaction.—Case LX.—Dorsett (*Transactions of the American Association of Obstetrics and Gynæcology,* 1896, ix, 76) reports a case primarily diagnosed as appendiceal abscess, and revised, after operation discovering the appendix to be normal, to that of fæcal impaction of the colon.

Ulcer, Perforative, following Impaction.—Case LXI.—Le Dentu (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 185) reports the case of a woman, aged twenty-three years, giving a past history of gastric pain, vomiting, and chronic constipation throughout four years, and pain in the appendicular region throughout the past year. The diagnosis of appendicitis had been made, and the following symptoms were exhibited at her last attack. Violent pain existed in the region of the stomach and kidney, and the ingestion of any food was followed by vomiting. These symptoms persisted three days, when violent pain was experienced at the site of McBurney's point. Pain was aggravated by pressure, and the appendix was not discerned on palpation. On operation, the cæcum, liver, bile-ducts, gall-bladder, and stomach were found normal; also the appendix. The latter, however, was removed, and was found normal on pathological examination. In the upper part of the right iliac fossa the large intestine was bound down by adhesions; these were severed and a small perforation discovered. The diagnosis of appendicitis was revised to stercoral ulcer in the ascending colon.

Perforation from Foreign Body.—Case LXII.—B. B. Davis (*Journal of the American Association,* 1900, ii, 904) reports a case in which the accidental swallowing of a bone was followed in four days by pain in the right side of the abdomen, constipation, vomiting, general tympanites, with marked dulness on percussion from McBurney's point to the floating ribs. Progressive emaciation ensued. Malignant disease was suspected. Incision showed the ileocæcal junction and appendix to be normal, but that there was a perforation in the colon and behind it an inflammatory mass containing pus and fæcal matter. The bone was not found. Revised diagnosis, perforation of the colon, probably caused by a foreign body.

Malignant Disease.—Cases LXIII, LXIV.—Charrier (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 924) and Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676) each report cases in which the primary diagnosis of appendicitis was revised on operation to that of carcinoma. The hepatic flexure in Charrier's case and the sigmoid flexure in Mühsam's case were the regions involved.

CÆCUM.

Foreign Body.—Case LXV.—Mumford (*Boston Medical and Surgical Journal,* 1899, cxli, 602) reports the case of a girl of twelve years seized three days before with sudden abdominal pain referred to the umbilicus. She vomited six hours after the onset of pain, which was especially severe in the right iliac fossa and extended to the back; her bowels were freely moved with castor oil, but the pain only increased in severity. On the third day her temperature was 103° F.; pulse, 112; her abdomen was distended; its muscles were rigid, exhibited spasm, and were especially tender over McBurney's point. Rectal examination was negative. Diagnosis of appendicitis was followed by operation, discovering the appendix normal; likewise the cæcum, except that it was distended. Incision into it revealed a compact mass of orange pulp, which was removed; the patient recovered, and the primary diagnosis of appendicitis was revised to that of foreign body in the cæcum.

Enteroliths.—Case LXVI.—Goldbach (*Prager medicinische Wochenschrift,* 1898, xxiii, April 21) reports the case of a boy of sixteen years, a gymnast, whose past history told of jaundice, vomiting, frequent colicky pain beneath the right costal margin, coexistent with constipation. These symptoms were subject to improvement and were of a year's duration. The history of his last attack dealt with pain in the ileocæcal region and back, constipation, flatus, and tenderness at McBurney's point. Examination revealed slight distention, dulness in the ileocæcal region, where a movable, resisting, soft mass was felt. The diagnosis was made of chronic appendicitis. Operation discovered the appendix and cæcum to be normal, but the latter contained a few fæcal stones. The primary diagnosis of appendicitis was revised to that of cæcal enteroliths.

Intussusception; Ileocolonic.—Case LXVII.—Mühsam (*Berliner klinische Wochenschrift,* 1899, xxvi, 676) relates the case of a little boy of five years of age, who a year previously had suffered with pain in the right iliac fossa, and also with nausea and vomiting. The recent attack had begun with sudden violent pain in the right iliac fossa and was accompanied by diarrhœa. Vomiting, but not of fæcal character, occurred on the following day, during which there was no bowel movement. On the third day symptoms of peritonitis and collapse set in. The abdomen was flat and not tender, except in the right iliac fossa, where a resisting mass as large as the fist could be felt, and it was dull on percussion. The diagnosis of perforative appendicitis was made. Collapse and death ensued. The post-mortem examination revealed the appendix to be normal, but the ileum was found to invaginate the ascending colon, and the diagnosis was accordingly revised.

Ulceration.—E. G. Janeway (*Medical Record,* 1900, lvii, 897) says varieties of ulcers, perforative and non-perforative, have been mistaken for appendicitis, and that he has known of operations for the removal of the appendix in cases in which the cæcum and neighboring peritoneum were the seat of tubercular inflammation.

Dr. W. Joseph Hearn (*Transactions of the Philadelphia Academy of Surgery,* 1899, i, 11) reports a case described as "Pericæcal Abscess without Appendicitis." The abscess was between the cæcum and the parietal peritoneum, and the appendix was three inches distant from the abscess. The cæcum at the inflammatory focus was almost gangrenous; the appendix on microscopical examination exhibited inflammatory change in its mucous and submucous coats, but not in the muscular and peritoneal. The inflammation observed in the appendix Dr. Hearn considered secondary to the trouble in the cæcum. Dr. John Ashhurst, Jr., reported a similar case, and one with less involvement of the appendix. As both these cases are of mixed character, they are not numbered as cases in illustration to the reply to this inquiry.

Perforative Ulcer.—Cases LXVIII to LXX.—Vincent (*Lyons Méd.,* 1900, xciv, 526), Monod (*Gaz. des Hôp.,* 1891, lxxi, 353), Delbet (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 170) report three cases respectively diagnosed as appendicitis with local peritonitis, appendiceal abscess, and appendicitis with general peritonitis. The first had a history of a kick in the abdomen a month before, the second exhibited a fluctuating mass in the right iliac fossa with tenderness most marked at McBurney's point; the signs in the third case were described as typical. Operation in the three cases revealed normal appendices and cæcal perforation. The primary diagnosis of appendicitis was revised from appendicitis to perforating cæcitis.

Perforation and Malignant Disease.—Case LXXI.—Janeway (*loc. cit.*) mentions the case of a man he saw in consultation. Appendicectomy was prevented by fatal collapse. The autopsy revealed a colloid carcinoma of the cæcum with a perforated ulcer of the intestines, and the diagnosis was so revised.

Tumors.—Case LXXII.—Sonnenburg (*Berliner klinische Wochenschrift,* 1897, xxiv, 810) reports a case diagnosed as appendicitis which on operation proved to be a fibromyoma of the cæcum.

Cases LXXIII, LXXIV.—Mühsam (*Berliner klinische Wochen-*

schrift, 1899, xxxvi, 676) and Coley (ANNALS OF SURGERY, 1901, xxxiii, 631) were each diagnosed as appendicitis. On operation, in each instance, a carcinoma of the cæcum was discovered and the appendix found to be normal.

CASES LXXV, LXXVI.—Coley (ANNALS OF SURGERY, 1901, xxxiii, 631) and McCosh (*loc. cit.,* 630) were each diagnosed as appendicitis, but were discovered by operation to be sarcoma of the cæcum.

ILEUM.

Foreign Body.—CASE LXXVII.—Th. Weiss (*Rev. Méd. de l'Est.,* 1900, Feb. 15, 111) reports the case of a man aged thirty-five years, diagnosed as having appendicitis, and who had complained of pain in the right iliac fossa for two months He was without fever, and did not vomit, but he could not work or even move without exciting severe pain in the ileocæcal region. His abdomen exhibited marked rigidity and some induration over the region of the appendix; it was dull on percussion, and tenderness was most marked over McBurney's point. Operation discovered the appendix to be normal, but in the small intestine near the ileocæcal valve a bone, pointed at one extremity and the size of a two-franc piece, was found and removed by incision. The primary diagnosis of appendicitis was revised to that of foreign body in the ileum.

Lead Ileus.—CASE LXXVIII.—J. P. Lord (*Journal of the American Medical Association,* 1899, i, 800) reports a case of appendicectomy in which the appendix showed no signs of recent inflammation, but in which the ileum was contracted, the condition being due to lead poisoning.

CASES LXXIX, LXXX.—Murphy (*Journal of the American Medical Association,* January 4 and 11, 1896) and Le Gendre (*Lancet,* July 29, 1899) are similar cases.

Inflammation, Acute.—CASE LXXXI.—Quénu and Cavasse (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, 82) report the case of a boy of seventeen years with a negative abdominal history until three days before he came under observation. He then exhibited constant bilious vomiting, accompanied by violent abdominal pain and obstinate constipation throughout two days, at the end of which time his bowels were moved by enemata. On that evening his face was Hippocratic, there was slight abdominal distention, pain on pressure in the right iliac fossa, and contraction of the right side of the abdomen. There was slight fever. Diagnosis was made of appendicitis. Incision in the right iliac fossa, and subsequent microscopic examination, discovered the appendix normal, but the small intestines were congested and covered with a slight exudate, especially over the lower part of the ileum. The patient recovered, and the primary diagnosis of appendicitis was revised to that of inflammation of the ileum with localized peritonitis.

Inflammation with Adhesions.—CASE LXXXII.—Fowler ("Appendicitis," 1894, p. 120) reports a case with appendiceal symptoms operated upon by Dr. Delatour. The appendix was found to be normal, but the small intestine was bound down by old adhesions posterior to the cæcum. Separation of the adhesions was followed by recovery.

Perforation.—CASE LXXXIII to LXXXV.—Aimé Guinard (Dentu and Delbet, Vol. vii, p. 490), J. B. Deaver ("Appendicitis," 1900, chapter on Differential Diagnosis, p. 201), Kirmisson (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1898, xxiv, 279), report, respectively, the following three cases: The first, that of Guinard, exhibited all the signs of appendicitis with suppuration. The second, that of Deaver, had eaten a hearty mean, which was followed by acute abdominal pain centring round the umbilicus, nausea, vomiting, and bile-stained urine; the symptoms improved on the following day, but by evening all the symptoms of appendicitis developed and the signs of general peritonitis. The third, that of Kirmisson, complained of pain referred to the right iliac fossa, accompanied by vomiting and constipation, marked tympanites, and fever. Excepting the temperature, the symptoms had grown progressively worse, and there was a mass in the iliac fossa. The case of Guinard was operated upon and died; the post-mortem discovered the cæcum and appendix normal; there was a perforation in the ileum thirty centimetres from the ileocæcal junction, the size of a fifty centime piece. In the case of Deaver, diagnosed as acute appendicitis with general peritonitis, operation was deferred in the hope of reaction, but death occurred, and the post-mortem showed the appendix and gall-bladder to be normal, but the ileum to be perforated. General peritonitis existed. In the case of Kirmisson, the diagnosis of appendicitis was modified on anæsthetization to that of localized peritonitis. Examination with the patient anæsthetized confirmed the presence of the mass, which was of regular outline, unfluctuating, of the size of an orange, and slipping on palpation to the left side just below the umbilicus. A median incision discovered intestinal obstruction and a small perforation at the junction of the contracted and dilated ileum. The patient recovered.

The primary diagnosis of appendicitis in these three cases was revised to that of perforation of the ileum; and the last case was caused by intestinal obstruction.

CASE LXXXVI.—Barb (*Thèse,* Paris, 1895 [Letulle and Monod]) reports the case of a man of forty-two years of age, who for two weeks suffered with fever, diarrhœa, alimentary vomiting, pain in the right flank, hypochondrium, and in the cæcal region, where it was most severe. A hard, indurated mass tender to the touch was discernible in the right iliac fossa. The diagnosis was made of localized appendiceal abscess. On incision the cæcum was found congested, the appendix was not seen, but the omentum was infiltrated, and behind it was a small cavity containing gangrenous *débris* and a sanious fluid, but no true pus. The cavity was cleaned and drained. Death occurred a month later. The autopsy discovered the appendix normal, but there was a large perforation in the small intestine at the level of the ileocæcal value and communicating with retrocæcal abscess cavity. There were other abscesses and a general peritonitis. The cause of the ulceration was unknown; it was not considered typhoidal or tubercular. The diagnosis was revised to perforating ulcer of the ileum.

CASE LXXXVII.—Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676) reports the case of a woman who in six months had suffered

two attacks diagnosed as appendicitis. There were fever, pain, and a resistant mass in the right iliac fossa. Operation discovered an abscess containing fæcal pus and a needle. The intestine exhibited several minute perforations.

The Typhoid Ulceration of Peyer's Patches.—CASES LXXXVIII to XCI.—Richardson (*Providence Medical Journal,* April, 1901, p. 65) reports four cases, two of which were recommended for appendicectomy and two of which were operated upon. The revised diagnosis was typhoid fever in each instance. The following is an abstract of the last case.

A girl ill for a week exhibited marked tenderness in the right iliac fossa, little rigidity, and some resistance upon deep pressure on the right side of the abdomen. The attack began with a chill, headache, and abdominal pain. The diagnosis lay between typhoid and appendicitis. Palpation with the patient anæsthetized revealed an ill-defined mass, probably an inflamed appendix, in the right iliac fossa. Incision discovered the cæcum and appendix to be normal, and the mass to consist of seven or eight enlarged, juicy, reddish lymph glands clustering about the ileocæcal valve. A resistant mass that felt like a tubercular ulceration was located in the small intestine. This was believed to be the primary lesion and the enlargement of the glands to be secondary.

The diagnosis in this case was revised to typhoidal ulceration of the ileum by the pathologist who examined the glands, and who congratulated Dr. Richardson upon the "earliest diagnosis of typhoid on record."

CASES XCII, XCIII.—H. A. Hare (*Transactions of the American Physicians,* 1900, xv, 193) reports two cases of similar history. The notes of the first case are as follows: A boy, twenty-one years of age, exhibited pain and much tenderness in the right hypochondrium and epigastrium for a few days. His abdomen was scaphoid; he had slight fever and a rapid pulse. His pain became worse on the following day and more limited to the appendicular region. There was hardness and rigidity of the abdominal wall and marked tenderness over McBurney's point. The operation which was arranged for that afternoon was delayed because the tongue became suggestive of typhoid, which later developed, and the diagnosis was revised from appendicitis to that of typhoid.

CASE XCIV.—John B. Walker (ANNALS OF SURGERY, 1901, xxxiii, 633) and Gabriel Maurange (*Gazette Hebd. de Méd. et de Chir.,* 1899, xlvi, 925)

each report one case in which a primary diagnosis of appendicitis was followed by operation, and the discovery of a cæcal ulcer in the first case and enlarged retrocæcal glands in the second. Both cases developed typhoid fever, and the primary diagnosis of appendicitis was revised to that of typhoid fever. The appendix in the second case was removed; its microscopic examination suggested that it had been subject to chronic atrophic inflammation.

CASE XCV.—John B. Walker (*loc. cit.*) also reports in the same article a case diagnosed as appendicitis. Operation set for the following day was prevented by the development of typhoid symptoms. The case proved fatal in six weeks from hæmorrhage.

CASES XCVI to XCVII.—Morris (*New York Medical Journal,* 1899, i, 469) and Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676) each report a case in which a primary diagnosis of chronic appendicitis was made in the first instance and of appendicitis with peritonitis in the second. The first case went to operation, and adhesions of the cæcum and appendix were separated and the latter removed. These evidences of local peritonitis were ascribed to a broken-down Peyer's patch occurring during an attack of typhoid fever, microscopical examination of the appendix proving it to be normal. Mühsam's case was not operated upon, but at post-mortem section perforated typhoid ulcer was discovered. Primary diagnoses of appendicitis in both these instances were revised to that of typhoid fever.

CASES XCVIII to XCIX.—Alberti (71. Vers. d. Nat. u. Arzt., München, 1899, p. 129), Mühsam (*Deutsche medicinische Wochenschrift,* 1901, xxviii, 534), and Rendu (*Sem. Méd.,* 1901, xxi, 41) each report a case that was operated upon, the first for perityphlitic abscess, the remaining two for appendicitis. The diagnosis in each instance was revised to that of typhoid fever.

Peabody (*Medical Record,* 1900, lvii, 935) and Janeway (*Medical Record,* 1900, lvii, 898) also speak of cases of typhoid that had been operated upon by mistake for appendicitis, but do not describe them.

Malignant Disease.—CASES C, CI.—Brewer (ANNALS OF SURGERY, 1901, xxxiii, 590) and Berg (*Medical Record,* 1901, i, 1025) were each diagnosed as appendicitis. Operation proved Brewer's case to be a soft sarcoma of the intestines and Berg's to be a lymphosarcoma of intestine, omentum, mesentery, and glands.

DUODENUM.

Perforating Ulcer.—CASE CII.—Lennander (*Mittheilungen aus den Grenzgebiet der Medicin und Chirurgie,* iv, 105) reports the case of a woman of twenty-five years, a servant, who for several years had exhibited the signs of gastric ulcer. Her symptoms were not severe, and she never suffered from hæmatemesis. History of her last attack is one of severe gastric pain of a few days' duration. The entire abdomen was tender, but was especially so in the region of the cæcum, appendix, and ascending colon, and gave least trouble in the epigastrium. There was general distention. On rectal examination slight fulness was discovered in the right

iliac fossa but no evidences of gynæcological disease. Diagnosis was made of peritonitis due either to perforated appendix or gastric ulcer. Incision in the right iliac fossa discovered the peritoneum to be thick and injected, the abdominal cavity to contain a thin and flaky, odorless liquid, and the cæcum and appendix to be normal. The operation proceeded no further than the institution of drainage. Death occurred in three days, and post-mortem examination discovered a large abscess bounded by the abdominal wall, the left lobe of the liver, its suspensory ligament, the transverse colon, and the stomach. A small abscess was located in the lumbar region and ulcers found in the duodenum. Two of these were intact, and one situated near the gastroduodenal junction had perforated. Diagnosis of possible appendicitis was revised to general peritonitis due to perforation of a gastroduodenal ulcer.

CASE CIII.—Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676) reports the case of a man of fifty-one years, who eleven years before was said to have had an attack of appendicitis. His present illness was characterized by sudden pain in the right side of the abdomen. He was not nauseated, nor did he pass flatus. On the following day his symptoms suggested grave peritonitis; his pain was greatest in the right iliac fossa and in the gastric region. His abdomen was distended and very tender to the touch. There was no dulness on percussion; no information was gathered from rectal examination, and retention of urine was relieved by the catheter. Diagnosis was made of perforated appendix or gastric ulcer. He died, and post-mortem section revealed a perforated duodenal ulcer. Diagnosis of possible appendicitis was limited to that of duodenal ulcer.

CASES CIV to CXLII.—R. F. Weir (*Medical Record,* 1900, lvii, 934) refers especially to duodenal perforations, of which he collected fifty-one cases, three-quarters of which (thirty-eight cases) had been operated upon for appendicitis.

STOMACH.

Perforating Gastric Ulcer.—CASES CXLIII to CXLVI.—Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676), Verdelet (*Gazette Hebd. de Méd. et de Chir.,* 1900, 227), Jacob (*Thèse,* Paris, 1893), and Kammerer (ANNALS OF SURGERY, 1901, xxxiii, 632) each report a case in which the primary diagnosis of appendicitis was made. Three of the cases were operated upon, that of Verdelet was not, but a post-mortem section was made.

In all four of the above cases the primary diagnosis of appendicitis was revised to that of perforated gastric ulcer.

Gangrenous Polyp.—McCosh (ANNALS OF SURGERY, 1901, xxxiii, 629) reports the case of a man with symptoms of general peritonitis and pain in the epigastrium and right iliac fossa, accompanied by fever, tenderness over the appendix, and abdominal distention, who was operated upon for general peritonitis due to perforative appendicitis, and discovered to suffer from general peritonitis due to a gangrenous gastric polyp, and the diagnosis was so revised. The appendix was but slightly and secondarily inflamed.

FOREIGN BODY IN THE ABDOMINAL CAVITY.

CASE CXLVII.—Marx (*Medical Record,* 1899, ii, 868) reports the case of a woman of twenty-eight years who two years before was relieved of a dermoid cyst. At twenty-seven she had an attack of what was styled acute appendicitis, but she was not operated upon. She had three later attacks, the diagnosis was made of acute appendiceal abscess. At the operation an abscess was evacuated, but it arose not from the appendix, but a silk ligature.

HERNIA.

Several cases of hernia that were mistaken for appendicitis have been discovered in the search for reports pertinent to this paper, but, as the original scope of the paper was limited to abscess, they were rejected, and their references, with the exception of the following, are not now at hand.

Femoral Hernia.—CASE CXLVIII.—Walter C. Wood (*Brooklyn Medical Journal,* 1898, 484) operated on a case referred to him with the diagnosis of appendicitis. He discovered on section that the trouble was due to a properitoneal hernia, only the ring of peritoneum was concerned in the constriction. The gut involved was only a portion of the circumference of the ileum; the lumen of the gut was not occluded, *i.e.,* the hernia was of the Littré variety. The location was that of the femoral canal, but the canal was not entered by the hernia.

Retroperitoneal Hernia.—CASE CXLIX.—Fowler ("Appendicitis," 1894, p. 119) reports a case of rare interest with appendiceal symptoms which were found by operation to be due to hernia of a portion of the ileum into the fossa duodenojejunalis of Treves, the musculus suspensorius duodeni of Treitz acting as a band. The case ended fatally.

SPLEEN.

Abscess.—CASE CL.—Mühsam (*Berliner klinische Wochenschrift,* 1899, xxxvi, 676) reports the case of a woman of twenty years, having tuberculosis of the lungs and an enlarged liver, who suffered for three weeks with severe gastric pain. There was dulness in the right iliac fossa, which contained a resisting mass the size of a man's fist. This mass was tender to the touch; percussion discovered dulness extending as far as the left side of the abdomen, the bladder being empty at the time. Vaginal examination confirmed the presence of a fluctuating tumor. Diagnosis was made of a post-appendiceal abscess. On incision, and apparently before the peritoneum was reached, an abscess cavity was opened, and from it came odorless pus. No intestine was visible. Death occurred in two weeks, and post-mortem examination discovered a chronic adhesive peritonitis with multiple abscesses "and suppuration of the stomach and spleen;" also a purulent thrombophlebitis of the portal vein and other inflammatory lesions. The primary diagnosis of appendicitis was revised to that of splenic and gastric abscess.

PANCREAS.

Suppuration.—Case CLI.—Brewer (Annals of Surgery, 1901, xxxiii, 590) reports the case of a man of fifty-three years who had exhibited abdominal symptoms for a year. Seventeen years before an attack of abdominal pain and fever had been styled acute peritonitis. He was recently suddenly seized with abdominal pain, which gradually grew worse, and was accompanied by vomiting, malaise, fever, and sweat, but not by jaundice. His abdomen was distended. It was generally tender; there was no suggestion of its containing a mass or free fluid. Examinations of the rectum, of the liver, and of the urine were negative. The diagnosis was made of peritonitis due to a perforated appendix. On incision, there was no evidence of general peritonitis, and the pancreas, gall-bladder, and appendix appeared to be normal. The omentum was covered by numerous small white spots. Microscopic examination showed one of these to be subject to fat necrosis. The patient died. At the post-mortem the pancreas was found to contain numerous small abscesses. The primary diagnosis of appendicitis was revised to that of acute suppurative pancreatitis.

KIDNEY.

Floating Kidney.—E. G. Janeway (*Medical Record*, 1900, lxxvii, 897) says that fæcal impaction in cases of narrow hepatic flexure is often associated with movable right kidney, and the condition mistaken for appendicitis. He has also known intermittent hydronephrosis without calculus, hydronephrosis with displaced right kidney, and movable kidney to be mistaken for appendicitis. Finally, he has known operations for appendicectomy to be instituted in cases that were subsequently discovered to suffer from renal colic.

Case CLII.—Miller (*Medical Record*, 1900, lvii, 363) reports the case of a woman of forty-four years of age, a servant, who had suffered with pain in the right iliac fossa for one year. There was a distinct mass in the fossa, and there was tenderness one inch below McBurney's point. The diagnosis was made of appendicitis or ovarian tumor. Operation proved both the appendix and ovary to be normal, but discovered a right-sided floating kidney, and the diagnosis was so revised.

Cases CLIII, CLIV.—Morris (*New York Medical Journal*, December 22, 1900, 1093) and Wright (*American Journal of Surgery and Gynæcology*, 1901, xiv, 86) each report a case in which the primary diagnosis of appendicitis was responsible for operations that discovered normal appendices, but floating kidneys, and the diagnoses were so revised.

Hydronephrosis.—It is of interest to note that in Wright's case, the supposed appendiceal inflammatory mass disappeared on anæsthetization, which was followed by a copious discharge of urine. The notes of the case thus explained the phenomena observed: A floating kidney twisting on its pedicle resulted in hydronephrosis mistaken for appendicitis. The relaxation of anæsthetization permitted untwisting of the pedicle, relief from constriction, the escape of urine to the bladder and disappearance of the hydronephrosis.

Pyonephrosis.—Case CLV.—Marx (*Medical Record*, 1899, ii, 868) reports the case of a girl seized with sudden pain in the right iliac fossa, and who exhibited abdominal tenderness, a temperature of 102° F., and a pulse of 108, and was pronounced to be suffering from appendicitis. Incision discovered the appendix to be normal, but that back of the peritoneum there was a suppurating cavity. Two days later a suppurating kidney was removed. The patient recovered, and the primary diagnosis of appendicitis was revised to that of retroperitoneal abscess due to a suppurating kidney.

Perinephritic Abscess.—Case CLVI.—.—Halle and Bernard (*Revue Chirurg. Presse*, from Manley, *loc. cit.*) record the case of an infant eighteen months old having a mass in the right side diagnosed as encysted peritonitis with atypical appendix. Operation revealed the case to be one of perinephritic abscess

The writer saw the following hitherto unreported case in substitution for Dr. T. G. Morton, and is indebted to him for permission to report it.

Case CLVII.—A girl aged sixteen years, by occupation a seamstress, was brought to the Pennsylvania Hospital complaining of pain in the right lower abdominal quadrant, radiating to the back. She had been ill for a week and in bed for four days. The pain was first noticed in the right leg upon sitting down or arising from a sitting posture. Her trouble had been diagnosed as appendicitis, and she was sent to the hospital for operation. There was marked tenderness of the abdomen over McBurney's point, and muscular rigidity and retraction were observed on palpation, also a mass extending from the outer border of the rectus into the right iliac fossa and from McBurney's point downward. The right thigh was slightly flexed and her temperature was 102° F. Her abdomen, flank, and lumbar region posteriorly were examined by bimanual palpation without turning her back to view. When questioned regarding previous trouble in the back she denied its existence. The diagnosis of appendicitis was approved, and she was immediately prepared for operation. Under ether anæsthesia the abdomen was incised and the appendix brought into view. It was very slightly congested and was removed. There was no evidence of other inflammation. Instead of finding a mass in the right iliac fossa, its exploration showed it to be very shallow, and the question was raised of malformation of the ilium or of possible trouble with the spine with resultant iliac abscess. The complete absence of fluctuation, the discovery by the Chief Resi-

dent that the interior of the appendix was ulcerated, and so accounted for the symptoms, and the fact that the patient's back had not been sterilized and that she was much shocked, all determined the writer to conclude the operation and leave the investigation of the shallow iliac fossa for another occasion. On removal from the operating-room, the patient's temperature was 96.2° F. Her shock, however, was overcome by heat and stimulation. Her abdominal wound did well, but she was so noisy and restless at night that on the fifth day her general condition gave such anxiety that her abdominal wound was examined. It was found in perfect condition. She was then questioned whether she at that time had, or ever had any deformity of her right hip or of her back, or ever suffered any distress with either. She denied that her back occasioned her distress. An attempt to pass a fresh binder under her to secure her abdominal dressing was followed by a loud cry. Questioned as to its cause, she created surprise by contradicting her denial of but a moment before, and admitted that she suffered from pain in the back. She was turned upon her side and a large fluctuating mass was found extending over both lumbar regions and midway between the pelvic crest and the scapular inferior spines. A couple of hours later this was freely incised in three places with the aid of a local anæsthetic. Her alarming shock upon her previous anæsthetization, and her grave general condition, prevented a second resort to general anæsthesia. The mass proved to be a very large and foul lumbar abscess, containing much necrotic material. The deep origin of the pus could not be discovered, and the patient's condition forbade exploratory procedure. Her condition was more comfortable on the following day, but on the day after she died. Autopsy was denied, and the diagnosis is debatable. The examination of the urine the day after admission showed a specific gravity of 1030, a slight trace of albumen, a few hyalin casts, some epithelium, and leucocytes. Its examination four days later, upon the day the abscess was opened, discovered no albumen, but hyalin casts, epithelium, and leucocytes were still present. The origin of the abscess was probably either vertebral or perinephritic. The examination of the urine of the first case reported in this paper, one of extensive psoas abscess due to vertebral disease but without deformity, was very similar to the report just read, so that the pathological condition of the urine does not necessarily

show that the kidney was primarily in fault. On the other hand, the perfect health of the patient and her activity up to the time of her seizure, suggest that the suppurative process was of rapid formation, and therefore more probably perinephritic than spinal. The unfluctuating character of the thickening felt in the iliac fossa at the time of the abdominal operation may possibly be explained by the displacement into the fossa of the kidney by the collection of pus posterior to it, and so the primary diagnosis of appendicitis in this case is revised to that of perinephritic abscess; and it is the sin of omission in not viewing the patient's back in this case, despite her assertion that it was sound, which inspired this paper.

Renal Calculus.—CASE CLVIII.—A. D. Bevan (ANNALS OF SURGERY, 1901, xxxiii, 630) reports the case of a woman who suffered recurrent attacks attributed to appendicitis. Urinalysis discovered hæmaturia and the X-rays a renal calculus. Dr. Bevan commends the use of the X-rays in effecting differential diagnosis in such cases.

URETER.

Abscess.—CASE CLIX.—Charles McBurney ("International Text-Book of Surgery," Vol. ii, p. 405) says "a purulent cyst of the ureter has led to operation for a diseased appendix, the symptoms of the case, both subjective and objective, simulating those of appendicitis (Guitéras)."

Gonorrhœal Ureteritis.—CASE CLX.—Reynier (*Bull. et Mém. de la Soc. de Chir. de Paris,* 1900, xxvi, p. 169) reports the case of a man suffering from pain in the right iliac fossa and exhibiting a mass there. The diagnosis of appendix led to operate for that trouble. But the appendix was normal, and beneath it was an abscess due to gonorrhœal ureteritis. The primary diagnosis of appendicitis was revised to that of gonorrhœal ureteritis.

Calculus.—CASES CLXI to CLXIII.—Brewer (ANNALS OF SURGERY, 1901, xxxiii, 590) and William Russell (*Scottish Medical and Surgical Journal,* 1900, vii, 197) report three cases of primary diagnoses of appendicitis. Two of the cases were Brewer's and underwent three operations apiece. Russell's case was not operated upon, but passed a calculus. All three cases suffered revision of their diagnoses to that of ureteral calculus.

PROSTATE.

Gonorrhœal Prostatitis.—CASE CLXIV.—Brewer (ANNALS OF SURGERY, 1901, xxxiii, 600) reports the case of a man of twenty years, who four days previously was attacked with paroxysmal abdominal pain in the right lower quadrant. There was vomiting, but his fæces and condition suggested the existence of general peritonitis. The abdomen was enlarged, tender, hard, and very rigid. Diagnosis was made of general peritonitis due to a perforated appendix. Operation revealed that organ as

well as the gall-bladder, kidney, etc., normal, but the lymph glands on the right side were enlarged. A subsequent rectal examination discovered an acute follicular prostatitis preceded by a gonorrhœal discharge of recent existence. The primary diagnosis of appendicitis was revised to that of gonorrhœal prostatitis, with enlargement of the retroperitoneal lymph glands.

Acute Epididymitis.—Howard Lilienthal (ANNALS OF SURGERY, 1901, xxxiii, 631) invited attention to the abdominal pain preceding an attack of acute gonorrhœal epididymitis, as a condition that might be mistaken for appendicitis. Such cases may be accompanied by pain and tenderness at McBurney's point.

LIVER.

Subhepatic Abscess.—Weiss (*Rev. Méd. de l'Est.*, 1900, xxxii, 357) reports the case of a boy of sixteen years, who suffered from pain in the right iliac fossa, fever, vomiting, and diarrhœa for eight days. His temperature was subnormal, his pulse weak, and his general condition very bad. His countenance was Hippocratic; there was dulness in the right mass. A diagnosis was made of appendicitis with general peritonitis. Incision evacuated an abscess that was retrocæcal and subhepatic, and the diagnosis was so revised (condition of appendix not mentioned).

Dahlgren (*Upsala Läkareförenings*, iv, 197; *Centralblatt für Chirurgie*, 1899, 825) reports two cases in which the symptoms pointed to appendicitis, but the diagnosis was limited to abscess in the ileocæcal region. Incision and evacuation of the abscess were followed by a short period of improvement. A cæcal fistula persisted, and operation was again attempted in search for the cause of trouble. Pus was discovered to come from the subphrenic region; death ensuing, post-mortem examination discovered that in one case the appendiceal wound had drained the abscess. No general peritonitis existed, and the appendix was normal.

GALL-BLADDER AND DUCTS.

The following thirty cases were diagnosed as appendicitis. The diagnosis in each case was revised by examination at operation or autopsy to that of some lesion associated with the gall-bladder. These cases are as follows:

REVISED DIAGNOSES, WITH REFERENCES.

Dilatation of the Gall-Bladder.—CASE CLXV.—One case, Rotter (*Berliner klinische Wochenschrift*, xxiv, 832).

Rupture of the Gall-Bladder.—CASE CLXVI.—One case, Peabody (*Medical Record*, 1900, lvii, 935).

Cholecystitis.—CASES CLXVII to CLXIX.—Three cases, Janeway (*Medical Record*, 1900, lvii, 897).

Cholecystitis.—CASE CLXX.—One case, Elliot (Chute, in *Boston Medical and Surgical Journal*, 1899, cxl, 236).

Cholecystitis.—CASES CLXXI, CLXXII.—Two cases, Richardson (*American Journal of the Medical Sciences*, 1898, cxv, 629).

Empyema.—CASE CLXXIII.—One case, Taylor (*Virginia Medical Semi-Monthly*, 1898, p. 708).

Empyema.—CASE CLXXIV.—One case, Parmentier and Fossard (Adenot, in *Lyons Médicale*, February 24, 1901).

Empyema.—CASE CLXXV.—One case, Gérard Marchant (*Bull. et Mém. de la Soc. de Chir. de Paris*, April 23, 1897, p. 304).

Empyema.—CASE CLXXVI.—One case, Jacob (*Thèse*, Paris, 1893).

Cholelithiasis.—CASE CLXXVII.—One case, Means (*Journal of the American Medical Association*, 1899, ii, 311).

Cholelithiasis.—CASE CLXXVIII.—One case, Deaver, J. B. (*Journal of the American Medical Association*, 1899, i, 866).

Cholelithiasis and Dropsy.—CASE CLXXIX.—One case, Fowler ("Appendicitis," 1894, p. 123).

Cholelithiasis and Cystitis.—CASE CLXXX.—One case, Mynter ("Appendicitis," 1900, p. 126).

Cholelithiasis and Cystitis.—CASE CLXXXI.—One case, Terrier (*Gazette Hebd. de Méd. et de Chir.*, 1895, xxxii, 603).

Cholelithiasis and Cystitis.—CASE CLXXXII.—One case, Brewer (ANNALS OF SURGERY, 1901, xxxiii, 598).

Cholelithiasis and Cystitis.—CASE CLXXXIII.—One case, Reynes (*Rev. de Chir.*, 1900, xxii, 380).

Cholelithiasis and Cystitis.—CASES CLXXXIV to CLXXXVI.—Three cases, Richardson (*American Journal of the Medical Sciences*, 1898, cxv, 629).

Cholelithiasis and Cystitis.—CASE CLXXXVII.—One case, Guinard (Le Dentu and Delbet, vii, 513).

Cholelithiasis and Empyema.—CASE CLXXXVIII.—One case, Fowler ("Appendicitis," 1894, p. 122).

Cholelithiasis and Empyema.—CASE CLXXXIX.—One case, Kilgore (*Philadelphia Medical Journal*, 1900, vi, 1167).

Cholelithiasis and Empyema.—CASE CXC.—One case, Berg (*Medical Record*, 1901, i, 1025).

Cholelithiasis and Empyema.—CASES CXCI, CXCII.—Two cases, Adenot (*Lyons Médicale*, February 24, 1901).

Cholelithiasis, Empyema, and Abscess of Abdominal Wall.—CASE CXCIII.—One case, Gibbon (*Philadelphia Medical Journal*, 1901, January 19).

Gall-Stone in and obstructing the Intestines.—CASE CXCIV.—One case, Sonnenburg (*Berliner klinische Wochenschrift*, 1897, xxxiv, 810).

It is regretable that limitations of space prevent the presentation of the interesting details of these cases. An abstract of one case is appended because, in addition to the conditions of cholelithiasis and empyema of the gall-bladder, there were abscess of the abdominal wall, internal and external fistulæ communicating with it, and a history of the diagnosis of the

case as one of hernia, prior to its classification as one of appendicitis.

J. H. Gibbon (*Philadelphia Medical Journal,* January 19, 1901) reports the case of a woman, fifty years of age, who suffered for four years severe pain starting low in the right side of the abdomen and radiating to the umbilicus, and occasionally to the right shoulder. There was no history of vomiting, jaundice, collapse from pain, or of the passage of gall-stones. Her last attack was characterized by severe pain accompanied by chill and fever, headache and constipation, but no vomiting or jaundice. Pain was most severe in the right iliac fossa, and the diagnosis of appendicitis was made by her attending physician. The following summer, the patient came under the care of Dr. Stout. She was then wearing a truss to control a mass in the right iliac fossa, supposed by her last consultant to be hernial in character. The skin over the mass was perforated by a sinus discharging pus. Operation by Dr. Gibbon discovered an abscess in the abdominal wall extending in several directions. In one of its pockets was a small sinus; this when dilated led into the gall-bladder, which contained fifty-one gall-stones a little larger than peas. Diagnosis was revised to cholelithiasis with formation and rupture of an abscess of the abdominal wall.

CONCLUSIONS.

The mass of evidence furnished has been gleaned from the literature of the past four years and its references. No attempt has been made to make the evidence complete in quantity; the aim has been rather to make it illustrative of the *variety* of abscesses occurring in the right iliac fossa, with mention of some other lesions that have not been recognized for what they were, and that have been mistaken for appendicitis.

The question naturally follows: "Is the diagnosis of appendicitis difficult?"

Turning to "Appendicitis" by Dr. G. R. Fowler, 1894, we find that he agrees with Talamon, saying (page 117), "In the average typical case of appendicitis there should be no greater difficulty in making a diagnosis than the physician ordinarily finds in arriving at a conclusion in a case of pneumonia." This book contains twenty excellent pages on diagnosis and differentiation, and is illustrated not only by abstracts of cases of appendicitis that have not been primarily recognized, but also by cases of other lesions that have been mistaken for appendicitis, and to which this paper is indebted.

In Dennis's "Surgery," published in 1896, the article on appendicitis written by Hartley contains no comment on Differential Diagnosis.

In "Surgery by American Authors," the chapter on Appendicitis, written by Richardson and Cobb, says: "The diagnosis of acute appendicitis is rightly regarded as easy," and devotes five lines to enumeration of diseases from which it should be differentiated.

The "American Text-Book of Surgery" (1899) takes the question of diagnosis seriously, devoting half a page to it and a full page to differential diagnosis. The tone of the author suggests that error is possible and care required to avoid it.

In the "International Text-Book of Surgery," 1900, the article on Appendicitis is written by McBurney, who says: "An attack of appendicitis accompanied by the characteristic symptoms is rarely mistaken for any other condition; but other diseases within the abdomen may present many of the symptoms of appendicitis."

The "Cyclopædia of Practical Medicine and Surgery" (Gould and Pyle), 1900, thus introduces the topic of diagnosis: "Typical cases of appendicitis are frequently easy of diagnosis, but in the large majority of cases an unending variety of symptoms difficult to read or to explain are present." Further on, some earnest lines warn the necessity, in all cases, of only making a diagnosis after a careful review of the history and an exhaustive examination of the existing conditions. A column and a half are devoted to "conditions that may simulate the disease (appendicitis) or create confusion in diagnosis."

In "Appendicitis and its Surgical Treatment," 1900, Herman Mynter, in eighteen pages on diagnosis and differential diagnosis, gives a comprehensive review of the published opinions on these topics, and, like Fowler, quotes cases of appendicitis that were mistaken for other lesions, and *vice versa.* This paper has quoted from the latter class. No general opinion is expressed as to the ease or difficulty of diagnosis. Yet one is impressed on completing these chapters that the author believes that the diagnosis of appendicitis is not usually difficult.

"Appendicitis," by Dr. John B. Deaver, 1900, devotes one-sixth of the book (forty-four pages) to an elaborate and able chapter devoted to consideration of Diagnosis and Differential Diagnosis, and gives perhaps the most complete enumeration of lesions that may be mistaken for appendicitis. One of the cases reported has been quoted in this paper. The chapter on diagnosis opens with the sentence, "The diagnosis of appendicitis is ordinarily unattended with special difficulties."

The opinions of these authorities may be considered representative, and the initial sentence of Dr. Deaver descriptive of present opinion.

It is because "the diagnosis of appendicitis is *ordinarily* unattended with special difficulty" that the possibility of other lesions occurring in the right iliac fossa is not sufficiently borne in mind. If the variety or quantity of evidence furnished by this paper is not sufficient to carry conviction, it can be increased by referring to the illustrative cases accompanying Dr. Deaver's excellent chapter on Differentiation; it is written from the point of view that other lesions may be erroneously diagnosed in place of appendicitis, and it well establishes that fact. And so from both points of view, that of mistaking appendicitis for other lesions and that of mistaking other lesions for appendicitis, the conclusion is reached that *a diagnosis in cases with symptoms pointing to the right iliac fossa should not be made without a routine, conscientious examination for, and exclusion of, the various troubles that may exhibit misleading symptoms and signs.*

It was only fifteen years ago (April 23, 1887) that a member of this Academy, Dr. Thomas George Morton, performed the first appendicectomy for a previously diagnosed appendicitis.

The intervening years have developed a keen and necessary apprehension of the danger of this disease and of the necessity of meeting it by early diagnosis and prompt operation, and this paper must not be misunderstood as detracting from these dangers and necessities.

Zeal for a cause, however good, may lead to the disregard

of claims equally just. The other ills of the iliac fossa have their claims as well as those of the appendix, and an opinion on the plainest case of trouble in this region should only be reached after careful *differential diagnosis*, and the question of *differential diagnosis* is omitted, with the hope that it will be honored in discussion.

The author desires again to express his earnest thanks to the gentlemen who so kindly contributed their cases to the paper, and to Dr. Cross, from whose notes two of the author's cases were reported.

DISCUSSION.

Dr. Davis called attention to a case that came under his notice that presented a form of possible origin of abscess which he had never seen before. A patient had an ischiorectal abscess which was followed by the appearance of a swelling in the region of Scarpa's triangle. It then apparently appeared above Scarpa's triangle in the right iliac fossa, whence it was opened, a sinus leading downward and inward to the region of the lesser trochanter and downward towards the perineum. It was not an appendiceal abscess, because the appendix was afterwards looked at and found to be perfectly normal. If one were allowed to theorize on the subject, it could be suggested that the pus might have arisen in the ischiorectal fossa and then worked its way up possibly through the upper portion of the thyroid foramen, appearing in Scarpa's triangle and thence upward striking the fascia later and working its way farther outward. It is true that this seems a rather far-fetched route; but, as a matter of fact, the abscess did begin in the ischiorectal fossa, and was also opened and pus evacuated in the iliac fossa.

Dr. Wharton recently had a case bearing upon Dr. Spellissy's paper. A young man received a fall in a gymnasium and struck the right side of his pelvis. He got up and walked home, but that evening he had severe pain in the right iliac fossa. His family physician was summoned, and he thought at first it was an injury to his hip. He thought possibly the young man had received an injury to the neck of the femur, and examined him under ether with a negative result. The speaker saw him two weeks after the injury, when he was in bed, his thigh flexed almost to a right angle with the pelvis. He had tenderness and

induration low down in the right iliac fossa. He had the patient removed to the hospital, and a day or two afterwards made an incision just above Poupart's ligament, and as soon as the tissues were divided there was an escape of pus and blood-clot, which he found arose from the separation of the iliacus muscle in the pelvis. He could pass his finger down over the surface of the ilium, the periosteum being stripped off and the peritoneum being pushed upward into the muscle. The amount of material collected under the iliacus muscle was certainly a pint, and consisted partly of pus and blood-clot. This case presented at first many of the symptoms of appendiceal abscess.

Dr. Jopson spoke of a case of abscess arising in the soft parts of the iliac fossa. It was in an infant two or three months old, arising without apparent cause, and appeared as a swelling above and to the outer side of Poupart's ligament. Its deep origin was not suspected until it was opened, where the speaker found that he could pass his finger deeply into the iliac fossa. This case healed rapidly.

The other case was a boy of sixteen or eighteen who presented a swelling of rather rapid growth above the outer border of Poupart's ligament. In some ways it resembled a rapidly growing sarcoma, although its cystic nature was rather apparent. There were no symptoms of hip or spine disease; it was very evident that it contained fluid. It proved to be an abscess of the sacro-iliac joint which had followed the iliac fascia, pointing above Poupart's ligament instead of in the back.

Dr. Willard said that the erratic course frequently taken by pus originating from the spine or from various portions of the ilium is so common that we ought to be on our guard for abscesses appearing in the right iliac region. We are so liable, of course, at the present time to look upon all these accumulations as appendiceal. He had seen a number of large abscesses which were undoubtedly purely iliac not psoas abscesses,—not from the spine,—but caused by a rupture of, or severe injury to, the iliac muscle by violent contraction, the fibres of the muscle being torn. In two cases very probably the injury to the muscle would have ended in resolution, but, owing to attacks of influenzal grip, degeneration occurred, abscesses formed, and large quantities of pus were evacuated. Various abscesses may creep down from the vertebral column or from the region of the kidney or liver, and present themselves in the right iliac fossa.

STATED MEETING, FEBRUARY 3, 1902.

The President, Richard H. Harte, M.D., in the Chair.

INTESTINAL SUTURE.

Dr. Edward Martin, in a discussion upon the above subject, said that for some time Drs. Carnett, Levi, and himself had been trying the various methods of sewing animal and human intestines. The speaker wished to detail some of the conclusions which they had reached.

The difficulty incident to making an end-to-end intestinal suture is dependent upon the loose, flabby, slippery nature of the tissues involved, its deep position, and particularly the tendency of the mucous membrane to prolapse. Of the many different methods of end-to-end suture, those which now are received with most favor are the Murphy button apposition, the Maunsell invagination, the Lembert suture, the suture facilitated by the O'Hara forceps, and, latest, and in some respects best, the Connell method of suture, all the knots being placed within the lumen of the intestine.

Considering the use of the different devices for facilitating sewing, they found the Murphy button and the O'Hara forceps perhaps the most practicable. By the O'Hara forceps the junction is a little more rapid. His own experience with the Murphy button was comparatively limited. He had used it in one case of resection of the pylorus with part of the stomach, and the final junction between the stomach and duodenum was made by means of the Murphy button. The man ran a smooth course until the seventh day, when he was given, by inadvertence, a full-sized eggnog. He vomited, went into collapse, and died. The Murphy button had given way; moreover, the swollen mucous membrane had entirely occluded its lumen. Sometimes the button is the only thing that can be used; but, under ordinary circumstances, after intestinal resection where the parts are fairly accessible, we have other and better means.

The O'Hara forceps offers an admirable means of rapid, easy, safe suture, provided the stitches be passed deeply; but the diaphragm is left too large. In one dog subjected to an end-to-end suture by the Connell suture, and lower down to a similar procedure by the O'Hara forceps, some hard fæces which passed through the upper line of junction lodged in the lower and produced an obstruction. The line of the diaphragm is perhaps a third of an inch in width all around, and this may produce sufficient narrowing of the lumen, to make a difference between life and death to a patient whose bowels previously have not been cleared out. Also where the bowel walls are thick, the forceps may knuckle or double over.

The Lembert suture is fairly rapid, provided the gut be anchored properly. In anchoring and in applying these sutures, they found the forceps devised by Allis, that is a modified tenaculum forceps, of the greatest help. In the Lembert suture the question has been discussed as to whether it should be continuous or interrupted; and, indeed, that question is a very common one for decision in regard to all forms of intestinal suture. After first closing the mesenteric junction,—which should always be done by a rectangular suture tied on the mucous surface,—three anchoring sutures are applied, one to either side of the mesenteric attachment and one at the portion of the gut farthest from this attachment. Two continuous sutures are then run from the stitch at the side of the mesentery to that on the convex border. There are then six interruptions. None the less in dilating the bowel there is always a more distinct constriction than where interrupted sutures are placed throughout. The latter, however, take much more time in their application.

In regard to all intestinal sutures, it seems clear that the dread of penetrating the mucosa is one of the legacies left from pre-antiseptic days. The peritoneum will stand a great deal of insult if it is not soiled; it will stand some soiling if not insulted; but the combination is deadly! If there be infection carried by the threads traversing the mucous coat, there are few records to prove it. Cases of fatal peritonitis are not due to penetration of the mucous coat, but to failure to include the submucosa. If the sutures are applied properly, some of them are almost certain to penetrate some part of the mucous membrane.

Knots on the outside are supposed to increase the danger of

peritonitis. Connell and Maunsell devised their methods of suture for the purpose of avoiding this danger. Connell's suture has seemed strong, perfectly safe, and has produced the smallest diaphragm.

In experimenting with the Maunsell invaginated method after using this Connell suture, one is liable to become confused as to the proper method of applying the suture, since in one case the gut is simply turned inside out, in the other it is invaginated. The Maunsell method is rapid, easy, and safe. The main objection to it is that it requires an added incision, which must be closed by the Lembert method. The thread used should not be too fine to be handled readily, nor should it fit the eye of the needle so closely that it readily slips out. A fine Chinese twist is preferable. The ordinary dissecting forceps is not very serviceable, but the tooth forceps is of the greatest use. The double tenaculum and the instrument devised by Allis are both serviceable and both expedite the operation. The sweet and white potato plates, bone plates, bone bobbins, and other mechanical contrivances, have not been employed. For the removal of a carcinoma involving the entire circumference of the stomach, one-third of that organ was removed. Its continuity was restored by the rectangular suture knotted on the mucous membrane, the closure being completed by two Lembert sutures. This patient made an uneventful recovery.

The next important element in the successful closure of an intestinal defect incident to resection is the manual dexterity, which can only come from long practice, such as is only practicable in the laboratory upon living animals and upon human cadavera.

Dr. De Forest Willard had had the opportunity to see Dr. Connell make the application of his suture, and was struck with its exceeding simplicity and with the rapidity of the operation; also with the security with which he was able to bring the two ends of the intestine together. His end-to-end anastomosis would evidently stand a very considerable amount of strain. His experience demonstrates that there is less danger of leakage by this method of suturing all the coats of the intestine than by the old method of endeavoring to pick up the peritoneum and muscular coat.

Leaving all the knots within the lumen is certainly most

desirable. The absence of a foreign body, like the Murphy button or any device of its kind, is of very great advantage. Those who have used the Murphy button, and have not been able to find it for several weeks afterwards, are always anxious as to its ultimate disposition. If there are a number of points of narrowing of the intestine and a Murphy button is inserted above, it may cause secondary obstruction. The Connell method is simple and effective, and with the use of the Allis forceps or the O'Hara forceps, or both, the procedure is a rapid one.

Dr. John B. Deaver had not been sufficiently impressed with the Connell suture to give up the Lembert operation. While he did not say that the Connell suture is not equally as good, he had always made it a rule that where a suture, or any type of surgical procedure, had served him well, not to give it up for any new method. He had never had any difficulty in closing the ends of a bowel. He whipped the mucous membrane, removing the clamps or rubber tube, when the bowel inflates and makes the introduction of the continuous Lembert suture comparatively easy. He had had occasion recently to use the bone bobbin, devised by Mr. Robson, of England, and could say that it offered some advantage.

As far as the Murphy button is concerned, it only has a certain field. He, too, had gone through the ordeal of waiting for patients to pass the button.

In one of the first operations done with the segmented rubber ring, he had to open the bowel later and remove the segments of ring. With the Murphy button, the operation of cholecystduodenostomy is made comparatively easy.

Dr. W. L. Rodman said that unquestionably the trend is in the direction of direct suturing and doing away with mechanical aids. In talking with Dr. Murphy on this subject, the speaker had been led to believe that he considered many bad results had occurred from using buttons too large or improperly manufactured. He had had no unpleasant experience with the Murphy button, and could do better work with it than with other methods, and it undoubtedly is the most rapid way of making an anastomosis. There are objections to it which have been already stated; but, if the button is properly selected and is made by the best of instrument makers, it will not prove disappointing in many instances.

Dr. Martin agreed with Dr. Deaver that it was best to continue the method with which one is familiar. The old Lembert suture, properly applied, gives admirable results. There are practically no records against it to show, when it is used properly, that it is not good. It seems, theoretically perhaps, that the knots within the lumen and the rectangular suture represent a better method; it is slower than the Lembert, but representing, as it does, a strong line of union, it might be well to adopt it as one of the resources when there seems to be special danger of a suture-lining giving way. One objection to the Murphy button is the expense.

THE RADICAL CURE OF HÆMORRHOIDS WITHOUT THE USE OF GENERAL ANÆSTHESIA.

Dr. Gwilym G. Davis read a paper upon this subject, in which he said that the desirability of some method of treatment by which internal hæmorrhoids can be cured without the necessity of resorting to general anæsthesia has long been evident. The commonly used methods of treatment are those of the ligature or clamp and cautery under general anæsthesia and the injection of carbolic acid or other coagulant without anæsthesia. Any formal operation for hæmorrhoids is often declined for two reasons,—the patient is afraid to take an anæsthetic and undergo an operation, or alleges that he cannot spare the time necessary to be absent from his business affairs.

Experience with the injection methods has demonstrated that while satisfactory in many cases it is unreliable, and unpleasant or even serious results may occur at any time. The value and efficacy of cocaine on the mucous surfaces elsewhere suggested its use for rectal troubles, and the method proposed is a combination of it with the electrocautery. The hæmorrhoids are to be exposed to view by means of a speculum. Every surgeon probably has a favorite rectal speculum. At present, the one preferred by Dr. Davis is that known as Kelly's sphincterscope. It is cylindrical, two and a quarter inches long, cut off square at the end, and is used with an obturator. It is not self-retaining, but after being introduced, the patient himself can hold it in place, as it has a large, firm handle. The speculum having been inserted, a pledget of cotton an inch or so in length is moistened with a 4 per cent. solution of cocaine and introduced, being allowed to

remain as the speculum is withdrawn. In a few minutes the speculum is again introduced, the cotton removed, and the speculum partly withdrawn and turned from side to side until the hæmorrhoid on which it is desired to operate is brought well into view. The patient then takes hold of the handle of the speculum and holds it in position, while, with a small electrocautery knife, such as is used in nasal operations, the hæmorrhoid is either seared superficially or a line burnt in it, or one or more punctures made as deemed most suitable. Especial care should be taken not to encroach on the skin, but restrict the application to the mucous membrane. The cautery point may cause bleeding. The blood can be wiped away with cotton in a pair of forceps held in the opposite hand, and, if it is too free, the operation may be suspended. A piece of cotton is then pressed on the bleeding point and allowed to remain as the speculum is withdrawn.

Bleeding into the bowel and distention of the rectum are to be avoided by not applying the cautery too high up, as otherwise the sphincter may fail to compress the bleeding point. One locality is enough to treat at a visit. The cotton does not produce any discomfort because of the anæsthesia produced by the cocaine, and the bleeding is controlled by the contraction of the sphincter. The cotton is passed out at the next movement of the bowels. The operation had better be done late in the day, so that after the application the patient may return to his home, lie down, and rest for the night. By the next morning any irritation which may have been produced will have subsided, and he may resume his business. It is better to allow perhaps a week to intervene before another application, as otherwise the wound previously made will not be sufficiently advanced in healing. By persistently working in this manner, the hæmorrhoids can gradually be removed.

Each operator must evolve his own technique, and this can easily be done by beginning with a single small application of the cautery and observing its effect on the patient. The applications can then be increased both in frequency and extent, according to the judgment of the surgeon.

The method is not advisable in every case. In some the hæmorrhoids are so extensive that treatment in this manner would be too tedious and consume too much time, but in a certain class of cases it will be found quite satisfactory.

Dr. Edward Martin said that the common teaching for a great many years, in regard to treatment for affections about the anus, was that stretching the sphincter was essential to the comfort of the patient. A rectal fissure was treated, first, by overstretching the sphincter, then by cutting, then by curetting or removing the fissure. These procedures have long since been shown to be unnecessary, though often there is excited a tenesmus, which causes great anguish and aggravates the local inflammation. One reason for wishing to operate on these cases without an anæsthetic depends on the fact that the mortality for anæsthesia is higher for rectal operations and for comparatively trifling operations than for any other class of surgical procedures. There seems to be a cardiac inhibition caused by stimulation of the rectum.

Dr. W. L. Rodman had never operated on such a case without a general anæsthetic until a few days ago. The patient had previously undergone an operation, and said that the ether had made him very sick; that he preferred to undergo the operation for hæmorrhoids without an anæsthetic. The speaker had no idea that he could stand the pain when he went on the table, but to the last he said he did not want anything. Three very large internal piles were tied and removed after stretching the sphincter. The man stood the operation surprisingly well without any anæsthetic whatever. In many instances the speaker used the clamp and cautery, though his preference was for the ligature. He had never had postoperative hæmorrhage occur in his own practice, but it is undoubtedly one of the dangers after the clamp and cautery operation. If the base of the pile be incised too near the clamp, and if the iron be used at a white instead of a dull heat, the danger of secondary hæmorrhage is great.

Dr. William J. Taylor called attention to the necessity of applying the heat slowly when the cautery is used. The pile should be cooked, not cut off. The cautery is used on either side, starting from the top, cooking it back and forth, until only a fibrous band supports the pile. He had never seen a hæmorrhage occurring after that method, but it takes considerably longer than when the hæmorrhoid is rapidly burned off.

Dr. De Forest Willard said that we cannot too frequently emphasize the danger of these operations on the rectum where anæsthesia is employed. Even in simple cases serious symptoms

may arise. He had practically abandoned the ligature, and rarely employed the Whitehead excision. He had had personal experience in the use of the ligature, with sloughing masses within the rectum, the presence of knots and ligatures, and the intense pain and discomfort that are found in these cases, no matter how thoroughly the sphincter has been stretched. He always preferred the clamp and cautery. If we use a clamp whose blades will close parallel and not in a V-shaped manner, then cut through the skin with scissors, so as not to have too thick an outer portion of the pile in the proximal end of the clamp, and then thoroughly incinerate the tissues, we will rarely have hæmorrhage. The after results are better than with the ligature, and there is less danger of subsequent contraction.

Dr. H. R. Wharton had formerly used the ligature in the treatment of hæmorrhoids, but was led to give it up after trying the clamp and cautery, simply because the patients on whom the ligature method was tried suffered so much pain. He had never seen hæmorrhage after the clamp and cautery. He had seen men operate with clamp and cautery in which they trimmed the hæmorrhoid too close, and hæmorrhage had resulted. He clamps the hæmorrhoid and then cauterizes with the Paquelin cautery at a dull, red heat. If the hæmorrhoids are large, he leaves one-eighth or one-fourth of an inch of stump at least free from the clamp, and then cauterizes this stump thoroughly. He regarded the operation as safe as that by ligature, and the convalescence is probably a little more rapid.

Dr. John B. Deaver observed that in the after-treatment of these cases he made it a practice to withhold opium. He had the bowels moved on the second day, and encouraged a daily bowel movement.

Dr. Martin said that the last time he had used the clamp and cautery he took particular pains to cook the stumps slowly and thoroughly. When he loosened the clamp there came an arterial gush, which was only checked by ligature. He had never used the clamp and cautery since. In addition one case of clamp and cautery suffered afterwards from stricture, and immediately following the operation experienced the most agonizing pain. Both these cases were exceptionally severe ones, and many others ran a perfectly smooth course.

Dr. Richard H. Harte said that it has often been urged

that the ligature is a very painful method of treating piles, and that, on the other hand, the use of the clamp and cautery possesses all the desirable features of treating these cases. This, however, had not been his experience. If the ligature is intelligently used, but little pain or discomfort will follow its employment. He had frequently employed both methods on the same day of operation, and attempted to see if there was any marked difference in the amount of discomfort that the patients suffered. He was disposed to think that less pain was suffered when the ligature was carefully employed. The entire base of the pile should be freed and the vessels grasped in the loop of a small, strong, silk ligature. He never confines the bowels in these cases; and patients the next day are usually able to sit up in bed and read, and never express themselves as suffering any unusual discomfort.

Dr. Willard said that as to the after-treatment of this operation, the patient's bowels should never be locked up. A soft stool can be passed through a sensitive rectum and anus with very little difficulty, but if, as in former times, the bowels are confined for many days, a large feculent mass must be extruded, an extremely painful process. The bowels should be kept soft from the second day, and a mushy stool secured daily thereafter.

Dr. Davis said, in closing, that he wished to call attention to the fact that the rectum is tolerant of certain manipulations under cocaine. The surgeon had cases at times presented to him which are not so severe as to compel the individual to submit to a formal operation. To relieve those cases is the object of the operation presented by him.

STATED MEETING, MARCH 3, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

FRACTURE OF THE PATELLA TREATED BY WIRING.

DR. W. L. RODMAN presented a man, forty years of age, who had sustained a fracture of the patella ten weeks ago. The patella was wired simply by placing the wire through the fibro-aponeurotic covering of the bone instead of drilling the bone. The joint was found to be full of blood-clots. It was thoroughly irrigated with normal salt solution and the wire introduced through the periosteum covering the fragments, which were widely separated and turned down, so that good results would have been impossible by non-operative treatment. Recovery was uneventful, and the temperature was never more than 99.5° F. There had been no resentment in the joint. As a precaution to prevent refracture of the bone, he is wearing an apparatus at the present time. Wiring was done two days after fracture.

DR. H. R. WHARTON expressed the opinion that there was not bony union between the fragments. He thought, however, the result would be a very good one, and the separation of the fragments would be limited by the presence of the wire. He had never used the silver wire in the aponeurotic structures, but rather favored the method of Stimson, of bringing the aponeurotic structures together with catgut and then closing the wound as Dr. Rodman had done. He thought the question of wiring the patella was still on trial. He saw very excellent results by the older methods of treatment, by simply fixing with posterior splints, compresses, and adhesive strips. Either this method of wiring the bone or suturing the aponeurotic structures with catgut is better than Barker's method, which consists of passing a heavy silk suture around the patella. The latter method leaves a foreign body in the knee-joint, and does not get rid of blood-clots or inverted or torn aponeurotic tissues which may be inverted between the edges of the bone.

DR. JOHN H. GIBBON favored the semicircular incision for turning up a flap to expose the patella.

DR. DE FOREST WILLARD recently had an unfortunate experience. The man had suffered a simultaneous fracture of both patellæ from muscular action. The fragments were encircled subcutaneously by loops of silk, and drawn closely together. The case progressed without the slightest evidence of joint infection. He let him up at the ninth week with apparently good union. The second day, while on his crutches, he slipped, and in endeavoring to catch himself pulled the fragments in each patella half an inch apart. He remembered another case in which he did not wire; and yet there seemed to be bony union,—the skiagraph also showed complete union,—and yet the man on using the limb pulled the fragments half an inch apart.

DR. RODMAN said that he had used the curved incision in his previous operations on the patella. Like Dr. Wharton, he much preferred the direct suture rather than the subcutaneous suture of Barker and others. There is certainly less danger of infection and better results are to be procured. As to the statement of Dr. Wharton regarding ligamentous union, he did not think there was motion. He did think union was pretty close; certainly closer than it would have been without direct suture. Wiring fractured patellæ is possibly still *sub judice*. It was his conviction that in good subjects who are to lead an active life, it should be given the preference over other and less satisfactory methods of treatment. He had had no bad results.

FRACTURE OF THE CLAVICLE ASSOCIATED WITH ANEURISM OF THE SUBCLAVIAN ARTERY.

DR. R. H. HARTE presented a fracture of the clavicle associated with aneurism of the subclavian artery. The history of the case is briefly as follows: The patient about a year ago noticed at the root of his neck a large swelling, which was pulsating and of considerable size. He did not seek any medical advice for its relief. While descending a flight of stairs he tripped and fell, striking on his shoulder and breaking his clavicle, and when admitted to the Episcopal Hospital in November last, the speaker found a large pulsating expansile mass corresponding to the position of the subclavian artery, and directly over that, and lost to a certain extent in the surrounding swelling, were the two ends of

a fractured clavicle. On auscultation all physical signs of an aneurism were evident. Shortly after admission there was considerable ecchymosis around the seat of injury, and the pulsation and bruit, with a well-marked radial pulse, still continued. In about four days after the receipt of the injury attention was called to the fact that the pulsation had entirely ceased in the region of the injury, and it was found that this was correct, leading to the belief that a clot had formed, which was apparent by the increased density of the tumor. The patient was kept absolutely at rest in bed, and no attempt was made to apply any surgical dressing to correct the deformity in the clavicle other than to keep him on his back with a small sand bag resting on his shoulder. All evidences of pulsation now have disappeared, leaving only a clavicle united with some deformity. The speaker was inclined to regard this as a case of aneurism which had been cured in some way by the traumatism received.

OLD DISLOCATION OF THE SHOULDER.

Dr. Harte also presented a man of seventy-three years, who had presented himself at the Pennsylvania Hospital a few weeks ago with all the characteristic signs of an old subcoracoid dislocation. He felt quite positive that it would be impossible to reduce it without doing damage to either the bone or more particularly to some of the important blood-vessels or nerve-trunks. He therefore did a resection of the entire head of the bone by splitting the deltoid. The patient at no time complained of any discomfort, and in a week was up and around the ward with the wound entirely healed. He had been always strongly of the feeling that this is much the safer way of dealing with old dislocations of the head of the humerus, rather than attempting to resort to force in correcting the deformity, which is always accompanied with a certain amount of risk, especially in old people. The results that he had obtained by excising the head of the bone had been much more satisfactory, and the function of the joint is restored much quicker than if the head of the bone is forcibly replaced and retained for a long time in an apparatus to insure its remaining in its normal articulating surface.

Dr. O. H. Allis agreed with Dr. Harte that efforts to reduce old dislocations, even if the head is placed in the better position, often result in ankylosis and a useless and painful joint. In this

instance, the man's arm will be getting better and better and the flail-motion in the shoulder-joint become, under proper exercise, gradually more accurate.

Dr. John H. Gibbon spoke of the danger resulting from attempts at reduction in these old luxations. He had broken the humerus by attempting to reduce it by the Kocher method. He had seen two other fractures of the humerus by attempts at reduction. All the cases were of long standing. This method works all right in fresh dislocations, but in old dislocations is apt to produce a fracture.

LIVER ABSCESS, PROBABLY OF AMŒBIC ORIGIN.

Dr. John H. Gibbon presented a man who four and a half years ago went to South Africa and followed the occupation of peddler. After a residence there of two years, he developed a form of diarrhœa which he said was very prevalent at that time among the foreigners. It was characterized by frequent and bloody stools, loss of flesh, very little pain, and no loss of appetite. At the end of three years he determined to leave South Africa, and began to improve as soon as he set sail. This improvement continued after his arrival in this country until about three months before admission to the hospital, the latter part of September, 1901, when he suffered from a return of bloody stools, and was treated in the medical dispensary of the Polyclinic Hospital by Dr. Cohen. Under treatment the blood entirely disappeared from the stools and the patient improved in health. About a year before coming to the hospital he noticed a swelling in the upper portion of the right side of the abdomen, which has continued to gradually enlarge. During his attendance at the dispensary his stools were repeatedly examined for the amœbæ, but none were found. At the time of admission it was found that the patient's liver was enormously enlarged, particularly the anterior portion; so much so, in fact, that the lower ribs were displaced upward. The patient's temperature was below 100° F.; his pulse was not rapid; he suffered from no localized pain, had no sweats, and complained of little discomfort. The leucocyte count was about 10,000. At this time it was thought that crepitation could be felt over the tumor. The patient stated that before coming to the hospital a doctor had introduced a needle and withdrawn some brown fluid. Dr. Gibbon made an incision into

the abdomen over the most prominent part of the tumor, which was at the costal border on a level with the tenth rib. When the peritoneum was opened, he found the liver extending nearly down to the crest of the ileum and very generally enlarged. There was, however, at the point of greatest prominence a sense of fluctuation, and into this portion he introduced an aspirating-needle, withdrawing a very thick, dark pus. There were no adhesions between the liver and the intestines or the omentum. The upper surface of the liver, however, was slightly adherent over the point of fluctuation to the diaphragm. The opening into the liver made by the needle was enlarged by means of the Paquelin cautery until a large-sized glass drainage tube could be introduced. Through this tube there flowed an enormous quantity of very thick, dark pus. The exact quantity he was unable to estimate because of the necessity for constant irrigation with salt solution in order to protect the peritoneal cavity, which had before puncture been walled off with abdominal pads. The quantity of pus, however, exceeded the largest quantity that he had ever seen removed from the pleural cavity. As the liver contracted, he saw that he would be unable to drain the abscess through the incision which he had made, and found it necessary to make another incision at right angles to the first and running backward towards the loin. Through the lower angle of this transverse incision he was able to establish very satisfactory drainage by means of a rubber tube and gauze packing. This operation was done in the early part of October. The patient improved rapidly after the operation, the amount of drainage gradually growing less until about two weeks ago, when it ceased entirely. The contraction of the liver was at first slow, but lately has been very rapid, until now it has reached about its normal size. The wound is entirely healed, and the patient suffers no discomfort. The pus was examined for the amœba, but the examination was negative. He was sorry that he did not scrape the abscess wall, because often the amœbæ can be found in the scrapings when they are not found in the pus itself. During the man's stay in the hospital his stools were also frequently examined for amœbæ, but on each occasion with a negative result. The diagnosis in this case was somewhat obscure; and, although the speaker had carefully weighed the question of liver abscess, he rather inclined to the view that the condition was a suppurating hydatid cyst. The patient's history of long-standing diarrhœa accompanied by blood in the stools becoming better and worse alternately was in favor of abscess; but, on the other hand, the long duration of the swelling (more than a year), the absence of all symptoms of pus, and the absence of amœbæ in the stools, together with the fact that occasionally crepitation was heard over the growth, led him to believe that he would find upon opening the abdomen an hydatid cyst. The discharge in the abscess cavity was carefully examined for hooklets, but none were found. The patient has now returned to his work, feels perfectly well, and has gained a great deal in weight.

OPERATIONS UPON THE KIDNEY AT THE GERMAN HOSPITAL IN PHILADELPHIA.

Dr. John B. Deaver read a paper with the above title, for which see page 58.

OSTEOPLASTIC RESECTION OF THE SKULL BY MEANS OF A NEW TREPHINE.

Dr. John Chalmers Da Costa read a paper with the above title, for which see page 68.

VAGINAL HYSTERECTOMY FOLLOWED BY DRY GANGRENE OF THE RIGHT FOREARM.

Dr. William J. Taylor reported a complication which had occurred in a case of vaginal hysterectomy, and which he had never before seen. The patient was a woman, aged fifty-nine years, sent by Dr. S. Mason McCollin, who entered the Orthopædic Hospital on November 21, 1901, for the relief of a complete prolapsus of the uterus, associated with a badly lacerated perineum.

Physical examination showed her heart-sounds muffled, slightly accentuated second sound. The lungs normal. The urine showed the presence of a small amount of albumen, but no casts and no sugar. There was a very slight œdema of the lower extremities.

She was kept in bed, the uterus replaced with tampon, and hot-water douches given for nearly a week (until December 4), when vaginal hysterectomy was performed. This was only diffi-

cult owing to the small size of the pelvis, it being impossible to get three fingers into the bony outlet. The uterus was separated easily from the bladder and rectum and the vessels ligated with silk, there being no occasion for the use of clamps.

Everything went on very well until the ninth day, when she had a sudden fall of temperature to subnormal, with rapid pulse and enlarged abdomen. This suggested some form of internal hæmorrhage. In a short time she reacted, but for some days there was distention of the abdomen and great tenderness, and evidently a local infection. Soon a foul-smelling discharge came from the vagina as an evidence of it. At the time of operation, the speaker could detect that the right ovary was somewhat enlarged and possibly cystic, but her abdomen was so fat and the pelvic outlet so small that it was impossible for him to make a satisfactory examination, and it is, therefore, a surmise on his part.

By the tenth day she was somewhat improved, and on the twelfth very distinctly improved in all of her symptoms, except that now there occurred a sudden loss of power and fall of temperature in the right forearm with total loss of radial pulse. This was accompanied by intense pain in the upper forearm, and by the next day there was loss of ulnar pulse. The hand gradually became discolored, fingers blue, and by the sixteenth there was distinct dry gangrene with a line of demarcation well shown. Her general condition fluctuated,—some days rather better than others,—there being a discharge of pus from the vagina until January 7, when there began an area of moisture around the upper edge of this heretofore dry gangrene.

On January 9 she was given ether with oxygen and the arm amputated through its middle third by a circular flap.

Recovery after amputation was very rapid. The wound healed throughout very promptly, save at the inner angle, where there was a superficial slough about an inch long by one-half inch wide. For some time she had intense pain in the nerves of the arm and complained of great cramp as it were in the amputated hand. She had one or two attacks of depression with very rapid and weak pulse, generally following some digestive disturbance; but with this exception her progress towards recovery was uneventful, and finally she returned home able to walk around with comfort and feeling quite well.

Vaginal hysterectomy has always seemed to the speaker to be non-surgical, since much of the work has to be done in the dark, with great liability to local infection. This seemed to him a very suitable case for vaginal hysterectomy, for the uterus was hanging between the legs, and all of the manipulations could be done practically outside of the patient. If this condition of infection were due at all to the right ovary, which was supposed to be cystic, abdominal hysterectomy would have given an opportunity for perfect investigation and proper treatment of it. This complication might have arisen very readily before this, but he had been fortunate enough never to have met with such a condition.

An examination of the arm after amputation showed a complete clogging of almost all of the vessels, and just above the elbow was quite a considerable abscess which had burrowed down towards the gangrenous area.

OPERATIONS UPON THE KIDNEY AT THE GERMAN HOSPITAL IN PHILADELPHIA.

BY JOHN B. DEAVER, M.D.,
Surgeon to the German Hospital.

From the beginning of 1899 to the present date there were performed in the German Hospital, in Philadelphia, thirty-four operations for the fixation of floating or movable kidney; seven for nephrolithiasis; three for pyonephrosis; two for hydronephrosis, and two for sarcoma and nephrotomy or pyelotomy.

NEPHROPEXY.

Of the floating kidney operations there were twenty-nine on the right kidney, four on the left kidney, and one bilateral. Six of the cases also suffered from chronic appendicitis, and this organ was removed at the same time. One case had had an appendectomy performed one year previously. Two cases had cœliotomy performed some years previously for tubal troubles. One case was two months pregnant and recovered without mishap. Thirty-one cases were females. Three cases were males,—one on the left and two on the right kidney. Thirty-two cases recovered. Two cases died (6.7 per cent.), one thirteen days after operation from acute mania, and the other in four days from uræmia. Both of these cases were males.

A blood count was made on seven cases before operation and averaged, hæmoglobin, 60 per cent.; red cells, 3,610,000; white cells, 7960. In no case was a leucocytosis observed.

The patients were in the hospital on an average forty-four days,—excluding the two deaths and three cases still in the hospital. Shortest confinement in hospital, twenty-two days; longest, seventy-five days.

Ether was used in all cases and without any difficulty, patients leaving the table without medication. Of the thirty-

four cases, thirty-two were operated with the diagnosis of floating or movable kidney. Two cases had the diagnosis made of stone in the kidney. One case negative to X-ray examination, and the other positive; both here and at another hospital. In neither case was a stone found, and the kidney was subsequently anchored.

The patient in all cases was laid on the side opposite the kidney affected, with the knees and thighs flexed and an inflated pillow beneath the loin. The incision was usually about three and a half inches long, extending along the outer margin of the erector spinæ from the twelfth rib towards the crest of the ileum, separating the fibres of the latissimus dorsi and laying bare the lumbar fascia. The fascia was then incised, exposing the perinephric fat and quadratus lumborum muscle, care being taken to avoid the lateral cutaneous branch of the last dorsal nerve. The posterior part of the fatty capsule was resected in all cases and the kidney delivered.

In three cases the true capsule was split from pole to pole, the kidney replaced, and the edges of the capsule united to the muscular layer by three chromicized catgut sutures on either side. Iodoform gauze was packed into the wound cavity and dressings applied.

In twenty-eight cases after delivering the kidney, its true capsule was well scarified with the blade of a scalpel, a strip of white or iodoform gauze was passed around each pole and the kidney replaced. Several pieces of gauze were packed in the wound cavity and the gauze around the poles tied over these. Dry dressing was then applied.

Three cases were operated by Edebohls's method. The kidney was exposed and delivered in the usual manner. The entire fatty capsule was then cut away. The true capsule was divided along the dorsum to the middle of each pole, reflected, and the excess cut away. Four mattress sutures were passed through the reflected capsule, two on either side, near the poles, and left loose. The kidney was then returned. The eight ends of the four sutures were passed through all the abdominal parietes, except the skin. For the present these sutures are

left untied. The muscles and fascia of the wound were then united by interrupted sutures. Then the two ends of each of the four suspension sutures were tied and the skin united over all.

In no case was the peritoneum opened. In no case was the patient very much shocked. In all cases there was a temperature varying from 99° to 100° F. after operation, and lasting from three to twelve days.

In only one case was vomiting present as a sequelæ beyond the usual results of ether narcosis. This case was the one on which a double nephropexy was performed. Vomiting was controlled on the third day by means of exclusive rectal feeding. One case developed a urinary fistula, which healed spontaneously on the fourteenth day. In one case the pelvis of the kidney and ureter was slightly torn during the operation; suturing with Lembert silk sutures resulted in primary union.

In all cases the gauze packing remained untouched for from six to nine days; it was then removed and the wounds mostly healed by granulation. In a few cases the patients were etherized, the edges of the wound pared, and the tissues brought together with silk or worm-gut sutures.

Most of the cases were discharged with a small granulating wound flush with the skin surface and with the kidney seemingly in good condition and position. None of the cases were readmitted.

It will be noticed that none of the cases were anchored by any method requiring sutures to be passed through the parenchyma of the kidney. I have long ago abandoned this method on account both of the danger of a subsequent pyonephrosis and its inadequacy.

In addition to a case in my own experience, two cases were reported by Dr. Heath, of England, in a personal communication to Dr. Keen, of pyonephrosis following kidney suture.

The operation of splitting the true capsule and suturing its edges to the muscular layers of the wound was found to be unsatisfactory for two reasons: first, urine was exuded from

the surface of the kidney into the wound and greatly interfered with granulation. In one case contraction of the capsule forced the kidney out of the wound, and it was almost impossible to replace it. In fact, the case recovered, but the kidney is between and not below the muscular layers of the back. In spite of this malposition the patient is perfectly well, and has been since delivered of a child without any difficulty either during labor or afterwards.

The patients operated upon by Edebohls's method were a little more comfortable after operation than those anchored by gauze.

Of the two deaths in this series, the one due to acute mania had probably an alcoholic foundation; the one due to uræmia I am unable to satisfactorily explain, but it is tentatively suggested that perhaps it was due to a compression of the renal vessels and failure of the other kidney to establish compensation.

NEPHROLITHIASIS.

Seven cases diagnosed clinically as stone in the kidney are reported in this group. On two of the cases, operation revealed the absence of a stone. One of these gave a positive shadow to an X-ray examination on two occasions, nine days apart. The other was not X-rayed. Both cases were on the left side. The first case was opened from pole to pole and no stone found whatsoever. Kidney closed and gauze placed around poles, as in nephropexy. Patient very much shocked and was transfused before leaving the table. In four hours marked hæmorrhage took place, the patient was given a little ether, and a complete nephrectomy rapidly performed. Death took place an hour later from shock.

The second case was operated on the same lines exactly, but the patient made a perfect recovery without a complication.

In five cases the diagnosis was confirmed by operation. Three cases were positive to X-ray. Two cases were not examined by X-ray. Three cases were on the left side. One case was on the right side. One case was bilateral. Four cases were men. One case was a woman. All five cases recovered.

In two cases the stone occupied the pelvis of the left kidney. After the usual incision, the pelvis was cut open, the stones removed, and the wound closed with Lembert sutures. Both cases were anchored with gauze as in nephropexy, and both made a complete and uncomplicated recovery. Discharged on the twenty-first and forty-first days respectively, with small granulating wound.

In two cases, after the usual incision, the kidney was found not only to be filled with stones, but also the subject of pyonephrosis.

First Case.—Peritoneum opened in delivering the kidney, which was markedly adherent, closed immediately with catgut. Ureter ligated as low as possible, the vein and artery tied separately, and the kidney removed. The wound cavity packed with gauze and allowed to heal by granulation. Patient made a nice recovery, and was discharged in thirty-one days, with a small granulating wound.

Second Case.—Precisely as above, but peritoneum was not opened. Discharged in thirty-nine days with a small granulating wound.

One case bilateral.

June 4, 1900.—Incision as in nephropexy (left side), kidney opened from pole to pole, and a number of stones found in the pelvis and calices. All cleaned out and kidney brought together, packed, and anchored as in gauze nephropexy. The patient suffered very little from shock, but shortly became very septic, and several hæmorrhages took place from the kidney. Seventeen days after operation a stone was passed out of the wound. Eighteen days after operation the patient was re-etherized and the kidney (left) rapidly removed, and the cavity packed with gauze. The wound healed by granulation and, with the exception of considerable vesical trouble, the patient did very well. Improving gradually in weight and strength, and on discharge was able to walk about.

Exactly nine months later the patient was admitted with all the symptoms of stone in the right kidney. Operation under chloroform revealed a hyponephrosis due to a stone in the pelvis blocking the ureter. Two large incisions were made through the

cortex and six calculi removed from the pelvis. Incision was packed with gauze. During the next six weeks the patient was dressed every other day, and nineteen stones were discharged through the wound during this time. There were no uræmic symptoms, and the urine was passed both through the urethra and through a sinus leading to the kidney. Discharged nine weeks after operation with a urinary fistula, but in good general health.

NEPHRECTOMY FOR PYONEPHROSIS.

Case I.—Female; right side. Incision from crest of ileum to anterior border of quadratus, nine inches long. Kidney delivered and aspirated, vessels ligated separately. Ureter ligated and stitched in wound. Kidney removed. Peritoneum not opened. Wound closed with silk sutures, with a rubber tube for drainage.

Patient became very weak and anæmic after operation, but recovered after a protracted convalescence. Discharged four months after operation.

Case II.—Female; right side. Operation the same as in preceding case, except that the peritoneum was accidentally opened, and immediately closed. Patient still in hospital, with a clean granulating wound and in good condition, twenty-eight days after operation.

Case III.—An X-ray made on this case showed a distinct shadow over the right kidney. *Operation.*—Long lumbar incision, and a second at right angles to the first going up over the two lower ribs, the ends of these were cut off with forceps. The kidney was enlarged and firmly adherent to the peritoneum. It was cystic and filled with pus. In delivering the kidney, the peritoneum was opened and immediately closed with catgut. The kidney was then removed, after ligating the artery, vein, and ureter, separately; wound packed with gauze and partially closed. Cultures made from purulent foci in kidney remained sterile. Patient was discharged five weeks after operation, completely recovered.

NEPHRECTOMY FOR HYDRONEPHROSIS.

Case I.—Female; right side. Incision extending from right lumbar muscle over and beyond the anterior superior spine of the ileum, with ileum about one and one-half inches above it. Tumor mass found as large as an adult head. In attempting delivery, mass was ruptured, and about 1000 cubic centimetres of cloudy

amber fluid without urinary odor escaped. Sac wall and remains of the kidney were delivered, vessels and ureter ligated, and mass excised. Extremities of the wound closed, gauze drainage in the centre. Patient died on the second day of uræmia.

Case II.—Male; right side. Incision as in first case. Kidney delivered and aspirated, vessels ligated separately. Ureter ligated and stitched in abdominal wound. Kidney removed, peritoneum not opened. Wound sewed up with silk sutures, using a rubber tube for drainage. Wound healed by first intention. Patient never had a bad symptom. Discharged three weeks after operation.

NEPHRECTOMY FOR SARCOMA.

Case I.—Female; right side. Incision through right rectus, nine inches long, growth seen to be retroperitoneal and attached to kidney. Parietal peritoneum clamped to mesocolon; growth enucleated, considerable bleeding in doing so. Tumor about the size of a child's head and was lobulated. Parietal peritoneum was then stitched to mesocolon (ascending) and gauze packed into the cavity. Patient was severely shocked and died three days after operation.

Case II.—Male; left side. *Operation.*—Patient placed on right side, resting on an air-cushion. Incision made extending from the angle between the erector spinæ and the last rib, obliquely to the anterior superior spine of the ileum. All flat muscles were divided down to the lumbar fascia; this was divided, exposing the perirenal fat. Perirenal fat picked up with forceps and divided, and pressure anteriorly brought the kidney mass into the wound. Dissection round the kidney mass of the perirenal fat was carried on with index-finger. Many adhesions were found, especially at the upper pole. Terrific hæmorrhage occurred at all points, which was very difficult to control on account of size of vessels. Thought best to try to tie the renal vessels as soon as possible. Upper angle of the wound was packed with gauze as tight as possible, to check hæmorrhage, and dissection of kidney mass attempted from the lower end. The ureter was first exposed in a dense mass of adhesions. It was ligated and cut. Further dissection exposed the renal vessels, which were clamped and cut. A dense mass of adhesions was encountered at the upper end. It was adherent at all points. The broken-down tissue resembled wet, coarse sawdust. The kidney was

now removed and as much of the tissue as possible was scraped away from all adjacent structures; all bleeding points ligated. The kidney mass was about the size of a very large cocoanut, of firm consistency at the lower pole, but friable and spongy at the upper. The wound was then packed with large pieces of iodoform gauze, and partially closed with silk sutures. Before this could be done the patient went into collapse, almost pulseless, with shallow breathing. Hypodermics of atropine and strychnine were given and intravenous injection of hot saline was administered. Patient reacted slightly before leaving the operating-room. Dry dressing applied. At no time was the peritoneum opened.

CONGENITAL ABSENCE OF LEFT KIDNEY; OBSTRUCTION OF RIGHT URETER BY STONE.

Male; sixty-five years old. Suffered from severe abdominal cramps one week before admission, which yielded to mustard-plaster treatment. Two days before admission was suddenly taken sick with severe pain in right flank, testicles, and penis, suppression of urine, which continued until operation. Examination showed marked tenderness in the region of the right kidney, bladder empty.

Incision was made in the right flank parallel to the crest of the ileum extending round in front nearly to Poupart's ligament; the kidney delivered and ureter found much distended with urine. The kidney was about twice the normal size and very dark. On account of the fatness of the patient and his bad condition, a very thorough exploration of the ureter could not be made. The pelvis of the kidney was opened and a rubber drainage tube put in, coming out through the back; gauze was packed in and the incision partly closed with silkworm-gut sutures. Patient died in three days from uræmia. At post-mortem the left kidney was found wanting, the left ureter being represented only by a fibrous cord extending down through the inguinal ring to the scrotum. A small stone was found blocking the right ureter near the bladder.

DISCUSSION.

Dr. J. Chalmers Da Costa was in accord with Dr. Deaver's view that stitches should not be put in the kidney. He believed stitches to be inadequate and dangerous. In making an attempt

on one occasion to find out how much resistance there is in the kidney structure, he found that the stitch would tear with the very slighest traction. Any stitch that goes through the kidney substance must be loose before the wound in the skin has been closed.

He was in favor of the gauze-packing, and had used it habitually for a number of months. He had had an opportunity a few months ago to open the abdomen of a patient on whom this operation had been done. He had operated on the man a year before for a dislocated kidney. The kidney was replaced and gauze was used. The abdomen was opened because of another trouble, and it was found possible to palpate the kidney, and he was gratified with the fixation. He had lost a case from uræmia in which there was apparently no kidney disease antecedent, in which there was no complication, and in which the operation was completed as rapidly as usual. It raises the question as to whether these operations are quite as safe as we previously thought they were.

Dr. W. L. Rodman was fully in accord with the position taken by Dr. Deaver and subsequently reinforced by Dr. Da Costa. He had had no untoward result in the gauze-packing operation, and had been gratified, in the majority of instances, to see that the removal of the gauze packing was not so painful as many have claimed. One advantage of the Senn operation is that the work is done from behind. The kidney substance is not interfered with; there is no danger of extravasation, and there is a firm cicatricial band which adequately holds the kidney in position.

Dr. H. R. Wharton, in speaking of pyonephrosis, said that his experience had been that in a large proportion of cases the kidney is converted into a large pus-tumor with firm adhesions, and that there is a certain amount of danger in removing it at a primary operation. He had lost a case of this kind a few years ago from hæmorrhage in removing such a kidney; and since that time he had followed the plan of Weir, who strongly advocates first drainage, and then, in a week or ten days, enlarging the wound and doing a nephrectomy. By drainage the tumor shrinks, and the operation is done with less difficulty. As a matter of safety, it should be considered in nephrectomy for pyonephrosis.

Dr. Richard H. Harte was convinced that the X-ray in

renal surgery and in other conditions is a Will-o'-the-wisp which is liable to lead many astray. He did not wish to state that it is of no service at all; but it is dangerous to depend too much upon it before making a diagnosis. He had seen many mistakes made where too much confidence had been placed upon its shadows for the diagnosis of renal calculi or other conditions. He felt that the anterior incision is a poor way to attack the kidney, and is very often accompanied with a great deal of risk. In regard to the fixation of the kidney, he had tried a number of methods,—the so-called Senn by packing, and also the Edebohls's operation. They all are open to certain defects. Feeling that possibly some other method might be devised for retaining the kidney in position, he had tried to support the kidney in a small basket made of chromicized gut, after the kidney had been exposed, and then closing the wound with this network of catgut supporting the kidney in relation with the posterior abdominal wall. This enabled him to close the wound, and at the same time to retain the kidney in its normal position. It may be said that with this method of procedure undue pressure may be made upon certain portions of the kidney and cause ulceration; but of course this has to be carefully guarded against by the amount of pressure in tying the sutures which form the net-work or cradle in which the kidney is supported. The results that he had obtained by this method of treatment were quite satisfactory; but he did not know that they were any better than had been obtained by the so-called Senn operation, except that it relieves the patient of a good deal of pain when the gauze has to be removed. It has, however, the advantage that the wound can be permanently closed, and that there is little chance for the kidney to slip away and assume a false position.

Dr. Deaver agreed with Dr. Da Costa's point relative to the suture cutting out of the kidney. He did not know that he had really modified Senn's operation. He practised delivery of the kidney and stripping off the fatty capsule. In the Senn operation only the posterior portion of the fatty capsule is cut away, the anterior part being pushed into the wound. In the Edebohls's operation the entire fatty capsule is cut away. In the speaker's opinion, the kidney being delivered on the surface of the back, a piece of gauze is placed under either pole. This piece of gauze comes in contact with the pelvis of the ureter. Pieces of gauze are then packed around the kidney.

OSTEOPLASTIC RESECTION OF THE SKULL BY MEANS OF A NEW TREPHINE.

BY JOHN CHALMERS DA COSTA, M.D.,
Professor of Principles of Surgery and of Clinical Surgery in Jefferson Medical College.

VARIOUS methods are practised for effecting an opening into the cranial cavity. The one most frequently used is the old operation of trephining. This plan will probably always be the method of choice in the majority of cases. It exposes, however, but a small area for inspection and for operation, and, if it is necessary to expose a large area, the bone around the trephine opening must be cut away with rongeur forceps. When such an operation is finished, a large gap is left in the skull; and, because of the fear of hernia cerebri and of apprehension as to future injury from without, various ingenious methods have been practised to effect a closure of the opening.

The osteoplastic method of resection of the skull, originally suggested by Wolff and put into practical execution by Wagner in 1889, makes an opening into the skull by cutting what is practically a trap-door in the bone. This trap is held open, the operation is completed, and the trap is replaced. In certain cases such a method is distinctly advantageous. It enables us to expose as large a surface as may be necessary, because a large bone-flap of this description will unite, when returned to place, as easily as a small one. The osteoplastic method is the one chosen in most exploratory operations, where we fancy that there may be a tumor; in some operations for the removal of known tumors, and in operations for epilepsy.

The bone-flap is usually cut by the use of chisels or gouges of special construction. It takes a long time to complete the chiselling, and the employment of the mallet or hammer may, by repeated tapping or more violent jarring, injure the nervous structures within the skull. In such a condition as abscess of the brain, hammering may lead to diffusion of the

abscess; if hæmorrhage exists, it may increase it or it may cause hæmorrhage; and in using a chisel there is always some danger that a fracture will extend out far beyond the point which we desire cut. Many surgeons feel apprehensive in using the chisel and mallet for opening the skull. It is my personal belief that the hammer increases the shock and distinctly adds to the risk of the operation.

In order to avoid this risk, some surgeons cut an osteoplastic flap by means of the Gigli saw. To use this saw, it is necessary, first, to make several or a number of trephine openings. To do this requires the expenditure of a great deal of time. The saw, when put in use, cuts from within outward, which is the safe way, but the operation requires much time to perform.

Other surgeons cut the bone-flap by means of a surgical engine, and this would seem to be the ideal method; but the handle of the cutting-saw in the engine is difficult to satisfactorily sterilize, and the engine runs the saw with a speed so great that long training and the utmost care are required to cut with safety. I have no doubt that a surgeon can train himself to work accurately with a surgical engine, but I do not believe that the implement is destined soon to come into really general use.

Recently, Dr. T. C. Stellwagen, Jr., a dentist and a student in the third-year class of the Jefferson Medical College, devised an instrument designed to cut an osteoplastic flap with a minimum expenditure of time and without inflicting any serious concussion upon the intracranial structures. After constructing this instrument, he experimented with it upon the dead body; and I joined him in some of these experiments. We determined that certain alterations were necessary in the instrument as originally constructed, and, after these had been made, we used it with much satisfaction upon a patient in the hospital of the Jefferson Medical College.

This patient was a child who was laboring under epilepsy and hemiplegia, the condition having followed an attack of diph-

theria. A large-sized osteoplastic flap was cut in an extremely short space of time with ease and certainty, the chisel being lightly used to complete the division of the inner table of the skull. In using the saw, it was found to be undesirable to take it at each turn through the whole length of the half-circle. It was moved rapidly to and fro over a short portion of the length of the circle; then over another portion; next over another; and so on, until the whole had been traversed. The outer table and diploe were very readily cut through, and the inner table was satisfactorily divided. The skull was of moderate thickness. It is evident that in a very thick skull this operation would be more difficult, and would require especial pyramidal, sharp-cutting instruments, in order to make a sufficiently large opening in the bone to enable the surgeon to locate the position of the point. In fact, in none of these cases would a very narrow cutting instrument do; because such a line of incision in a bone would not admit a chisel to complete the division and to pry up the bone-flap. The flap in this case was raised with the utmost ease; and after the completion of the operation, when the bone was replaced in position, it fitted with an evenness that is not seen after the ordinary operation with a chisel.

This instrument consists of a handle and a shaft, as does an ordinary trephine. Screwing into the end of the shaft is a movable centre-pivot or point instead of the pin seen in the ordinary trephine. Dr. Stellwagen and I discovered, while working on the dead body, that a sharp and long centre-point might bore through a thin skull,—a danger which had to be obviated by modifying the instrument. The danger of such a puncture is reduced to a minimum by placing a shoulder above the point, which shoulder prevents the possibility of any deep penetration. Another method is the use of a centre-plate, with a hole for the pivot, and with sharp points on the under side, these points being driven through the scalp and a short distance into the skull, thus assuring fixation. It was this latter method which I employed in the case of the child above mentioned.

Plates containing points of several sizes should be used, the thickness of the scalp determining to some extent the length of point which it is necessary to employ. If care is taken that sufficient length is used to go but a short distance through the scalp, there is no real danger of penetrating the skull with the point.

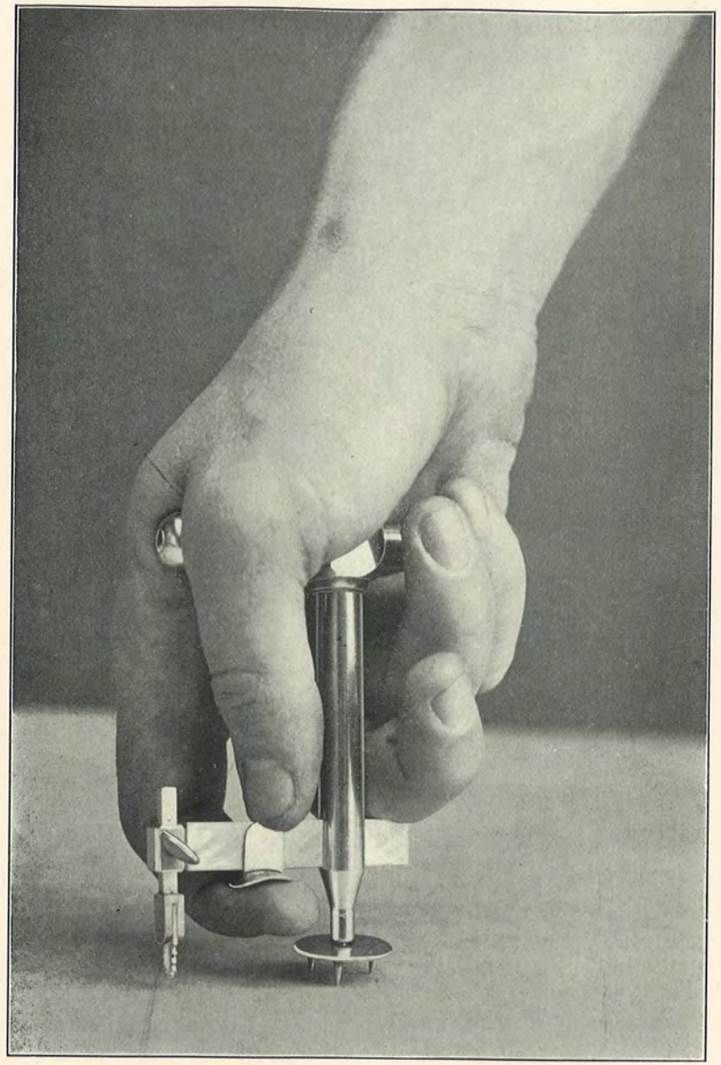

FIG. 1.—The method of using Stellwagen's trephine.

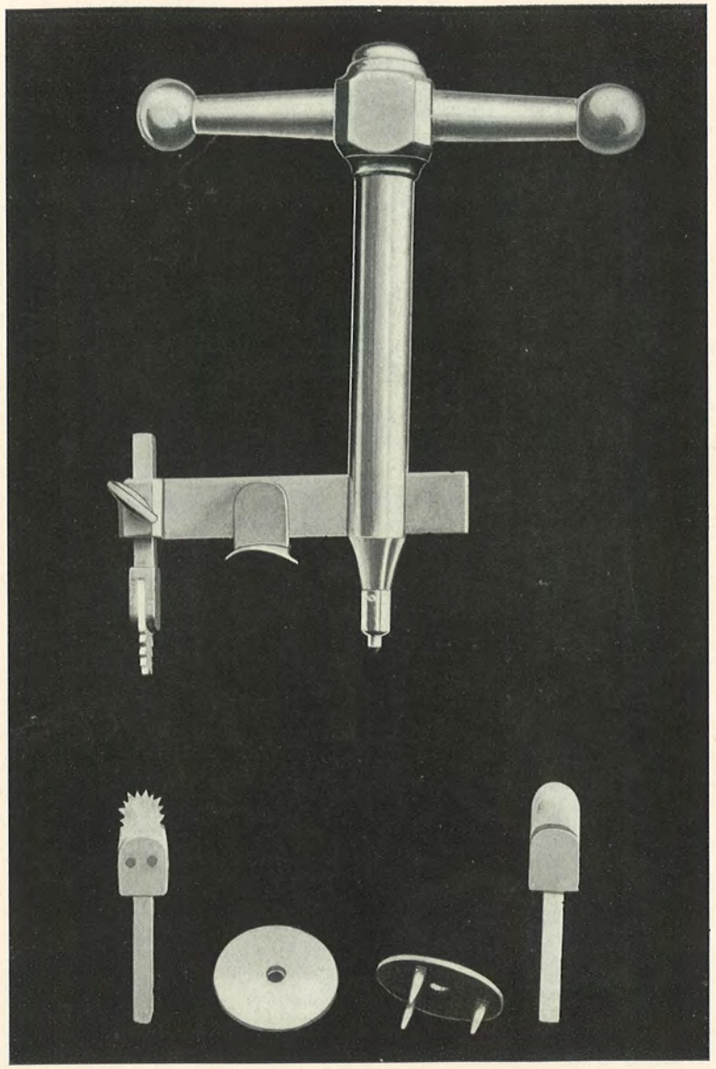

FIG. 2.—Shows the saw, the plates, and the knife, and also the instrument put together and ready for cutting the bone.

The centre-pivot, too, may be changed, a short or a long one being used as desired. Dr. Stellwagen says that when using the centre-pivot without the plate it has been found practicable upon the cadaver to start it with an appropriate drill, sinking the hole just deep enough to prevent slipping of the instrument. Thus, a centre-pivot with a blunt end may be used for the final work. Dr. Stellwagen's description of his instrument is as follows:

The instrument, with its parts assembled ready for use, consists of a shaft pierced by an oblong quadrilateral hole, through which is passed a piece of steel at a right angle, the projection of this piece of steel being regulated by a set thumb-screw. This device enables the surgeon to cut any desired size of bone-flap. The projection-bar has a gear-hole forged in its outer or cutting end, into which fits the shaft of a movable knife and movable saws, which are used for incising the scalp and for dividing the bone. The saw may be raised or lowered to suit each case and to permit of adjustment to the inequalities of the skull, and, when once set, may be clamped by a thumb-screw. Several different forms of bone-cutting instrument were tried at various times upon the cadaver, but were discarded as being conspicuously inferior to the saw.

Fig. 1 shows the proper way to hold the osteoplastic trephine. It will be observed that the index-finger is hooked beneath the finger-guard on the bar, and not extended along the shaft of the instrument, which is the method employed in using the ordinary trephine. The manner of holding this instrument should be most particularly observed, as the success of the manipulation largely depends upon absolutely controlling, at the same time, the saw and the centre-pin. By holding it correctly, the greatest amount of power is obtained with the least resistance and the slightest pressure; thus, the control and power of the instrument are much increased.

Fig. 2 shows a knife for making the incision through the scalp and periosteum, which device was suggested by Professor W. J. Hearn. The employment of this knife shortens the time required to incise the flap and expose the bone, and it makes the scalp incision accurate; this is necessary when we are going to use a bone-cutter which moves with absolute accuracy. Furthermore, the consequent cicatrix is neater than when the incision has been made with a knife. It is difficult or impossible to make an

absolutely circular cut with a knife. Even if we attempted to cut a half-circle, there would be irregularity and nicking of the edges.

Fig. 2 also represents the saw, the diagram being of the actual size. A saw of this character and size has been found to be the most successful. This saw is easily kept in order, and can be readily sharpened. It must be thick enough to cut a fairly wide groove; must have long teeth, properly set, polished, and sharpened. A saw of the character shown in the cut will make the bone section without jamming or clogging with bone dust. The surgeon should have several saws of different lengths until he becomes accustomed to the use of the instrument. When the kerf is deep and the skull thick, a longer saw may be inserted. This would prevent sudden plunging of the blade into the dura. The shoulder, which is shown in the cut, will prevent such slipping.

Fig. 2 also shows the plate, the pins of which pass through the scalp around the centre of the circle selected for operation. When they engage the bone, a few light blows of the mallet will cause their entry into the skull.

In performing the operation on the case before referred to, it was found that not only did the plate serve as a satisfactory centre for turning the instrument upon, but it also kept the scalp fixed to the bone and prevented the stripping or separation which is apt to occur, to a greater or less degree, in an ordinary osteoplastic operation. The centre-point, or pivot, of the osteoplastic trephine is introduced into the hole in the plate. This prevents slipping of the instrument. The scalp is then cut through with the knife and the bone cut through with the saw, with the least possible expenditure of labor.

Dr. Stellwagen further observes that in proportion as one's hand becomes trained in the employment of the instrument, so will the necessity for the use of the mallet and chisel decrease; as, with care, not only may the outer table and the diploe, but also a considerable thickness of the inner table, be cut through with the saw, so that with a very few light blows of the mallet upon a chisel the section may be completed. The bone should be divided well up to where the fracture is to be made through the base of the bone-flap. By so doing, a clean

break can be obtained with the least possible amount of prying. In fact, it would be advisable to cut the scalp and the bone-flap rather in the shape of a clover-leaf than in that of a semicircle. It would be well for the surgeon to practise with this instrument upon the dead body before using it upon the living.

The inventor shows that this instrument can be employed for cutting a complete circle; that when it is used for this purpose, it is adaptable to the inequalities of the bone; and that a circle of practically any size can be cut with it. This one instrument, therefore, can cut a trephine opening of any size. I believe, however, that the ordinary trephine is still the instrument to be preferred in making a moderate-sized trephine opening; but if we wish to remove a very large circular piece of bone, I think that Stellwagen's instrument should be given the preference. Its inventor likewise suggests that this instrument might be used for the removal of portions of other bones.

I agree with the conclusions of the ingenious deviser of this trephine, which are that its simplicity of construction, the ease with which it can be manipulated and sterilized, its freedom from the danger of disarrangement or crippling, the speed with which it can be set, or sharpened, if need be, its adaptability to various cases, its cheapness, and the fact that either an osteoplastic flap or a circular piece can be rapidly cut by it, make it an instrument which will probably be regarded as most useful to the surgeon.

DISCUSSION.

Dr. William J. Taylor was firmly convinced that the ordinary use of the chisel and mallet increases very materially the dangers in making these large flaps. The continual hammering increases the shock, and he was sure that any method which will relieve this is a distinct gain.

He now had a dental engine with which he was practising on skulls. He found that the oftener he used it the greater dexterity he acquired. No one should ever use a dental engine unless they have worked considerably on the dead body with it. He had seen one case die from the use of the dental engine, entirely from faulty technique.

STATED MEETING, APRIL 7, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

RENAL CALCULUS IN A CHILD OF TEN YEARS.

DR. THOMAS R. NEILSON said that a girl, ten years of age, came under his care at St. Christopher's Hospital for Children in November, 1900, with the history that for some two years previously she had been subject to attacks of pain, sharp and lancinating in character, in the right loin, radiating downward and extending to the anterior and inner aspect of the thigh. At the time of these paroxysms, which occurred as often as once a week, the urine was, as described by the parents, very bloody.

When Dr. Neilson first saw the child, she was pale, anæmic, and feeble in appearance; her pulse was 100, weak, and irregular in character. The urine, which presented a cloudy, bloody looking sediment, contained albumen, pus, blood, and uric acid crystals.

The general condition was such that it seemed to him highly injudicious to submit the patient at once to an operation of the gravity of nephrolithotomy, for it was evident that any loss of blood, however small it might be, would be ill borne. Accordingly, the child was placed in bed, carefully watched for symptoms, and fortified by diet and treatment for the necessary operation. She gained strength but slowly, and it was several weeks before he considered her strong enough to undergo it. On but three occasions in the interim did she have attacks of renal colic, two of them being of but a few minutes' duration. Twice the operation was delayed by intercurrent troubles,—a cold with croupy attacks, and a sore throat.

The urine was repeatedly examined, and the microscope showed that it generally contained some blood-corpuscles and pus-cells, although no blood was visible to the naked eye after the first examination made on the day of admission. There were noted on several occasions crystals of uric acid, amorphous urates, and phosphates. The reaction of the urine was uniformly acid, and the test for albumen usually was positive in result.

The diagnosis of renal calculus was confirmed by a skiagraph

taken by Dr. Charles L. Leonard. This showed the presence of a stone in the pelvis of the right kidney at the lower pole.

Operation was performed on January 9, 1901, Dr. H. C. Deaver assisting. Dr. Neilson made the incision preferred by Mr. Henry Morris for exploration of the kidney and ureter, which afforded easy and ready exposure of the organ. The kidney was freely movable downward; the result, no doubt, of the long-continued attacks accompanied by straining. Delivering it through the wound, a small stone was easily felt at the lower extremity of the renal pelvis; the blood-vessels being firmly compressed between the thumb and fingers, an incision through the cortex readily enabled him to extract it with small stone forceps. A careful search was made to see if any other concretions might be present, but none were discovered. The wound in the kidney was packed with a strip of iodoform gauze to control oozing and to act as a drain, and the kidney was then replaced, a thick loop of iodoform gauze being first passed beneath both the upper and lower ends of the organ to hold it in position, the ends of the loop being brought out of the wound, which was packed with more iodoform gauze, sutures being employed only at the extremities.

The calculus, which is of irregular shape, weighed twelve and one-half grains; its greatest circumference being thirty-three millimetres, and its shortest twenty-five millimetres. In its long axis the diameter is thirteen millimetres, crosswise it measures nine millimetres, and its least diameter is six millimetres. At one extremity it comes almost to a sharp point near which its surface is rough and uneven, and at two other places groups of crystals protrude from the otherwise smooth surface.

Part of the gauze packing was removed in a few days, the loops not for some ten days. At this time the surface of the kidney, which could be seen partly in the wound, was covered with healthy granulations.

The little girl bore the operation well and made a good convalescence, being allowed to get out of bed in five weeks. Since her recovery she has remained perfectly well so far as urinary symptoms are concerned.

SARCOMA OF THE LEFT SUPERIOR MAXILLARY BONE IN A CHILD OF ELEVEN.

DR. NEILSON presented a boy, eleven years old, who was admitted to St. Christopher's Hospital on January 2, 1902, with

the history that something over a year previously he had been struck on the left cheek by a base-ball, and that soon afterwards a tooth (the first bicuspid) came out, and a small swelling on the jaw was observed. This growth had gradually increased in size, more noticeably shortly before the child's admission to the hospital. When first seen by Dr. Neilson, there was a marked prominence of the left cheek, and inspection revealed the presence of a tumor, the surface of which was traversed by several good-sized veins, the growth apparently springing from the body of the superior maxilla, extending downward as far as the alveolar border, upward into the antrum, and encroaching inward upon the hard palate. Measurements taken by the Resident Physician, Dr. G. J. Ewing, from whose notes the data for this report were gathered, showed that the tumor extended upward to within half an inch of the infra-orbital margin, outward to within one-eighth of an inch of a line drawn perpendicularly from the external canthus, and inward to within one-fourth of an inch of the nasal septum.

Inquiry into the family history elicited the statements from the boy's parents, both of whom are living and healthy, that his maternal grandfather had been operated upon for a tumor of the groin, and that an aunt, also on the maternal side, was said to have had a cancer of the breast. Besides the patient, there are three other children in the family, all living and well.

A blood examination made by Dr. Ewing on January 6 gave the following result: Red blood-corpuscles, 5,184,000; white blood-corpuscles, 13,500; hæmoglobin, 68 per cent. On January 29 another examination was made, the report being, red blood-corpuscles, 5,120,000; white blood-corpuscles; 17,300; hæmoglobin, 90 per cent.

On February 7, an operation, in which he was assisted by his colleague, Dr. H. C. Deaver, was performed.

With the head well elevated, the patient in a semi-reclining position, the Fergusson incision was made, and the entire bone was removed. There was no excessive loss of blood, and the boy bore the operation well until just after the removal of the bone, when he suddenly collapsed. Stimulating hypodermic injections and oxygen were given during the closure of the wound, and immediately after the child was returned to his bed, a few minutes later, he was given normal saline solution by hypodermoclysis. The shock was severe, and for some time the condition remained

critical. Reaction, however, occurred before long, the temperature rising by 7 P.M.—some five hours after the operation—to the remarkable height of 106.8° F. The boy made a good recovery.

The growth was submitted for examination to the pathologist of the hospital, Dr. William Pepper, who reports that it was a giant-celled sarcoma. Surrounding it was a thin layer of bone as though the latter had been pressed out.

A blood count made on April 4, two weeks after the boy's discharge from the hospital, showed but little change in the number of leucocytes as compared with the count made just after admission to the hospital. The figures from the latest count are, red blood-corpuscles, 5,060,000; white blood-corpuscles, 13,000; hæmoglobin, 65 per cent.

DOUBLE ANKYLOSIS OF HIPS FOLLOWING COXALGIA.

Dr. John H. Jopson showed a girl, aged fourteen years, on whom he had operated one year previously for contracture of both hips following coxalgia. The patient also had a very marked kyphosis in the dorsal region, the result of Pott's disease. Both hips were much contracted, the left hip firmly ankylosed, the right hip partially so. She moved about by swinging herself along between crutches, and when standing rested in a crouching attitude, her hands and forearms supported on her thighs. The left hip was straightened by sawing the femur below the trochanters; and dividing subcutaneously the sartorius, the tensor vaginæ femoris, and the adductors. The right thigh was brought down without cutting the bone, after subcutaneous tenotomy of the adductors and division of the tensor vaginæ femoris, the sartorius, and the long head of the rectus muscle through one open incision. The result was better than expected. The limbs are of almost equal length, the patient walks very well with one crutch, and for short distances without any. She uses a chair which permits her to sit in a semi-reclining attitude. The operation shows the wisdom of preliminary myotomy and tenotomy in fibrous ankylosis, as recommended by Lorenz, before dividing the femur. Attempts have been made by Volkmann and others to secure a movable joint in these cases by chiselling out a new joint, to avoid the difficulty in sitting which is present after simple osteotomy. Where both hips are ankylosed in bad position we have a choice of three procedures

(Hoffa). (1) The formation of a new joint on both sides (Studensky and Maas). (2) The performance of double subtrochanteric osteotomy. (3) Resection and formation of a movable joint on one side, and simple osteotomy on the other side (Volkmann and König).

Dr. De Forest Willard remarked that cases of multiple tubercular foci demand careful attention. Where there is a spinal caries and a tubercular disease in one hip or, as frequently happened, in both hips, the resulting deformities are so great that the locomotion of the individual becomes almost an impossibility. The child shown has been improved from 50 to 75 per cent. by operation. She is still crippled, yet moves about without even crutch or cane, and will be able in time to take long walks and accustom herself to the new position. In ankylosis following a spinal caries and one following hip disease, especially if the ankylosis is at right angles, progression becomes so difficult that the individual is obliged to almost bow himself to the ground at every step. The rigidity of the spine renders it impossible for the lordosis or anterior bending to occur, which would otherwise take place to accommodate this ankylosis of the hip. This calls for osteotomy; and while the ultimate fixation of the hips in nearly a straight line to the body renders sitting much more difficult than in the former conditions, yet with a narrow chair and high back the patient is able to support himself partially lying and partially sitting, with moderate comfort. The new position of the hips is, of course, for a time difficult, and patients are obliged to throw the body from side to side, but they gradually accommodate themselves to this condition, and are able to have free and comfortable locomotion. It is an operation that should always be done in these cases. They should never be allowed to become helpless cripples, incapable of voluntary locomotion.

Dr. J. K. Young said that he had seen several cases of double osteotomy for hip-joint disease, and in one he attempted to remove a wedge-shaped piece of bone after the method described. Motion kept up for several days, but ankylosis finally occurred. He did not think it possible to produce a movable joint after an operation of this kind.

Dr. G. G. Davis thought that in ankylosis of both hips the condition is so deplorable that an effort ought to be made to get a movable hip. The difficulty, however, that will be encountered,

in all likelihood, in cases due to coxalgia is that they show a large amount of new bone thrown out about the joint, that the operation is apt to be such a severe one as almost to preclude its being done. The simple apposing of the ends of the divided bone, as would occur after a linear osteotomy, he would always expect to be followed by union, and nothing but the removal of a wide amount of bone would give a movable joint.

TENDON TRANSPLANTATION TO RELIEVE LEG PARALYSIS FOLLOWING ANTERIOR POLIOMYELITIS.

Dr. Jopson also showed a boy of eight years suffering from paralysis of the extensor longus digitorum and peroneal muscles of the right leg, the result of anterior poliomyelitis. To relieve the equinovarus he had transplanted the tendon of the healthy tibialis anticus to the two outer tendons of the extensor longus digitorum after division of the plantar fascia. As the operation had been done only one month before, and the bandage had been cut only a few days, it was too early to foretell the ultimate result. There had been as yet no restoration of function. The operation of tendon transplantation, although twenty years old, had only attracted much attention in the last few years. Nicoladoni, in reporting his first operation in 1882, laid down what were still recognized as essential features in the technique, viz., to secure moderate tension of the transplanted tendon, to approximate surfaces of tendon extensive enough to promise firm union, and to prevent premature strain upon the tendon by providing support of the part for a considerable period after operation. The operation is still in the stage of development as regards its application to various regions. The most recent advancements have been in the attempts made to overcome the paralysis of the quadriceps so common as a result of anterior poliomyelitis. Among these are the plan of suturing the sartorius and external hamstring muscles to the quadriceps extensor (Bradford); and the transplantation and suture to the patella itself of the biceps tendon on the outer side by perforating the vastus externus, and of the tendons of the semimembranosus, semitendinosus, and gracilis on the inner side, bringing them through an opening in the vastus internus (Krause).

Dr. De Forest Willard said that tendon transplantation is one of the operations which can be used in quite a number of cases

with very great advantage. The difficulty in employing it lies in the fact that in a very large number of cases there is no tendon which one can borrow, since all the neighboring muscles may be paralyzed. Where there is a lack of equilibrium, one can borrow from the stronger and attach it to the weaker side, whether in the foot, leg, thigh, or arm. The transplantation of the entire tendon or a part of it is very helpful. The peroneal engrafted upon the tendo Achillis will often give sufficient power to raise the calcaneum if proper gymnastics are pursued.

Dr. G. G. Davis said that it is certainly gratifying to note the effect which is produced in a successful case after a transplanted tendon has begun its work. Usually, before operation, the foot is stiff and more or less locked. After transplanting, if the muscle begins its work, the foot seems to become more supple; and, of course, you have, in addition, the advantage derived by the action of that muscle in the functions of the foot. He had recently transplanted the semitendinosus to the quadriceps, perforating the vastus internus, and the muscle was regaining its action when the boy went home. He had also transplanted the anterior tibial to the extensor muscles as well as the peronei to the tendo Achillis.

NON-DEFORMING CLUB-FOOT.

Dr. J. H. Jopson also reported the case of a girl, aged sixteen years, who had scarlet fever in childhood and typhoid fever four months ago. Trouble with her feet was noted more than eighteen months ago, the exact date of onset being uncertain. An increase in the arch first attracted attention. Later she complained of pain in the thighs and knees after walking, and developed a peculiar and awkward gait. It was noted that the ball of the foot struck the ground first. There was no muscular weakness, as she was able to walk long distances in spite of the pains which persisted up to the time of observation. When first examined, it was noted that the patient was rather short in stature, and underdeveloped for her age, a bright, intelligent girl, but indisposed to physical exercise. There is nothing, aside from the condition of the feet, to attract attention. There is no lateral curvature. Examination of the feet shows an increase in the height of the plantar arch, more pronounced in the right but also present in the left foot, associated with contraction of the plantar tissues. A

very tight band of plantar fascia is observed on the inner side of the right foot. There is contraction of the calf muscles in each leg, resulting in inability to flex the foot to a right angle on the right side, or beyond a right angle on the left. Passive stretching is equally ineffectual. There is no loss of power apparent in the anterior muscles of the leg, the inability to flex the foot being due to the contracture of the calf muscles. There is a peculiar condition of the great toe of the right foot, consisting in an overextension of the first phalanx and a flexion upon it of the second phalanx. This is present to a minor degree in the outer toes of the right foot. The muscles of the legs are poorly developed, but no distinct wasting is present. The knee-jerks are normal.

It was apparent that stretching would not suffice for the contractures in the right foot; the plantar fascia and tendo Achillis were at once divided under anæsthesia, and the foot put up in an overcorrected position in plaster of Paris, which was retained for five weeks, the patient being permitted to walk on the cast after three weeks. A pair of light braces was then applied, consisting of a steel sole plate with a light bar fastened to the inner side and extending upward to a point just below the knee, where it was fastened by a band. There was a stop-joint at the ankle preventing extension of the foot beyond a right angle, and the foot was fastened to the plate by a band making pressure over the arch. The shoe slipped on over the brace after adjustment, and as the upright piece was lacquered, the brace was almost invisible. This brought both feet into good position, and the use of the braces was followed by steady improvement. After a couple of months she was sent to the Orthopædic Gymnasium of the University Hospital and active and passive corrective exercises ordered. She has now improved to such a point that the braces have been left off. There is a slight tendency to contraction of the left tendo Achillis, which was not divided; but this is yielding to the gymnastic exercises.

This case is a good example of the class of cases described by Newton M. Shaffer, in 1885, under the title of "Non-deforming Club-foot," a name which has been retained by most writers. An examination of the systematic text-books on orthopædics written since that time adds very little to the admirable description of the affection as given by Shaffer. Whitman includes it as one of the two subdivisions of the so-called "contracted foot," under

the head of "compound variety," and identifies it with the condition described by Fisher, of London, in 1889, as talipes plantaris. For a concise description of the deformity, one cannot do better than refer to Shaffer's original description. He describes the deformity as one in which "all the conditions found in certain forms of talipes exist with the exception of the exaggerated deformity. That is, there is a loss of normal relation between the articulation at the ankle and the muscles which act upon it, involving, also, in many instances, the tarsus, producing a condition which prevents normal flexion at the ankle-joint, and modified mobility, with slight deformity at the tarsal, metatarsal, and phalangeal articulations." In other words, the whole complicated mechanism of the foot and ankle are thrown out of equilibrium, and the pain, deformity, and disability which are present in all grades and degrees are the results. The etiology of the deformity is one of the most interesting features connected with it. That such a condition may and frequently does result from a temporary or permanent extensor palsy, the result of an anterior poliomyelitis, is of course unquestioned. According to Whitman, a mild poliomyelitis or neuritis occurring in childhood is the cause in most instances, often following scarlet fever or some other acute infection, and while recovery is apparently complete, a slight weakness is left which, during adolescence or adult life, develops into the condition described. The "talipes plantaris" of Fisher, with which Whitman identifies it, is certainly a deformity of paralytic origin, as Fisher expressly states. Among the causes which Shaffer enumerates as etiological factors are anterior poliomyelitis, traumatism, the infectious diseases of childhood, especially diphtheria and scarlet fever, and malposition, habit, etc. There still remains what might be called the idiopathic form, by far the most interesting because the most obscure, to which the case reported belongs, in which there is no evidence of any spinal cause, no history of traumatism, neuritis, or long-continued malposition, and which is observed, according to Shaffer, more frequently in the female sex, especially in those whose growth has been apparently arrested before the average height is reached. The very frequent association of lateral curvature and non-deforming club-foot, which he states were present in more than 50 per cent. of his cases of scoliosis, led Shaffer to look for some common cause, and this he views probably some

trophic lesion in the motor tracts of the brain, resulting in a misdirection of growth, affecting first the muscles, later the joints and other structures, and causing now a torticollis, again a scoliosis, again a foot deformity. Whatever the cause of this class is, indications all point to a central nervous origin.

While Shaffer treated his cases successfully by the application of his extension shoe, the indications for rapid correction by division of contracted structures in cases of any severity are generally recognized. The application of some simple and convenient retentive apparatus is of benefit after correction, and whatever course of treatment is employed, it should include a thorough course of gymnastic exercises to develop the muscles of the anterior aspect of the leg, which would seem to be the most rational means of preventing recurrence.

ANGIOMA OF FACE; REMOVAL AFTER LIGATION OF EXTERNAL CAROTID ARTERY.

Dr. W. Joseph Hearn reported the case of a child, four months old, who was brought to the Jefferson Hospital with an angioma the size of a large walnut in front of the ear. It was first noticed as a small red mark soon after birth. When admitted the tumor measured one inch by one and a half inches, and stood off from the side of the head one inch. It did not pulsate. From its color, there was a large admixture of venous with the arterial vessels. As dissecting out the tumor was the only means of removing it, and as it was fed by large vessels from the external carotid, he first ligated that vessel. The hypoglossal nerve served as an excellent guide to the vessel. After ligation of the external carotid, the tumor was removed without loss of any blood. One large artery supplied the tumor.

PERINEAL DISLOCATION OF HIP.

Dr. W. J. Hearn reported the following case: A man sixty-eight years of age, weighing 200 pounds, five feet five inches high, on stepping out of his door on ice, one leg suddenly separated from the other and he fell backward. He was unable to arise. He was carried to bed. Dr. Hearn saw him the next day, and found much suggillation in the perineum. The great amount of fat prevented him from feeling the head of the bone in its new

position as satisfactorily as he could have wished; but there was extreme abduction of the limb, and the knee stood far out from his body at an angle of sixty degrees. It was impossible to abduct the corresponding limb to the same degree. There was some shortening. Reduction was easy under an anæsthetic. Recovery with a useful joint followed. He reported the case on account of its rarity. Stimson reports but three cases of his own, and recorded cases are not numerous.

THE ACTION OF X-RAYS ON INOPERABLE CANCER.

Dr. W. Joseph Hearn reported the case of a man, aged forty-five years, who came to the Jefferson Hospital, October 3, 1901, with the following history: Ten weeks previous to admission he discovered an ulcerated lump on the inner side of his right jaw, which he thought was a gum-boil. It grew rapidly, and on admission was twice the size it was when first discovered. He was somewhat emaciated, and complained of gastric disturbances and constipation. The disease involved the mucous membrane at the angle of the jaw and extended to the membrane covering the pterygoid plates. An incision from the commissure of the lips to the angle of the jaw was necessary to expose the tumor, which was removed, but not satisfactorily, as the growth ramified in every direction. Three months later the tumor had returned, and its location and size made it inoperable. X-rays were then used twice weekly by Dr. Buchanan with a most gratifying result. The tumor has almost entirely disappeared, but that the disease is eradicated, the reporter did not pretend to claim. The health of the man has much improved, and altogether he is greatly benefited to a degree that no other treatment could accomplish. Dr. Hearn could not explain how the rays act, unless they cause a fibroid change in the cells of the growth, and this diminishes their power of proliferation.

In a second case, in the person of a man, seventy years of age, who was operated upon in Jefferson Hospital in July, 1900, for an epithelioma of the ala of the nose, a degenerated wart which he had for twenty years, there was complete removal and no return of the disease for eighteen months, when it again returned not only in the scar tissue, but also in the gum of that side. It was very painful. He neglected to return until the tumor was very large and involved much structure. His age and general health precluded an operation. The X-rays have reduced the tumor at least three-quarters of its original size and diminished pain. He has also been under the care of Dr. Buchanan.

Dr. De Forest Willard said in cases of epithelioma treated by the X-rays, the preliminary step to the application should be the removal of a large portion of the growth itself. By this means are removed millions of diseased cells, and the X-rays have a very much better opportunity to do their work. Their effect does seem to be favorable and hopeful.

Dr. Robert G. Le Conte said that his experience in epithelioma and its treatment by the X-rays had been limited to two cases. Both had epithelioma of the nose. In the first woman there was an involvement of the glands of the neck and also a portion of the lower eyelid. This case was treated by the X-rays; sometimes one treatment a week, sometimes two were given for a period of several months. For the first eight or ten weeks an improvement apparently took place. At the end of that time the growth on the nose remained in about the same condition for a period of two months, and then it rapidly grew worse, ending fatally possibly six or seven months after the X-ray treatment had begun.

In the other case, also a woman, there was a small area of ulceration on the tip of the nose, but, as far as discernible, no other portion of the body was involved. In this case the X-rays were applied two or three times a week, and there was a slow improvement. The ulcerated area cicatrized and the growth apparently diminished in size, but after three months it was still not cured. Induration was still present, although the ulcer had healed.

Dr. Francis T. Stewart said that he had had a case of an extensive epithelioma of the neck and side of the face under treatment by the X-rays for the past month. The patient is an elderly man, who has never submitted himself to an operation. The growth in the neck soon ulcerated, so that at the present time there is an immense irregular excavation in the side of the face and neck extending from the ear almost down to the clavicle, a clearly inoperable case. It had been making rapid progress, the pain was very severe, and the discharge extremely fetid and profuse. He was put under the X-ray treatment, Dr. Mitchell, of the Pennsylvania Hospital, applying the treatment every second day.

In a short time it was distinctly noticeable that the progress of the ulceration had been hindered; it had not been stopped; and there was no cicatrization; but it was not growing as rapidly as it had been. The discharge had markedly diminished, and the fetid character was entirely absent; the pain had practically disappeared. The patient had gained some in general health and his mental condition was very much better; it had been a ray of hope to him, for he had been told that some cases were cured by X-ray treatment. While this case does not promise much because of its extensive character, it does prove that there is a marked benefit from the rays in lessening the fetor, in ameliorating pain, and in prolonging life. The patient has been under treatment for a month.

Dr. John H. Gibbon said that after the recurrence took place in the man, described by Dr. Hearn, he came every day to the dispensary to have the growth dressed. The growth projected far out from the cheek and was about the size of a hen's egg, or even larger. At this time the odor he carried about him was so disagreeable that they had to give the dispensary over to him or else hurry his dressing. The picture shown was taken three days after the treatment was begun, when great improvement was shown.

In another case, a woman had an epithelioma, which extended over nearly the entire one-half of the nose. She had submitted to two operations. It was at first diagnosed lupus, but later the diagnosis of epithelioma was confirmed by the microscope. In this case complete healing took place, the result being very impressive.

Dr. Buchanan said that he was not so sanguine about the permanent cure of these cases as some other physicians who had used the X-rays for therapeutic purposes. He cited a case of lupus, the first of the kind treated by him with the X-rays. A man came to the hospital in August, 1901, with a patch of lupus in the region of the glabella about the size of a quarter, which had existed for a year and a half. He had been treated by the family physician during that time, who had used various forms of treatment, without any response. He also curetted this area once. When he came to the hospital, Dr. Buchanan subjected him to the X-ray treatment. After sixteen exposures of five minutes' duration each, twice a week, the lesion had entirely disappeared. He

was discharged at the end of this time as cured. After three months he came back to the hospital with the same condition existing as before. He stated that the sore had returned one month after his discharge from the hospital. He was again subjected to the X-ray, and after eight exposures with the time and distance as before, the lesion disappeared, and he was again discharged, which was two months ago. Whether it has recurred again or not, Dr. Buchanan did not know.

The case of cancer of the nose cited by Dr. Gibbon, involving the entire nose, had been under treatment for four years at the Jefferson Hospital. She was subjected to various modes of treatment in the surgical department for three years. As the sore made but little progress, she was then referred to the skin department, where she went at stated times for one year. She was then referred back to the surgical department, with the suggestion that it would be advisable to remove the nose. Dr. Da Costa suggested that we try the X-rays, and after eight exposures of five minutes' duration each, the patient being seated twelve inches from the tube, and the face being protected with a papier-mache mask covered with lead foil, a complete cure had apparently been effected. She then disappeared from the hospital, and up to the present time they had not been able to locate her. Dr. Buchanan further said that a great deal had been said about the kind of tube to be used. The majority of X-rays experimenters have said that the low tube is the better. A soft or low tube is one that gives but a faint shadow of the fluoroscope. He believed, however, that a strong tube, that is, one that will make a good skiagraph, is the best for all-around purposes. Furthermore, a high tube is less apt to burn than a low tube. The proper distance of the patient from the tube is about twelve inches, as the danger of a burn increases as the square of the distance decreases from the tube.

Dr. Hearn made the statement that the cure of cancer may be due to some fibroid changes produced by the X-rays in the tissues. Dr. Buchanan's theory is that it is due to some trophic disturbance in the trophic nerves of the blood-vessels and skin, and the fact that a burn or an erythema does not present itself for some time after the exposure, and the progressive character of said conditions, he believes supports his theory. As a cancer is a pathological new growth, he believed the trophic disturbance in the blood-vessels of these growths causes it to atrophy and disap-

pear, just as an epithelioma of the tonsil is caused to atrophy by the ligation of the carotid arteries.

The only case apparently completely cured in his experience is that of the old lady with the cancer of the nose. His experience had not led him to be very sanguine about the complete cure of all cases. If he were to make longer exposures and take chances of burning his patients, he would probably make more rapid progress. Whether this is advisable or not remains to be seen by further experiments.

ACUTE INTESTINAL OBSTRUCTION CAUSED BY AN ENTEROLITH.

Dr. A. D. Whiting reported the case of a woman, aged sixty-eight years, who was treated in the German Hospital about one year ago for chronic rheumatism and chronic interstitial nephritis. At that time she complained of pain in the right iliac fossa. Vaginal examination revealed a hard, freely movable mass which was thought to be an ovarian tumor. Radiographic examination was negative. The patient had been an invalid for years, and had suffered greatly from persistent constipation.

Three days before her second admission to the hospital, the patient experienced a sharp pain in the lower abdomen. This was followed by complete obstruction of the bowels, and later by vomiting, which became fæcal in character. On admission, the abdomen was remarkably distended, the walls being tense and rigid. There was much pain in the lower quadrant, with tenderness on pressure, most marked in the right iliac fossa. Vaginal examination was negative; a rectal examination was not made. The temperature was 99° F.; pulse, 108, and respirations, 28. The pulse was intermittent.

Under ether anæsthesia an incision was made through the right rectus muscle, above the pubes. When the peritoneum was opened, a distended portion of the ileum bulged into the wound. Immediately below this was collapsed bowel, which was drawn into the wound and traced towards the distended portion. These merged into each other about four feet from the cæcum, with but slight indication of the point of obstruction. The bowel was perfectly free, there were no bands or adhesions, the pelvic organs were normal. Examination of the bowel to the proximal side

of the seat of obstruction revealed the presence of a hard, oval-shaped mass within the lumen. This mass was worked towards the collapsed bowel, and was found to engage in the beginning of that portion of the intestine. It had probably been displaced during the manipulations. It was removed through a longitudinal incision made opposite the attachment of the mesentery. The bowel wound was closed with two layers of silk, and the bowel then returned to the abdominal cavity. The external wound was closed with through and through sutures of silkworm gut and a dry dressing applied.

The patient left the operating-table in fairly good condition, the pulse being 116, intermittent, but of good volume. She reacted well, but was drowsy and had considerable abdominal distress. A purgative enema was followed by a free escape of flatus which afforded much relief. Uncontrollable vomiting began about twenty hours after the operation, and the patient gradually grew weaker and more drowsy until she died about fourteen hours later.

A partial post-mortem examination showed that the proximal portion of the bowel had not regained its tone, and was still distended; the distal portion had returned to its normal condition. The intestinal wound was in good condition. Both kidneys showed decided interstitial change. Death was attributed to the general infection consequent upon the interference of the functions of the intestine, complicated by the lesions in the kidneys.

The mass which had been removed from the intestine proved to be an enterolith, with a small body forming the nucleus. It weighed a little over an ounce (33.5 grammes) and measured two and a half inches (fifty-seven centimetres) in length and one and three-eighths inches (thirty-five centimetres) in width.

An examination of the stone made by Dr. A. O. J. Kelly, in the Pathological Laboratory of the German Hospital, proved the stone to be a true enterolith, with a small mass of inspissated fæces as the nucleus. There was an absence of cholesterin or other constituents of the bile, thus excluding a diagnosis of gall-stone which might have been made.

Treves, in his monograph on "Intestinal Obstruction," divides enteroliths into three classes:

"1. Concretions formed in great part of phosphate of lime, or of phosphate of magnesia, or of the triple phosphates, or stones

formed of mixtures of these salts. Such calculi on section show a concentric arrangement of chalk-like or dirty white layers. With such layers alternate others of a brownish color. In outline they are oval or rounded, and often appear to be polished by peristaltic movements. They would appear to be always formed around a nucleus of some indigestible substance. Among such may be mentioned vegetable fibres and husks, hair, fruit-stones, biliary calculi, pieces of bone, and little foreign bodies that have been accidentally swallowed.

"2. Enteroliths of low specific gravity and of irregular form, which are porous in appearance and have the consistence of compressed sponge. They are composed mainly of densely matted masses of vegetable fragments mixed with particles of fæcal matter, and with a certain amount of calcareous material similar to the above species of stone." These are known as "oat-stones" or avenoliths.

"3. Concretions formed of insoluble mineral matters that have been swallowed as medicine. These are most frequently composed of magnesia."

The present case belongs to the first class.

Enteroliths usually lodge in the large bowel, especially in the cæcum. They may be found in the rectum, more rarely in the ileum, and in false and true diverticula. Kassai has reported a case in a female, thirty-six years of age, who had had abdominal pains for fourteen months. A long, hard, movable tumor could be palpated in the left iliac fossa. On account of an existing cachexia, a diagnosis of malignant new growth was made. A large dose of castor oil was administered, which resulted in the evacuation of three enteroliths varying in size and the disappearance of the supposed malignant growth.

Enteroliths are of very slow formation and may lie dormant for years. It is very probable that the supposed ovarian tumor found at the first examination of the patient was this enterolith which had lodged temporarily in a coil of bowel occupying a position near the right ovary. As stated above, no ovarian tumor was found at the time of operation.

Enteroliths very rarely cause acute, sudden occlusion of the bowel. Their presence is usually noted by long-continued digestive disturbance with occasional attacks of pain, and always associated with constipation. The main symptoms indicative of their

presence, as noted by Treves, are those of persisting, incomplete, and inert obstruction of the bowel which may continue for years.

Dr. W. L. Rodman recalled a case of intestinal obstruction caused by an enterolith which was in the practice of a former colleague in the Kentucky School of Medicine, Dr. J. M. Holloway. It was an enterolith in the ileum, exactly the same shape as the bowel, more like a section of a large corn-cob than anything else. That case was operated, but was also fatal, the patient dying within a few hours after the operation.

Dr. Robert G. Le Conte described a case of acute obstruction of bowels due to a large gall-stone which occurred in a woman of sixty-seven years of age, a stout, large, plethoric person, of probably gouty history, with an enlarged and weak heart.

This woman suddenly developed symptoms of complete obstruction of the bowels. After vomiting had begun, one or two enemas, with some concentrated purges, caused a movement of the bowels with flatus. Operation at this time was not undertaken. She had some three movements, the distention of the abdomen which had previously been present subsided, and a large amount of flatus passed. A few hours later symptoms of obstruction again presented themselves; vomiting again appeared, and in the course of two hours became stercoraceous. At this time operation was undertaken, and the following condition was found:

Incision was made in the median line below the umbilicus and a portion of the intestine speedily presented, which was very much thickened, congested, and felt hard and indurated as compared with the rest of the small gut. This portion was six to seven inches in extent, and was probably in the middle portion of the ileum. The inflammation had extended into the mesentery, and from this appearance it portended a very speedy gangrene and death of the part. Shortly below this inflammatory area, a dark body was seen through a normal part of the gut, which on section of the intestine and removal of the body proved itself to be a gall-stone of almost pure cholesterin. It was three and a half inches at its greatest circumference by two inches at its least circumference.

A probable theory which will explain the inflammation of the bowel is that this gall-stone became impacted, producing the first attack of obstruction, and permitting the bacterial invasion through all the coats of the bowel and into the mesentery. As the result

of active purgation in concentrated form, the stone was dislodged from its position in the small intestine and passed on, but the damage it had left behind caused the second attack of obstruction.

At the operation, this portion of inflamed bowel was resected, and an end-to-end anastomosis done with the O'Hara forceps. The case terminated fatally in a few hours. Microscopic sections of the resected bowel showed a destructive inflammation of a gangrenous order, with the presence of numerous cocci and bacilli.

STATED MEETING, MAY 5, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

OSTEOTOMY FOR BOW-LEG.

DR. JAMES K. YOUNG presented a girl, aged ten years, who, for the relief of deformity of the left leg, was subjected to osteotomy below the knee three months before.

SUBCUTANEOUS RUPTURE OF THIGH MUSCLES.

DR. OSCAR H. ALLIS presented a man, forty years of age, brakeman, who, on February 15, 1890, was standing on the rear end of an empty box freight car, weight 60,000 pounds, when it was hit unexpectedly by other cars coming slowly against it. The momentum knocked the man down. He fell with his body outside the track, but the advancing car ran over both thighs. The car was an eight-wheeled one, and two wheels passed over the thighs. He was taken promptly to the Presbyterian Hospital, where, on admission, the right limb was greatly swollen and bruised; the left limb much less so. In the right limb the wheel seemed to have passed a trifle above the midlength of the limb; in the left limb the apparent track of the wheel was at the junction of the lower with the upper two-thirds. The skin was not broken in either limb. The swelling was too great to permit of any satisfactory examination. Peripheral sensation was lost in the region of the injury to right limb, but not in the left.

Two weeks after the injury the hæmatoma broke down and was evacuated. No part of the skin sloughed in either limb. He was discharged at the end of thirteen weeks. Result, sensation returned to right limb; function so completely restored that the usual recklessness of brakemen was again indulged in, viz., the jumping on and off cars while in slow motion.

The track of the wheels can now be distinctly seen as two broad shrunken belts. When the patient contracts the flexor muscles, they act as two-bellied muscles, especially marked on the right limb.

Dr. Allis said that there was no reason to dispute the accuracy of the history of the injury. The car was marked, weight, 60,000; it was moving slowly; only two wheels passed over him; the clothing, which was his only protection, consisted of winter pantaloons and drawers.

OSTEOPLASTIC OPERATION FOR SPINA BIFIDA.

Dr. De Forest Willard presented an infant who at birth presented a large sessile tumor, lumbosacral, skin ulcerated. When seen at five weeks, epidermis had formed over the tumor, which was two and one-half inches in diameter; tensely distended during crying. Pressure upon the sac gave distress to the infant. The lower limbs were partially defective in motion, but not totally paralyzed, and there were no deformities of the legs. Condition of sphincters not ascertainable on account of age, but there was no apparent control of either bladder or rectum. In the centre of the sac was a dimple, apparently the attachment of the cord.

Operation at five weeks. A V-shaped portion of skin was excised, and the skin thoroughly dissected back from the sac. Upon opening the sac, the entire cauda equina was found adherent to the posterior wall; the filaments were dissected free and replaced in the spinal canal. A large section of the sac was excised, the remaining lateral portions being brought together over the large opening in the canal, which was an inch in length and three-quarters of an inch in width; spinous processes and laminæ being entirely absent. Redundant lateral portions of the sac were closely stitched with a continuous suture of catgut, the edges being inverted, and a staple stitch employed. Next, two large osseous flaps were cut from the crest of the ilia with a strong knife and turned inward upon their periosteal bases like a cellar-door, the fresh surfaces presenting outward. These were firmly united with catgut, and the opening in the canal thus accurately closed. The flaps of skin were then brought together and sutured in the same manner. The wound was dusted with aristol, and a dry aseptic dressing applied. The wound was protected from soiling by enclosing the gauze within a superimposed piece of mackintosh, accurately sealed and united around its lower and two lateral margins by freely applied layers of collodion, the collodion being applied first to the skin over one half an inch in width around the

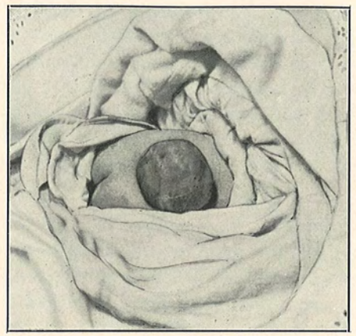

Fig. 1.—Spina bifida, five weeks old.

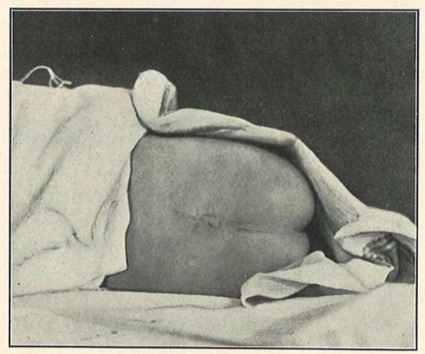

Fig. 2.—Spina bifida, after excision of sac.

margin, the mackintosh then laid in place and sealed thoroughly. By the use of this dressing combined with keeping the child upon its face and an abundance of absorbent cotton about the genitals and anus, all infection was prevented and primary union secured. The child suffered less discomfort after the operation than before; nursed and slept well, and recovered in two weeks. The tumor has not reappeared and the opening seems to be strongly closed, but the child is apparently becoming hydrocephalic, a not uncommon sequel. The legs show no change.

INTESTINAL ANTHRAX.

Dr. De Forest Willard made the following report to complete the history of the case of anthrax reported by him in the Annals of Surgery, April, 1902, page 524.

The man, a leather worker, had been infected in the cheek and also in the intestines. The wound caused by excision of the cheek tissues healed speedily; after a long struggle, in which his life was in the balance for weeks from peritonitis from the intestinal infection, opening of the abdomen and evacuation of three quarts of pus caused slow improvement, the sinus closing in five months. Meantime he suffered greatly from intestinal pains, probably due to the adhesions of loops of intestines about the abscess wall; but these pains, together with the symptoms of partial obstruction, were slowly relieved, and he was discharged from the hospital in six months, apparently in good health.

EPITHELIOMA OF THE ORBIT; TREATMENT BY X-RAYS.

Dr. Wharton presented a woman who, for a number of years, had been suffering from an epitheliomatous growth which first appeared below the right eye, involving the lower lid. It gradually extended, until she was sent to the hospital under his care two months ago. At this time she had a very large growth, which extended beyond the limits of the orbit and had destroyed the right eyeball. He curetted the growth, removed the shrunken eyeball, cut away the edges, and then applied the X-rays from five to ten minutes at intervals of two to three days. She has had in all twenty applications, and there has been marked improvement in the condition of the parts. A large amount of cicatrization has occurred.

ARTERIAL ANGIOMA OF THE EAR AND NECK.

Dr. Francis T. Stewart reported a case of cirsoid aneurism occurring in a medical student aged twenty-two years; he had been born with a nevus on the left ear, which grew with a rapidity out of all proportion to his general development. Hardly a month has passed without some hæmorrhage from the angioma; at times the bleeding would occur during sleep and often a large quantity of blood would be lost. For several years a bandage has been continuously worn around the head, owing to the constant dread of severe bleeding. The patient is unusually intelligent, quick and nervous in action, and markedly anæmic, owing to the repeated hæmorrhages. Occupying the site of the left ear and that portion of the neck immediately below it was an irregular swelling, purple in color, measuring six inches longitudinally and three inches laterally, the width of the mass lessening in the lower part. The whole swelling pulsated with considerable force, there being a number of arteries—the largest about the size of the radial—which ran into the mass, and which by their twisting and sacculation constituted most of the swelling. The skin was infiltrated with numerous enlarged venous capillaries. Pressure on the carotid caused a material diminution in the size of the tumor, but did not stop pulsation. Under ether anæsthesia an incision was made around the periphery of the angioma; each vessel was ligated as it was encountered, and all the vessels and overlying skin below and behind the ear were excised. The cartilage of the ear, which had been pushed forward by the growth so that it projected perpendicularly from the side of the head, was next sutured to the periosteum of the skull, and the incision closed except for a small area just below the ear, whose margins could not be approximated and which was allowed to granulate. The operation lasted three hours, was attended by frightful bleeding, although compression of the carotid was practised, and was followed by much shock. The patient was satisfactorily reacted, however, by saline infusion and stimulants, and the wound healed without mishap. The only vestige of his former trouble is a slight bluish discoloration occupying the region of the lower ear.

ADVANCED CARCINOMA OF THE BREAST.

Dr. Stewart presented a woman, aged forty-five years, who had noticed a hard lump about the size of a hazel-nut just to the

inner side of the nipple three years before coming under observation. This increased very slowly in size for one year, when the rapidity of the growth became accelerated, until the entire breast was the seat of a hard mass. The skin covering the breast had ulcerated, the huge tumor resembling a crater. The axillary lymph glands were swollen and the growth was adherent to the pectoralis major muscle. The breast, both pectoral muscles, and the axillary glands were excised, and the wound closed by raising large flaps from the belly and back to fill in the deficiency left by the removal of the mass. The temperature remained about normal for three weeks after operation, and the tip of one of the flaps sloughed, leaving an area about the size of the palm to granulate. His object in bringing this case before the Academy was to show the result after the Warren method of the closing an enormous wound following an extensive excision of the breast, and also the amount of comfort gained for a patient subsequent to an operation for a breast cancer which might have been considered inoperable. The operation was performed ten months ago, and there were no signs of recurrence thus far.

Dr. Allis said he had had infection in every case in which he had to do this operation, and the reason was this: the surgeon takes away the great and small pectoral; that leaves a space which is bridged over by the clavicle which stands out so that when the skin is brought over there is left an air-space which invites infection.

One of his cases was quite unique and interesting; the shoulder-joint approximating the operation became infected. He drained right through the joint, washing it out, and in the course of five or six days removed the drainage. She recovered perfect use of the shoulder.

Dr. Rodman said that one of the patients who was shown to the Academy by him fifteen months ago is now dying from recurrence. But in another case, operated four years last October, the third operation, a most extensive operation for a recurring scirrhus growing from the sternal portion of the mammary gland, the patient is entirely well to-day.

In yet another case reported to him last month, the patient is well a little more than four years, having been operated in December, 1897.

SUPPURATIVE CHOLECYSTITIS DUE TO THE TYPHOID BACILLUS.

Dr. George Erety Shoemaker reported the case of a woman, aged thirty-three years, who was seen at her home by Dr. Xander for an inflammation in the region of the gall-bladder. She had had six confinements without sequelæ, and had aborted two months before at three and one-half months of gestation, while suffering from a severe attack of typhoid fever in the Methodist Hospital. During this attack, which began October 15, 1901, there were noted, as confirmatory of the diagnosis of enteric fever, the Widal reaction, spots, tympany, and typhoid stools. Though dangerously ill, she recovered fully and remained well four weeks. Then began, December 27, 1901, the present attack, with soreness and pain in taking a long breath, two or three inches to the right of the median line and above the level of the navel. Turning in bed gave severe pain. No cough, chill, or jaundice. There was absolutely no previous history of a gall-stone or gall-bladder attack. A mass below the rib edge was noted by the patient two days later. Her temperature ranged to 101° F., pulse to 110. There was some perspiration. When seen January 2, 1902, by the writer, a distinct mass could be felt to the right of the median line below the rib edge; the upper half of the right rectus muscle was rigid, the lower abdomen was tympanitic; the tenderness was greatest over the gall-bladder, less over the appendix, and absent on the left side. Vaginal examination was negative; there was no jaundice, no vomiting. She was sent to the Presbyterian Hospital for operation; diagnosis, cholecystitis with abscess. Leucocyte count, 15,200. The pain was very severe during the night. Next day, on opening the abdomen vertically over the mass, no adhesions were found to the parietal peritoneum. The liver, gall-bladder, and neighboring viscera were massed firmly and covered with well-organized exudate. The recognition of the gall-bladder was a matter of some difficulty; but without separating its adhesions, after proper packing, it was opened with great ease by a blunt dissection and about two ounces of pus allowed to escape. This was yellowish, streaked with blood and contained small clots; the portions escaping last contained mucus, but no bile. The walls of the gall-bladder were about one-eighth inch thick, much softened by inflammation, and of a

purplish red inside; they bled on the lightest touch, so that small clots, constantly renewed, concealed from recognition by the finger a solitary gall-stone, which was, however, afterwards found and removed through the wound. It had no facets. The gall-bladder opening was stitched in the wound and drained. There was no complication in the recovery, and the patient left the hospital on the twenty-sixth day with a small sinus discharging a very little mucoid secretion from the gall-bladder wall. No bile.

A culture made by Dr. Foulkrod, under the supervision of Dr. Steele, in the laboratory of the hospital, gave a pure culture of a bacillus identical with the typhoid bacillus.

Four months later the patient is strong and well, doing her own work, including washing, without any discomfort whatever. The sinus still persists, a very little mucopurulent fluid staining the dressing. When it closes, she feels some discomfort, and she therefore re-opens it. Only once since the operation has anything resembling bile appeared, when about six weeks ago a few drops of greenish fluid escaped for a week. The cystic duct appears to have been obliterated by inflammation. No gall-stone can be now found.

INTERSCAPULO-THORACIC AMPUTATIONS.

Dr. Le Conte read a paper with this title, for which see page 100.

A FURTHER NOTE ON INTERSCAPULO-THORACIC AMPUTATIONS.

BY ROBERT G. LE CONTE, M.D.

THIS month, three years ago, I had the honor of showing a case of interscapulo-thoracic amputation before the Philadelphia Academy of Surgery, and of detailing a new method of technique for its accomplishment (ANNALS OF SURGERY, August, 1899). At that time I had absolute confidence in the safety of the method, and the belief that no serious accidents could occur during the performance of the operation. To-day, my confidence in the method is still unshaken, provided it is carried out with good judgment, but errors of judgment may bring about complications of the most serious character. It is for the purpose of detailing my own errors in this line that I again bring up the subject.

The safety of this operation for malignant disease lies in the control of hæmorrhage, particularly of the venous bleeding, for in some cases the venous channels exposed are as large as the ascending cava. For the purpose of exposing these veins as thoroughly as possible, I have advised the disarticulation of the sternal end of the clavicle instead of a resection of that bone. When the veins are of normal size, the operation may perhaps be performed safely by either method; but when the veins are enormously increased in size, the greatest exposure of the part gives none too much room for their ligation. It was at this point of the operation in the following case that I erred in judgment, and my errors nearly cost the patient his life.

T. D., aged eighteen years, white, school-boy, born in Philadelphia, was admitted to the Pennsylvania Hospital, April 2, 1902. Family history negative. He has always been quite healthy, though never very robust.

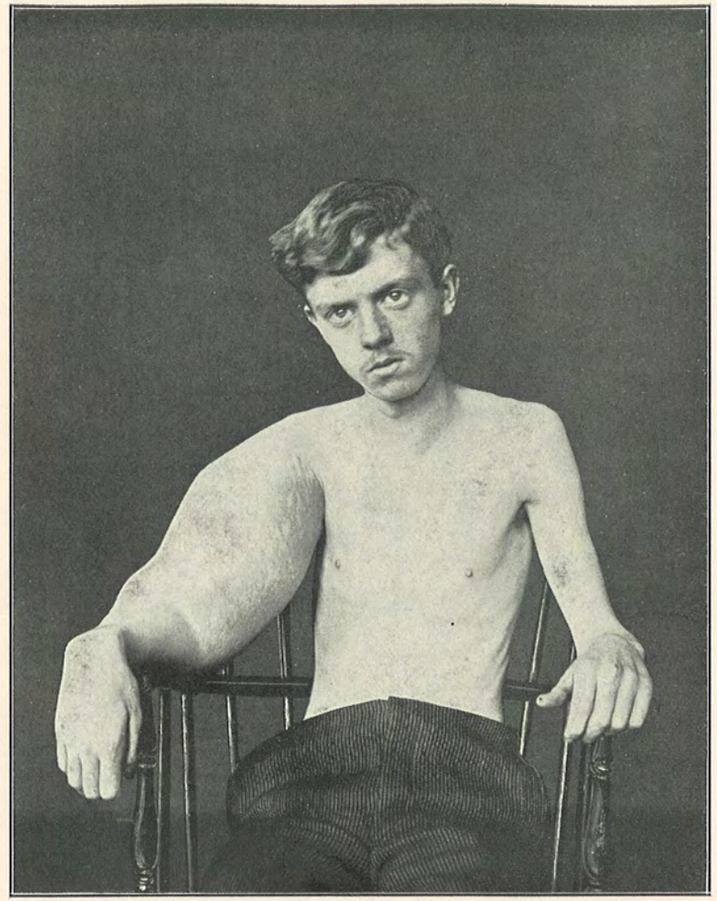

FIG. 1.—Sarcoma of right arm, anterior view.

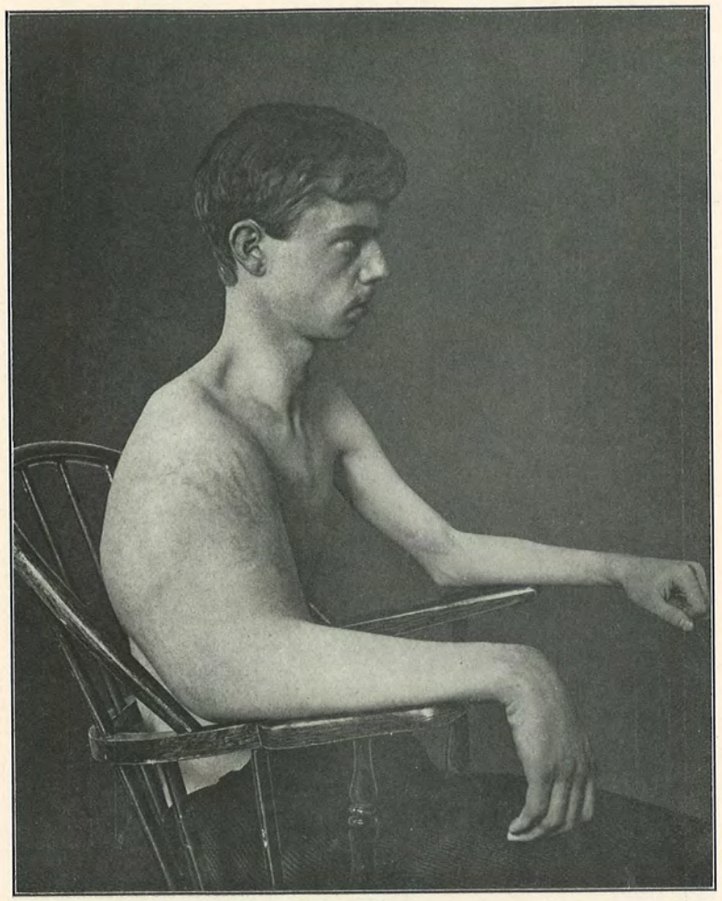

FIG. 2.—Same patient, side view.

Present Condition.—One year ago, while at school, he was frequently pummelled on the right arm by some of the boys, causing a feeling of soreness for several days. During the summer, while playing baseball, he noticed that he could not throw as far as formerly, and as time went on his ability to throw a ball diminished. In October he noticed a stiffness of the arm, with a tendency to flexion at the elbow, with slight pain on motion. Not until January was he aware that the arm was increasing in size. This enlargement was at first gradual and painless, and the flexion at the elbow increased slowly until two weeks before admission, when very rapid growth set in, accompanied by severe pain, especially at night, and a feeling of discomfort and distress from the weight and bulk of the arm, which rendered the limb useless and overbalanced him when moving about.

On admission the patient was pale, very slightly built, weighing 118 pounds; eyes prominent; temperature and respiration normal, but cardiac action much accelerated, pulse ranging from 120 to 130; no murmurs present. Lungs, other organs, and urine negative to examination. Blood count: red blood-corpuscles, 5,136,000; white corpuscles, 12,400; hæmoglobin, 87 per cent. The prominent eyes with rapid heart action were strongly suggestive of exophthalmic goitre.

The right arm reveals a growth about the size and shape of a large ham. (Figs. 1 and 2.) The tumor seems limited to the confines of the humerus, as the forearm, shoulder, and axilla are not visibly affected. Axillary glands not enlarged. The growth is hard and tense, and the skin over it brawny and markedly striated. The elbow is flexed almost to a right angle and cannot be extended. Movements of the hand and fingers on the affected side are limited, with a very pronounced wrist-drop, and a weak radial pulse.

Measurements.—Circumference: Right elbow, twelve and one-half inches; left elbow, nine inches. Right biceps, twenty-two inches; left biceps, eight inches. Right axilla, fifteen inches; left axilla, twelve and one-half inches.

April 24, ether administered. An incision was made through the skin and superficial fascia from the sternum, along the clavicle to its middle, and then curved downward to the anterior axillary fold. The clavicle was disarticulated from the sternum with blunt, curved scissors, the rhomboid ligament and the clavicular

portion of the sternomastoid muscle were divided, and the clavicular portion of the pectoralis major separated with the finger from the costal portion of that muscle up to the anterior axillary fold. The clavicle was now pulled upward and the subclavian muscle divided at the first rib. The pectoralis minor was then exposed, divided, and the coracoid portion reflected upward with the clavicle. Enormous venous channels immediately presented surrounding the anterior scalene muscle. A careful dissection revealed that the greatly enlarged cephalic vein joined the subclavian just in front of the anterior scalene muscle, and the vessel formed by this union was from an inch to an inch and a quarter in width. An attempt was made to expose the third portion of the subclavian artery or the first part of the axillary by retracting the veins, but it failed, and the vessel could not have been ligated in these positions unless the great venous channels had first been dealt with and severed. If the artery was to be secured first, and the blood in the arm saved to the patient, it seemed to me necessary to pass the ligature at about the junction of the first and second portion of the subclavian. This was done, and the vessel firmly secured with a chromicized catgut ligature, but unfortunately the pleura was also opened. In the presence of such enormous veins, which were now very turgid and flaccid with every inspiration and expiration, the noise of the air rushing in and out of the pleura was most alarming and terrifying, resembling my ideas of the sound of air entering a vein. A gauze sponge was packed deeply in the cavity over the pleural rent, the arm was elevated, and ligatures were passed around the veins,—one around the subclavian at a point which corresponded to the first portion of the artery, one at its distal portion before it had been joined by the cephalic, and one around the cephalic. These ligatures were tied when the arm had become fairly well blanched, and the vessels, together with a part of the brachial plexus of nerves, were divided. The ligature around the cephalic vein slipped and the wound was instantly flooded with blood. The hæmorrhage was quickly stopped with the finger and the vessel secured with two hæmostatic forceps and ligated. While dividing the remainder of the brachial plexus of nerves, another large vein was opened, which produced a very alarming hæmorrhage. This was also controlled by direct pressure, and the vessel secured with hæmostatic forceps and ligated. It proved to be a large communicating branch from the cephalic to the jugular vein. These two hæmorrhages occurring with such a short interval between, and with the loss of several ounces of blood in a few seconds, rendered the condition of the patient most precarious. He was almost pulseless, and respiration was shallow and irregular. Hypodermics of strychnine and digitalin were given, while an assistant opened a vein in the left leg and introduced two quarts of hot normal salt solution. During these procedures the rent in the pleura was stitched up with catgut, the patient turned on his left side, and an incision dropped to the lower angle of the scapula and up to the anterior axillary fold. The scapula was rapidly freed from its attachments, and the two skin incisions joined through the axilla, completing the detachment of the upper extremity. Three or four vessels required a ligature. The wound was closed with silkworm gut, a rubber drainage tube coming out at the lower angle, and at the sternal angle a wick of gauze led down to the pleural rent. The time of operation was fifty-five minutes, and the patient's condition at the close was fairly good.

For a week following the operation the patient's temperature ranged from 99° to 101° F., the pulse-rate from 110 to 140, the cardiac action being accelerated under the slightest exertion. On the third day the gauze wick and the drainage tube were removed, and on the ninth the stitches were taken out, and the wound found in excellent condition, with good union. At both these dressings there was evidence of a right-sided pneumothorax of slight degree, the expansion of the chest being about equal on both sides, and the heart in its normal position. Dr. Frederick A. Packard very kindly saw the patient with me, and concurred in the belief that Graves's disease was also present. For these reasons the patient has been kept quiet in bed, and will now be placed on small doses of suprarenal gland. Dr. Longcope, the resident pathologist of the hospital, has kindly furnished me with the following notes of the tumor.

Report of Pathologist, No. 5335.—The specimen consists of the entire right arm amputated with scapula and clavicle attached. The upper arm presents an enormous fusiform swelling reaching from the head of the humerus to the elbow. The arm weighs 7000 grammes. The skin over the swelling is discolored bluish, and there is a streaking somewhat similar to the lineæ atrophicæ of the abdomen. The elbow-joint is slightly swollen,

but the forearm and hand appear normal. The swelling is hard and firm. On section, the tumor is found to be an enormous growth, arising evidently from the periosteum of the humerus. It is fusiform in shape, and reaches its greatest thickness about the middle of the humerus, where it surrounds the bone in a collar 8.5 centimetres in thickness, being separated from the skin only by the superficial fascia and subcutaneous fat. The growth is generally firm, pearly white, and slightly translucent, having an irregular outline, which in some places is fairly well circumscribed, but in others appears to infiltrate between the muscle bundles.

Large ragged cavities occur throughout, often measuring 4.5 or seven centimetres in diameter, and being filled with a clear yellow fluid. A portion of the free surface of the bone forms the wall of one of these cavities. The bone is covered with small, soft, tooth-like elevations which project like the quills of a porcupine. Some of them are calcified. Near the elbow much of the growth above the bone contains areas of calcification. At the upper end the growth has broken through the capsule into the shoulder-joint and forms a lobulated, firm, gray mass near the head of the humerus.

Both the subcutaneous tissue and muscles are greatly œdematous, the muscles being exceedingly pale and streaked. They are all so compressed by the growth that the various groups of muscles cannot be distinguished. The branches of the brachial plexus are compressed by the growth, and the musculospiral nerve is lost entirely in the tumor mass. The vessels are clear. The axillary glands are enlarged, often the size of beans, œdematous, and soft. No macroscopic areas of growth are found in them. The growth does not involve the clavicle or scapula. The subscapular muscle is unaffected.

Section through the newer portion of the growth, which is invading muscle, shows it to be composed of large, irregular, and round cells grouped in a somewhat ill-defined alveolar arrangement. These alveoli are only distinguished by a fine stroma or single capillary which runs between them. A very fine net-work of stroma is likewise visible between the individual cells. The tumor cells are irregularly round or polygonal and vary somewhat in size. The nuclei are even more irregular than the cells; usually, they are oval or round and vesicular, the nucleoli being distinct, but frequently picknosis is present, or the nuclei are very large and pale. Both karyolisis and karyokinesis are common, and here and there a large multinucleated cell is seen.

In the older portions of the growth extensive degeneration has taken place; here the tumor cells are confined to areas about the blood-vessels, and both cytoplasm and nuclei show great irregularity in size and staining qualities. Some cells assume an elongated shape; others are very large and multinucleated, and the protoplasm contains large numbers of fat droplets or is vacuolated. The muscle surrounding the tumor is the seat of an extensive interstitial myositis, large areas of muscle have undergone degeneration, and show slight infiltration of small round cells, epithelioid, and young connective-tissue cells. The muscle cells lying in small areas between the degenerated portions are very small, irregular, and often broken. Their nuclei are greatly increased in number, and the striations are usually lacking.

The lymph glands from the axilla show an endothelioid proliferation with enlarged lymph channels. The keimcentra are swollen, but no tumor cells can be found.

Diagnosis.—Spindle-celled sarcoma.

To return to the technique of the operation. When the veins were exposed, and it was found impossible to ligate the third portion of the subclavian artery or the first part of the axillary, it was an error to ligate the subclavian at the junction of the first and second portions. Owing to its depth, its close relation to the pleura, its partial covering by the vein, and the close proximity of the phrenic nerve, such a ligation will always be attended by an immediate danger to these important structures. Secondly, the short distance from the innominate, together with the large branches given off in its first portion, subjects the patient to the remote danger of a secondary hæmorrhage, an event which would almost of necessity mean death. The ligation of this portion of the subclavian artery was therefore a distinct error in judgment, and led to serious complications.

Two other procedures were open to me, either of which would have been safe. First, the veins could have been ligated first, and after they had been severed the artery would have been readily exposed. This would have lost to the patient the amount of blood that remained in the arm, of some consequence, perhaps, but a much smaller risk than the one taken. Second, a still better procedure would have been to expose the axillary artery as high as possible, certainly its third portion and probably its second, and tie a temporary ligature about it. Then the arm could have been elevated, the veins ligated and severed, and a permanent ligature placed around the third part of the subclavian, and the artery severed in this portion. This could have been quickly and safely done, and would have saved to the patient the blood in the part amputated.

DISCUSSION.

Dr. W. L. Rodman said that he did not think that the weak and excessive heart action in this case was entirely due to hæmorrhage. The pulse was 120 before operation, and the man was known to have Graves's disease, than which nothing produces a more irritable heart. Furthermore, one should not forget the rapid dismemberment, and the additional fact that limb and tumor weighed fifteen pounds. The existence of Graves's disease and the rapid amputation were as potent factors in producing shock as the hæmorrhage. The subsequent behavior of the case would seem to prove it.

Dr. Le Conte thinks that he made an error in ligating the first portion of the subclavian, and in this opinion Dr. Rodman concurred. Ligations of the first and second portions of the subclavian have been looked upon as undesirable, if not very generally unjustifiable procedures. He who does them goes into a hornet's nest. The artery is so intimately surrounded by important veins and nerves, and, moreover, gives off all of its large branches from the first portion, that both primary and secondary hæmorrhage are greatly to be feared. The pleura beneath is very apt to be wounded, as in this case. Still, in spite of difficulties seemingly almost insurmountable, the subclavian has been successfully ligatured in its first portion. A vast majority of such cases have, however, been fatal.

Had Dr. Le Conte attached the vessel in its third portion, as he now suggests, the operation would have been both an easier and a safer one. Dr. Rodman also questioned the wisdom of removing the entire clavicle, unless it be diseased. He should feel safer in dividing the bone where it is smallest, at the junction of the outer and middle thirds, by means of a Gigli saw, which can so easily be slipped under the bone. In this way there would be little to fear in the way of hæmorrhage. The inner end of the clavicle is a dangerous region, and one to avoid when possible. Should Dr. Le Conte modify his operation so as to ligate the third portion of the subclavian, and remove only the outer third or half of the clavicle, he will then have an easy and safe procedure.

Dr. Le Conte said that his object in recommending the disarticulation of the sternal end of the clavicle was to give the

largest possible exposure for the ligation of the vessels, and the procedure certainly accomplishes this well. The question of resecting or disarticulating resolves itself into the following consideration. If the veins are of normal size and normal relations, a resection of the clavicle will probably give all the room required for safely dealing with them, but if they are much increased in size or of abnormal relationship, a disarticulation of the sternal end of the clavicle is more safe, for it gives a much larger field for their ligation. No one can possibly tell before operation the size and relationship of the veins. In malignant disease, they are usually much increased in size, therefore the largest possible exposure will be the safest procedure.

Owing to the many difficulties encountered in this operation, even in the hands of the most skilful surgeons, he felt that there must be some better way of exposing the vessels than by the use of Berger's method. By disarticulation he got a better exposure, but perhaps at a greater risk of wounding the important structures at the root of the neck. If one omits the disarticulation of the clavicle, the same incision as proposed above will give a fair exposure of the axillary vessels, provided the costal section of the pectoral muscle is severed in the axilla, and the pectoralis minor is divided and reflected upward, but it will not expose the anterior scalene muscle or the junction of the cephalic with the subclavian vein. In other words, it exposes the vessels too far out to eliminate all the dangers of hæmorrhage. As yet he had experienced no difficulty in disarticulating the sternal end of the clavicle without opening the deep layer of the deep cervical fascia, and no harm can come to the vital structures in this region unless this deep layer is opened. (*Vide* Transactions of XIII International Congress, Paris, 1900, Section of General Surgery, p. 467.)

STATED MEETING, OCTOBER 6, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

INTESTINAL OBSTRUCTION BY FIBROUS BAND, A REMNANT OF MECKEL'S DIVERTICULUM, AND ADHESIONS FROM A FORMER ATTACK OF APPENDICITIS.

DR. WILLIAM J. TAYLOR reported the case of a woman, aged twenty years, who was admitted to St. Agnes's Hospital on December 21, 1901, with a history that there had been no stool for six days, and that for nearly twenty-four hours there had been vomiting, which had become fæcal in character.

She gave a history of having had, a year or so ago, a somewhat similar attack, which was relieved in the course of a few days.

When she was admitted to the hospital her temperature was normal, her pulse good, and there was no marked degree of pain. There was slight abdominal distention, but no marked tympanites. The whole abdomen could be handled freely and deep pressure made all over it without giving special pain.

In view of her general good condition, the stomach was washed out, calomel was given, and several high enemata employed.

The next day, December 22, there was no improvement in her condition. She had passed a poor night, and had kept down a grain of calomel in small doses, but she had vomited several times since the stomach had been washed out.

When Dr. Taylor saw her at half-past eleven, her pulse was weak, not very rapid; the tongue was dry and coated with deep brown fur. There was no special abdominal distention, as it was soft and gave no special pain on deep palpation, and there was only moderate tympany. She complained of great discomfort across the upper portion of the abdomen.

He opened the abdomen by a median incision and found the omentum adherent to the bladder, intestines, and to the tip of the

appendix. The appendix was bound down by many adhesions, and had to be separated with great force from its attachment to the omentum. This was particularly marked at its tip. It was swollen, and showed evidence of former inflammation, but there was no evidence of recent trouble. After freeing it from the adhesions, its removal was easy. The small intestines were constricted at one point, congested, and much distended, but falling short of the appearance of a true peritonitis. The intestines were pulled out of the belly and a careful search made, when it was now found that a band was constricting the small gut. This proved to be a remnant of Meckel's diverticulum arising from the small intestine about thirty-two inches from the cæcum. It was a long cord, a remnant of the diverticulum, which completely encircled the small intestine and passed through a hole in the mesentery; it was then attached to another coil of the intestines, thus firmly binding and constricting the lumen of the gut. This was a single fibrous band one-eighth of an inch in diameter, having no mucous membrane nor lumen. It was ligated with silk and then cut away; the constriction was thus entirely relieved.

The intestine was opened at one point and its contents milked out, there being quite two large basinfuls of fluid fæces. The opening was then sutured with silk, the abdomen was flushed out with salt solution, the intestines replaced, the omentum drawn down over them, and a large glass drainage tube introduced to the bottom of Douglas's cul-de-sac. The abdomen was closed by through-and-through silkworm-gut sutures.

Although everything in the intestines was greatly congested, there was no evidence of long-standing strangulation. The peritoneal covering of the gut was torn in two places during the manipulations.

She stood the operation fairly well, as it was long and necessarily exhausting, for the intestines were out of the abdomen for some time. Her recovery was uneventful, the wound having healed by January 15, less than four weeks.

The cause of the constriction had evidently existed for a long time, but the strangulation was very recent. While the constriction was absolute, as far as the lumen of the bowel was concerned, it had not blocked the circulation in the bowel, and hence her general symptoms were not those of acute strangulation.

GALL-STONES IN THE COMMON DUCT.

Dr. Robert G. Le Conte reported the case of a man, aged thirty-four years, who was admitted to the Pennsylvania Hospital, July 9, 1902. He was a large, strong, well-developed man, although he showed evidence of having recently lost a good deal of weight, estimated by him to be between thirty and forty pounds. He had always had good health until last March, although his life had been one of constant exposure in the coal-mines. In the middle of March he was suddenly seized with excruciating pain which centred in the umbilical region, radiated across the abdomen and up the back to the right shoulder-blade, accompanied by nausea, vomiting, and marked jaundice. He has had about six such attacks during the last four months. In the intervals he has been able to go about, but has not been able to work. No gall-stones have been recovered from the stools. On admission he was free from pain, and felt better than he had at any time since the beginning of his illness. His skin was loose and icteroid; muscles flabby; heart, lungs, and urine negative; abdomen soft, not tender; no enlargement of liver or gall-bladder demonstrable. Leucocytes, 11,800; hæmoglobin, 90 per cent.; no fever. Under phosphate of soda, light diet, and rest in bed the man improved slowly, and was discharged from the hospital at his own request July 28, with the sclera still showing a slight tinge of yellow. The patient was readmitted August 1 during a severe attack of abdominal pain, with vomiting and marked jaundice. He was now quite tender over the gall-bladder region, but no enlargement of the liver or gall-bladder was discernible. The urine showed bile and a trace of albumen, with small bile-stained granular casts. The blood-count showed the leucocytes to be 10,200 and the coagulation time three minutes. The acute symptoms had somewhat subsided by the 6th of August, when, under ether anæsthesia, a four-inch incision was made in the right semilunar line over the region of the gall-bladder. The omentum and colon were found firmly adherent to the under surface of the liver and gall-bladder. These adhesions were broken up with some difficulty and the gall-bladder exposed. It was found to be small, thick, and firm, and could not be brought up into the abdominal incision, so that the operation had to be carried on at a considerable depth from the surface. A longitudinal incision was made

in the gall-bladder and a large number of stones, perhaps two or three hundred, of different sizes were withdrawn. They varied in size from a hickory-nut to a No. 8 shot, most of them being small. A few were dislodged from the cystic duct, and two were felt in the common duct, one at the junction of the cystic and common duct and the other about one inch farther on. The first by manipulation was pushed into the cystic duct and removed through the gall-bladder, but the second was found to be immovable. An incision was made in the common duct and this stone withdrawn, and the rent was partially closed with one catgut suture. Only such adhesions were broken up as were necessary to expose the gall-bladder and ducts, the rest being allowed to remain as a protection to the remainder of the peritoneal cavity from possible infection. A few catgut sutures attached the gall-bladder to the fascia and abdominal peritoneum. Gauze drainage was inserted to and around the rent in the common duct and a rubber drainage tube placed in the opening in the gall-bladder. The wound was then closed with silkworm-gut sutures.

The recovery was uneventful. His temperature never reached 100° F.; there was a free flow of bile on the dressing, and the stools resumed their normal color. The gauze packing about the common duct was removed in forty-eight hours, and two days later the rubber tube was taken from the gall-bladder. The stitches were removed on the eighth day and the wound found well healed. At the end of two weeks the amount of bile on the dressing was perceptibly diminished. He left the hospital, September 9, with a small sinus, which discharged, perhaps, a drachm of colored mucus in twenty-four hours. One week later he again returned to the hospital with the sinus infected and a free discharge of pus. Under treatment this speedily improved, and the sinus permanently closed in two weeks' time. During these two weeks he had one annoying symptom, viz., almost every midnight he would vomit the contents of the stomach without nausea. The vomitus consisted of food that had completed gastric digestion with a slight mixture of bile. The reporter called attention to two points in the report of this case:

First. Closure of the common duct by suture. While he advocated its closure whenever possible, he said that in some cases the duct is so rigid and thickened with inflammatory mate-

rial, and perhaps also so deeply placed from the abdominal surface, that it is nearly impossible to pass sutures unless the abdominal wound is very greatly enlarged, and even then the walls of the duct may be so friable that the sutures will tear out. He thought that it did not make much difference if the incision in the duct was left open, provided the opening is well surrounded with gauze. The wound of the duct will always close before the opening in the gall-bladder has ceased to drain.

Second. In those cases where the opening is not immediately closed by sutures, should all the adhesions among the surrounding organs be broken up? When the bile-tracts are sterile, it probably makes no difference whether these adhesions are thoroughly broken up or not; but when there is a possibility of infection, it would seem that only such adhesions should be separated as are necessary to expose these parts properly, and that the remainder around the pylorus, the duodenum, and the transverse colon should be left untouched as an additional barrier to a possible general infection of the peritoneal cavity.

Dr. Allis thought the question regarding the closure of the common duct a very pertinent one. Even if fine catgut and a very small needle be used, there is danger of infection from entering the mucous membrane when closing the duct. If the duct be thickened, as is generally the case in these instances, the incised part will be held in place by gauze without suturing.

Dr. W. L. Rodman thought that Fenger had fully demonstrated that an incision in the common duct need not be closed in all cases. So long as the bile is aseptic, closure is not necessary. Suture of the common duct is one of the most difficult tasks in surgery. This summer he saw Mr. Robson operate and close the duct with great facility. The abdominal incision was made in the right semilunar line with a curve at the upper end. With a bag under the patient's back, the liver and gall-bladder were delivered in the most perfect manner. By this method the duct was comparatively easy of access.

Dr. John H. Gibbon referred to a case operated upon two days previously for gangrenous cholecystitis.

The patient was a woman fifty years of age, who gave a history of having suffered from attacks of indigestion and vomiting. She was taken ill three days before admission to the Polyclinic Hospital. At the time of admission there was palpable a

tumor in the right side of the abdomen considerably below the costal border; there was marked rigidity of the abdominal wall on this side; frequent vomiting occurred; the patient's temperature was 102° F.; and the leucocyte count made the morning after her admission was 37,000. The abdomen was opened at this time and some free fluid found in the gall-bladder region. The gall-bladder itself was covered by an adherent omentum, which, when removed, showed a distended and gangrenous gall-bladder. When incised, the gall-bladder was found to contain a large amount of pus possessing a very foul odor. A large stone was found firmly fixed at the mouth of the cystic duct. The mucous membrane of the entire gall-bladder was gangrenous and about one-third of all the coats near the fundus. The gall-bladder was easily separated from the liver, and when an attempt was made to pass a ligature about the cystic duct the gall-bladder separated and came away. The cystic artery bled furiously, and could not be controlled by a hæmostat, as the instrument cut through the inflamed tissues; the bleeding was then controlled by gauze packing. The patient was very ill after the operation, but recovered, and the day following the leucocyte count had dropped to 12,000, the vomiting had ceased, and the patient's bowels had moved freely. The second day the patient was in good condition, the temperature having fallen, but the leucocyte count had again gone up to 20,000.

AMPUTATION OF THE LEG DONE UNDER LOCAL ANÆSTHESIA PRODUCED BY THE INTRANEURAL INJECTION OF COCAINE.

Dr. John H. Gibbon, in reporting this case, referred to Crile's paper on the use of cocaine and eucaine (*Journal of American Medical Association,* February 22, 1902). Crile conducted a number of experiments upon animals in order to learn the effect of intraneural injection of cocaine and eucaine. He discovered that such injection resulted in an absolute block to both afferent and efferent impulses, and that consequently no shock resulted from operation upon the parts supplied by the nerve. These experiments were confirmed by subsequent clinical experience. After injecting the sciatic and anterior crural nerves with a 1 per cent. solution of cocaine, he was able to perform an amputation of the leg not only without pain, but without the patient's

knowledge, with only one exception in five cases. The exceptional case, hearing the saw passing through the bone, realized what was being done. Crile states that it is the afferent impulses from injury or operation which produces shock, and that these impulses are but slightly influenced by a general anæsthetic. Afferent impulses producing pain are abolished by a general anæsthetic, and those affecting vasomotor, respiratory, and cardiac mechanisms are not. Crile describes this injection of the nerves as a physiological amputation of the part. Matas has also done considerable work in this line with equally satisfactory results.

The case reported by Gibbon is that of a man fifty years of age, who was admitted to the hospital suffering from a tuberculous ankle-joint. The man was extremely thin and wasted. Because of the patient's age, his general condition, and the far advanced disease of the bones, it was thought inadvisable to attempt any other than a radical operation. The sciatic and anterior crural nerves were exposed under infiltration anæsthesia, and each nerve injected with a 1 per cent. solution of cocaine. Anæsthesia in the parts supplied by these nerves was not immediate, and, in fact, it was feared for a while that no anæsthesia would be produced, but in about eight minutes the patient experienced no pain when the ankle-joint was opened for the purpose of inspection. Prior to the operation, the patient was given a hypodermic of morphia and atropia, and during the operation one of the house staff engaged him in conversation. The amputation was quickly performed and without the patient's knowledge. Subsequent to the operation there was no evidence of shock whatever, excepting a slightly increased pulse-rate. He suffered little pain in the part after the operation, and the wounds healed promptly. The patient was discharged from the hospital about a month after the operation, showing no effects from the injection of the nerves with the cocaine solution.

Dr. R. G. Le Conte said he was present during the operation, and could corroborate the statement that there was no pain felt by the patient during the amputation. He would offer in explanation of the increased pulse-rate the fact that a perceptible quantity of cocaine had been used and absorbed. He mentioned the case of a man, about to go on a coaching trip, from whose scalp he removed a wart after injecting a small amount of a 4 per cent. solution of cocaine. The man was greatly exhilarated

thereby, and when he reached the coaching party the other members thought he was intoxicated. The stimulation of the pulse in the case under discussion might probably be due to the cocaine instead of being a nervous phenomenon.

INJURIES AT THE HIP IN AGED PERSONS.

Dr. Oscar H. Allis read a paper on the above subject, for which see page 116.

NOTE ON THE FREQUENT GREAT DISPARITY BETWEEN FALLS UPON THE BUTTOCKS AND THE SUBSEQUENT PERSISTENT PAIN AND IRREMEDIABLE HELPLESSNESS IN PERSONS IN ADVANCED YEARS.

BY OSCAR H. ALLIS, M.D.,
Surgeon to the Presbyterian Hospital.

It is well known among the members of the medical profession that very trifling injuries are sufficient to produce fracture of the neck of the femur, and it is quite as well known that the results of these simple injuries vary greatly,—that in one case a good and useful limb will be obtained, while in another total helplessness will result. The fact that in one case satisfactory results follow treatment and in another under similar treatment pain and total helplessness, leads patients and their friends to reflect upon the skill of the respective surgeons, and has led many a surgeon to have confidence in a line of treatment that greater experience would show to be premature and ill founded. In the following remarks I shall not dwell upon the subjects of diagnosis and treatment, but will confine myself to the topic under consideration, and offer a few reasons for the pain and helplessness, and suggest a remedy for it.

I will first give brief histories of cases that have been victims of pain and helplessness until relieved by death; second, report similar cases that have recovered with useful limbs; third, will give the pathology of a few cases that I have posted or operated upon, and conclude with surgical procedures for its relief.

Case I.—Mrs. W. H., widow, seventy-nine years of age, active and in apparent good health, arose from her bed at midnight, tripped in her night-dress and fell to the floor. The immediate pain and helplessness were the occasion of my summons. I found her with shortening, eversion, relaxed fascia lata, and

excessive pain and helplessness. These being the signs and symptoms of fracture of the neck, she was immediately made as comfortable as possible, and, to prevent the formation of bed-sores, her position was changed, her bed kept as free from pollution as a dribbling bladder would permit. Efforts to move her were attended with pain, and when it was deemed proper to get her out of bed and sit her up, the pain was greatly increased. She lived four years, and was a helpless sufferer during the entire period.

Case II.—Mrs. G., sixty-five years of age, was growing feeble from paralysis agitans, but otherwise not a sufferer. While sitting in a low rocking-chair she slipped to the floor; the fall was accompanied with so much immediate pain and helplessness that I was summoned. All the signs of fracture of the neck of the femur were present. The pain from the time of the original injury to her death, which occurred six years afterwards, necessitated day and night watches to turn and relieve her position.

Case III.—Miss B., aged sixty-six years, arose from her bed and through some entanglement was pitched forward upon her hands and knees. She said that if her thigh had been made of glass, it would have broken, as she thinks her thigh was broken. All the symptoms of fracture of the neck of the femur were present. She was gently moved about in bed and no bed-sores resulted. It is now six years since the injury. She can barely stand alone, and is practically helpless, though in comparatively good health.

In none of these cases was there any attempt at treatment. The effort on my part being to avoid bed-sores and to make the patients as comfortable as possible. To show that the bad results were not due to faulty treatment upon my part, I will give three cases as nearly parallel as possible.

Case IV.—Miss R., aged sixty-three years, fell in the yard; as it was in winter, the pavement might have been slippery. I saw the case with Dr. Franklin Mathews a few days later. He had diagnosticated fracture of the neck of the femur, but had not made a thorough examination, deferring it, if necessary, until I came. All the signs were so clear that no further examination was made. She had received no treatment save that of making

her comfortable in bed. After my examination, she said, "I do not know why you advise my staying in bed. I am as well as ever except this bruise." She was not told her hip was broken. She was helped out of bed the second week, and in due time walked with crutches, then without them, going to visit friends and to church. An autopsy several years later confirmed the diagnosis.

CASE V.—Clergyman, aged seventy-eight years, was knocked down by a passing carriage; was rendered helpless and brought home in conveyance. Fracture, neck of femur. Was gotten out of bed second week. Soon moved about on crutches, and later went into the pulpit, with a number of steps to ascend, and preached an old-fashioned—which means a long—sermon. He was indeed proud of his achievements upon his broken thigh.

CASE VI.—Mrs. G., widow. Though suffering from paralysis agitans, she was able to go about. Was struck by a wagon and knocked down. Every sign of fracture of the neck of the femur present. Confinement for a few days revealed a forming pressure sore and special treatment abandoned. She was made comfortable. No particular attention was paid to her fractured thigh. Gotten on to her side and propped with pillows to relieve pressure on her buttocks. Later out of bed. She recovered, and had a useful joint, going up and down stairs and all about her house without the use of crutch or cane.

As the only treatment in these cases was to make the patients comfortable, and to avoid pressure sores by changing their position in bed several times a day, some might infer that had extension been made or long splints been used the results would have been better; but I have been careful to give an equal number of the two classes,—the first of great and permanent sufferers, and the second with but little pain and recovery with useful limbs.

To make my point more emphatic, I add the history of a case treated by Dr. Walter C. Stillwell.

CASE VII.—Mrs. C., aged sixty-seven years, fell in the yard; was treated with extension and lateral supports for eight weeks, during which time there was no pain. She was then permitted to get up, when the pain commenced, and continued until she died

six years later, during all of which time she had been obliged to sit in a chair night and day. The injured limb swelled greatly, and the distention, no doubt, caused much of the pain.

The different results from trifling injuries—for such falls as I have described are comparatively trifling—must be due to very different conditions present. These may be considered under the following heads:

First. Osteophytes may spring up about the injured joint, or fragments of bone from the original injury may become fixed like stalactites and pierce the tissues. Such a condition I found present at the autopsy in Case I.

Second. The fall may in one instance produce concussion of the joint. In experimental work, I have found that when great pressure has been exerted against an articulation, in some instances the cartilage has been depressed, cracked, and distinctly broken. Although in fractures of the femoral neck the yielding of the bone under comparatively slight injury would preclude a concussion or severe injury to the joint, yet in autopsies, after years of suffering, I have found evidence of a mild subacute arthritis that accounted fully for the pain. In one instance in which I was permitted to operate five years after a fracture of the femoral neck, I found no evidence of active degeneration of the articulation, but the head and socket both showed large areas of absorbed cartilage and denuded bone.

Third. The sciatic nerve may at times be pinched or torn. I know of no facts to warrant this statement. There are facts that show that this nerve is injured by dislocations. Autopsies show that blood has been effused into the sheath of this nerve, and the same has been lacerated and torn in two. It is also known that paralysis has followed either injury to the nerve from dislocation or from injury in attempts at replacement. In one case of a comparatively slight fall backward, the patient experienced no great pain, and was able to get up and go into her kitchen. The pain arose while she was in a sitting position, and soon became so violent that she could not move the limb

without pain. An examination under ether revealed no bone lesion, and the conjecture was that the sciatic had been bruised.

Fourth. The ligamentum teres may be torn. Of this I have no positive evidence. In one autopsy to examine a fractured hip it was either congenitally absent or absorbed. I have in experimental work torn the ligamentum teres without dislocating the head of the femur.

In regard to treatment, I have little to offer. In one case I removed the fragment of the head of the femur five and a half years after the injury because the patient had suffered pain night and day all these years and could endure it no longer. As the patient was sixty years old, with atheromatous arteries, the fact that no brilliant result followed may not be wholly attributed to the operation. The pain is much diminished, none at all at times, and locomotion gradually improving.

If an operation be undertaken, it is reasonable to think that it should be indicated by the persistency of pain,—after one or two months. There are few surgeons who would think of removing the fragments of a broken femoral head and neck without first seeing what effect treatment would bring about, but after one or two months of continuous pain, surgical interference is warranted, provided the patient's age and strength will permit.

DISCUSSION.

Dr. Richard H. Harte concurred in all that Dr. Allis had said with regard to the sometimes anomalous conditions which occur about the neck of the thigh-bone after fracture. He had often been struck with the amount of pain and inability to move the joint, even after it had been at rest for a very considerable length of time. These conditions were due, as Dr. Allis had pointed out, to three or four causes: There may be a large number of spicula, which are sources of irritation and pain, and which often remain there as foreign bodies until they are absorbed and again replaced, frequently, by new growths from the periosteum, forming many of the large mass of osteophites which are so often seen in specimens after fracture of the neck of the thigh-bone.

Again, it is not an uncommon thing to have extensive inflammation started up, either of the character of a synovitis or an osteitis. Again, many of the specimens are frequently denuded of their cartilage, showing that a very extensive inflammatory process has been going on. This in one sense is responsible for a great deal of the loss of function which is so apparent in many of these joint injuries, and which is always characteristic of every joint inflammation. Where pain and inability to move the joint persist, and there is no contraindication to it, it is good surgery to open the joint and remove the end of the bone and any other irritating fragments which may be in the capsule or in relation with the fracture. Of course, this must be governed by the age and the condition of the patient.

Dr. Robert G. Le Conte said that one case recently under his care might possibly help bear out the statements of Dr. Allis, which he fully endorsed. The patient was a woman who one year ago fractured the neck of her right femur. Since that time she had been perfectly helpless and had suffered great pain. She had also been for many years a great sufferer from rheumatic gout or arthritis deformans. Operation was undertaken ten months after the injury with the idea of freshening the ends of the bone and pegging them. When the femur was exposed, it was found that the neck had been almost entirely absorbed. The head showed eroded areas similar to those mentioned by Dr. Allis. The head of the bone was excised to relieve the pain. At the end of six weeks the patient was about on crutches, and continues in comparative comfort with the exception of the knee of the same side, which gives great pain on account of the arthritis deformans. The pain in the hip is absolutely relieved.

Dr. W. J. Taylor said that the pain in these cases was probably largely due to arthritis set up by traumatism. An old lady of eighty-two had recently been under his care, but she was one of the more fortunate cases. She fell and sustained an impacted fracture of the neck of the femur, there being two and one-half inches of shortening. The X-ray shows a spicule of bone near the neck of the femur, but it is impossible to say where it came from. The patient, however, has had very little pain, and none since the first week. She remained in bed three weeks with light extension. She now walks around the house and even up and down stairs, the main difficulty resulting from the marked

shortening of the affected side. No true arthritis was caused in this case, and the patient's general health has not suffered.

Dr. G. G. Ross related a case of which he had personal knowledge, that of an old lady who sustained an intracapsular fracture of the hip when she was 102 years of age. She recovered, and was able to walk afterwards with considerable ease, living until she was 106.

STATED MEETING, NOVEMBER 3, 1902.

The President, Richard H. Harte, M.D., in the Chair

PERFORATION OF AN INTESTINAL ULCER DUE TO TRAUMATISM.

Dr. George G. Ross reported the case of a man, aged fifty-four years, who, while loading a box on to a wagon, slipped and was struck by the box a slight blow on the lower abdomen. He at once experienced considerable pain, nausea, and vomiting. The pain increased steadily until the time of operation. When admitted to the German Hospital about two hours after the accident, he was profoundly shocked and was suffering great pain. The abdominal recti were rigid and the abdomen was retracted. Rectal examination negative; the flanks were tympanitic, and he gave no positive evidence of hæmorrhage. The tenderness was most marked over the lower half of the abdomen. Peristalsis was absent and he could not pass flatus. Purgative enemata were retained. His temperature was subnormal and pulse weak and running. Four hours after his admission his temperature had risen to normal, pulse 104, pain still severe, and the abdomen had begun to distend.

Median incision six inches long. There was some œdema of the abdominal walls. On opening the peritoneal cavity a sero-purulent, non-odorless fluid escaped, but no gas. The surface of presenting knuckles of bowel was injected and covered in places with flakes of lymph. Throughout the small intestines, small, yellowish-white, pearly bodies were noticed beneath the peritoneal coat.

The entire peritoneal cavity was thoroughly and completely irrigated with warm salt solution, the hand being introduced to manipulate the fluid and force it into all the pockets of the cavity, beginning below in the pelvis, then each iliac fossa, then beneath the stomach and spleen, and finally under the liver and between the coils of bowel. The small intestine was now withdrawn, and beginning at the ileocecal valve was wiped with gauze. About

twelve inches from the cæcum a perforation, large enough to admit a lead-pencil, was discovered. It was situated at the side of the bowel one-third of an inch from the mesenteric attachment. The edges of the perforation were everted, so that the mucous coat of the bowel was protruding through the opening. There was no blood in the peritoneal cavity and the edges looked ulcerated and not torn or lacerated. The opening was nearly round. Peyer's patches appeared normal, and, excepting the perforation, the pearly bodies, and some injection, the bowel seemed normal.

The hole in the bowel was closed by Lembert sutures, the pelvis drained by a glass tube, and several wicks of gauze placed so as to drain the iliac fossa. The convalescence was, on the whole, satisfactory. His bowels moved almost daily, and he passed quantities of flatus. The abdomen remained distended and painful for some days after operation.

Dr. Le Conte was of opinion that, from the characteristics which were found at the time of operation, the case must have been one of perforation due to traumatism, and not to ulceration. The fact that the abdominal wall was thickened and œdematous showed that there must have been considerable contusion; and also the fact that the mucous membrane protruded through the opening in the bowel would seem to indicate that the force had spent itself more on the peritoneal and muscular coats of the bowel than upon the mucous lining. Had the perforation been the result of an ulcerating or excavating inflammatory process, there would have been greater destruction of the mucous coat than of the muscular and peritoneal coats of the bowel.

Dr. William J. Taylor referred to a case which he reported some years ago of rupture of the bowel from the kick of a gun. This occurred while a young man was walking across a marsh hunting for snipe. The gun was accidentally discharged and struck him over the right iliac fossa, causing great pain, and making it almost impossible for him to get to his home, which was some distance away. The accident occurred on Saturday afternoon, and he was brought to Philadelphia on the following Monday, being first seen by Dr. Taylor about eight o'clock that evening, when he was found to be suffering from a violent general peritonitis. The abdomen was immediately opened, and when a slight adhesion between two coils of gut were separated with the finger, the contents of the bowel poured out. Upon examination

it was found that a round ulcer had formed, which had so perforated the bowel that it had become adherent to another coil, and the accidental movement of the finger was sufficient to rupture the slight attempt at repair. The patient died in the course of four or five days.

SPURIOUS MENINGOCELE.

Dr. Henry R. Wharton presented an infant, fourteen months of age, who, when six months old, received a fall, which is said to have resulted in a fracture of the right parietal bone. She was taken to a hospital near her home, and while under treatment there is said to have had a number of convulsions. She was admitted to the Children's Hospital in September of this year, six months after the accident, and presented the following conditions. She presented a fluctuating tumor the size of a hen's egg over the upper and posterior portion of the right parietal bone; the tumor could be reduced to some extent, but became more tense when the child cried, and transmitted pulsation could be detected. There was also noticed marked asymmetry of the face. Examination of the eye grounds was negative. The tumor was tapped and found to contain cerebrospinal fluid. Upon deep pressure a distinct opening in the skull, about two inches in length and one inch in width, at the base of the tumor could be felt with thickened edges.

The case appears to be one of spurious meningocele which has developed after a fracture of the parietal bone; the pathology of the condition is explained by a fracture of the skull, with simultaneous rupture of the dura mater and the effusion of blood beneath the pericranium, causing a hæmatoma which gradually becomes encysted and the subsequent replacement of the blood by cerebrospinal fluid.

The prognosis in these cases is unfavorable, as the tumor gradually tends to increase in size. Various forms of treatment have been employed,—pressure, repeated aspiration combined with pressure, extirpation of the sac, and closing the gap in the skull by an osteoplastic flap as practised in one case by König.

A spontaneous cure has resulted in some cases, and in early cases compression has been followed by good results. All operative methods of treatment have been followed by a high mortality.

Dr. Wharton said that this case seemed to him to be an

unfavorable one for operation on account of the large gap in the skull, and the difficulty of forming an osteoplastic flap of sufficient size to fill the gap.

Dr. De Forest Willard thought that in a case with so large an opening, and probably traumatism as the initial lesion, and with the absorption of the bone which is apparently taking place, any injection operation would be exceedingly unsatisfactory, probably fatal, and certainly not curative. He believed that an excision of the tumor would be followed by failure of reproduction, and that the only operation offering any hope of relief would be an osteoplastic plate covering the bone and giving support after operation. This operation he also felt would be attended by the same risks as any operation of that kind, but as the size of the tumor is constantly increasing and the size of the opening in the skull constantly increasing, he thought that it would be justifiable.

MARJOLIN'S ULCER.

Dr. J. Chalmers Da Costa read a paper on the above subject, for which see page 128.

EXTRADURAL HÆMORRHAGE.

Dr. John H. Jopson read a paper entitled "Two Cases of Extradural Hæmorrhage," for which see page 136.

A HOLLOW BONE-DRILL.

Dr. J. Torrance Rugh presented a bone-drill which he thought would obviate the necessity of groping about with a wire to find the hole made by it.

It is made in four parts, viz., a straight handle which has a hole running longitudinally through the centre; the "bit," which

Hollow bone-drill.

also has a hole drilled through it lengthwise and coming out about one-sixteenth of an inch from the lower end on one of the grooved sides; a set-screw, to hold the bit in place; and a trocar to close the lower opening, and so prevent the lumen of the canal from

being choked with bone chips. A short screw-thread holds the trocar fixed in its position.

After the parts are put together, the drill is pushed through the bone, the trocar is withdrawn, and the silver or other wire pushed through the centre of the drill and caught on the other side of the bone. The drill is then withdrawn on the wire, the trocar again inserted in its proper place, and the bone drilled on the other side. The trocar is then withdrawn, and the end of the wire inserted into the opening in the one side of the drill, and as the drill is withdrawn, the wire is pushed through with it and follows it, as it were.

The hole cannot clog or choke with bone-borings because of the trocar, and this most troublesome feature of all such instruments is thus overcome.

A TWIST DRILL BONE-NEEDLE.

Dr. H. Augustus Wilson exhibited a twist drill bone-needle which is an ordinary twist drill of commerce with an eye made in each end. It may be used like an ordinary needle or by means of the eye in the point by being passed through the bone, the suturing material inserted in the eye and withdrawn. To facilitate

Twist drill bone-needle.

the use of this bone-needle, a jeweller's vise was shown which is made with a hollow handle, so that the suturing material may be in place ready for use. This vise is readily sterilized. The twist drill bone-needle has the advantage of making a very small hole in the bone, which is necessary in suturing the smaller bones, for instance, the clavicle. By means of this needle any suture material can be employed.

CARCINOMATOUS CHANGES IN AN AREA OF CHRONIC ULCERATION, OR MARJOLIN'S ULCER.[1]

BY JOHN CHALMERS DA COSTA, M.D.,
Professor of Principles of Surgery and of Clinical Surgery in the Jefferson Medical College.

DURING the past year I have seen two cases of this rare condition. The first case was a woman sixty-eight years of age, who was a patient in the Surgical Ward of the Philadelphia Hospital. For many years she had suffered from what was regarded as a varicose ulcer of the leg. During the last six months the discharge had become very foul; the edges of the ulcer had become thick, everted, hard, and rose-colored; and a section of the margin of the ulcer shows that it was epitheliomatous. The patient declined amputation.

The second patient was a woman fifty years of age, and was seen in the Jefferson College Hospital. Her father died at the age of 105; her mother, at eighty-seven years. While pregnant with the last child, fifteen years ago, she developed varicose veins of both legs; from the left leg, in the region which now is the seat of the ulcer, there was a considerable hæmorrhage, and a sore. The latter healed after her delivery, and remained well until two years ago, when it again broke out. It healed up in a few weeks, remained well for a month or so, and then broke out again; since that time it has remained open. On two occasions she went to hospitals and had it burned with caustic. Eighteen months ago it was the size of a ten-cent piece; now it is seven inches in width and six inches in length. She has considerable pain in the bone of the leg, which is much worse at night. The ulcer at some spots has undermined edges, and is elevated at certain places on the margin; its border is hard and dense, and sections which have been removed for examination show it to be an epithelioma. The patient declined to submit to amputation.

The two cases cited above are instances of chronic ulcers of the cutaneous surface which became carcinomatous. The

characterization of this condition as Marjolin's ulcer I think to be proper, because it was first carefully studied and accurately described by Professor Marjolin, of Paris, over fifty years ago.

It is a very ancient and well-demonstrated belief that cancer may arise, and, in fact, is rather apt to arise, in an area of chronic inflammation; for instance, on the lip of a pipe-smoker, on the tongue of a lather or carpet-layer—who holds nails or tacks in his mouth—on the scrotum of chimney-sweeps and paraffin-workers, in a gall-bladder containing gall-stones, on the skin of the nose where the bridge of an eye-glass or of a pair of spectacles has rested, on the tongue where the sharp edge of a tooth has been in contact, and in numberless other locations. It has been demonstrated that a laceration of the cervix uteri or an ulcer of the tongue is likely to become cancerous, and that an ulcer of the stomach occasionally becomes so.

The question of the relationship between gastric ulcer and gastric cancer is very much disputed. Strümpell and others are positive that there is a causal relation between them; and Schmidt has pointed out that a cell-degeneration, identical or of similar character, is to be found about each of these lesions.

On the cutaneous surface of the body, it is a rare occurrence for an innocent lesion to become cancerous, although occasionally this does take place. There is, of course, a certain relation between innocent and malignant epithelial growths, in the fact that in both there is an excessive growth of epithelium. We find this excessive epithelial proliferation in warts, in Molluscum contagiosum, and in some syphilitic and tubercular lesions; but, although in innocent conditions there is epithelial overgrowth, there is never unlimited and unrestrained growth, and the multiplying cells grow outward, as a rule; and even if they grow inward, they do not infiltrate tissues, and do not abolish the normally clear division which exists between derm and epiderm.

We have seen an area of chronic eczema on the left hand of a locomotive engineer become cancerous. It is this hand that habitually rests upon the throttle-valve; and the throttle-

valve is often warm, or even hot. We have seen cancer arise from a wart, from the scar of a burn, from the margins of an anal fistula. Nevi and moles occasionally become cancerous; but, as a rule, the malignant growth which springs from either one of these is sarcoma rather than carcinoma. We have never seen a carcinoma arise from a corn, although it has been alleged that it sometimes does so. That it occasionally arises from an old area of lupus, a syphilitic ulcer, or an ordinary chronic ulcer of the leg is undoubted.

When a cancer arises from an ulcer, it is not to be supposed that the connective tissue of the ulcer has been converted into epithelium. The proliferating epithelium of a cancer must spring from pre-existing epithelium; hence, it sometimes comes from epithelial elements, such as sweat-glands or hair-follicles, that lie undestroyed among the granulations of the ulcer, or, what is more common, from the edges of the ulcer itself. In the vast majority of instances, a malignant growth that arises in an area of ulceration on the cutaneous surface begins at some point on the margin of the ulcer.

The fact that malignant growth can follow chronic irritation is not proof positive that the irritation is its direct cause. A great many hold that in such a case the ulcer is not directly converted into a cancer, but that the chronic irritation in the ulcerated area simply allows of the admission and favors the destructive action of some cancer germ.

It is certainly not proved, at the present time, that cancer is due to a germ, although many of the ablest students and observers are of the opinion that it is. There is no theory as to the cause that is really capable of explaining all the phenomena of cancer. Beside the fact that regions that are irritated or injured are particularly prone to develop cancer, the parasitic theory has gained support from the observation that metastases take place; and that it may be possible to inoculate the growth into the lower animals, or that an accidental inoculation may take place at another part of the body of the individual who is suffering from the disease. But there is considerable doubt as to the real cancerous nature of many of the

tumors that have been transplanted from one animal to another; and, further, a great many different parasites have been alleged to cause cancer. Many supposed parasites are, however, really cell-degenerations; and, whereas yeasts and blastomycetes may exist in a carcinoma, it is very doubtful whether they are causative.

Gaylord and others strongly maintain that protozoa are the cause, but their experiments seem to have failed to demonstrate absolutely that epithelial cells were not transferred. There is no doubt that epithelial cells can be transplanted. We carry this process out deliberately in skin-grafting; and yet we do not assume that a parasite exists because the transplanted cells grow. It is equally possible to transplant the embryonal cells of cancer; and if they take root and grow, this is no proof that parasites are present.

The existence of metastases seems, at first glance, to be strongly suggestive of a parasitic influence. These secondary tumors are, however, not due to the proliferation of lymphatic structure in that region, as would be the case in an ordinary infection; but they are the result of the transfer of epithelial cells from the primary focus, the deposition of these cells in the lymphatic tissue, and their multiplication in this tissue. As Nicholas Senn says, a parasitic origin is improbable from histology and histogenesis; and the secondary tumors are not due to the growth of pre-existing lymphatic structures.

In view of the possibility that an ulcer of the cutaneous surface may become malignant, it becomes highly important that every chronic ulcer should be subjected to a thorough study for the purpose of making a careful diagnosis. As previously stated, in any chronic ulcer malignant change is most apt to appear at the edges, and persistent and increasing induration should excite suspicion. Of course, in the ordinary indolent ulcer there is a great mass of scar tissue, which often fastens the ulcer to the bone; but this mass of tissue does not have a local beginning, as it seems to appear and advance equally at all parts of the edges, and also at the base of the ulcer. Then, again, the edges, though thick, are often smooth and are usually

free from tenderness. The most chronic form of indolent ulcer is known as the callous ulcer; and this ulcer, unlike a malignant growth, is distinctly sunk below the cutaneous level. Its entire border is hard and knobby. It is not tender, and the appearance of the ulcer varies scarcely at all from week to week or from month to month.

When a carcinomatous change takes place in a chronic ulcer, induration usually begins at a portion of the margin and spreads slowly, progressively, and inexorably; although, even after it has existed for a considerable time, we may find but one-third or one-half of the margin of the ulcer to be malignant, the balance of its edge being non-malignant. In fact, it is extremely rarely that the entire margin of a large ulcer is converted into malignant disease; it requires a long time to effect this.

An important fact to remember is that, whereas very chronic, simple ulcers are rarely tender or painful, in malignant disease there is both induration and pain. This pain, as Paget long ago pointed out, is of a hot, scalding, or darting character.

The discharge of a chronic ulcer which becomes cancerous is increased in amount and becomes ichorous, and marked bleeding may occur. A foul, and even stinking, discharge, containing visible masses of destroyed tissue, is a usual feature.

Again, as Paget has likewise shown us, we find, here and there, on the margins of such a malignant growth, spots where apparent healing has occurred; but this is not due to the healing of actual cancerous tissue, but to the fact that non-cancerous regions have healed or that portions of the malignant growth have sloughed out, leaving a non-cancerous bed which will heal.

When the growth has attained a considerable size, we shall find that its base and margins are densely indurated; that the patient suffers from shooting or burning pain in the ulcerated area; that the floor is uneven, and frequently of a warty appearance or like a cauliflower; and that there is a profuse, stinking, and bloody discharge.

At some time or other the anatomically related lymph glands are bound to enlarge; although this seems, as a rule,

to be late, probably because the previous induration has blocked up the lymph channels.

The most difficult case in which to make a diagnosis is one in which there has been great pre-existing induration of a chronic ulcer, and the knobby induration of the cancerous change is not appreciated and differentiated for a considerable time. In every doubtful case of chronic ulcer, portions should be removed from the margins and be studied by a skilled pathologist.

And right here a caution should be put forth. In two cases a pathologist reported carcinoma of the tongue, but recovery followed the administration of antisyphilitic treatment. In one case of ulcer of the leg a pathologist declared the condition to be cancerous, but Dr. Hearn and I were doubtful, and specific treatment effected a cure. Such mistakes sometimes arise because of the common belief that embryonal or atypical epithelial cells justify always a diagnosis of cancer, and yet healing sometimes occurs even when such a finding has been made.

What really does justify a declaration that carcinoma is present is the unrestrained multiplication of epithelium as shown by the infiltration of the apparently sound tissue at the margin of the growth. The finding of the pathologist is of the greatest value if proper material is sent to him to study. When the surgeon removes a bit of a growth for microscopic investigation, it should be large enough to make many sections, and should include not only a portion of the obvious growth, but also a portion of the adjacent and apparently healthy tissue.

If a carefully made clinical diagnosis is not in accord with the microscopist's diagnosis of carcinoma, no such radical operation as amputation should be performed until the situation has become clear and the diagnosis positive.

When a positive diagnosis of cancer arising in an ulcer of an extremity is made, there is only one proper operative treatment; *i. e.*, amputation well above it, and the removal of anatomically related glands, even if another incision has to be

made to accomplish this. For instance, if dealing with an ulcer in the middle of the leg, we should amputate well above the knee, and should then make an incision into the groin that will permit us to remove the inguinal and femoral glands. That a condition such as this is very rare is shown by the fact that the elder Gross, in more than a half-century of surgical experience, saw only three cases of ulcer of the leg that required amputation.

Marjolin's ulcer may be greatly benefited by the X-ray; hence, before considering amputation try this agent, if glands are not obviously enlarged. The late period at which glandular enlargement is apt to occur makes this plan hopeful.

In an advanced case in which operation is refused, the X-ray may still be of service in lessening the rapidity of the growth, checking discharge and hæmorrhage, and subduing pain.

DISCUSSION.

Dr. Henry R. Wharton stated that his attention was first directed to this condition by a case which he had seen some years ago in the University Hospital under the care of Dr. Ashhurst, the ulcer occurring in the cicatrix of a gunshot wound received in the War of the Rebellion. The case presented all the characteristics which Dr. Da Costa has enumerated. The ulcer was inflamed and painful, and the discharge therefrom was most offensive. Since that time he had seen three typical cases of Marjolin's ulcer, one of which developed in the cicatrix of a gunshot wound also received in the War of the Rebellion, which came under his care at the Presbyterian Hospital, and in which amputation of the leg was performed. Another occurred in a colored woman sixty-three years of age, being located in cicatrized tissue back of the knee, which had resulted from a burn received at the age of twelve years. A few years previous, when the woman was fifty years of age, there developed a fungous ulcer. In this case an amputation of the thigh was done. Another case occurred in a woman seventy years of age, who gave a history of an ulcerated leg since she was twelve years of age, which had suddenly broken down, involving the leg to the knee-joint. In this case amputation of the thigh was done. These cases all terminated satisfactorily, and, although some of them have been under observation for a number of years, there had been no return of the disease.

Dr. G. G. Davis stated that if by Marjolin's ulcer was meant any malignant growth following ulceration of the extremities, he felt it was a very remarkable thing that Gross should only have seen three cases in his lifetime. If such was his experience, we would be led to think that these cases are extremely rare. He stated that personally he did not think malignant growths occurring on previously ulcerated surfaces were so extremely rare as this experience of Gross would seem to indicate. He remarked that a few months ago he amputated one leg for carcinomatous growth of the heel following an injury and ulcer which had existed for a couple of years, and he also felt sure that he had seen other cases of this character.

EXTRADURAL HÆMORRHAGE FROM RUPTURE OF THE MIDDLE MENINGEAL ARTERY.

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My object in this contribution is to report two cases of rupture of the middle meningeal artery and compression of the brain by an extradural clot, with operation and recovery, and a third case in which the symptoms closely simulated those of extradural hæmorrhage, but in which operation showed it to be absent. These cases all came under my observation in a short space of time, and, as I had previously encountered but two similar cases in my own experience, I thought they might be of sufficient interest to make this report.

Case I.—*Fracture of Skull; Extradural Hæmorrhage from Rupture of Middle Meningeal Artery; Fracture of Tibia and Fibula; Lacerated Wounds of Face, Mouth, and Scalp.*

W. C., white, aged nine years, was admitted to the Children's Hospital, April 22, 1902, with a history of having a short time before fallen from a freight-car on which he was playing. When admitted he was conscious, but somewhat irrational, and was still suffering from shock. His temperature was 98° F.; pulse, 92, but of rather poor volume. He was bleeding freely from a wound in the chin about two inches long, which communicated with the mouth. The upper lip was torn from the gum and superior maxilla, almost opening the nasal cavity, and the left cheek was cut internally by impaction against the teeth, two of which were broken. There was a slight lacerated wound of the scalp in the posterior parietal region on the right side, not extending to the bone, and around and above it a considerable hæmatoma. Palpation in this region gave a distinct sense of depression in the underlying bone. The left tibia and fibula were fractured transversely in their lower third, and the lower fragments and foot were drawn backward at a considerable angle by the action of the calf muscles. There was no paralysis of face or limbs; the pupils were equally

contracted. He vomited freely after admission. The boy was etherized, and the fracture of the leg reduced, the tendo Achillis being divided subcutaneously to facilitate reduction and prevent subsequent deformity; and the foot, leg, and knee fixed with double lateral splints of binder's-board and placed in a fracture-box. The wounds in the face and mouth were sutured. A diagnosis of probable fracture of the skull was made, but, as the depression seemed moderate and the symptoms rather those of concussion with shock than compression, surgical interference was postponed. The patient reacted well from the shock, pulse dropping from 120 on the evening of the 22d to 76 the following evening, but the temperature remained slightly elevated, ranging from 100° to 101$^{3}/_{5}$° F., and his mental condition being dull during the day and somewhat delirious at night. He was roused with difficulty. The pupils were equal and contracted; there was no paralysis. He vomited a couple of times on the 25th and 26th. The hæmatoma over the right parietal region continued to increase in size. While there were distinct evidences of cerebral irritation, it was difficult to separate them from those naturally due to the shock and concussion, complicated as they were by his other injuries.

On the evening of the 26th, however, after a bad night and day, his pulse suddenly dropped to 48, and operation was at once decided upon. Dr. Wharton, who had seen him several times with me, assisted me. Incision evacuated the contents of a large hæmatoma in the parietal region, and revealed a moderate depression above and behind the right ear about three-fourths of an inch in diameter; and running from this, parallel to the median line, was a fissure several inches in length crossing the parietal and penetrating the frontal bone. An extradural clot presented itself after removal of a fragment of the depressed area, which it filled, and from which it extended forward. It was gradually uncovered by cutting away the bone on either side of the fissure with rongeur forceps, until its anterior limit was reached about four inches in front, where the middle meningeal artery had been torn. The clot was about three-fourths of an inch thick and about two and one-half inches wide. After removal, there was free hæmorrhage from the region of the vessel, which was only checked by packing with gauze strips, as the bleeding vessel could not be isolated. The brain was much depressed by the very large clot,

but the dura was uninjured. The packing was brought out at the anterior portion of the wound, a gauze strip laid in the posterior angle, and the remainder of the wound sutured. The patient was slightly shocked, but soon rallied. The next day his pulse varied from 92 to 100, and temperature fell from 101⅖ to 100⅜° F. His mental condition at once began to improve. The restlessness and delirium abated, and while he was very dull and slept a great deal for several days, he was easily roused, and at the end of this time regained fully the possession of his mental faculties. No paralysis was present at any time before or after the operation. On May 1 he was again etherized and the packing removed. There had been considerable oozing after operation, and there was some fresh bleeding from the region of the vessel, which was controlled by a little packing, which was removed three days later. The greater part of the wound healed by first intention. The temperature remained slightly elevated for a week, between 100° and 100½° F.; but his condition gave us no anxiety after the operation, and his convalescence was uneventful. Medication consisted in calomel one-tenth grain every three hours, with bromides for restlessness, and strychnine after operation.

CASE II.—*Contusion of Head; Rupture of Middle Meningeal Artery; Extradural Hæmorrhage; No Fracture of Skull.*

D. C., aged thirty-three years, Italian, was admitted to the Presbyterian Hospital, July 1, 1902, at 5.30 P.M. He had been struck on the left side of the head by a piece of cable, from the breaking of a derrick that morning, knocked down and stunned. He either did not lose or soon regained consciousness, and refused to go to the hospital, but did not resume work, walking with assistance to a shanty near where he was employed. In the afternoon, several hours later, he became unconscious, and was hurried in the patrol to the hospital. He was admitted in an unconscious condition. There was a contusion, with an underlying hæmatoma and two slight superficial lacerations of the scalp about four fingers'-breadth behind the left eye and a similar distance above the zygoma. The temperature was 96° F., pulse 48, respiration 24 and irregular. The pupils reacted to light. There was a slight protrusion of the left eyeball and œdema of the lid on same side. The face was not noticeably drawn. During examination he resisted with the left arm only, although he was able to make indefinite movements with the right arm and to move both legs. There

was a very distinct partial paresis of the right side. He made no attempt to speak and seemed to recognize no one. I saw him at 8 P.M. Coma was now more profound. The pupils were fixed midway between contraction and dilatation, the left slightly larger than the right; neither reacted at all to light. Temperature 98⅖° F., pulse 68, respiration 20. No movements of extremities at all. Condition otherwise as given above. There was a sense of depression in the left parietal region, which led me to think we would find a fracture. The patient was at once prepared for operation and ether was found necessary. During preparation he moved the right arm and leg a little, showing paralysis was not complete. A semicircular flap was reflected over the contused area on the left side and the bone exposed, covered by a hæmatoma of external origin. No fracture was discovered. I had been led by his history and symptoms to suspect a rupture of the middle meningeal artery, and when I found no fracture, determined to trephine over its location and examine it. The incision was enlarged anteriorly, and the crown of a medium-sized trephine applied, with the pin over a point two fingers'-breadth behind the external angular process of the frontal bone, and three fingers'-breadth above the zygoma. The button removed was grooved by the vessel, which was bleeding in its immediate neighborhood, and a dark clot filled the opening.

The trephine opening was then enlarged in a backward and downward direction, the artery spurting in the wound, following the direction of the clot. An unsuccessful attempt to tie the artery was followed by easily checking the hæmorrhage by packing a couple of small strips of iodoform gauze between it and the edge of the bone. The clot was then followed backward, and an opening in the bone three inches by one and three-fourths inches in its widest diameters was necessary to remove the clot, which extended at least three-fourths of an inch beyond the edges of this opening, was about three-fourths of an inch thick, and was removed with some difficulty by a sharp spoon. After its thorough evacuation, the much depressed dura was found apparently uninjured; a gauze drain was laid in the opening and brought out at the posterior angle. The two small pieces of gauze controlling the vessel were brought out at the anterior extremity and the wound sutured. Immediately after operation, and before he was removed from the table, the patient moved the right arm and leg freely; both pupils

reacted to light, and the character of the respirations was much improved. Temperature, 99⅘° F.; pulse, 92; respiration, 20.

Consciousness was rapidly restored, and the following morning, July 2, his mind was clear and he talked freely. Temperature, 97° F.; pulse, 72; respiration, 15. No paralysis noted. His improvement after this was rapid. The temperature was slightly subnormal, varying from 96⅕° to 98⅘° F. for seven days, when it became and remained normal. On the fourth of July it was noted that the right side of the face was a little flaccid during whistling or smiling. The wound was dressed on the fourth day, found clean, and the packing removed. There was a little oozing from the anterior angle. The mental condition was normal from the morning after operation. The slight facial paralysis had disappeared by July 8. The patient was with difficulty persuaded to remain in bed for two weeks, and was discharged July 22 with a very small granulating area at the anterior angle of the wound; the rest healed solidly, although with moderate depression present.

CASE III.—*Contusion of Head; Concussion of Brain; Cortical Irritation, probably due to Minute Hæmorrhage or Laceration.*

H. W., white, aged nine years, was admitted to the Children's Hospital on the evening of April 19, 1902. He had been struck a short time before by a trolley-car; was unconscious when picked up, and remained so for five minutes. He was in a semistuporous condition when admitted, and very irritable on examination. He presented a contusion, with much swelling over the left supra-orbital region. The pupils were dilated, pulse small, and skin clammy. No paralysis. He vomited twice while still in the receiving ward. I saw him at this time and made a diagnosis of concussion. Soon after this, and when sent to the ward, he became totally unconscious, and about one-half hour later developed muscular twitching, confined to the right side of the face, lasting for a couple of minutes, and at the same time vomited freely. About ten minutes later he had a convulsion, preceded by twitching of the right side of the face, and then involving the right arm and leg and lasting for about fifteen minutes, the left arm and leg being affected during the latter part of the time also. The child remained unconscious, and a third convulsion occurred while he was being prepared for operation, beginning on the right side and becoming general, although the movements were more marked on

the right side throughout. There was external strabismus in the left eye; pupils equal and contracted. Breathing stertorous; pulse, 104; temperature, normal. Dr. Wharton saw him with me four hours after admission, and we decided, in view of the urgent and very alarming symptoms, to operate. Examination of the shaven scalp showed only the contusion in the left supra-orbital region. A flap was reflected at this point, and no fracture found. The right side of the face was now paralyzed, but the child seemed to be regaining consciousness. I trephined over the region of the middle meningeal artery on the left side, using the measurement already mentioned, but allowing for the age of the patient. The artery was at once exposed unruptured and with no clot to be observed. The opening was enlarged in a posterior direction over the motor area with the rongeur forceps, and the dura found apparently uninjured, with no evidences of fracture or subdural clot. During this time the right arm and leg continued to twitch. Bearing in mind those rare cases in which the symptoms of cortical irritation are on the same side as the lesion, a small semicircular incision was made on the right side, and a small trephine used to uncover the right middle meningeal artery. This was also found uninjured where exposed under the button, and the latter was at once replaced and the wound sutured. The first wound was sutured, a small gauze drain being inserted. As we had failed to find the cause of the alarming symptoms, the probable diagnosis was either a laceration of the brain, or minute hæmorrhage into the cortex. Following operation the symptoms rapidly ameliorated. The temperature rose to 102° F., falling by the next morning to 100⅘; pulse, 104; respiration, 24. There had been no more convulsions, and his mental condition had improved rapidly and was quite clear. The facial paralysis had disappeared, pupils were equal, strabismus gone. On the 21st his temperature fell to normal, and did not rise above 100 afterwards, and the improvement in his general condition continued. He slept a good deal for the first two or three days, but exhibited no other special symptom. The wounds healed by primary union. He remained in the ward for several weeks, during which time he exhibited no ill effects from his injury, when he was discharged apparently cured. His medication consisted of calomel and bromides for the first three days and then bromide alone for several days longer, with small doses of digitalis for two days after operation.

In the first case reported the line of fracture crossed the anterior branch of the artery and explained its laceration. In the second case, where there was no fracture, the contusion was sufficient to rupture the vessel, a possibility well recognized. Tillaux showed that the adhesions between the dura mater and skull were weak in the temporal fossa, and this in fact constitutes the "zone decollable" of Marchant, and would favor rupture. The presence of perforating branches from the vessel which pierce the skull and are liable to be pulled upon when the elastic skull springs back after momentary depression by a force perhaps insufficient to fracture it (Steiner[1]) also exposes the vessel and its branches to dangerous traction.

As regards the symptomatology of these cases, in the first case the classical clinical picture of extradural hæmorrhage was absent, the symptoms being more those of fracture of the skull with concussion or injury of the brain. The leakage of blood through the fissure into the subaponeurotic space probably relieved the pressure on the brain for a time and accounted for the preservation of consciousness and absence of paralysis. Gubler,[2] in a study of a large series of cases of fracture of the vault of the skull from Krönlein's clinic, reports a case in a boy four years of age in which there was apparently a rupture of the middle meningeal artery, a fracture of the skull, and a hæmatoma under the scalp communicating with the interior of the skull. The case recovered without operation. He quoted four analogous cases from Wiesman, two of them in children (observed by Holmes and Golding Bird), and explains the cause of this phenomenon in early life by the intimate adherence of the dura mater to the skull at this time. The temperature, slightly subnormal at first, then moderately elevated, was more suggestive of hæmorrhage, this being a common feature according to Phelps.[3] The slow pulse is not always observed with epidural clot, but in this case the sudden drop to 48 before operation was significant of cerebral compression.

In the second case, that of the man, the clinical picture was most complete. The initial stunning, the interval of consciousness followed by rapidly deepening coma, with subnormal

temperature, slow pulse, stertorous breathing, and contralateral hemiplegia, and with dilatation of the pupil on the affected side, made up a symptom-complex which scarcely admitted of other interpretation.

In the third case the diagnosis of hæmorrhage, while less certain, was, I think, justifiable, and trephining strongly indicated. There was a history of loss of consciousness, followed by its partial restoration, and then in a short time a deepening coma with severe convulsions starting on the opposite side from the injury, and followed by paralysis of the face on that side. The exact nature of the lesion remains unknown, but it seems probable that there was a slight hæmorrhage or laceration in the motor area. In two of Phelps's cases of cerebral contusion there were general convulsions, and in both he found large pial hæmorrhages, with in one case intense congestion of the dura and in the other a limited contusion of the temporal area. Muscular twitching and general convulsions were observed by him after both hæmorrhage and contusion, but he regards such motor disturbances as more characteristic of contusion, as paralysis is of hæmorrhage. Cortical irritation causing convulsive movements and due to hæmorrhage contributed to correct diagnosis in a case reported by W. J. Taylor.[4] The second trephining on the other side was indicated by the apparently desperate condition of the boy and by the possibility of that rare condition, as yet unexplained, of collateral palsy to which all authors allude, although some regard it as apocryphal. The rapid amelioration of symptoms after operation may have been due in part to relief of intracranial tension by trephining. The measurement which I used for locating the trephine openings and exposing the anterior branch of the artery in the second and third cases, two fingers'-breadth behind the external angular process of the frontal bone and three fingers'-breadth above the zygoma, is one which I have frequently tested on the cadaver, and corresponds in my own hand very closely to the measurement formerly recommended by Treves,[5] viz., one and one-half inches behind the external angular process of the frontal bone and one and three-quarters inches above the

zygoma. It makes the point of exposure a little higher than Krönlein's,[6] which is the one favored by Plummer[7] after an exhaustive series of tests, and the one Treves[8] now furnishes, and which is located on a line drawn through the supra-orbital ridge parallel to Reid's base line at a point from three to four centimetres behind the external angular process. Plummer found all the measurements recommended for exposing the posterior branch to be unreliable, but Steiner's as open to the least objections. This locates it at a point where a line drawn horizontally through the glabella is intersected by a vertical line running just in front of the mastoid process.

Steiner[1] and Plummer[7] both suggested the applicability of an osteoplastic flap exposure of the vessel which would render unnecessary these exact measurements, avoid the necessity of more than one opening, and the necessary leaving of large gaps in the skull, such as are indispensable to a thorough removal of a large clot and perfect control of hæmorrhage. This method has been used several times for this purpose, as Plummer[9] describes in his second article on this subject, where he reports two cases operated upon by the Hartley-Krause method in his own hands, with exposure of the clot, and recovery in one case, death in the second case being due to complicating injury of the brain. That the method is of value seems certain; but it seems to me that in cases of great doubt as to the existence of a hæmorrhage or fracture we should not always forego preliminary exploration by incision of the soft parts or even the application of a small trephine over the anterior branch of the artery.

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[7] S. C. Plummer, Jr. Annals of Surgery, xxiii., 1896, p. 540.
[8] Sir F. Treves. "Surgical Applied Anatomy," 1901.
[9] S. C. Plummer, Jr. Annals of Surgery, xxxvi., 1902, p. 591.

DISCUSSION.

Dr. J. Chalmers Da Costa referred to a case which had come under his care some time since. It was that of a man suffering from an injury to the skull by being hit on the head with a blackjack, after the administration of knockout drops. Incision into the wound revealed a fracture of the skull and extensive hæmorrhage from a parasinoidal sinus, which was controlled by gauze packing. The patient did well for a number of days. Primary union was complete, except there was a very small fistula. Ten days after the operation the patient became violently insane, imagined that he was being beset and prosecuted, had terrifying hallucinations, and became worse and worse. Da Costa then became doubtful as to how many pieces of gauze he had put in the wound. He could not remember how many he put in, but he knew only one piece had been taken out. By means of a small probe he was finally able to secure a thread through the sinus that remained, and then removed a piece of gauze twelve inches in length. This case indicates the necessity for extreme care in always noting down the number of pieces of gauze put in a wound for the control of hæmorrhage. The speaker referred to the case of a man who was run down by a bicycle fiend. The man was brought into the hospital speechless and suffering from an injury of the scalp above the external angular process on the right side. He was either unable or refused to write, but made curious signs with his fingers, which were found to be the deaf and dumb language. Another inmate of the institution who understood the sign language was brought into the room, and on attempting to converse with the patient, it was found that he only spoke three words, "how," "what," and "when," which he repeated with his fingers. When asked his name, age, residence, how he was hurt, etc., he would invariably make these same signs with his fingers. The man was operated on and a bit of bone was found driven into the third frontal convolution. When the man returned to consciousness, his wife, who was also deaf and dumb, was there, and he conversed with her with perfect freedom, and the question has presented itself to the mind of the speaker whether the sign language was located in the third frontal convolution on the right side, as seems to be indicated by this case of aphasia to signs, as it might be considered.

Dr. Henry R. Wharton stated that in his opinion one point which should never be lost sight of in these cases of extradural hæmorrhage was that where the typical symptoms might be located, the hæmorrhage might be from another source, as for instance the symptoms occurring in the right side when the hæmorrhage was in the lateral sinus. He reported the case of a boy who fell some distance and struck the right side of the head, and within twelve or fifteen hours developed typical symptoms of extradural hæmorrhage. Following the external symptoms, a trephining operation was done, including the small fissure of the skull, which was followed backward until the seat of the hæmorrhage was found and an immense clot of blood removed. The hæmorrhage was controlled by packing, and the patient ultimately recovered. In suspicious cases it was thought to be always well to bear in mind the possibility of the lateral sinus being the seat of the hæmorrhage.

Dr. Taylor stated that in one case which he had reported, a man had been standing at the head of a stairway down which he fell. A history was given of his unconsciousness for a short time, that he recovered sufficiently to get up and walk into a room and sit down, but that in a few minutes he became again unconscious and was sent to the hospital. When first seen he was apparently paralyzed on one side, and had convulsive movements on the other. As he had only one eye, it was impossible to compare the pupils, but his single one was contracted. A trephine opening was made in the skull on the opposite of the paralyzed side in the region of the anterior branch of the middle meningeal artery, but no clot whatever was found. Immediately another trephine opening was made on the opposite side of the head at a corresponding point, and a large extradural clot was discovered. Evidently this clot had produced sufficient irritation to the dura to cause the convulsive movements. The man never regained consciousness and died. It was now learned for the first time that he had been paralyzed on one side some time before the accident, and at the autopsy an old blood-clot was discovered on the brain. The question of diagnosis was here very much complicated by the conditions and by a faulty history.

Dr. G. G. Davis stated that it was interesting to bear in mind, in reference to the cases of extradural hæmorrhage not from the middle meningeal artery, that they can take place without any

fracture being present. He had been inclined to doubt the possibility of this occurrence, but referred to a case which was reported in the *New York Medical Journal* three or four years ago, in which a surgeon diagnosed and evacuated a clot in one of the parietal regions, in which there was absolutely no evidence of a fracture. Since that time he has seen the record of another case in one of the British journals, which would seem to establish the possibility of the occurrence of this condition beyond a reasonable doubt.

Dr. T. R. Neilson stated that he had a number of times to control hæmorrhage from the middle meningeal artery or its branches. He felt that packing by means of gauze is best adapted to intracranial hæmorrhage from the venous sinuses, as he had proven by personal experience on a number of occasions. In hæmorrhage from the middle meningeal artery his practice has been to control it by ligature, not tied over a hæmostatic forceps, but passed around the vessel threaded in a small, full curved needle. Reference was made to a case in which he had found it necessary to plug the foramen spinosum in order to control the hæmorrhage, the vessel being torn across as it emerged from the foramen. The plug used was a match-stick sterilized by boiling. In reference to the removal of clot, he stated that he believed it could be done more easily and more quickly by means of a stream of water from a syringe than by any instrument.

Dr. John H. Jopson stated that he believed the method recommended by Dr. Neilson, of controlling the hæmorrhage by means of the ligature, was the best in the cases where it could be practised; but in the first case this was absolutely impossible, as several of the branches of the vessel were apparently torn, and a considerable amount of packing was required. In the second case, a very little packing checked bleeding most satisfactorily, and more bone would have had to be removed than was done to have used the ligature method.

As to the possibility of the production of hæmorrhage without fracture, he believed that that point had been emphasized by Jacobson. As long ago, however, as the time of Charles Bell, he pointed out, if you take a cadaver and strike it a heavy blow on the skull and then inject the carotid artery, you can find evidence that the dural artery or its branches has been ruptured.

The question of the removal of the clot was considered an

important one, and it was recommended that an opening should be made in the skull of sufficient extent to thoroughly uncover the seat of the hæmorrhage, reference being made to a case in which a trephining operation had been done, the clot syringed out, but the true source of the hæmorrhage never uncovered or controlled, and death resulted from further compression of the brain.

STATED MEETING, DECEMBER 1, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

HIP-JOINT AMPUTATION FOR TUBERCULAR DISEASE OF THE FEMUR.

DR. DE FOREST WILLARD presented a woman, fifty years of age, who was admitted to the Presbyterian Hospital, October 21, 1902, with the history that for forty-two years she had had tubercular ostitis of the left femur,—first at knee, then thigh, then hip. Numerous sinuses had formed from time to time at various points in the thigh, sometimes healing, then reappearing. One year ago she fell, and either broke the femur at lower end or tore the ligaments at the knee, so that the leg now bends outwardly at an angle of forty-five degrees to the femur; limb perfectly useless. Pus discharging sinuses at various points between knee and hip-joint. Increased pain and discomfort both at lower and upper ends of femur. The tissues throughout the entire thigh dense and indurated from tubercular deposit. Knee-joint rigidly fixed. As the limb had been useless for years, and as there was no possibility of her ever employing it for locomotion except with crutches, the patient readily consented to a hip-joint amputation.

Operation.—Three Wyeth's pins used, anterior one entered below anterior superior spinous process, and emerged near the vulva, passing close to pubic ramus and beneath femoral vessels. Around the head and point of this pin was carried ovally an elastic tubing, thus compressing the femoral vessels independently of the encircling tubing, which was afterwards applied. The anterior flap was made irregular in shape to avoid the pus sinuses; the femoral vessels were tied with catgut before disarticulation of the joint; posterior flap also cut and vessels tied, as the tissues were densely infiltrated. Upon removal of the tourniquet, less than one drachm of arterial blood was lost, the only hæmorrhage being the venous blood in the leg itself, which, on account of the pathologic conditions, had not been pressed out by elastic bandage. Wound closed with silkworm gut, posterior drainage being provided for by an independent opening through the buttock.

Animal heat had been economized during the operation by placing the patient upon an electrically heated mattress, and by her body having been wrapped from neck to feet in cotton wadding. She left the table with a temperature of 99° F. Whiskey and water enemas had been given just previous to the operation; also, hypodermics of strychnine and morphia.

Her operative recovery was retarded, as the wound became infected from the old pus sinuses, which delayed the healing. The blood supply for the body was abundant, as the circulatory system was relieved of one-sixth of its requirements.

SPINA BIFIDA.

Dr. Willard presented a girl, aged seventeen years, height four feet eight inches, fairly well developed, who was admitted to the Presbyterian Hospital, October 9, 1902, with a history that since infancy she had been unable to walk without apparatus or crutches. History vague, but, as far as she could remember, she had been operated on six times for correction of feet and leg deformities.

At time of admission she had trophic ulcers on the soles of the feet, and bore the scars of several tenotomies; also on the right foot the scar of a probable wedge-shaped excision of the outer side of the tarsus. The right foot, however, still presented a bad talipes varus. Foot very short and stumpy and incapable of bearing weight. Left foot markedly valgic, so that the inner malleolus came close to the floor. The great toe had been removed for trophic changes or necrosis. Legs and thighs feebly and illy developed. Sensation markedly absent, so that operations on the foot have been done without ether, yet without the patient complaining of any pain. Legs incapable of bearing weight of body without support of hands or of crutches. Muscular contractility very feeble in left leg, moderate in right; had control of bladder and rectum.

The appearances were indicative of a lack of nerve supply from a spina bifida, and upon examining her back a large, soft swelling, resembling a fatty tumor, was found over the sacrum; in its centre was a marked dimple, but the tumor did not project like an ordinary spina bifida, but was flattened out like a saucer, and while four or five inches in diameter was not elevated more than an inch, being spread out over the sacrum. A very slight

depression could be felt over the spinal canal, but no large opening could be discovered, and pressure upon the tumor gave no pain, headache, or discomfort to the patient. There was no abnormal growth of hair over the region.

As there had been a previous unsuccessful wedge-shaped tarsectomy, the astragalus of the right foot was removed in order to allow the member to be brought into a straight position, with the sole well down upon the ground. No anæsthetic was required, and the patient complained of no pain. Catgut drainage and catgut sutures were employed, and foot dressed with plaster of Paris. In the left valgic foot the tendon of the peroneus longus was divided, and an osteotomy of the fibula performed one inch above the malleolus. The foot was then forcibly inverted and confined in this position by a gypsum dressing. The bandages were not removed until the end of the fifth week, when the wounds were found perfectly healed. The right foot was in such good position that it will probably not require apparatus, but the left will need a valgic support at the inner ankle. The limbs are so feeble from their lack of nerve supply (a portion of the cord having probably been lost in the tumor) that she will require the assistance of crutches, at least for a time.

As the opening in the spinal canal had apparently closed, there seemed to be no benefit to be secured by operative treatment upon the spina bifida occulta.

GUNSHOT WOUND OF FOREARM.

Dr. Willard presented a boy of fourteen, who had been injured by discharge of a shotgun at close range. The entire upper middle region of the right forearm was torn away, leaving only the ulna. About four inches of the radius were destroyed, together with the radial and interosseous arteries, the radial and median nerves, and the entire muscular and tendinous structures. The ulnar vein was also wounded and a large branch of the ulnar artery also injured.

At first sight it seemed that an immediate amputation was necessary, but from past experience, knowing the recuperative power of the adolescent, and with the fact that a hand and forearm even though rigid and distorted are more serviceable for work than an artificial member, it was decided to attempt to save the arm. Many shot were removed; the area sterilized; torn ten-

dons and nerves were united as far as possible. The question of immediate excision of the ulna to accommodate its length to that of the destroyed radius was considered but abandoned, since the excision of four inches would have so folded what was left of the ulnar circulation, that it would certainly have impeded the slight remaining current. The arm was put upon a splint with thorough antisepsis. Patient was critically watched for the next week. The hand became very black, but no blebs appearing, amputation was deferred from day to day. The result at time of report, four weeks after the injury, is that no area has become acutely gangrenous, but there has been a dry, hardening gangrene which is now limited to the tip of the pulp of his little and third fingers and the last phalanx of the thumb. An amputation of the latter member will give him one phalanx of the thumb, which with even stiff fingers will prove very helpful, even if but slight motion is secured, and though the hand and arm will necessarily be very useless, yet will answer for many kinds of work. As the boy still has several years of growth before him, it is probable that the elongation of the ulna will distort the arm, but a future resection of the bone can readily be done when needed, and if trophic changes occur from destruction of nerves, an amputation in the future will leave him no worse than would have been the case had an operation been done at once.

SIMULTANEOUS RUPTURE OF BOTH QUADRICEPS EXTENSOR FEMORIS TENDONS.

Dr. Henry R. Wharton presented a man, aged sixty years, who, in stepping from a trolley-car on the evening of June 12, 1902, alighed upon a pile of sand and experienced a sense of something giving away in the knees. He did not fall at the time, but when he attempted to walk, fell, as the limbs seemed powerless. He was removed to his home and was examined by his family physician, who found the knees greatly swollen, with marked disability as regards extension of the knee-joints. He was treated by fixation of the knee-joints and the use of evaporating lotions; but when the swelling had subsided it was found that there was no improvement in the power of extension of the knees. Dr. Wharton saw the patient in consultation with his family physician on July 12. Upon examination, a marked depression over both quadriceps extensor tendons, about one and a half inches above

the patella, was evident in each limb. There was at this time complete loss of the power of extension of the knees. A rupture of both quadriceps extensor tendons had occurred, and there had been no attempt at repair under fixation of the joints.

The patient was removed to the Presbyterian Hospital, and on July 21, after careful preparation of the limbs, a longitudinal incision, four inches in length, was made over the position of the rupture in each tendon, and the ruptured ends of the tendons were exposed about one and a half inches above their insertions into the patella. The gap between the ruptured ends of the tendons in each case was filled with a blood-clot and synovial fluid. The bursæ above the patella were ruptured, and a portion of the blood-clot extended under the patella and into the knee-joints. The ends of the tendons were freshened, and in accomplishing this it was observed that there were bony deposits in the tendons, which was probably a predisposing cause to their rupture. The blood-clots were carefully removed, and after freshening the ends of the tendons the surfaces were brought into contact by the introduction of four heavy chromicized catgut sutures. Some force was required to bring the edges in contact, on account of the gap which existed. The most scrupulous care was exercised as regards asepsis during the operation. The fibrous tissues over the tendons were brought together with buried sutures of fine catgut, and the external wounds were closed with silkworm-gut sutures without drainage; a sterilized dressing was applied, and the limbs were enclosed in plaster-of-Paris dressings extending from the toes to the groin.

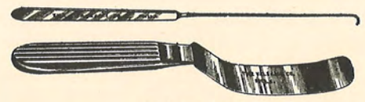
The patient ran a perfectly satisfactory course after the operation, with scarcely a rise of temperature above the normal. The bandages were trapped on July 31, ten days after the operation, and, as the wounds were healed, the sutures in the external wound were removed. The plaster bandages were removed on August 9, and the union in the tendons at the seat of operation was found to be firm. Plaster bandages were reapplied and remained for two weeks, and were then removed, and a pair of laced knee-caps applied. The patient was then gotten out of bed and allowed to walk with crutches. He was soon able to walk with the use of a cane only, and rapidly regained the use of the limbs. By October 15 he could walk without any artificial support, and the restoration of function was complete.

Dr. W. Barton Hopkins recalled a rupture of the ligament of the patella that he met with some years ago. The injury was the result of muscular violence, and the patella was found to be drawn up the thigh at least five inches above its normal position. The patient was admitted to the Episcopal Hospital a few hours after being injured, and was immediately operated upon. The patellar ligament was found to be ruptured and the patella entirely denuded of its periosteum and dragged up the thigh The tendinous covering of the bone was left attached to the tendon above. The wound healed perfectly and functional restoration was complete. Dr. Hopkins said that rupture of either the ligament of the patella or the tendon of the quadriceps is interesting because of the greater frequency of fracture of the patella when the structures in question are subjected to a breaking strain. During his experiments to determine the tensile, transverse, and crushing strength of bones, he found that the patella resisted a tensile strain of 1845 pounds, when the ligament parted. The pull was a steady, straight one, however, with no tendency to flexure of the joint or to impact upon the bone which is often present in cases of fracture. The tendon and ligament during the experiment were attached by straight iron clamps so arranged that crushing was avoided. The ligament parted at a point some distance from the clamp, showing that the instrument had no part in producing the rupture. In all cases of ruptured tendons or ligaments, operation, in his opinion, is the only method of cure, and should be performed as soon as practicable.

RETRACTOR OR ELEVATOR FOR OPERATIONS UPON THE BASE OF THE BRAIN.

Dr. Charles H. Frazier presented an elevator for use in operations at the base of the brain. He said that only those who have had occasion to approach structures at the base of the brain realize how necessary it is that the operator, at least, should be afforded an unobstructed view of the structures, and how difficult it is in many cases to secure proper exposure. Two factors interfere with the surgeon's view of his field of operation,—hæmorrhage and the brain itself. Hæmorrhage can be controlled by pressure applied through strips of iodoform gauze. The brain must be elevated or retracted, and in such a way as to cause the least degree of compression and contusion to the cerebral tissue,

and avoid laceration to the dura should that structure be still intact. In his operations upon the sensory root of the Gasserian ganglion he had been hampered by having his view wholly or partially cut off and his manipulations interfered with by the hand grasping the retractor, whether it be the hand of the operator or the hand of an assistant With a view towards removing this obstacle or annoyance, he had had constructed by the Valzahn Company of Philadelphia a special retractor (see figure). Its important features were the shape and the thickness of the blade. For a distance of three centimetres from the handle the axis of the blade forms with the axis of the handle an angle of 145 degrees, so that when the instrument is in use the hand grasping the retractor is so situated as not to interfere between the surgeon's eye and the field of operation. The remainder of the blade is eight centimetres long, follows a curve very slightly concave



Brain elevator.

except at the tip, where the curve is a little more exaggerated. The blade is thin enough to yield somewhat under the pressure that would be exerted upon the dura and brain, and thus adapts itself more or less evenly to the surface to which it is applied, and thereby subjects the brain to a uniform degree of pressure. This retractor or elevator may be used in any operation which requires an exposure of the base of the brain, whether it be one for removal of tumors or for the extraction of the ganglion or division of its sensory root. It is more particularly with the latter class of cases that he had employed the instrument and found it so useful.

The other instrument shown in the illustration above the retractor is a hook which he had had constructed for his operations upon the sensory root of the Gasserian ganglion. After the root is exposed, it is picked up with the hook, grasped with hæmostatic forceps, and divided.

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