Dr. Harte never gives ethyl chloride except as a preliminary in any case where he expects a delay. He uses it for opening an abscess or for putting in a drainage-tube, but where the patient is to be kept under the anæsthetic for any length of time, say more than five or six minutes, he does not use ethyl chloride.

Relative to the remark made by Dr. Gibbon that he had never experimented with anæsthetics on himself, Dr. Harte thought more could be learned from such experimentation than from the anæsthetization of five hundred other people.

Dr. W. Joseph Hearn agreed with Dr. Harte that the rapidity with which anæsthesia is induced with chloride of ethyl is its chief danger. A few years ago at the Jefferson Hospital when the bottle of ether was immersed in a tub of hot water during administration it was found that the concentration of the vapor was too great, and this method of administration consequently had to be abandoned because the anæsthesia was induced so rapidly that it was hard to recognize the danger signals.

Dr. Walter E. Lee, in closing, said that in regard to the color of the patients who died, all five of them were negroes and that one of the ether deaths occurred in a patient of this same race. The question of the rapidity of the appearance of anæsthesia, of which Dr. Harte and Dr. Hearn have spoken, is undoubtedly an objection to the general use of ethyl chloride. As it is given in England in large mass doses of from 3 to 10 c.c. in a closed inhaler with the admission of very little air, deep anæsthesia is reached after 5 or 10 inspirations. In Dr. Lee's experience the danger signs during the administration of ethyl chloride are very difficult to recognize, the slowing of the respiration is insidious and they have probably ceased for some seconds before the anæsthetist realizes it. For this reason the closed inhalers have been abandoned in the hospital and the open method used which has lengthened the administration period from 8 to 10 seconds to 3 to 4 minutes, giving more time for the recognition of the danger signals.

STATED MEETING, HELD OCTOBER 5, 1908.

The President, Dr. William T. Taylor, in the Chair.

GUNSHOT-WOUND OF THE ABDOMEN.

Dr. Charles F. Nassau presented three patients who had sustained gunshot-wounds of the abdomen. He said that it had always been his practice to immediately explore all gunshot-wounds in which there was a possibility that the ball might have entered the abdomen. Naturally, one should not do this, unless surrounded by the proper conditions and with the proper help to go ahead and perform any operation that the conditions found might necessitate. It seemed to him axiomatic that no gunshot-wound or stab-wound should be treated expectantly where there is the slightest suspicion of penetration of the abdominal cavity. The risks of delay are so disastrous and the danger of exploration so slight that the patient should be given the benefit in every instance.

Case I.—A white woman, aged 22, married, was admitted to St. Joseph's Hospital January 16, 1906, with the history of having been shot by her husband. When seen by Dr Nassau about three quarters of an hour after the injury, she showed such marked symptoms of internal hemorrhage that she was removed at once to the operating room. She was etherized, scrubbed and operated upon at once. The wound of entrance was situated about two inches to the left of the middle of a line drawn from the anterior superior spine of the ilium of the umbilicus. The ball had travelled upward and inward for about three inches in the abdominal wall, before it penetrated the peritoneal cavity. On opening the abdomen, there was a free gush of a large quantity of bright red blood which was found to be coming from a large vessel towards the root of the mesentary of the small intestine. This was at once ligated. There were found altogether five perforations of the small intestine, two perforations of the mesentery, and one each of the greater omentum and the gastrocolic omentum. The patient was given an intravenous transfusion of salt solution during the course of the operation. She was on the

operating table one hour and twenty-five minutes. The abdominal wound was closed without drainage by a combination of buried and through-and-through sutures. Wound healing was by first intention.

The patient's temperature fluctuated between 100 and 102 for 10 days. It came down to normal for four days; then for 28 days it ranged from 99 to 101; then for four days from 101 to 104, followed by five days of normal temperature. There remained a slight elevation of temperature until her removal from the hospital on April 12, 1906.

In explanation of this fever he stated that while she was being put to bed, after the operation, it was discovered that she had another bullet-wound, entering about two inches to the right of the eleventh dorsal vertebra. This bullet was lodged to the left of the spine, as shown by an X-ray plate, and had in its course completely divided the spinal cord. She was, of course, totally paralyzed from the waist down. This injury ultimately caused her death, some months after she was removed to her home.

CASE II.—Colored, aged 25, single. Shot at 11 P. M., March 7, 1908. Walked four squares to the station-house, from which he was brought to St. Joseph's Hospital, in the patrol wagon at midnight. The patient walked from the patrol wagon to the receiving ward, suffering no distress whatever. He had not vomited, and his pulse, temperature and respiration were normal. The wound of entrance was one inch above the crest of the ilium in the mid-axillary line on the left side. The bullet could be felt under the skin one and a half inches to the right of the umbilicus. He was operated on at 1.30 A. M., and was on the table one hour and thirty-eight minutes. After exploring the wound of entrance, and determining that the peritoneal cavity was open, the abdomen was then opened along the outer border of the left rectus muscle from just below the margin of the rib to within an inch of the pubes. There were found two perforations in the transverse colon; these were so large and so close together that it required a sutured area nearly six inches in length to make a safe closure of the bowel. There were 12 perforations of the small intestine; two perforations of the mesentery of the small intestine with considerable bleeding; one perforation of the descending mesocolon, just above the sigmoid flexure. At one

spot the bowel was so abraded that it was almost a perforation. The abdominal wound was closed without drainage by buried catgut, and through and through silk-worm gut sutures. The temperature went up to 103 at 4 P. M. of the same day. It fell to 100 during the night, and reached normal in three days. A portion of the upper angle of the wound broke down in about ten days, and healed by granulation, leaving a very small fistula at the upper end of the incision connected with the small intestine. Otherwise, in every way his recovery was normal. During the second week of September the patient had a bad cough and one day coughed so violently that he broke open his wound, and two loops of small intestine, about a foot in length, were extruded. Fortunately for him, this happened while he was in the hospital; the bowel was replaced by the resident physician, and the wound packed with iodoform gauze. The temperature went up to 101, but came down to normal the next day. Condition October 4, 1908, temperature normal, pulse 80, respiration 20. Dr Nassau said that he proposed to close the fistula shortly.

CASE III.—A white woman, aged 24, married, was admitted to the receiving ward at St. Joseph's Hospital July 7, 1908, at 2.45 A.M., suffering from an accidentally inflicted gunshot-wound of the abdomen. She was vomiting great quantities of dark brown fluid, was much shocked, and seemed to be suffering an excessive amount of pain; temperature was 97, pulse 102, respiration 26. She was operated upon at 4.30 A.M. She was on the table one hour and thirteen minutes. The wound of entrance was about two inches to the right of, and one and a half inches above the umbilicus. The abdomen was opened through the right rectus muscle, and in the peritoneal cavity there was much free blood; this bleeding came from the wounds in the transverse mesocolon and from the stomach. There were found one perforation in the hepatic flexure of the colon, two perforations in the transverse mesocolon, one being near its root and involving a very freely bleeding vessel in the anterior layer which necessitated ligation, three perforations in the small intestine high up; one large perforation or slit, nearly three inches in length, just above the attachment of the gastrocolic omentum, about the junction of the left and middle thirds of the stomach. The abdomen was closed without drainage by buried catgut, and through-and-through silk-worm gut sutures. While searching for the source

of the hemorrhage, which came from low down in the mesocolon, he could see the point on the lateral internal surface of the abdominal wall, where the bullet had passed out from the abdominal cavity, and buried itself in the muscles of the back. This was just below the spleen and above the anterior surface of the left kidney. The temperature ranged from 100 to 102 for five days, and then dropped to 99 and gradually came to normal. A portion of the wound healed by granulation. She was discharged from the hospital absolutely well, August 23, 1908.

About ten days after leaving the hospital she returned to the dispensary, and the bullet was removed from beneath the skin at a point just below the costal border, and about four inches from the spines of the vertebra on the left side.

None of these cases were drained. During the course of the operation the intestines and abdominal cavity were flushed constantly and copiously with normal salt solution. He thought that none of these cases had waited long enough before operation to involve any great amount of soiling of the peritoneum. The only question in his own mind was as to whether the various points of perforation were adequately repaired. If these were not going to leak, then he did not see reason for drainage. Certainly, one could not attempt to drain the many numerous and small areas that might be infected; therefore, he felt safe in trusting to the peritoneum whatever amount of infection might be left after his copious flushing. At all events, all the patients got well. In two of the three the bullet was recovered. All three were shot by a 32-calibre revolver at close range; the greatest distance being about five feet, and in the last case probably not more than eighteen inches, as the woman's nightgown was set on fire.

Dr. Nassau called attention to a condition that he observed in these three cases, and that he had also seen in several cases of perforation of the bowel during typhoid fever, where operation was undertaken early. The intestinal walls, and the mesentery are of a pinkish color, and spread over them the vast network of lymphatic vessels seem to be over-distended, chalky white, and if any of these little branches be scratched with a needle point, a milky fluid exudes. In operation, as prolonged as any of these three, this condition, by the time the abdomen

is closed, has almost entirely disappeared. Is this not nature's first great effort to do what she can to increase peritoneal resistance?

Dr. John H. Jopson spoke of three cases of penetrating wounds, with perforation of intestine in two cases, and of stomach and intestine in one case, which he had observed.

Case I.—A white boy, aet. 14, was admitted to the Presbyterian Hospital September 18, 1906. Four hours previous to admission he had received a wound in the right side of the abdomen, on a line above the umbilicus, by a 22-calibre rifle ball. On admission the temperature was 99°, pulse 120, small and tense. The abdomen was slightly distended, tender, tympanitic in the centre, and dull in the flanks. Had vomited several times before admission.

Operation seven hours after accident. The bullet-wound had taken a downward and outward direction through the abdominal wall, and was very dirty. The peritoneal cavity contained a large amount of free blood and some beginning serous effusion. There was a large opening in the lower ileum opposite the mesenteric border, single and irregular, and two openings in the cæcum. All were closed by Lembert sutures of silk. The mesocolon was perforated, and digital examination discovered the much deformed bullet in the retroperitoneal tissues, from which situation it was recovered. Irrigation of abdominal cavity and drainage of pelvis by tube and gauze. There was considerable peritoneal reaction, free drainage and suppuration of the wound in the track of the bullet, but the boy made a good convalescence, and was discharged from the hospital a month later.

Case II.—A boy, aet. 6 years, was admitted to the Presbyterian Hospital December 28, 1907, having received an accidental wound by a ball from a 32-calibre revolver about a half hour previously. The patient showed some evidence of shock on admission; his temperature was 98.4°, pulse 120. Condition at time of operation good. Operation about two hours after accident. The bullet-wound lay in the median line, running downward from a point just below the ensiform cartilage. Oblique performation of the abdominal wall. There was a small amount of blood clot in the peritoneal cavity. The stomach and transverse colon were drawn out, examined carefully and found uninjured. The small intestine was then examined, and two per-

forations found in the jejunum about three inches from its origin, opposite each other, at the mesenteric and antemesenteric borders, and two openings in the mesentery. All were closed by suture of celluloid thread. The entire small intestine was gone over for other perforations, but none found. The ascending and descending colon could not be examined through the median wound, but as the bullet had apparently taken a direction obliquely backward it was thought they had escaped injury. Operation was well borne. Irrigation of the peritoneal cavity and a cigarette drain. The child had a fairly good night except for some restlessness. The pulse gradually increased in frequency and lessened in force. The temperature steadily rose. There was suppression of urine, but little vomiting. A little sanious discharge from the wound. The patient died 24 hours after operation.

Examination of the abdomen, post mortem, showed no macroscopic peritonitis, but a perforation of the large intestine, exact location not detected by resident physician, but probably of descending colon or sigmoid. The cause of death was probably a rapid peritonitis in spite of the absence of gross signs, clinical or pathological. The bullet was not traced or found, and before death the possibility of a wound of the kidney was considered as the explanation of the suppression of urine. This was probably a toxic condition, however.

Case III.—A lad, aet. 15 years, a sturdy, active boy, was shot on May 11, 1908, at 3.30 P.M., by a B. B. cap fired from a 22-calibre rifle at a distace of about seven feet. The ball penetrated clothing and abdominal wall. There was little pain and no shock, and the boy did not know he was wounded until a bystander examined him. He walked five or six blocks to a physician's office, who at once sent him to the Presbyterian Hospital. On admission he presented no symptoms whatever. There was a small wound of the abdominal wall about two inches below the border of the ribs on the left side and one inch outside the semilunar line. No rigidity or tenderness of the abdominal wall. Temperature 97.8 °, pulse 84, respiration 24. The ball could be felt beneath the skin of the back at the edge of the erector spinæ.

Operation five and one-half hours after accident. A four-inch incision was necessary to trace the small bullet wound

through the muscular abdominal wall into the peritoneal cavity, which contained a small amount of blood. The splenic flexure of the colon lay immediately beneath the wound, and was surrounded by a hematoma beneath its peritoneal covering. It was with difficulty brought up into the wound. Prolonged examination failing to show the source of the hemorrhage, the peritoneum external to the colon was divided and stripped forward, when two small perforations were found in the colon, one on its anterior and another on its posterior surface, which were closed by double continuous Lembert stitches of Pagenstecher thread. The anterior wound had been the source of the hemorrhage. Blood and gas were seen to be coming upward from the direction of the cardiac end of the stomach, examination of which showed one perforation on the anterior and one on the posterior surface, very near the greater curvature. Both were closed by double layers of sutures. The intestine was gone over from the duodenum to the colon, examined, cleansed and returned. The upper abdomen was cleansed by wiping, and drained through the wound by cigarette drain and gauze packs. Partial closure of wound. The boy was turned on his side, and the skin nicked and the bullet removed from its subcutaneous location in the back. There was no shock and no diffusive peritoneal injection, although there was free drainage from the abdominal wound. Twelve hours after operation he drank all the water from a flower vase beside his bed. He was in the hospital a month and was discharged well.

Dr. Jopson said further that the questions raised by Dr. Nassau applied to the cases he reported. As to the importance of immediate operation in civil practice, there can be no question. The figures collected by Moynihan in his book on Abdominal Operations, and based on an analysis of 112 cases of gunshot-wound of the stomach, show a rapidly increasing mortality where operation was delayed.

As to the site of incision in the cases of gunshot-wound, it seemed to him that where there is only one wound, and this well to one side of the median line, it is preferable to make the incision in this site rather than in the median line, but where there are several wounds one must rely on the median incision.

In the second case a perforation in the descending colon or sigmoid was overlooked, and he did not see how this could have

been discovered unless there had been added to the primary wound another on the left side of the abdomen. This question is one of considerable importance, as the responsibility of overlooking a gunshot-wound of the intestine is not lightly to be taken.

Regarding the technic of suture of small wounds there is a little difference of opinion. Some surgeons think a purse-string causes too much narrowing.

The question of drainage depends somewhat on one's predilections. The importance of posterior drainage in gunshot-wounds of the stomach has been pointed out by Roswell Park. In cases of gunshot-wound of the cardiac end of the stomach, such as the one here reported, anterior drainage will probably often suffice.

ACUTE CARCINOMA OF BREAST.

Dr. William L. Rodman presented a woman, 45 years of age, who had been the subject of acute cancer of the mammary gland, the second he had encountered of this very rare affection.

Her history is as follows: Her mother is living at seventy years, her father died at seventy-two. None of four sisters had mammary tumors. She has had but one child, who is now nineteen years old. She never had abscess of the breast.

In January, 1908, she noticed a marked retraction of the nipple of her left breast. The entire breast then began to enlarge and she very soon noticed that the greatest enlargement was in the axillary hemisphere. There was, however, no distinct tumor. In short, the process was a diffused, not a discrete one. About three years ago she accidentally struck this breast while getting out of the window. In March, 1908, she consulted one of the surgeons in one of the most prominent hospitals of this city, and a diagnosis of mastitis was made. If her condition in March was at all similar to what it was early in September, the mistake in diagnosis can easily be understood.

When first seen by Dr. Rodman the gland was vividly red and covered by an eczematous eruption. Indeed, it closely simulated mammary abscess. A careful examination of the supraclavicular glands showed unmistakably enlargement of both chains. He could not believe that such enlargement was sympathetic and inflammatory, and therefore believed it to be acute cancer. Notwithstanding this, he took the precaution, as he always did in cases admitting of a doubt, to have a competent microscopist present at the operation; and the entire breast was not sacrificed until the examination of a frozen section confirmed the diagnosis. The report showed it to be medullary carcinoma. After the breast was entirely removed and the specimen carefully examined, it was shown that there were small deposits of pus throughout the gland. There was extensive carcinomatous infiltration throughout the glandular structure.

Dr. Rodman said that at first he hesitated as to whether or not operation was indicated because of its acute course and the involvement of the supraclavicular lymphatic glands. Certainly, nothing short of a most radical procedure was indicated. This was carried out the next day and the subclavicular triangle was also attacked and cleared of enlarged glands and fat. The finger would be carried behind the clavicle from the wound above to the one below it. In spite of a very large wound he was able by extensive undermining of the flaps, to approximate their edges and secured primary union in both wounds.

She made an excellent recovery and was sitting up in forty-eight hours; but two weeks had elapsed since the operation, but she was well enough to be presented before the Academy.

He presented the case with the hope that others would report any cases of acute cancer in their practice, meaning by the term cases not only more than ordinarily rapid in their course, but so closely simulating mastitis as to have warranted the name by so good a surgeon and pathologist as Volkmann, who described it as "carcinomatous mastitis." In other words, there is no local or discrete growth in a part of the gland, but a general carcinomatous infiltration. He had seen quite a number of cases of both sarcoma and carcinoma occur in pregnant and lactating women. While such cases pursue at times a very rapid course, the patients he had seen had not, strictly speaking, acute cancer, as there were wanting inflammatory symptoms, the diagnosis was always plain enough, and only one of them simulated mastitis. Acute cancer is somewhat more likely to occur in the breasts of pregnant and lactating women, undoubtedly; but to warrant the term "acute cancer" there must be inflammatory symtoms simulating mastitis. In other words, a diffused, not a discrete lesion.

Billroth reports a case where the tumor appeared in the

breast five weeks before delivery, and the patient died one day after a normal labor. So that in less than six weeks from the beginning of the disease the patient was dead.

In the first case that he saw, many years ago, in Louisville, Kentucky, the patient, a pregnant woman, never lived to be confined, but died within three months after the beginning of the growth.

Dr. John H. Gibbon said that within the past few months he had seen two cases of acute carcinoma of the breast as described by Dr. Rodman. The first case was in Dr. Le Conte's service at the Pennsylvania Hospital. She was a young woman, had recently been confined, and the entire right breast was red, hard and brawny. It looked very much like an extensive mastitis. The second case he saw with Dr. E. P. Davis. She was a woman about 35 years of age and seven months pregnant at the time. The breast in this case was very large, red and indurated; the entire breast was involved. This condition started last May, and the patient died a week or two ago. No operation was done in this case, as the growth was too extensive at the time that consent to operate was given. Dr. Davis did a Cæsarean section in order to save the child, and the mother died about two or three weeks later as the result of the extension of her disease. This breast looked exactly like an infiltrating abscess of the breast, excepting that there were no soft areas.

Dr. Edward B. Hodge said that he would add to the history of Dr. Gibbon's first case just mentioned. The patient was a rather young woman, not over thirty. She was pregnant and she is now coming to his service at the Out-patient Department of the Pennsylvania Hospital with a granulating area. She has pain in her back, low down, and about the pelvis, which looks as if she might have a recurrence in the spine. Her pregnancy is over. Her general condition is poor.

Dr. Charles F. Nassau said that a patient came to him from New Jersey, who is at the Jefferson Hospital at the present time, with a breast tumor which has existed for eight or ten weeks. It was so acute, pained her so much, and had this redness that Dr. Rodman speaks of, and looked so like an abscess that her doctor had opened it for an abscess, but she had very extreme and extensive involvement of the axillary glands in her subscapular fossa, and the growth had attached itself to

the ribs and sternum. This whole process had made its appearance very rapidly. He did not think it had been more than ten weeks since the patient was perfectly well. Her physician thought she had an abscess, but one which he acknowledged he could not cure, and suggested the removal of the breast.

Dr. William J. Taylor said that he had had one instance of acute scirrhus of the breast in a young woman of 24 years. She was seen only a few weeks after the tumor appeared. At operation there was very extensive involvement of the axillary glands, and in six months she was dead from a recurrence.

Dr. Rodman added that in case of acute cancer of the mammary gland both breasts are often involved. The right breast in the case presented is absolutely free of disease. There has been in most of the recorded cases of acute scirrhus a certain amount of purulent infiltration of the gland. In some there has been a well marked abscess, as in the case of S. W. Gross. Vivid redness and thickening of the skin, together with an eczematous eruption here and there, well justified Volkmann's name, "carcinomatous mastitis."

As regards the case presented he did not feel optimistic as to the ultimate result.

STRANGULATED INGUINAL HERNIA.

Dr. William L. Rodman reported the case of a man, 55 years of age, who was brought into his service at the Medico-Chirurgical Hospital at 8 p.m., October 20, 1908, with a well-marked strangulated hernia. He had had a right inguinal hernia for years, which was controlled ordinarily by a truss. The hernia, however, had come down in the afternoon, and at 5 o'clock he was taken with severe pain. He was then unable to reduce the tumor. He was admitted to the hospital at about 8 o'clock. He had not vomited, nor had he had nausea at any time. The tumor was very tense. The operation was done and he had never seen a tighter constriction at the end of three hours, excepting in one or two small tense femoral hernias. There was a loop of ileum which had been out only three hours, but was of a deep rose color, cold and clammy, and he was satisfied that necrosis would have set in and a resection of the gut have been necessary if the patient had gone until the following morning for operation,—say twelve or fifteen hours after strangulation.

Dr. Rodman said that he reported the case because in a pretty large number of herniotomies for strangulation he had never before encountered a case that did not vomit, excepting one or two epiploceles. He certainly had never seen an enterocele nipped so tightly as to be on the point of necrosis that was unaccompanied by nausea and vomiting. The one symptom emphasized by all authorities is vomiting; first, gastric contents, then bilious, finally stercoraceous in character.

Dr. John H. Gibbon said that he did not think that vomiting always occurs in these cases, even where the bowel is gangrenous. Recently he had operated upon a man who was 64 years of age, who had developed an irreducible hernia in the morning, and all day attempts at reduction had been made. The man's scrotum and penis were œdematous, and black and blue. He voided urine and it was found to contain sugar, diacetic acid and albumin. He had not vomited at all, nor had he any eructations of gas. Section was done with infiltration anæsthesia, and four inches of ileum were found, which, if the man had not been a diabetic, he would have resected; but he kept the wound open a long time, and the color of the gut improved so much that he restored it and did a Ferguson operation without the removal of the lower portion of the sac. The œdema of the penis increased after his operation for the next 12 or 18 hours, as if he was going to develop a diabetic gangrene of the scrotum and penis, but this is now much better. There is no doubt about it that this bowel was strangulated. One thing that made him hesitate to resect this bowel was the fact that the circulation of the mesentary seemed so good. There were no evidences of clotting in the vessels of the mesentery—a very important thing and a good criterion to go by in cases of strangulated bowel.

APPENDICOSTOMY FOR CHRONIC DYSENTERY.

Dr. William L. Rodman presented a man, who had been a soldier in the Philippines, where he was taken with amœbic dysentery. He was referred to him by Dr. Anders for appendicostomy, as he did not respond to ordinary treatment. He has been greatly relieved by it, and instead of having 60 actions a day, as in May, 1908, when he was operated, he now has only one of very good consistence. He irrigates himself daily.

I did this operation a week ago on a case in the Presbyterian Hospital for diarrhœa, and the patient is greatly relieved since the two or three irrigations he has had. He believed that this procedure will be done very much more frequently in the future for chronic dysentery diarrhœa, and mechanical obstruction of the large bowel with acute exacerbation. It is a very easy matter to overcome the acuteness of the symptoms by draining the appendix. There is no reason why the mortality in these cases could not be very greatly reduced by doing an ileosigmoidostomy and at the same time draining the bowel by an appendicostomy. It would be infinitely better than an attempt at resection.

Furthermore, it is possible to feed patients through the appendix in this way, where the rectum gives out and it is desirable to rest the stomach.

INTRAVENOUS INFUSION OF TWELVE PINTS OF NORMAL SALINE SOLUTION FOR HEMORRHAGE.

Dr. R. G. Torrey said that through the courtesy of Dr. Edward Martin he was able to report the case of a negro woman, 32 years of age, who was brought to the hospital September 18, 1908, with an incised wound of the abdomen. When seen on admission there was a prolapse of a number of loops of gut through a rather ragged incision on the right side of the lower abdomen some five or six inches in length, some external bleeding; a pulse which was very weak and running, the rate about 150. Her skin was cold and leaking, and the respirations very shallow. The patient was conscious, but seemed profoundly shocked.

A clean cover was placed about the exposed gut and the patient hurried to the operating room, where she was left on the litter without being transferred to the operating table. She was sufficiently conscious to recognize her assailant at this stage, although she appeared too weak to speak.

An intravenous infusion of normal saline solution was started at once and allowed to flow quite rapidly till nearly two pints had entered the circulation, when the flow was decreased. Hot towels had been placed over the gut and ether started at once.

Two punctured wounds of the prolapsed portion of the small

gut were encircled by purse-string sutures and closed, and the fecal matter carefully washed away. The edges of the wound were then retracted and a large amount of clotted and free blood removed from the abdominal cavity.

The bleeding was considerable, and great difficulty was experienced in locating and ligating the bleeding vessels. After increasing the incision, four bleeding points were ligated and the bleeding seemed fairly well controlled.

On further inspection of the intestines two more wounds of the small gut were found and inverted by purse-string sutures, and a contused area on the transverse colon, about 1 x 1½ in., which was perforated at its central portion, was also inverted by a purse string and reinforced by a couple of Lembert sutures.

During the search for bleeding points and the inspection of the gut, which occupied a considerable time, the patient's condition was much of the time alarming.

The salt solution was taken up rapidly, and there seemed to be no opportunity to stop its administration, as the signs most of the time pointed to a failing circulation. When the pulse became very bad and the skin leakiness increased, the aorta was compressed and held closed for some time by a hand in the upper part of the cavity. This procedure seemed to have a good effect on the circulation and also may have facilitated the location of the bleeding points by reducing the hemorrhage in the abdominal cavity.

While on the table the patient received about 10 pints of salt solution by the vein. There was a little leakage during the injection of the first pint, but after that not a drop was lost. About three pints of salt solution were poured into the abdomen and the wound was closed by layers in the usual manner, with catgut continuous and silkworm-gut interrupted sutures. Two Mikulicz drains inserted, one in the lower portion of the wound extending down, the other in the upper angle, directed at the wound in the transverse colon.

In spite of the time occupied by the operation, about two hours, the patient left the operating room in remarkably good condition. In fact, after the bleeding was checked and the intestines returned to the abdominal cavity (the latter task no easy feat), the pulse became at once stronger, and the skin dry and of good tone.

At the close of the operation the temperature was 95 ° and the pulse 156. There was a rapid readjustment of circulatory tone, the pulse rate dropping steadily and gradually, and the temperature rising until after eight hours the pulse rate was 110 and the temperature registered 100.2 °.

The patient's condition was remarkably good for 48 hours, but at this time she began to complain of severe pain in the abdomen, most marked at the epigastrium and extending downward more on the left side than on the right. The upper abdomen was distended and tympanitic. Peristalsis was active and rigidity slight. Patient became nauseated and retched considerably, but did not vomit. A stomach tube and a rectal tube were passed, and about a pint of very offensive fluid was withdrawn from the stomach. It was clear, almost colorless, and had a strong butyric odor.

Considerable flatus was expelled during the next two hours and the relief from distress was almost complete.

The skin-wound after three days began to show signs of infection, and two of the skin sutures were removed to allow of better drainage. In less than a week all of the skin sutures were removed. Union was secured only at the lower angle of the wound, but the fasciæ seemed well united and have since remained firm.

There was at no time a free discharge from the tubes. Oozing of a slightly blood-tinged fluid was present for two days, but after that the upper drain was almost dry and there was a small amount of thick pus in the lower tube at each dressing. There was marked tenderness in the vagina for three days after operation, but no bulging of the vault, and the tenderness disappeared after the fourth day.

Enteroclysis was continuous for more than 48 hours after operation and well tolerated. Nothing was given by mouth for 24 hours, when small amounts of water and albumin water were allowed, followed by beef juice and Liquid Peptonoids.

The urine has been negative throughout, though dysuria was present for a week.

The blood after operation showed 45 per cent. hæmoglobin, with 20,800 leucocytes and 3,370,000 red cells. Two days later, September 20, there was 38 per cent. hæmoglobin; on the 24th the red cells numbered 2,080,000, with the hæmoglobin at 42

per cent.; on the 28th and 30th the hæmoglobin stood at 48 per cent., with the red cells about 2,700,000; on October 4 the hæmoglobin had risen to 57 per cent., and the red cells were close to 3,000,000. A differential count on the 28th showed 74 per cent. polynuclears and 22 per cent. lymphocytes.

The temperature has twice reached 102 °. There has been a diurnal variation of about a degree, but the trend of temperature and pulse has been steadily downward.

The patient's present condition is perfectly satisfactory. The wound is granulating rapidly and is almost clean, the fasciæ firm. There is no abdominal tenderness. Bowels move regularly and urine is voided freely. Except for a slight pleuritic pain in the left side convalescence seems now normal and uneventful.

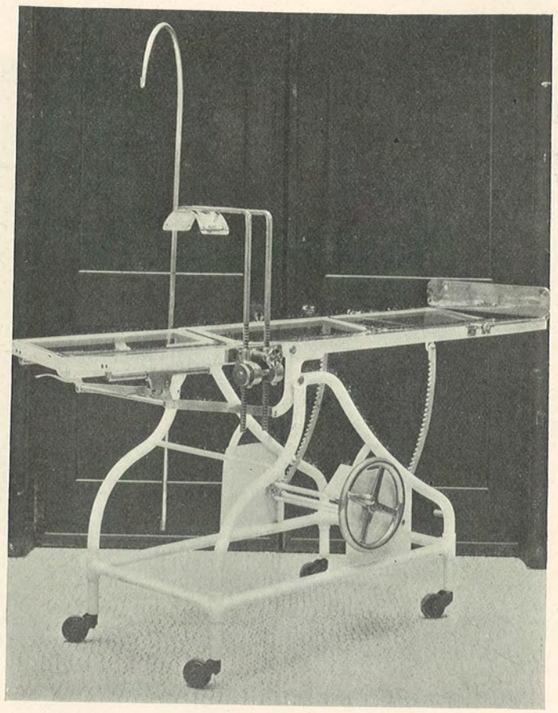
Dr. John B. Deaver said that through the saline solution and the skilful surgery this woman's life was saved, but without the saline solution he questioned if she would have survived. His experience had been more or less extensive with saline solution, but he had never transfused so large a quantity; to him the results obtained in this case are striking indeed. He had seen profound shock, not alone where there has been much loss of blood, respond effectually to this treatment.

Dr. Edward Martin thought the major point brought out by this case is the common-sense application of principles. The residents did what all residents should do,—they did not look on the dose of saline solution as one, two or three pints, but as sufficient to bring up the blood pressure.

Another point worthy of remark was that they did not have time to bandage the extremities, but they took the quickest means of keeping the blood where it was of most use. One of the residents kept the aorta down with his thumb. The quantity of solution given by the bowel was enormous. They hesitated to mention it, it being many gallons, and most of it was absorbed. The work done by the kidneys was extraordinary.

The third point was the complication recorded. The second or third day there was acute gastric irritation, evidenced by enormous distension, by the presence of tympany, by the absence of tenderness, and by the profound effect upon the heart, pulse and respiration. Stomach tubes relieved it immediately. He had had one or two other cases of this kind where this acute gastric dilatation, taken in the early stage, yielded at once. After

Fig. 1.



Frazier's operating table.

FIG. 2.

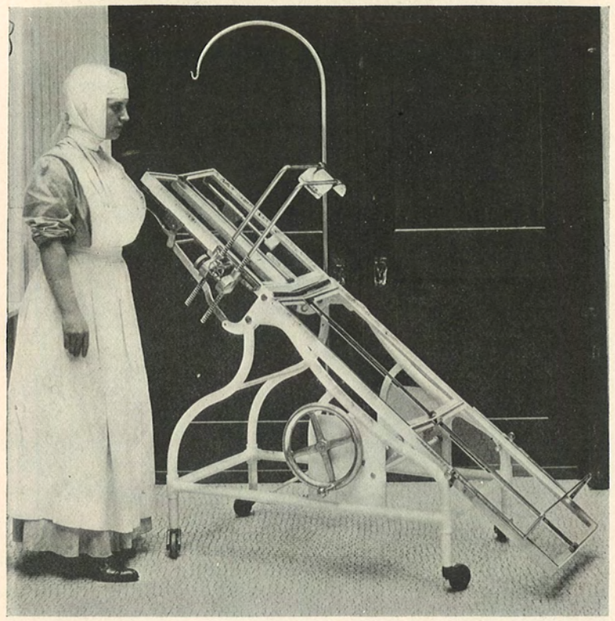
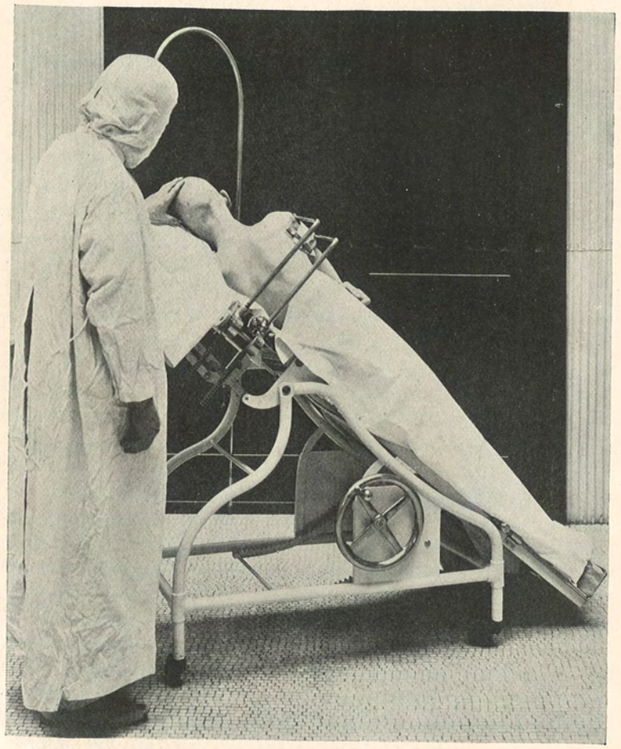


Table in position for elevation of head.

FIG. 3.



Showing patient supported in elevated head and lateral position.

the stomach is over-stretched, it is like a piece of rubber over-blown, and cannot get back.

DR. ASTLEY P. C. ASHHURST said that Dr. Martin had spoken of the results obtained by the use of large quantities of saline solution, and that this had recalled to mind a case of rupture of the liver in which the results were very surprising. The quantity of salt solution used was much less than in Dr. Martin's patient, being only 5½ pints, but at the end of the operation, instead of blood coming from the liver it was salt solution; the patient died soon after the conclusion of the operation.

AN OPERATING TABLE DESIGNED FOR OPERATIONS UPON THE HEAD AND NECK.

DR. CHARLES H. FRAZIER said that for many reasons it is desirable in operations upon the head and neck to have the patient's head and shoulders elevated to an angle of forty-five degrees. The greatest advantage to be gained from this posture is its influence upon hemorrhage; particularly venous hemorrhage. Gravity so lowers the pressure of the blood stream within the veins that bleeding from this source is very noticeably diminished.

If one elevates the head and shoulders of the patient on any operating table hitherto on the market the field of operation is so far above the floor that the operator's assistants and etherizer are compelled to stand on stools. This in itself is a matter of no little inconvenience. He presented a table, constructed for him by the Bernstein Manufacturing Company, of Philadelphia, which enables one to obtain the necessary elevation and yet have the field of operation at a level convenient to the operator as he stands on the floor (see Fig. 1). In operating upon the thyroid, the cervical lymph-nodes, in excisions of the superior or inferior maxilla, in operations for the removal of malignant lesions of the face and neck he had found this table a very valuable addition to their equipment.

Primarily, however, the table was designed for operations on the posterior cranial fossa. It has been his custom for several years to have the patient in the sitting posture when operating for lesions of the cerebrum, but in cerebellar operations this is manifestly impossible. In order to render the suboccipital region accessible the patient's head must be flexed and to control bleed-

ing the elevated posture is desirable. Furthermore the majority of cerebellar lesions are in the cerebellopontile space, and he had found it most convenient to approach these from the lateral aspect along the posterior surface of the petrous bone. By placing the patient on his side (see Fig. 2), elevating the table, and flexing the head, satisfactory conditions for cerebellar work can be obtained.

In order that this position may be maintained and to prevent the patient rolling over on his face when under the relaxation of the anæsthetic a special device has been attached to the table which grasps the arm in the deltoid region. It is most important in cerebellar subjects that, when under the anæsthetic, throughout the operation respiration should not be interfered with.

This device will be found serviceable for any operation in which it is desired to keep the patient on his side, as in operations on the kidney and thorax.

Attention is called furthermore to an adjustable foot-board which may be moved up or down, according to the height of the patient, and by means of an automatic catch retains its position, thus preventing the patient from sliding off when the table is elevated.

While the table was designed for a special field of surgery, the essential features of a general utility table were not sacrificed. The foot of the table will drop so as to enable one to place the patient in a position suitable for operations on the perineum or in the Trendelenburg position for pelvic work.

STATED MEETING, NOVEMBER 2, 1908.

The President, Dr. William J. Taylor, in the Chair.

CONGENITAL DISLOCATION OF THE KNEE.

Dr. John B. Roberts said that at the meeting of the American Surgical Association on May 9, 1901, he presented a paper reporting a case of arthrotomy for congenital anterior dislocation of the tibia.[1] The girl, who was aged five years, was operated upon in March of that year through a large horse-shoe incision made across the front of the knee. After division of the ligament of the patella and almost complete section of the lateral ligaments of the joint the dislocation was easily reduced. A partial section of the four-headed extensor muscle of the leg was necessary in order to repair the cut ligament of the patella. Some infection of the wound occurred and it became necessary to open it and thoroughly drain the knee-joint, using also irrigation with mercuric chloride solution and subsequently with formaldehyde solution. After a number of weeks the child returned to her home with the bones in proper position, though there was still great restriction of motion at the knee-joint.

He presented illustrations showing a skiagraph and photographs of the child before operation. The photograph now presented (Fig. 1) shows the child as she is at the present time. Her physician, Dr. F. S. Nevling, reports that the child, who is a dwarf, can now use the operated leg just as well as the other and needs no brace or support for it. She can run and jump just like any other little girl. She is now about thirteen years old and has long since ceased to grow. The doctor thinks she is little, if any taller than when she was operated upon at the age of five. Inspection of the photograph indicates that she is probably a cretin. She has a large head and prominent abdomen. Her expression, however, is not that of a child of very defective

[1] Transactions of the American Surgical Association, 1901; and Annals of Surgery, August, 1901.