of the cartilage, probably because the impact is one of the cartilage originally and because of the poor blood supply. Infection and ankylosis of the metacarpo-phalangeal joint often occur. One case required amputation. The speaker asked Doctor Bates how far he suggested going with the cautery when tendons were exposed. Doctor Owen is at present treating these cases by wide incision under general anæsthesia followed by continuous immersion in warm boric solution. He will be glad to try electrocauterization again.

DR. JOHN FLICK said that he had been trying to study cases of human bites bacteriologically but unless examination is made very promptly and very carefully the spirochetes are missed; they are difficult to culture and unless the material removed is examined within a half hour the organisms are not found.

DR. M. J. HARKINS remarked that Doctor Bates' success with cauterization might be due to the fact that the severe course of many cases of bites is due to invasion by anaërobic bacteria. Many antiseptics have little if any value in this type of infection and it may be that the severe disinfection of the cauterization is responsible for the cleansing effect.

DR. WILLIAM BATES said that after going over his findings and various reports in the literature about the types of infection, he decided to wait for a few more cases and have them cultured before treating them, but none of these showed the streptococcus fusiformis. Regarding depth of cauterization, he thought one would be justified in carrying it to the point of complete débridement, even though it was necessary to sacrifice a tendon.

COMPARATIVE STUDIES OF ANTISEPTICS IN EXPERIMENTALLY PRODUCED LOCAL INFECTIONS

DRS. ELI SALEEBY and M. J. HARKINS, by invitation, read a paper with the above title.

END-RESULTS IN RADICAL OPERATIONS FOR CARCINOMA OF THE PERIAMPULLAR REGION

DR. GEORGE P. MULLER, and, by invitation, DR. LEE RADEMAKER read a paper with the above title, for which see page 755.

STATED MEETING HELD DECEMBER 1, 1930

The President, DR. GEORGE P. MULLER, in the Chair

CALVIN M. SMYTH, JR., M.D., Recorder

PERFORATED DIVERTICULITIS OF THE SIGMOID

DR. S. DANA WEEDER reported the case of a man, age forty-one, who was admitted to Chestnut Hill Hospital in the service of Dr. William B. Swartley, November 30, 1929. His chief complaint was abdominal pain. Seven days prior to admission he was seized with a dull pain in the left lower abdomen following a meal. The pain was relieved by taking soda, but returned two days later and was not relieved by taking soda. The pain

continued until the day before admission when it became much more severe. He had a daily bowel movement until two days before admission, since which time he had been constipated and vomited frequently. There was no blood noticed at any time in his stools and no history of previous attacks of similar pain or other symptoms referable to the colon.

When admitted there was some distention of the abdomen with tenderness and some rigidity over the left lower quadrant. No masses could be palpated. The peristalsis was greatly diminished. Rectal examination revealed a tender mass in the left side. The rest of the physical examination was essentially negative. The temperature was 99, pulse 100, respirations 20. The X-ray report on a barium enema was as follows: "There is a delay in filling, apparently due to spasm of the colon. Coils of ascending colon are bent on themselves whether or not due to adhesions is impossible to say." The blood count showed hæmoglobin of 75 per cent., red blood cells, 3,800,000, white blood cells 15,000.

At operation on December 1, on opening the peritoneum a brownish fluid escaped. Further exploration revealed brownish purulent material with a fæcal odor in the neighborhood of the sigmoid. Thick creamy pus escaped from deep in the pelvis. There were two fæcal concretions free in the peritoneal cavity beside a hole in the sigmoid large enough to admit the tip of the little finger. The mesentery of the sigmoid was greatly thickened, œdematous, covered with fibrin and in several places necrotic. The perforation was closed and three cigarette drains and a rubber tube inserted. The patient died three days later.

DOCTOR WEEDER reported a second case which also bears out the observation that diverticulitis occurs most commonly in middle-aged rather obese subjects, a man aged forty, admitted to the Germantown Hospital, November 29, 1928, in the service of Dr. Edward B. Hodge. His chief complaint was pain in the left lower abdomen. The pain began the day before admission to the hospital for which he took Epsom salts which purged him freely. There was no nausea or vomiting. For some years he had taken milk of magnesia for indigestion and constipation. The man did not look acutely ill. There was tenderness and slight rigidity in the left lower abdomen, the point of greatest tenderness being about an inch and a half from the umbilicus on a line drawn from the umbilicus to the anterior superior spine of the ilium. Rectal examination revealed a tender mass slightly to the left of the mid-line. The examination was otherwise negative except for a systolic murmur heard at the apex of the heart. The temperature was 99.6, pulse 100, respiration 24. The white blood cell count was 12,500; blood Wassermann, negative.

At operation November 29, a search was made for Meckel's diverticulum but none was found. The gall-bladder was normal; no masses were found in the liver; the stomach, duodenum and the appendix were normal. A mass, hard and indurated, was found in the pelvis which proved to be contained within the sigmoid. There was considerable œdema of the mesentery and epiploic appendages, several of which were attached by fibrinous exudate over the inner aspect of the sigmoid. By separating the peritoneum lateral to the sigmoid, with its mass, it was possible to deliver this loop of sigmoid through a second incision in the left lower quadrant, the Mikulicz procedure having been determined upon. A glass rod was run through the mesentery of the loop in order to hold it. The mid-line incision was then closed.

The second stage was done on December 6, the loop of sigmoid being removed by the cautery. Two days later a clamp was applied to obliterate

the spur. The clamp came off on the twelfth day. As there was not sufficient spur destroyed the clamp was reapplied and it finally cut through by the end of the fourth week and the final stage was done January 3, 1929.

On January 17, emphysema was noticed extending over the left lower abdomen and scrotum. There was an elevation of temperature to 101 and pulse to 100. However, the patient did not appear to be toxic. The wound was opened down to the aponverosis and a brownish foul-smelling, purulent material and gas were liberated. In twenty-four hours the emphysema had extended to the left ankle; but the temperature had subsided and the pulse fell to 80. By January 31 the emphysema had practically disappeared and the wound looked healthy. An anaërobic culture was made to determine the presence of Welch's bacillus which was not found. The culture showed bacillus coli communis, a member of the dysenterial group and bacillus pyocyaneus.

The pathological report on the section of sigmoid showed no evidence of new growth and the diagnosis was acute perforated diverticulitis. The patient was discharged February 2, 1929.

This patient, since his discharge from the hospital, has been in good health, has daily stools with the aid occasionally of mineral oil. There is a hernia at the site of the incision in the left lower abdomen.

The speaker remarked that since 1849 when diverticula of the colon were first described by Cruveillier many have written on the subject. Colonic diverticula are not uncommon. Inflammatory changes with subsequent complications occur in about 17 per cent. of the cases of diverticulosis observed clinically, and about 14 per cent. observed at necropsy. In a group of 227 cases malignancy was associated in only 1.8 per cent. However, it should be emphasized that the surgeon is frequently deceived at the time of operation as to the true nature of the lesion and that a certain diagnosis cannot be made until the specimen has been examined microscopically.

Doctor Weeder believes that there is a certain group of cases reported as five-year cures of carcinoma of the colon without microscopic verification that were actually diverticulitis.

Dr. Damon B. Pfeiffer recalled a patient in whom diverticulitis was discovered by X-ray, in which there were some pelvic symptoms, and the surgeon, in his exploration, finding nothing in the pelvic organs themselves to account for this, resected a large portion with a disastrous result. The sigmoid is not a very good place to resect on account of the blood supply. It is not necessary to operate always. Even when a mass presents itself if it can be controlled, it is part of wisdom in certain cases to let that mass subside. He has seen a very considerable mass, the size of a fist, practically disappear on treatment. Of course, in the case of perforation, there is no choice but to operate.

Dr. George P. Muller said that a sigmoid diverticulum may produce a rapidly acute peritonitis which may be mistaken easily for appendicitis. The speaker thought that most surgeons have the conception of diverticulitis as a condition producing a gradual obstruction of the sigmoid, thus resembling carcinoma or a perforating retroperitonitis and forming a suppurative mass

in the groin. He had had three or four of the acute variety, all of which were diagnosed as pelvic appendix and in all a normal appendix was found, a greatly thickened cæcum felt, and thus the true nature of the infection discovered. In two of these patients, transitory fistulæ occurred. It is difficult to know what to do in these cases but probably the best treatment is simply to place good drainage.

TORSION OF THE GREAT OMENTUM

Dr. John Jeffries (by invitation) read a paper with the above title, for which see page 761.

Dr. William B. Swartley recalled the case of a woman, over sixty years of age, who was received at the Chestnut Hill Hospital with the diagnosis of acute cholecystitis. At the operation the gall-bladder was not found to be the cause of the acute condition, although it did contain stones but a part of the omentum was found to be firmly adherent to the peritoneum covering the abdominal wall just below and lateral to the gall-bladder. This part of the omentum after it had been separated from the abdominal wall was found to be dark in color and to be the seat of three complete twists at the base of the darkened or gangrenous area. This piece of omentum was resected; the gall-stones were removed, the gall-bladder drained and the patient made an uneventful recovery.

CARBUNCLE OF THE KIDNEY

Dr. Benjamin Lipshutz read a paper with the above title, for which see page 766.

Dr. George M. Laws remarked that his interest in the subject of cortical infections of the kidney began with the publication of Dr. George E. Brewer, who presented the picture of fulminating infections that often demanded immediate life-saving operation. Later, as the condition became better known, it was learned that, in some cases, the infection is comparatively mild, and it was difficult to determine whether early operation was required. The speaker is sure he has seen mild cortical infections clear up entirely without operation and he is still sometimes in doubt as to the treatment to be applied. It is important to remember that there are two types of kidney infection; that the colon bacillus type is manifested by pyelitis or pyelonephritis, and that the coccal type causes cortical lesions, including carbuncle, and complications such as perinephric abscess.

Doctor Laws studied the available cases of perinephric abscess from the standpoint of urinary findings, but as the essayist has said, the findings were often meagre and the study was not fruitful until he learned from various writers of the value of the stained smear in addition to the urine culture. The ordinary culture of the urine does not always give a true bacteriologic report because the cocci may not grow, or may be overgrown, by the colon bacilli.

Dr. George P. Muller remarked that Doctor Lipshutz had omitted to mention that condition occasionally called Brewer's Kidney or acute unilateral

hæmatogenous suppurative nephritis. Following Brewer's paper many years ago there were a great many reports of similar cases and as the speaker remembers the cases in his own experience, they were practically the same except for their acuteness as those described by the essayist. In view of the tendency to do conservative procedures upon the kidney, it should not be difficult to do a partial nephrectomy in the chronic type of case mentioned by Doctor Lipshutz instead of complete nephrectomy. That this can be done is shown by one of the case reports from the literature in which a bilateral condition was treated by nephrectomy on one side and nephrotomy on the other. In such cases Doctor Muller would suggest that the wound be unsutured entirely and the cavity filled with gauze in close contact with the infected kidney and perirenal valve.

Dr. Benjamin Lipshutz, in closing, said that he had attempted to present only the chronic group of cases. Brewer directed attention to the acute cases in which there is a violent clinical picture with evidence of septicæmia and urged immediate surgery. The infections known as chronic carbuncular type persist over a long period of time, lasting not infrequently for months. One of the cases presented symptoms for three months. In the acute type of case the infection is overwhelming. Multiple small abscesses may be associated with the carbuncular type. Some of the cases show multiple carbuncles. In the early stage the carbuncular type is localized and appears from the mildness of symptoms, as a different type of infection, from that observed in acute diffuse hæmatogenous group. He agreed with Doctor Muller that if the case is subjected to operation at an early stage, conservative surgery consisting of resection of the abscess and packing of the resultant cavity is the desirable procedure. The wound cavity should be left open and free drainage established, otherwise a septic wound may be the result.

CÆCAL DRAINAGE IN ACUTE SUPPURATIVE APPENDICITIS

Dr. George M. Dorrance remarked that every surgeon can recall numerous instances where a patient after an appendicectomy with drainage was practically moribund but upon developing a fæcal fistula promptly began to improve. Abdominal distention with its accompanying discomfort is a frequent and disagreeable complication of suppurative appendiceal cases. These facts led him to believe that in selected cases cæcal drainage should be established after the removal of the appendix.

Regarding indications and contra-indications the essayist said that there is a tendency to drain fewer cases of appendicitis and he is in accord with this view. The cases, however, in which all surgeons agree on drainage are where there is free pus in the abdominal cavity. In his opinion, these should have, in addition to the usual drainage of the peritoneal cavity, cæcal drainage. In cases of localized appendiceal abscess there is a question as to whether or not, in addition to the usual drainage, cæcal drainage is advisable. In these cases, if the appendix has been removed, when the abdomen is opened he employs this procedure. Doctor Dorrance's technic is as follows:

After removing the appendix a rubber catheter (Number 20 French) is inserted through the appendiceal stump well into the cæcum and held with a purse-string suture of Number 2 chromic catgut. The cæcum is then allowed to drop back in place and the usual drains are introduced. When the patient is returned to his bed, he is placed in the Fowler position. A small amount of fluid may be immediately introduced by the drip method or any way one wishes. Every three hours the catheter is sucked out with a syringe to remove the fluid intestinal contents, or they are allowed to flow out. The catheter is removed, or comes out of its own accord, in from four to eight days, depending upon the progress of the case.

The advantages are that one secures drainage of the cæcum which prevents post-operative distention. It permits removal of a large amount of liquid fæcal material and permits fluid, salt solution, glucose, etc., to be introduced into the colon at a place where absorption can readily occur—an improved Murphy method of getting fluid into these patients. In cases where nature would cause a fæcal fistula to develop, the surgeon by establishing cæcal drainage offers a much smaller opening and a stormy convalescence is prevented. It is seldom necessary to do a secondary operation to close the fistula. Secondary hernia do not seem to be more frequent than in drainage cases he has had in the past.

DR. I. S. RAVDIN said that in 1927 Clyde Wilson reported a large number of cases treated by this method with a remarkably low mortality. Since then he has used it a number of times and it seems to have a very definite field of usefulness. He puts the small catheter through the appendiceal stump and uses a long linen suture from the base of the appendix and threads a tube over that so that when the catheter is removed, if any further drainage does occur, there is a ready passage for it. There is no doubt the patient will receive and take much larger quantities of fluid by this method than any other. The speaker does not recall any complications in the cases in which he has used this method.

DR. DAMON B. PFEIFFER said that certainly cæcostomy is unnecessary in the average condition of acute appendicitis. The vast majority of these cases get well without any sort of drainage. The fact that it permits the administration of large amounts of fluid, in itself, would be no indication in most instances. The speaker could think of only one condition in which cæcostomy would be of any value, and that is in a pelvic collection with partial obstruction of the pelvic colon. In that condition it might be very valuable.

DOCTOR DORRANCE, in closing, said that he had observed no disadvantages from the use of this procedure, but has seen many advantages. Fluid can be administered directly into that portion of the bowel from which the maximum absorption takes place. He is sure that distention is less; it decompresses the colon. He uses salt solution and not glucose. He does not advocate the routine employment of cæcostomy, but in bad cases with pus in the peritoneal cavity he does advocate its use. He has had no complications and can see no objections to the method.