soon after Park advised posterior drainage in such cases, but the wound was so clean and the peritoneum in such good condition that he did not drain, even after reading Mikulicz's statements on the subject. The patient recovered, hence leakage could not have been great. Park, Körte, and others advise posterior incision below the lower pole of the left kidney for drainage after the first incision has been made in front, the latter being usually done in order to make the diagnosis. In some instances they close the anterior wound after draining posteriorly. In his case he drained anteriorly.

STATED MEETING, HELD OCTOBER 1, 1906.

The Vice-President, ROBERT G. LE CONTE, M.D., in the Chair.

LYMPHANGEIOMA OF THE CHEEK

DR. FRANCIS T. STEWART reported the case of an infant, who was seen by him with Dr. Robert Pitfield soon after birth. The whole right side of the face was occupied by a soft semifluctuating mass which extended from the mid-line of the upper lip back over the parotid, and from the orbit down over the lower jaw (Fig. 1), and which bulged into the mouth. The right eye was

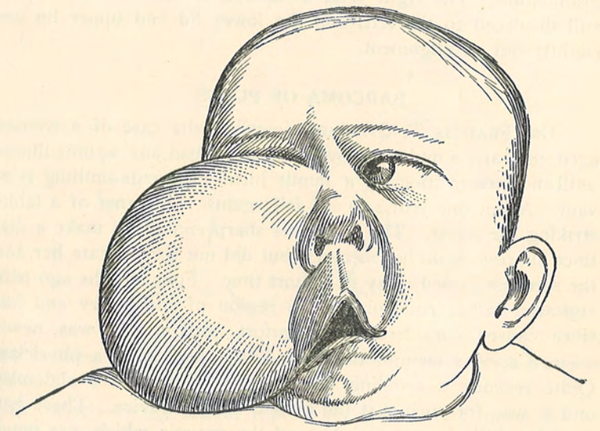

FIG. 1.—Lymphangeioma of cheek.

closed, the nose displaced to the left, and the mouth distorted. A hollow needle passed into the cheek withdrew a small quantity of straw-colored fluid. The skin was exceedingly thin and contained a few dilated veins but was not adherent. It was thought advisable to postpone operation as long as possible in order to give the infant a firmer hold on life. At the end of four months, however, the swelling had distinctly increased in size and there

was evidence of pressure effects on the upper jaw. Immediate operation was therefore advised. The skin was reflected by an incision similar to that employed by Weber for resection of the upper jaw, and the growth, which had also extended backwards along the floor of the orbit for about one-half inch, enucleated with but little loss of blood. There were apparently no muscle fibres in the cheek and at the completion of operation nothing remained but bone and very thin skin. After resecting the redundant portion of the flap, the mucous membrane was sutured to the jaw with catgut and the cutaneous incision closed with horsehair. Just as the operation was completed the baby ceased to breathe (ether had been employed) and artificial respiration was needed for some minutes. Primary union was secured except at a point corresponding to the inner canthus, which healed by granulation. The right face, of course, is sunken, the nose is still displaced to the left, and the lower lid and upper lip are slightly out of alignment.

SARCOMA OF PUBES.

Dr. Francis T. Stewart described the case of a woman aged 38 years, a multipara, who had never had any serious illness until the present time. The family history presents nothing relevant. About one year ago she fell against the corner of a table, striking the pubes. The blow was sharp enough to make a distinct impression on her memory, but did not incapacitate her and the soreness passed away in a short time. Four months ago pain appeared rather suddenly in the region of the injury and has since caused considerable discomfort, although it was never deemed serious enough to demand the services of a physician. Quite recently a swelling was noticed in the lower abdomen, and it was for such that the patient sought advice. There had been but little loss in weight, and the anæmia which was noted was said to have been present for many years. The tumor extended from the right anterior superior spine of the ilium to the left for 7½ inches, and rose about 2½ above the pubes, to the posterior surface of which it was firmly attached. The lateral extension on the right was moderately movable. The skin was at no place adherent. The growth was smooth, slightly lobulated, a little tender, and as hard as cartilage. The superficial veins were distended but no other pressure symptoms were

in evidence. The growth could be felt by vaginal examination but did not invade the uterus or appendages.

Operation was performed September 15, 1906, in the Pennsylvania Hospital. A long curved incision was made from the right anterior superior spine downwards and inwards across the abdomen to the extreme limit of the growth on the left. As the abdominal muscles were invaded, they were severed above the growth, thus exposing the peritoneum which was peeled from the mass except at three points where it was so firmly adherent that it tore, necessitating the use of catgut sutures. The bladder was not involved but the growth had displaced the right external

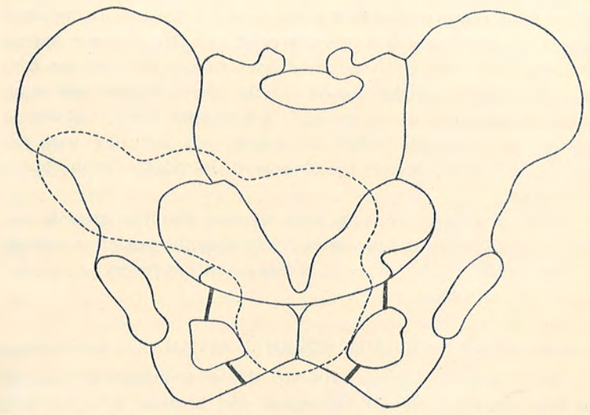

Fig. 2.—Sarcoma of pubes. Dotted line showing limits of tumor. Dark lines showing points at which bone was cut.

iliac vessels outwards and appropriated about two inches of the vein, which was therefore tied and severed above and below. Both round ligaments were cut and the remaining superficial soft structures separated or divided. The lower margin of the wound was then reflected downward, and both pubic bones separated from their fellows by the chisel, the amount of bone removed measuring four inches transversely (Fig. 2). The obturator vessels on the left were preserved, those on the right were sacrificed. Beginning on the left, the bone was elevated after some difficulty and forcibly turned to the right as the muscular

and ligamentous attachments were severed. It was possible to suture a portion of the lateral muscles on the right to Poupart's ligament, but the recti had retracted to the umbilicus and, as the operation had already consumed about two hours, no plastic work was attempted. The skin-wound was simply sutured except at the middle and the right end, where gauze drains were placed. Intravenous infusion was necessary towards the close of the operation but subsequently reaction progressed unaided. The following day the right leg was somewhat bluish in color and was evidently larger than the left but there was no œdema; there was, however, a sensation of "pins and needles" in the foot and the whole limb was moved with difficulty. On the second day the drains were removed but had to be replaced because of the large amount of lymph which was discharged. Œdema did not appear until the third day and has never been excessive. On the fifth day pus appeared in the wound but the infection has been comparatively benign and will probably not mar the result. It should also be noted that there has never been any difficulty with the bladder or bowels, despite the absence of muscles over the lower abdomen.

Examination of the specimen showed that the growth evidently sprung from the periosteum covering the posterior surface of the pubes. Microscopic investigation revealed a typical spindle-celled sarcoma.

STAB WOUND OF THE INTERNAL MAMMARY ARTERY.

Dr. John H. Jopson reported this case mainly because of the comparative rarity of the lesion and because it is the only instance he has encountered. The important vessels of the chest-wall that are liable to injury are the intercostals and the internal mammary. Only 15 cases of wound of the intercostals were recorded during the Civil War. In 1892 Schwartz collected 52 cases of injury of the internal mammary artery which had been reported during the past century. Among these were seven in which the artery had been opened during operation and these he excluded, leaving 45 cases of wounds proper. Surgically the internal mammary are more important than are the intercostal arteries.

Dr. Jopson's case was that of a man of 50 years who was brought to the hospital at 10 A.M. with a history of having been

stabbed a short time before. The man's clothing was saturated with blood and he was in a state of collapse, being practically exsanguinated. He was also under the influence of liquor. The wound was an inch in length, two and one-half inches to the right of the sternum in the second interspace, passing obliquely upward and inward; it was not bleeding. The resident physician applied a dressing and administered stimulants. At 1 P.M. Dr. Jopson saw the man. The wound was not bleeding, but though the man had reacted to stimulation the pulse was still of poor quality. At 4 P.M. the wound was examined and was not bleeding, but in a few minutes Dr. Jopson was called from the operating-room and found that severe hæmorrhage had begun. Compression was applied and the patient was at once prepared for operation. At this time he was not certain that the heart was not wounded. An anæsthetic was given and the wound enlarged. The internal mammary was found divided in the second interspace and both ends were bleeding. Both were tied with catgut sutures which included the surrounding muscle. Salt solution was infused, an iodoform gauze drain inserted into the pleura, and a dressing applied and the patient sent to the ward. The pulse reacted but soon went down and the man died that night. Autopsy by the coroner's physician showed atheromatous vessels. The pleura was full of blood but there had been no leakage from the ligated vessel. No other organs were injured.

Dr. Jopson said that the subject of wounds of the internal mammary artery had been specially investigated by Schwartz in his Königsburg dissertation, in which he analyzes 45 cases, as previously mentioned. Of the 45, nine died of acute hæmorrhage, which in four came from a wounded lung, heart or other neighboring structure, in 4 from the artery itself, and in 1 from an undetermined source. Of the 36 who survived the immediate effects, the wound became infected in 24, of whom 18 died and six recovered. Of the 12 with uninfected wounds, 8 recovered and 4 died. There were 21 cases of secondary hæmorrhage, 16 in the infected group, 5 in the uninfected group. In Dr. Jopson's case the consecutive hæmorrhage was brought about by strain during vomiting. In the reported cases, secondary hæmorrhage was due in some to vomiting, in others to straining at stool, or other muscular exertion. Schwartz concluded that ligature of the vessel is not an infallible means of preventing secondary hæmorrhage. He

believes that immediate ligature is not necessary, it being better to seal the wound primarily and raise the intrathoracic tension. The pleura is wounded in a large number of cases and this favors the continuation of hæmorrhage. Dr. Jopson believes that primary ligature is advisable. He also believes it would be better if we were more radical in our treatment of all penetrating wounds of the chest. Often we are too conservative in the presence of hæmorrhage, and even in the case of penetrating wounds of the chest in general. A year ago he reported a successful case of suture of the lung for hæmorrhage, and discussed the question of inserting a drainage-tube and controlling bleeding by establishing a pneumothorax as recommended by Le Conte. It is better to resort to a ligature of the bleeding vessel if it can be applied; if this cannot be done, then the establishment of a pneumothorax may be tried in hæmorrhage from the lung. In any case, even if the bleeding has ceased, infection is apt to occur. Two cases of chest wound he has had to treat in the past twelve months as empyema because of the consequent infection.

Dr. Edward Martin, speaking on the general subject of penetrating wounds of the chest, put on record a case bearing on the question of hæmorrhage. A negro climbing into a window was shot in the third interspace one-half inch to the right of the sternum. When seen later he exhibited the symptoms of hæmopneumothorax and progressive bleeding. An osteoplastic flap was turned back, revealing a cut internal mammary artery which was not bleeding. The man was turned on his side and three pints of blood poured out of the pleura. A bullet-wound of the lung, though not bleeding, was sutured and the lung sutured to the parietes. Though there was evidence of use of the lung afterward, the man died in ten hours from progressive bleeding. Autopsy showed that the internal mammary had not bled but that hæmorrhage had occurred from an intercostal artery which had been cut one and one-half inches from its origin by the bullet which had broken a rib close to the vertebral articulation. Had the X-rays been in use at that time the man might possibly have been saved. The case is recorded as an instance of a wounded internal mammary artery not bleeding and an intercostal bleeding which caused death.

Dr. George G. Ross cited a case in which he is not able to say whether or not the internal mammary artery was wounded.

The subject was an obese colored woman who was shot in the right side, the bullet going across into the left side also. The patient was in shock and there were indications of hæmorrhage. She reacted, however, and as there was no external hæmorrhage operation was not performed. Ten days later Dr. Ross evacuated two quarts of foul pus from the left pleura. As the woman recovered he does not know what internal organ was injured.

Dr. Robert G. Le Conte said that he had carried out experiments on the cadaver to determine the frequency of injury to intercostal vessels in wounds of the chest. His results appeared to demonstrate that the intercostal artery at the lower border of a rib would not be injured unless the rib showed marks of violence. The internal mammary artery is half an inch from the border of the sternum, and in case of a wound in this locality there is always the probability of injury of that vessel, and exploration should be made. If the artery is wounded as low as the fourth or fifth interspace it is questionable if the hæmorrhage will be severe enough to cause death, while if the wound is in the second interspace the resulting hæmorrhage will be fatal unless controlled. Should the vessel be injured below the third interspace—that is, below the origin of the triangularis sterni muscle—hæmorrhage may be controlled by packing against the muscle. Dr. Le Conte has seen this done in one case. Above this point the pleura alone is beneath the vessel, and packing cannot be employed, hence resection of a costal cartilage or enlarging the wound sufficiently to expose the artery must be done. The greatest danger of hæmorrhage is of course from a vessel that has not been completely severed.

Dr. Le Conte's experience with hæmorrhage from the lung is limited, but in his few cases of severe hæmorrhage he has simply made an opening in the pleura and allowed air to be drawn in. The rapidity of the formation of complete pneumothorax can be graded as desired. If alarming symptoms supervene the opening can be temporarily closed, followed later by the insertion of a smaller tube. He has seen no instance of this expedient failing to control hæmorrhage, and consequently has never had to seek a bleeding vessel in the lung. It is the ideal treatment, but where the patient fails to improve resection of one or more ribs becomes necessary, with a search for and direct control of the bleeding point.

DR. JOPSON, in closing, said that Schwartz's experiments on animals had shown the rapidity of bleeding from the internal mammary. A small vessel cut a short distance from the large one of which it is a branch will bleed almost as profusely as will a similar opening in the trunk itself. When the internal mammary is cut in the second interspace it is practically equivalent to making an opening the size of that vessel in the subclavian.

SURGICAL TREATMENT OF PERFORATING GASTRIC ULCER.

WITH REPORT OF THREE CASES, TWO ACUTE AND ONE CHRONIC.

BY ROBERT G. LE CONTE, M.D.,

OF PHILADELPHIA.

Surgeon to the Pennsylvania, to the Children's and to the Bryn Mawr Hospitals.

CASE I.—H. K., aged 26, white, laborer, single, born in Philadelphia, admitted to the Pennsylvania Hospital March 6, 1906.

Previous History.—Strong and healthy, but during the past six months has had more or less frequent attacks of indigestion, with pain and occasional vomiting; on two or three occasions the vomitus contained blood. Half an hour before admission the patient was standing on a box about two feet high, lifting a sack of oysters from the ground. He suddenly felt a sharp, cutting pain in the abdomen, and fell off the box, striking his left side. In a few moments this pain was intense. On examination there were no marks of contusion on the body. The abdomen was very rigid, particularly over the epigastrium, and there was exquisite tenderness in the region. He complained that the abdominal pain was agonizing. The pulse was good, but the temperature subnormal; sweating profuse; countenance drawn and pinched. He vomited once a small quantity of stringy mucus. The last meal was taken about five hours before the onset of the attack.

Diagnosis, acute, perforating gastric ulcer.

Operation was begun three hours and a half after the onset of the first symptom; anæsthesia with ethyl chlorid, followed by ether. A four-inch incision was made in the median line between the ensiform and umbilicus, and on opening the peritoneum a frothy fluid of pale green color was found free in the abdomen. The stomach, which was flaccid and empty, was immediately explored, and a hard, indurated mass found half an inch from the pylorus on the lesser curvature. The pylorus was brought into the wound and walled off with gauze. The thickened area was partially covered with lymph, with a distinct dimple at one point from which white scar-tissue radiated, evidently the cicatrix of

an old ulcer. No fluid was escaping, nor was an opening visible until the lymph was removed, when a thin pale fluid flowed out of a perforation about the size of a match head. This was inverted with a double row of Lembert sutures of Pagenstecher thread, and a piece of omentum tacked over the line of suture. A cigarette drain was carried down to the region of the ulcer and the abdominal wound closed with through-and-through silkworm gut sutures, the rectus fascia being united with a running catgut stitch. A buttonhole incision was made just above the pubis and a glass drainage tube inserted to the bottom of the pelvis. The abdomen was not flushed and the region of the ulcer alone was sponged. The patient was placed in bed in almost a sitting position and continuous enteroclysis used after the method of Murphy.

March 7.—The patient's condition is excellent. There is no pain; the water by bowel is well retained; temperature 100; pulse 80; bowels have moved once; very little drainage from the suprapubic opening.

March 8.—The patient has developed a bronchitis, with considerable cough and yellowish expectoration. The temperature is 100; abdomen slightly tender; bowels have moved once; no drainage from the suprapubic incision. The drainage tube was found to be entirely surrounded by omentum, which had penetrated the small openings and completely blocked up the tube. It was necessary to give the patient ethyl chlorid and to ligate and cut away a portion of the omentum before the tube could be removed. Water was given in drachm doses every 15 minutes. The convalescence from this time was uninterrupted. By the end of a week he was on a soft diet of eggs, custards, etc., which was gradually increased to the ordinary house diet. Cultures taken from the peritoneal cavity at the time of operation were entirely negative.

Case II.—D. L. B., aged 27, white, single, bartender, born in New York; admitted to the Pennsylvania Hospital April 21, 1906.

Previous History.—Has always been healthy, though given to slight excesses induced by his occupation. For a week previous to admission he had been feeling out of sorts, with some indigestion and general malaise. There was no vomiting and no previous history of indigestion.

While straining at stool he was suddenly seized with sharp

epigastric pain, which rapidly became agonizing. He was admitted to the hospital within half an hour of the onset of the symptoms. The epigastric region was found to be of board-like rigidity, with exquisite tenderness. The pulse was good; temperature subnormal; countenance anxious.

Diagnosis, acute perforating gastric ulcer.

Operation was begun within an hour of the onset of the first symptoms. Anæsthesia, ethyl chlorid, followed by ether. A four-inch incision was made through the inner border of the right rectus between the ensiform and umbilicus. There was no soiling of the general peritoneal cavity, although it contained a slight excess of fluid. The stomach, upon examination, was empty, and an indurated area was felt on the posterior wall near the pylorus, very close to the greater curvature. The gastro-colic omentum was torn through and the lesser peritoneal cavity found moderately soiled by gastric fluids. The indurated area on the posterior wall showed a perforation a little larger than a pin's head, which was partially covered with lymph. This opening was inverted with Pagenstecher thread and then whipped over with catgut. The lesser peritoneal cavity was sponged dry, but as it was feared that some of the fluid which it contained had found its way into the general peritoneal cavity during the operation, it was deemed advisable to drain the general cavity through a suprapubic incision with a glass tube. The upper abdominal wound was closed with a small cigarette drain leading to the lesser peritoneal cavity. The patient was placed in bed in a nearly upright position and continuous enterocylsis given.

April 22.—Condition remarkably good; free drainage from the suprapubic wound. Placed on drachm doses of water every 15 minutes.

April 23.—All drainage removed; enterocylsis discontinued; bowels freely moved. The convalescence was uneventful.

The night of the Fourth of July, after spending the day down the river with some companions, and having partaken of 14 or 15 bottles of beer and a large amount of cold indigestible food, he was seized with severe pain in the region of the stomach, with active emesis. Vomiting brought relief but was followed by a few hours of epigastric tenderness. At the end of 24 hours he was as well as ever. After such a test of overloading the stomach there is little doubt that the healing of this ulcer was complete.

These two cases are types of acute perforating gastric ulcer in which rupture takes place without warning, and where the patient is in apparent health and leading his normal life. In both, muscular effort was the exciting cause of the rupture, and in neither were there any peritoneal adhesions, although lymph had been thrown out in the first case in sufficient amount to temporarily close the opening.

The points in these cases to which I would invite discussion are, first, the question of drainage; and, second, whether gastro-enterostomy should or should not have been done.

1. *Drainage.*—In Case I the abdomen was opened three hours and a-half after the onset of the first symptom. Soiling of the peritoneum with a greenish fluid was moderate and general as far as the eye could reach. In view of the after history, as the suprapubic opening drained for 24 hours only, it seems probable that sponging or flushing the peritoneal cavity with closure of the wound without drainage would have been a safe procedure.

In the second case the lesser peritoneal cavity alone was contaminated at the time of operation, and drainage of this area with a gauze wick would perhaps have been all that was needed, although the tube leading to the bottom of the pelvis gave free drainage for 36 hours.

The reasons which led me to drain both these cases were, first, I have no fear of drainage, believing that if it does no good it is at least not a source of danger in a modern hospital. Second, I desired to use the method practised by Murphy for the treatment of general peritonitis—the exaggerated Fowler position; continuous enterocylsis, etc., and one of the essential steps in this procedure is a suprapubic opening to remove all fluids that drain into the pelvic cavity.

Granting that both these cases might have recovered without drainage, I still think their chances were slightly improved by using it.

2. *Gastro-enterostomy.*—In each of these cases the patient reached the operating-table in excellent condition. There was no necessity for hurry, and had there been any strong indication for gastro-enterostomy it could readily have been done. It was not done, first, because there was no external evidence of other ulcers being present either in the stomach or duodenum; and, second, because closing the perforation did not diminish the calibre of the pylorus.

If we consider the question of gastro-enterostomy from a mechanical standpoint only, it will be indicated when one of the three following conditions is present:

1. Multiple ulcers of the stomach or duodenum. When there are several ulcers and the one that has perforated alone is treated, *i.e.*, closed by suture, we leave the stomach in practically the same condition that it was in previous to the rupture, as nothing has been done to remove the sources of irritation which led up to the perforation. Each ulcer that remains is therefore a potential source of rupture. There is also the danger of hæmorrhage, which is ever present in a gastric ulcer.

2. Where suture of the perforation causes narrowing of the pylorus or duodenum to such an extent that the passage of food will be interfered with, gastro-enterostomy will be necessary to drain the stomach and prevent dilatation of that organ, with stagnation of food.

3. Where firm closure of the perforation cannot be accomplished through direct suture, and an omental patch has to be used, gastro-enterostomy is clearly indicated to prevent distention of the stomach and consequent strain on the patch. I say clearly indicated, but not imperatively, for I saw a case with my colleague, Dr. Gibbon, in which an omental patch was used to close an opening that could not be sutured, and recovery ensued without a gastro-enterostomy. In this case all foods and liquids were withheld from the stomach for a period of three weeks, the patient being nourished entirely by the rectum.

Unfortunately, these mechanical considerations cannot alone be our guide in the performance of a gastro-enterostomy, for the operator must carefully consider the following questions before it can be safely undertaken:

1. Is the condition of the patient sufficiently good to stand the lengthening of the operation by 20 or 25 minutes?

2. Is its performance likely to spread an already present infection or open up a new avenue for infection? For instance, the whole lesser peritoneal cavity will be open to infection when a posterior gastro-enterostomy is done for a rupture on the anterior wall of the stomach.

3. Can it be postponed to a later date when the patient's condition has improved and the peritoneal cavity is free from infection, the stomach in the meantime being placed absolutely at rest and the patient tided over by rectal alimentation?

If this last query can be answered in the affirmative the question is at once in abeyance, and its ultimate decision may be left to a more favorable time. As Mayo has suggested, a conservative and palliative operation with a living patient is better than a brilliant and completed one at a greatly enhanced risk.

I am indebted to Dr. D. E. Kercher, the attending physician, for the notes of the following case:

CASE III.—Chronic perforating gastric ulcer. Death from inanition. Mrs. L. H., aged 51; housewife; white; American. Mother died at the age of 57 of an injury; father and one brother died of tuberculosis.

Previous History.—Has always been fairly well; no children; normal menopause at 45. In June and July, 1902, she had frequent attacks of paroxysmal abdominal pain, which was not localized. Occasionally slight jaundice accompanied these attacks. They seemed to be traceable to dietary indiscretions. The abdomen was tender and there was slight rigidity in the region of the appendix. Rest with regulation of diet brought about entire relief.

September 19, 1902.—Another attack of severe abdominal pain, with tenderness, lasting several days.

December 12, 1902.—During the night she was seized with severe cramp pains in the lower abdomen, with marked tenderness and tympany. There was also slight tenderness and rigidity in the splenic region. The temperature was $100^{4}/_{5}$; pulse 110; complete anorexia. She lies on her back with knees drawn up.

This attack was treated with ice locally, and starvation. In

three days the tenderness had disappeared, except over the region of the appendix, but the temperature had risen to 102.

Pelvic examination showed a small, retroverted, adherent uterus; otherwise negative. Leucocytes 16,000.

At the end of ten days, as the tenderness still persisted over the appendix, operation was decided upon and this organ was removed by Dr. Kercher. At the same time the adhesions about the retroverted uterus were broken up and the fundus brought forward. The appendix was considerably injected, with a small hæmorrhagic area about one inch from the cæcum, and in the last three quarters of an inch the lumen was obliterated. For a week after the operation the temperature remained elevated, reaching 102, and then gradually declined. The recovery was complete. For six months she was free from pain, except for an occasional slight paroxysm in the epigastric region.

June 3, 1903.—At 3 A.M. she had a violent attack of stabbing pain in the right upper abdomen, which radiated to the left chest and into the bladder. The urine at this time was scanty, and on standing deposited a dense pink sediment. In a few hours constant nausea with retching developed. At the end of 24 hours there was frequent vomiting of dark brown stercoraceous material. The abdomen was greatly distended, with rigidity and tenderness in the epigastric region. For several weeks the temperature ran a distinctly septic course, ranging from 100 to 103. Epigastric tenderness was continuous, but otherwise there was little discomfort. On the 14th day pain was felt in the left lung, and an area of dulness could be mapped out in the mid-axilliary line at the level of the eighth interspace. This gradually became more distinct, and on the twenty-fifth day during a fit of coughing she felt something burst in the left chest and immediately began to expectorate foul-smelling pus. Microscopic examination showed this pus to contain streptococci and staphylococci, but no tubercle bacilli. There was prompt amelioration of all the symptoms; the purulent expectoration lasting four weeks. The appetite returned; she gained greatly in weight, and felt in better health than for many years.

This interim of comfort lasted until February, 1906, about two years and a-half. At the beginning of this month she felt stitchy pains in the base of the left lung at the site of the former trouble. On February 8, while attending a matinee, she was

seized with such pain in the epigastric and splenic region that she had to leave the theatre and be taken home in a carriage. By the time she reached home the pain was agonizing. There was considerable cough and she complained of being chilly. Temperature 100; pulse 108; respirations 28. Examination of the chest revealed only a few crackling rales over the lower left lung posteriorly. Ice was applied to the epigastrium and morphia given hypodermically. In 24 hours the entire upper abdomen was very rigid, but the pain had diminished. Leucocytes, 17,200.

There was dulness over the lower border of both lungs posteriorly, with crackling rales and bronchial breathing. The cough was severe; expectoration rather scanty, but on three or four occasions it showed a characteristic rusty appearance. This condition of the lung continued for a week, when the cough became free, the physical signs of consolidation disappeared and she was fairly comfortable. The tenderness in the epigastrium and the rigidity, however, remained, and pain was most severe when the stomach was empty and was always relieved by taking food.

February 22, 1906.—The epigastric pain again became very severe and boring in character, with nausea followed by frequent vomiting. The vomitus was black disorganized blood. The stools were also tarry.

At this time I was called in consultation. I found the patient suffering an agony of pain; abdomen distended; rigid in upper portion; exquisitely tender. The diagnosis of chronic perforating ulcer was made, and in view of her former attacks of slight jaundice and the relief of pain on taking food the ulcer was thought to be in the duodenum. Immediate operation was advised and accepted, and the patient at once removed to the Methodist Hospital.

Ether anæsthesia. A six-inch incision was made through the right rectus muscle between the ensiform and umbilicus. The right side of the upper abdomen was found free from adhesions. The gall-bladder and liver were normal, and the foramen of Winslow admitted the tip of the finger. To the left of the median line the viscera was densely matted together, and on breaking up the adhesions under the left lobe of the liver a large abscess was opened which extended posteriorly beneath the stomach. This cavity contained thick grumous pus filled with small dark blood-

clots, and on introducing the finger the tip seemed to enter the cavity of the stomach. The stomach was immovable and the adhesions were so dense that it was impossible to expose the perforation. As the condition of the patient was not very good it was deemed advisable to drain the abscess cavity with a rubber tube and gauze, the incision being closed with interrupted silkworm-gut sutures.

Reaction was prompt following the operation and there was immediate relief from pain. Slight nausea persisted but no vomiting. The drainage through the tube was very profuse, dark and flaky, with an odor of gastric contents. The patient was placed on nutritive enemata, and normal salt solution was frequently given by rectum. The discharge from the drainage-tube varied from 80 to 120 ounces in 24 hours, and it required but one minute for liquid taken by mouth to drain from the wound. Everything swallowed seemed to pass out through the drainage-tube. As nutrition could not be maintained the patient gradually sank, and died on the twelfth day of exhaustion.

Autopsy.—At the autopsy it was found impossible to expose the posterior wall of the stomach until the intestines had been removed from the abdominal cavity, the pylorus and œsophagus severed, and the firm adhesions binding the stomach to the posterior abdominal wall cut with a knife. The stomach was much contracted, the walls thick, and its posterior surface at the cardiac end contained a perforation the size of a silver dollar, with hard indurated edges. This perforation represented about one-third of the extent of the posterior wall of the stomach. The entire lower lobe of the left lung and the lower edge of the right lung showed recent consolidation.

From this history it is evident that the attack of June 3, 1903, was due to a perforation of this ulcer into a region that had been sufficiently walled off with adhesions to prevent a general infection. Slow leakage took place; a subphrenic abscess was formed, which perforated the diaphragm and discharged itself through a bronchus in the left lung.

The question comes up, Could anything else have been done at the time of operation except drainage of the abscess cavity? From the post-mortem dissection it was readily seen that an exposure of the perforation would have been impossi-

ble unless steps had been taken to remove the entire stomach. Therefore closing by suture was out of the question. In view of the density of the adhesions to the pancreas and the obliteration of all anatomical landmarks in this region, complete removal of the stomach would have been impossible during life. Our thought, therefore, was to drain the abscess with the hope that this cavity might be obliterated by adhesions and fibrous tissue, and during this time to support the patient by rectal feeding.

There was one other procedure which might have been tried had there been much improvement after operation; namely, a jejunostomy, for the purpose of feeding the patient and placing the stomach completely at rest, thus favoring the closure of the perforation by fibrous tissue. In this way the patient might have been tided over until she had gained sufficient strength to stand a more radical operation, or even a recovery might have ensued.

ACUTE GENERAL PERITONITIS WITHOUT DEMONSTRABLE LESION.

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OF PHILADELPHIA.

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CASE I.—A. L., (referred by Dr. Wilcox), aged 9 years, with a negative family and personal history, had been generally miserable for two weeks. On the day previous to her admission to the hospital she was seized suddenly with severe epigastric pain, accompanied by vomiting. The vomiting was repeated, and on the following day was accompanied by diarrhœa.

On her admission her temperature was 101.4, pulse 54, and respiration 28. She lay on the right side with her legs drawn up. The abdomen was universally tender, this symptom being perhaps more marked over McBurney's point. The muscles were rigid but not markedly so. There was absent peristalsis and repeated regurgitant vomiting. White blood-count 59,640. The diagnosis of general peritonitis was made, probably dependent upon perforative appendicitis or typhoid perforation, and immediate operation was performed. This showed the belly full of sero-pus with congested but not markedly inflamed intestines. Cultures showed a pure streptococcus infection. There were no pseudomembranes and the operation was completed in a few minutes, the belly cavity being thoroughly drained. The appendix was normal.

The patient died on the third day from septic intoxication. A searching post-mortem examination revealed no cause for the peritonitis.

CASE II.—L. L., aged 10 months; referred by Dr. Hoban; was seized with fever and constipation lasting one day and relieved by a teaspoonful of castor oil. A week later while seated in a high chair the latter tipped forward. The child was, however, caught before she struck the floor, though her abdomen struck against the guard common on such chairs. She cried for half an hour, was peevish some little time after this, and then seemed as well as ever and her accident was forgotten,—even her diet,

which contained among other things, bologna sausage, not being changed.

On the second day following the fall the child had a temperature of 104°. Calomel was given in 1/10-grain doses for three days, 3 grains in all being administered, but without result, though the mother had reinforced the doctor's efforts by syrup of figs and castor oil on her own responsibility. Because of the persistent constipation, intestinal obstruction was suspected and about two dozen enemata, some containing turpentine, were given without effect. The fever subsided, but vomiting became a more and more distressing feature of the case. During two days more large doses of castor oil, calomel and some croton oil were administered. On the fifth day of symptoms and the seventh day after the accident the child was admitted to the Howard Hospital. She was breathing 46 to the minute, with temperature of 100 2/5 and pulse imperceptible at the wrist. Vomiting was effortless and frequent, a thin, greenish material welling out from the mouth and nose. Abdominal palpation showed a rigid tympanitic belly, dull in flanks, and absent peristalsis. The child was treated by enemata, normal salt solution and whiskey being passed in slowly under very gentle pressure. The pulse improved in quality until it could be counted 144 to 154 at the wrist, but the child died in a few hours without showing reaction enough to justify any intervention which seemed to promise success. A careful autopsy was performed which failed to show any visceral lesion. The peritoneal cavity was full of extremely foul milky pus containing flakes of lymph. Bacteriological examination of this discharge was not made.

Case III.—M., aged 8 months; two or three days after a slight abdominal trauma, began to cry and vomit. Treated by purgatives to no effect. I saw her on the third day of her illness, when she presented a swollen, tympanitic belly, full in the flanks, without peristaltic sounds, a weak rapid pulse and hurried respirations and the facies of profound toxemia. There had been no bowel movement and vomiting was recurrent and regurgitant in type. The parents absolutely refused operative intervention and the child died in the course of 36 hours. Opportunity for complete autopsy was not given. The stomach and intestines were removed and most carefully examined. There was no inflammatory or perforative lesion.

These three cases occurring in my own experience suggest that we are possibly going through a period of over-reaction against the dark ages, when acute suppurative peritonitis without visceral or parietal causative lesion was regarded as common. We are now used to finding a visceral lesion in cases of acute peritonitis and our operations, even those of emergency, are so planned as to reach the cause of the inflammation. When we fail to find a definite local focus from which infection has spread we are prone to attribute this to an error in diagnosis, and an incomplete exploration usually necessitated by the profoundly septic condition in which these patients come to operation.

That there is or has been a lesion in cases of peritonitis following slight trauma cannot be doubted. It is certainly true, however, that this lesion may be beyond macroscopic detection. The indications for evacuation of pus and relief of tension are none the less absolute. It would seem advisable in cases of acute diffuse septic peritonitis in the absence of a preceding history pointing to a definite causal lesion to be content with an incision in the right lower abdominal segment, thus permitting a rapid exploration of the region from which most abdominal infections originate. If no causal lesion be found nor evidences of gastro-intestinal perforation further exploration should be omitted. This exploratory operation in the case of adults should be performed under local anæsthetics. With the majority of children the effect of fright and pain is far more depressing than that of a general anæsthetic, hence in them nitrous oxide should be used, since their struggle against it is brief and it is without serious after-effect.

Dr. John H. Gibbon regards Dr. Le Conte's first two cases as teaching the lesson that gastric ulcer is probably much more common than we think. Surgeons do not get more cases because the diagnosis is not more frequently made. In the series reported by Dr. Le Conte were two cases which gave no symptoms and in three of his own seven there was no history to lead to suspicion of ulcer. Since he reported four cases a few years ago he has met with three more as follows:

Case I was in a man of 50 with the typical history and symptoms of a gastric ulcer for a number of years. When seen by Dr. Gibbon he had been sick 36 hours and had all the evidence of general peritonitis. Operation revealed peritonitis and also a gastric ulcer but without perforation. Drainage was established but the man died next morning. At autopsy the entire alimentary tract was removed but showed no lesion except the gastric ulcer. There was a diffuse peritonitis and no adhesions to the ulcer. Dr. Gibbon believes it is possible to get infection of the peritoneum from a non-perforated gastric ulcer, just as this condition arises from the appendix, without macroscopic perforation.

Case II was a man, a typical alcoholic, who had a lead-pencil-sized perforation in the anterior wall of the stomach. The patient died five days later from delirium tremens.

Case III was the one referred to by Dr. Le Conte. There was the typical history of perforating ulcer, three-fourths grain of morphin having afforded no relief from the pain. The perforation was in the anterior wall toward the lesser curvature. It was patched up by means of omentum and the patient afterward recovered.

Of the seven cases seen by Dr. Gibbon three recovered. In two, death was due to lateness of operation, in one to delirium tremens, and in one to faulty technic. The last mentioned died on the twenty-fourth day from obstruction of the bowel and abscess of the pelvis. The insertion of a drain is the safest procedure for the majority of surgeons. He always feels more secure when a drain extends down to the point of perforation. The question of suprapubic drainage should be decided by the length of time that has elapsed after perforation and by the quantity and character of the fluid in the peritoneal cavity. Dr. Gibbon has always used suprapubic drainage. As to gastro-enterostomy when one is in doubt as to whether the pylorus has been closed in repairing the perforation, one point is to be remembered. Experience in closing typhoid and gunshot perforations of the intestine when the surgeon believes the gut is almost closed but finds later that the lumen is sufficiently open, makes one think that the pylorus will likewise stand a great deal of narrowing. Regarding secondary gastro-enterostomy Dr. Gibbon did one 18 months after operation for perforation. He agrees with Dr. Le Conte that it is a mistake to do a gastro-enterostomy

when perforation is present. It opens a new field for infection and is bad technic.

Regarding Dr. Martin's paper on peritonitis without visceral lesion, the surgeon not infrequently finds no cause to account for peritoneal infection and feels that possibly he has overlooked a lesion. It is comforting to hear that postmortem in the reported cases revealed no discoverable source of the peritonitis. Many such cases are probably due to the pneumococcus.

Dr. Gibbon is partial to local anæsthesia, but this is not satisfactory for exploring the abdomen, hence ethyl chlorid is used for this purpose. Four thousand cases of ethyl chlorid anæsthesia are now on record at the Pennsylvania Hospital. This anæsthetic is very satisfactory, especially if it is preceded by a small dose of morphin. He did a colostomy by its aid and the man was talking to him while the dressings were being applied. It is the ideal agent for short operations.

Dr. William L. Rodman is satisfied that the literature on the subject of gastric ulcer, in so far as perforation is concerned, has to be rewritten, as perforation is far more frequent than has hitherto been dreamed. During last May he spent a fortnight with Dr. Mayo, and during that time saw him operate on 12 cases of gastric and duodenal ulcer, and of these three had previously perforated; in all three the evidence was conclusive. Dr. Rodman has operated on three cases of perforated gastric ulcer which were latent, and previous to perforation presented not the slightest symptom suggestive of ulcer. In one instance one of the best medical men in the city had been in attendance and had not suspected the presence of ulcer.

As to the wisdom of drainage he agrees with Dr. Le Conte. It is not absolutely necessary in all cases but is very generally advisable. Suprapubic drainage is not necessary in the majority of instances but the necessity for such drainage must depend upon whether or not there has been gross soiling of the peritoneum and whether the extravasated material has wandered far from the site of perforation. If perforation occurs shortly after a meal, then suprapubic drainage would be indicated; if when the stomach is empty, it usually will not be needed. It must be remembered also that in a large percentage of cases of perforation, as shown especially by Cripps and English, the stomach contents are sterile, and far different from the intestinal contents.

As to performing gastro-enterostomy after dealing with a perforation, Dr. Rodman agrees with Drs. Le Conte and Gibbon that it is wholly unnecessary unless there be stenosis of the pylorus. Dr. Gibbon raised the question as to whether it is better to excise the ulcer than to do gastro-enterostomy. Both are in most instances unwise, but if the ulcer is accessible and the surrounding tissue not too necrotic, then excision is preferable to gastro-enterostomy. In regard to Dr. Martin's paper, he also has failed to find perforation in some cases and yet peritonitis was present. However, there is no reason why we may not find peritonitis without macroscopic lesion of the viscera. Infection of intra-abdominal tumors may occur because of their prolonged contact with hollow viscera; and without apparent lesion uterine fibroids have become infected through the intestine or the bladder. If then infection of tumors may occur in this way why should not peritonitis be caused in the same manner? Dr. Rodman agrees in the wisdom of using local anæsthesia, but it is unwise to attempt it in the case of children. He has several times performed laparotomy under local anæsthesia, using a weak solution of cocaine. In one case he used only carbolic acid. There was no pain except when the parietal peritoneum was cut. The patient was dull and in a semi-stupor and perhaps not so appreciative of pain as the average case.

Dr. John H. Jopson said that Dr. Martin mentioned finding the streptococcus in one of his cases of peritonitis without evident visceral lesion. In pediatric literature a constantly increasing number of cases of pneumococcus infection of the peritoneum are being reported. Clinically these cases are difficult to distinguish from those of streptococcus or other infection, and unless cultures are made a pneumococcus infection could not be excluded in the class of cases under discussion.

Dr. Francis T. Stewart has operated on seven cases of perforated gastric ulcer and in six he used drainage. Five recovered. In one he closed a perforation, did a gastro-enterostomy, and employed no drain; the patient recovered. He also omitted drainage in a case of typhoid perforation and the patient recovered. He cleans the peritoneum by irrigation with salt solution after thoroughly packing off the surrounding structures. Dr. Stewart assisted at one operation for perforated gastric ulcer in which the operator placed a drain at the site of the perforation.

Leakage occurred with a resulting gastric fistula and death of the patient from inanition. Given a recent perforation, should the patient be placed in the Fowler position? If the peritonitis is generalized, suprapubic drainage should be established and the head of the bed elevated. If, however, the soiling is confined to the upper abdomen, the foot of the bed should be raised in order to prevent dissemination of the infection. Gastro-enterostomy is in a transition stage at present and its indications and contraindications are not fixed. It should rarely be performed at the time a perforation is closed. An alarming number of cases of peptic ulcer of the jejunum have been reported as a sequel of gastro-enterostomy, a number of which have perforated. Several have been operated upon and some of these have recovered. All were foreign cases.

As to peritonitis without visceral lesion, Dr. Stewart has seen several instances in which the diagnosis was confirmed post mortem. In one case which survived, the gonococcus was found. A second case was that of a woman with a diagnosis of typhoid fever and a supposed perforation. Operation revealed peritonitis but no indication of typhoid fever and no visceral lesion. Cultures showed the pneumococcus. A third case was one of typhoid fever operated on for perforation; no perforation was found and the patient recovered. If the causative lesion be not found at once it is best to make a further careful search, as the lesion will almost always be finally located. Dr. Stewart assisted at one operation for supposed appendicitis in which suppurative peritonitis was found. Air came out of the abdomen but the operator simply removed the appendix, although that organ did not appear to be much diseased. Autopsy showed a leaking gastric ulcer which a more careful search would have located.

Local anæsthesia is often useful for exploratory purposes, but its use in these cases should be limited to the diagnosis of peritonitis. If this condition be found, general anæsthesia should be employed, as washing out of the abdomen or searching for a perforation cannot well be performed even in the adult by the use of a local anæsthetic.

Dr. John B. Roberts cited a case of traumatic ulcer of the stomach which was mistaken for a peptic ulcer. When the abdomen was opened for repeated vomiting of blood there was found a thickening of the posterior wall of the stomach near the

pylorus. Dr. Roberts did a posterior gastro-enterostomy which was followed by the vicious circle. Dr. Stewart operated later for this condition, and found two sewing needles, one in the liver and one behind the stomach, which Dr. Roberts had not left in the abdomen. The woman afterward gave a clear history of having eaten pie, some months previously, in which there was some foreign body which gave intense pain at the time of swallowing. Soon after this she had profuse vomiting of blood and applied to a dispensary for treatment. The swallowed needles were evidently the cause of the bleeding and probably caused a chronic ulcer where the thickening in the stomach-wall was felt at the time of the first operation. The case is a warning against being in too great a hurry to make the diagnosis of peptic ulcer before getting as full a history as is possible.

Dr. Charles H. Frazier alluded to a case at the University Hospital operated on by Dr. Norris for strangulated hernia. The following morning the patient showed evidence of collapse and it was thought that a ligature had slipped, giving rise to internal hæmorrhage. An exploratory laparotomy revealed a perforated gastric ulcer and the abdomen filled with blood. The perforation was closed but the patient did not react from the shock of operation and soon died.

Dr. John B. Roberts said he had lost two patients from perforation of gastric ulcer a considerable time after operation in the pelvis. One was a man upon whom he had performed suprapubic lithotomy; the other was a case of extraperitoneal rupture of the bladder, doing well after incision and drainage, in which death suddenly occurred. The abdomen was found at autopsy to be full of blood from sudden perforation of an ulcer of the stomach. There may be some definite connection between septic processes in the pelvis (one of his cases had suppurated) and duodenal or gastric ulcer, just as in the case of similar ulcers developing after severe burns of the skin.

Dr. Le Conte, in closing, made clear his position regarding drainage in cases of perforated gastric ulcer. In the majority of cases seen by the surgeon the abdomen is not opened within an an hour or two after perforation has occurred. When the extent of the soiling is as far as one can see or feel, then the case should be treated as one of general peritonitis, the patient placed in the exaggerated Fowler position, with suprapubic drainage and

employment of the other measures advised by Murphy. If one can use this procedure with success in the presence of an extensive peritonitis, why should it do harm where the peritoneal inflammation is more limited? This method of treatment does no harm and can do good.

As to peritonitis without visceral lesion, the condition is not common, yet most surgeons have seen one or more cases. In one case seen in the Children's Hospital, the attending physician and Dr. Le Conte had a long dispute, the former believing it to be one of peritonitis, the latter considering it pneumonia. After a delay of 48 hours Dr. Le Conte operated and found a diffuse peritonitis but no visceral lesion to account for it. The pneumococcus was isolated from the peritoneal contents and the autopsy showed that the infection had passed through the diaphragm from a pneumonic lung. He made this error because pain is often referred to the abdomen instead of to the chest in beginning pneumonia.

Dr. Martin, in closing, said he did not wish to be understood as advising against thorough search for a possible visceral lesion. He meant to say that in the absence of local symptoms and previous history exploratory opening may be sufficient. The Germans are the only people who can stand abdominal operations under local anæsthesia. In answer to a question by Dr. Ross, Dr. Martin said that peritonitis in the cases reported was not due to an intussusception which had been self-reduced.

STRANGULATED HERNIA OF THE OVARY IN A TWO MONTHS OLD INFANT.

Dr. Edward B. Hodge reported this case, which occurred in an Italian child. There had been a small umbilical hernia following infection of the cord at birth, but otherwise the child was healthy. Two weeks before admission a lump appeared in the right groin and four days later the child became fretful. On a Saturday the child vomited but had a stool as the result of an enema. On Sunday it vomited a number of times and on Monday was sent to the hospital. It had been in shock but condition on admission was good. It apparently had a hard strangulated hernia. Operation under chloroform showed a thick hernial sac which contained a swollen and discolored ovary, almost black, three and one-half by one and three-fourths centimeters in size.

There was no intestine in the sac. The ovary and tube were tied off and the parts repaired as well as possible. The child had good convalescence except occasional vomiting, and now appears to be well. It is a question if the condition of the ovary was not due to torsion or injury, as he is not satisfied there was constriction sufficient to cause the lesion present. To decide if there was a uterus bicornis it would have been necessary to enlarge the internal ring, and this was not considered justifiable. Hernia of the ovary is not extremely rare but appears uncommon enough to warrant the report of a case occurring at this age.

Dr. John H. Jopson believes this patient is one of the youngest subjects of operation for hernia of the ovary on record. A case of hernia of the uterus and ovary operated upon in a child of seven months has been reported by Defontaine. In cases of hernia of these organs there is frequently some congenital abnormality, as bicornate uterus, imperforate vagina, or pseudohermaphroditism. A case such as that reported by Dr. Hodge might lead to hernia of the uterus if adhesions of the ovary to the sac were present. In such cases the round ligament not infrequently is short and this aids in the production of the hernia of the uterus.

Dr. George Erety Shoemaker said he saw the patient referred to by Dr. Hodge three days before it was operated on. The mass in the groin was at first a small, painless swelling which he thought was infiltrated omentum. He advised temporizing on account of the baby's age, but at the end of three days the mass was four or five times as large as it was before and there was vomiting and subnormal temperature. He then sent the child to the hospital. The condition was no doubt congenital.

LARGE CYSTIC KIDNEY.

Dr. John H. Gibbon showed a specimen of cystic kidney in which the renal tissue had been entirely obliterated, none being demonstrable by the microscope. The question of diagnosis was interesting, the case being sent in as an ovarian cyst. In many respects it resembled that condition, but the diagnosis of cystic kidney was confirmed when the patient was put upon the operating-table. The tumor extended from the pelvis to the costal border and it would evidently have been foolish to attempt its removal posteriorly, hence it was taken out through the abdomen. It was tapped before removal and eleven pints and four ounces

of fluid withdrawn. This was accomplished as easily as any nephrectomy he has ever performed. The incision was made through the sheath of the right rectus muscle, the muscle pulled aside and the sheath opened beneath it. Five or six inches of the ureter, which was as large as the thumb, were removed, with the kidney. The remainder of the ureter was not explored, though this should have been done. This point was not considered until the ureter had been ligated, and then, as the patient was old and not in good condition, it was allowed to remain. Vaginal examination before operation revealed no stone in the lower part of the ureter. As high as 60 ounces of urine a day has been secreted by the patient since the operation. The vessels in the pelvis of the kidney were so distinct at the time of operation there was no trouble in their ligation. The vena cava was exposed for a length of six inches. Dr. Gibbon believes it is better in the case of a large growth of the kidney to go in anteriorly. Opening through the peritoneal cavity does not interfere with drainage.

Dr. Robert G. Le Conte stated that tumors of the right kidney are easy to remove under the circumstances narrated by Dr. Gibbon, the colon usually being internal to the mass. In the left kidney, however, the descending colon is often to the outer side and the tumor presents under the mesocolon. Consequently, the mesentery must be incised, and if the tumor is a large one the left colic artery must be divided before the removal can be effected. Ligature of this vessel endangers the life of the descending colon and is not infrequently followed by gangrene.