first attack I saw the patient with Dr. Sabin. He bore the appearance of one long sick, and was thin and sallow, and was having severe night sweats. Though when well patient had slept upon his face, he now sleeps best upon his right side. When he turns to the left side, he must prop up his abdomen with a pillow, otherwise he feels a dragging sensation in the right side. When lying upon his back he can straighten his legs without pain. His bowels have moved regularly; he has had no chill, but early in the evening has wanted to be warmly covered. On examination there was no unnatural fulness anywhere. In the region of the cæcum there was no induration but there was some tenderness on deep pressure. The diagnosis of appendicitis was made and an operation was advised, and for this purpose the patient was brought to Charity Hospital in Cleveland, on January 3. At this time he was seen in consultation by Dr. H. K. Cushing, Dr. Sabin and myself. Since I had seen him in Warren, the tenderness in the right iliac region had wholly disappeared. The patient also said he had some pain at the base of the lungs, and some dulness could be discovered at this point. The change in symptoms led us to defer the operation, and on January 7 the patient was seen in consultation by Drs. H. K. Cushing, W. J. Scott and myself. The conditions remained the same as on the week previous, and the diagnosis of appendicitis was thrown so much into doubt by the disappearance of pain in the region of the cæcum and the appearance of dulness at the base of the right chest that operation was still deferred. The evening temperature had ranged from 103 to 104. As time progressed there was a gradual increase of dulness in the right side corresponding to the right lower lobe of the lung, accompanied by slight bronchophony, a few moist râles and cough with some purulent expectoration. In February, the patient's condition gradually improved, the region of the cæcum remained free from pain and the temperature did not exceed 102 and it seemed not improbable that it was an obscure case of tuberculosis. This opinion gained strength since there had been cases of tuberculosis in the family. On February 14 I saw the patient at his home in Warren. The condition of the lung seemed slightly improved, but the patient was much the same. On March 16, I again visited the patient in Warren. The dulness in the chest had increased slightly, and there was an absence of respiration at the base. For the purpose of exploration an aspirating needle was inserted; though inserted but a short distance and in the usual manner, there immediately followed a most copious discharge of blood from the mouth, which came near suffocating the patient. He recovered from this however, and seemingly improved. The winter of 1890 and 1891 the patient spent in the South, troubled with a cough and expectoration, and it seemed probable that the case was one of tuberculosis. He gradually improved, however, and was able to do some professional work, which was that of a lawyer. Later however, he developed trouble in the right leg and on October 1, I opened an extensive abscess of the right leg. These abscesses formed repeatedly, extending from the knee almost to the groin, and have been repeatedly opened by Dr. Sabin. In January of the present winter patient's condition was so low that it was supposed that he could live but a few days; he has however improved considerably. From a further study of the subject of appendicitis and experience gained in operating upon these cases, I am convinced that this case was primarily one of appendicitis. Though the local manifestations were followed by extension of the abscess upward either by absorption or directly to the right thoracic cavity, subsequently the progress of the disease has been downward, and the right thigh has been involved in repeated and extended suppuration. The grave error in the case was that it was not operated when first seen, as a case of appendicitis. I do not believe that tuberculosis ever played any part in the case.

It is unnecessary for the purpose of this paper to multiply further cases. Though I might cite others pointing to the same conclusion, those cited are sufficient in number to demonstrate the fact that cases accompanied by pain in the region of the cæcum with tenderness and perhaps vomiting, though there is no apparent temperature or collection of pus are of extreme gravity, and as positively demand operations as those in which collections of pus are evident.

The question remains, how are such cases to be operated. I have tried both the extra-peritoneal and the trans-peritoneal method. Though it is of course

desirable to avoid the opening of the abdominal cavity when possible, and though I have repeatedly succeeded by this method in relieving a deep seated appendicitis, there are many cases in which operations must fail unless the abdomen be opened, for without it, the whole region of the cæcum cannot be thoroughly examined, and the danger of tearing the tissues about the cæcum, for the purpose of locating an appendicitis, accompanied by very slight collection of pus, is greater than freely to open the abdominal cavity, find the cæcum, locate the seat of the appendix and open the inflammatory mass which may contain only a small amount of pus with perhaps a gangrenous vermiform appendicitis, and a foreign body. During the operation the abdominal cavity may be shut off by means of tampons of iodoform gauze, and when the inflamed mass is opened, by means of a stream of water from a fountain syringe, all inflammatory material may thoroughly be washed away, and the abdomen kept free from contamination. A good way of dressing the wound is to carry a large drainage tube down to the point of inflammation and then thoroughly to pack the opening about it with iodoform gauze. By these means, the abdomen is kept closed from infection, the free discharge of pus through the tube is insured, and the iodoform gauze packed about the tube will upon its removal, leave a passage for the discharge of material from the inflamed cavity.

As to whether such operations should be performed in the intervals between attacks or only when an attack is in progress cannot be answered by any general statement. Each case must be decided upon individually. There are many cases however where there are chronic inflammatory conditions, such as several which have been cited in which operative interference offers the only opportunity for cure which can rationally be expected and in such cases I am strongly of the opinion that the seat of disease should be sought out without awaiting the occurrence of an acute attack. Since such operations are a severe tax upon the patient his opportunity for recovery may be enhanced by an operation performed in his interval between attacks, when his general condition and strength are better.

REPORT OF A CASE OF GUNSHOT WOUND OF LIVER AND STOMACH. LAPAROT- OMY. RECOVERY.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JAMES T. JELKS, M.D.,
OF HOT SPRINGS, ARK.

Formerly a Member of the State Medical Society of Georgia; a Member of the Southern Surgical and Gynecological Society, Mississippi Valley Medical Society, Chicago Medical Society, Hot Springs Medical Society, State Medical Society of Arkansas, American Medical Association; formerly Secretary of the Obstetric and Gynecological Section, American Medical Association; and late Professor of Surgical Diseases of the Genito-urinary Organs and Venereal Diseases in College of Physicians and Surgeons, Chicago, Ill.

Some time in April I received a note from Dr. Eugene Hay, saying he had a case he thought required a laparotomy, and asking me to come to him.

I responded, and found the doctor at what is known as "Dirty Six," a tough suburban resort. In a small cottage, lying on a bed, was a young man apparently 22 years old. He was resting very quietly, his face covered with sweat. Turning him partly on his right

side, Dr. Hay showed me the wound of entrance—a bullet hole 3 inches to the left of spinal column and just at lower border of last rib. There was no wound of exit. He had vomited quite a quantity of blood. There was no tenderness; pulse 70 but quite soft, and as stated above, his skin was covered with sweat. I agreed with Dr. Hay that indications pointed to a laparotomy, and so advised the friends of the young man and the man himself. At first he refused an operation. Then stating the case to him as clearly as I could, telling him what the hæmorrhage meant, and what his prospects were both without and with the operation, he consented to have it done. This was about 3 A.M. We then proceeded to get ready as best we could. There was nothing in the house; we had to borrow the table, lamps, and even the hot water, from a restaurant across the street. So after boiling my instruments, I got everything in the best shape I could, and again asked him if he wanted the operation; he again consented, and was brought to the table. Dr. Hay gave the chloroform until the patient was anæsthetized, when it was turned over to Dr. How, and Dr. Hay assisted me.

The abdomen was then rendered as aseptic as we could make it with green soap, bichloride and ether, and by the light of the lamps I made an incision from the ensiform cartilage to the umbilicus, afterwards prolonging it about 2 inches below the latter point. All hæmorrhage was checked before the peritoneum was opened. When we entered the cavity of the abdomen some blood was visible, but not a great deal. At this time patient began to vomit blood, and during the straining the stomach was pushed out of the abdomen and lay in my hands; as it did so the bullet also appeared to the left of the median line, and lying loose. This was removed and handed to a bystander. I then carefully examined the anterior and posterior surfaces and the greater curvature, but could find no wound in the stomach. I then passed my fingers along the lesser curvature, but still could find no wound. Continuing my search, I found a bullet hole in the posterior edge of the liver, to the right of the aorta. By this time the flat sponges which I had used to keep the intestines in the cavity were with the latter extruded, and lay on the patient's abdomen. The intestines were carefully wrapped in warm towels and kept warm with boiled water, while I continued to search for other wounds. Finding none in the intestines, and being unable to stitch the hole in the liver, I wrapped a glass drainage tube in iodoform gauze and passed it down underneath the stomach, and placed it in the wound in the liver. This bag of iodoform gauze I packed with more gauze, thus ballooning it, and a strip of same material was passed down the tube into the hole in the liver. After this was done, I flushed the cavity of the abdomen with warm sterilized water by passing the nozzle of the irrigator down into the bottom of the pelvis and allowing the water to fill and overflow the abdomen. In doing so some clots and blood were washed out. I then proceeded to sponge out the cavity, getting it as dry as I could. During all this time Dr. Hay was assisting me, while Dr. How was giving the anæsthetic. When this was completed, we had great difficulty in getting the intestines back into the abdomen. Patient's pulse began to grow quite weak, and hypodermics of whisky and digitalis were given. Finally the abdomen was closed with sutures of braided silk, and coaptation sutures of plain silk,

the drainage tube coming out at the upper end of the incision; the iodoform bag with its packing shutting off the abdominal cavity from the wound in the liver, and also from the posterior surface of the stomach.

I saw the patient a few times afterwards with Dr. Hay, and for the subsequent data I am indebted to him.

The glass drainage tube was removed on the third day, and on the fifth the iodoform gauze was taken out perfectly sweet; drainage of bloody serum had been perfect. Into the place of the large bag of gauze I now pushed, with the sterilized handle of a tenaculum, a strip of same material, and allowed it to remain several days. This latter was removed by Dr. Hay and the hole closed with a suture.

Day after the operation temperature was 99° in the morning and 100° at night. During the next day he had considerable pain in the abdomen, with tympanitis. We now gave him saline purges until his bowels moved some eight or ten times, with entire relief of the tympany.

During the next five days he was nourished by the rectum. He was allowed nothing by the stomach but crushed ice for three days, save the saline mentioned, when a little water was permitted. His temperature ran from 99° to 100° during the forenoon, and to 100° or 101° during the afternoon. On tenth day we removed the sutures and found perfect union, with one stitch hole abscess. Dr. Hay redressed the wound. The day after he telephoned me that the man had been coughing and had torn open the line of union. He visited him and found the line open for about 4 inches, with a knuckle of intestine protruding. This he replaced. There were adhesions between the parietal and intestinal peritoneum throughout the remainder of the open wound. These he separated with his fingers and put in several sutures through all the tissues, and brought the wound together. The patient stood this without an anæsthetic. These stitches were allowed to remain in place for two weeks, when they were removed, the line of union being found strong. The wound was now covered with aristol and carbolized gauze, and several adhesive plasters strapped the latter in place, thus supporting the parts to prevent a new rupture.

During the healing process patient complained of a constant pain in one spot in the line of incision, which I think may be explained by the adhesions which had been formed. At the end of three weeks the young man was well, and in four weeks was up. He now has no trouble save some "bloating" of the abdomen from gas.

Discussion.

Dr. Christian Fenger, of Chicago, in opening the discussion, said the main feature in wounds of the liver is undoubtedly the hæmorrhage, and this is probably better stopped by packing the wound with iodoform gauze than in any other way. Ligatures will not, of course, hold in the liver substance. He had seen one instance of subcutaneous rupture of the liver, and in operating for a tumor of the abdominal cavity a year after the infliction of the injury, the wound in the organ was still visible.

Dr. E. H. Gregory, of St. Louis, wanted to know whether, in Dr. Jelk's case, hæmorrhage was going on at the time of operation. Being answered in the affirmative he said, that though he thought the operation was not wrong for it fulfilled what seemed to be the indications, he, as a conservative surgeon, would like to know whether the man might not have recovered by his line of treatment, viz., by leaving him alone. He believed that by following this course, we should have had another case of recovery without operation.

Dr. Thorn, of Toledo, reported a case in which there was a small laceration in the liver, and the patient died from loss of blood. He believed operation would have saved his life.

Dr. D. A. Watson, of Jersey City, had seen a great many cases in his experiments on animals, and in a vast majority, even though the laceration was very extensive and the wound filled with blood, the animal recovered, except were the main arteries were involved. He thought danger lay in the fact that the bullet might carry septic material into the abdominal cavity, but beyond this he believed we are more afraid of lacerations of the liver than we have any just right to be.

Dr. Murdoch, of Pennsylvania, defended the operation on the ground that a surgeon would feel that he had not done his full duty if he did not open the abdominal cavity and notwithstanding what might be said about the innocency of a bullet in the cavity, he thought any man would rather have it out.

Dr. Gregory did not wish it to be understood that he objected to the operation, in fact, he might have been betrayed into doing it himself, though he felt sure he would regret it later. He thought that the bullet left in the cavity would have done less harm than the operation.

Dr. Griffin, of Missouri, reported three cases of gunshot wounds of the abdomen which he had seen within the last year and in all of which he had operated.

Dr. Walker, of Tennessee, reported a case in which the patient refused operation. The autopsy showed anterior border of liver torn to shreds. Patient died of hemorrhage.

Dr. McIntyre, of Missouri, said there was no shadow of doubt that men did get well who had these injuries, but he congratulated Dr. Jelks on the success of his operation and thought that a ball rolling about in the cavity of the abdomen would not be likely to become encysted.

Dr. Dolan, of St. Louis, thought no surgeon would refuse to operate where there was vomiting of blood as in Dr. Jelk's case. He could not see how this symptom could occur if the stomach were not punctured.

Dr. Palmer, of Wisconsin, considered the case to be one of those cases in which it is the absolute duty of the surgeon to operate.

Dr. Quinby, of Jersey City, said it was his rule to operate when there was a foreign body where it might do harm.

Dr. Jelks felt sure that if Dr. Gregory had been called to the case he would have diagnosed gunshot wound of the stomach. The surgeon's duty is to offer the operation and if accepted he must do it. If we wait twenty-four hours before operating we have passed the golden opportunity. Statistics show 63% of deaths in liver wounds. Experiments have demonstrated that the blaze of fire renders a bullet aseptic. The harm is done in its passage, not after it has stopped.

SOCIETY PROCEEDINGS.

American Otological Society.

Twenty-fifth Annual Meeting, held at the Fort Griswold House, New London, Conn., July 19, 1892.

(Continued from page 142.)

It seems unaccountable that only one of these cases resulted fatally when it is known that any considerable quantity of dead bone in the vicinity of the brain, may induce fatal cerebral disease. The author did not think it proper to attempt the removal of dead bone where the meninges are in danger of being encroached upon.

Numerous cases are on record (one in the author's book) where a considerable portion of the bone has separated leaving an uncovered meninges without fatal consequences. Moreover when all dead bone is removed, reparative action does not commence until a new barrier of dead bone has been established.

B. Alexander Randall, M.D., of Philadelphia, read a paper entitled

PRELIMINARY NOTES ON CRANIOMETRIC STUDIES IN RELATION TO AURAL ANATOMY.

The author referred to the numerous careful studies made of the temporal bone with special relation to operative pro-

cedure and the conflicting results of Koerner and Schultze as to a relation between the cranial index and the dangerous position of the lateral sinus and the middle cerebral fossa. Recognizing from the first the need of more extensive examinations, he had been accumulating data bearing on the matter, and offered now a preliminary report principally to secure criticism of his methods. Only 122 skulls, 73 broad headed, 33 long headed and 16 medium in index were used in the tabulation, and the only clear showing was that maximum or minimum dimensions might be found on either side and in any form of skull. The greater danger of the right side and of the brachycephalic skull receive slight confirmation, the cerebral fossa being actually more often lower on the left, but no deductions should be attempted from so small a series of studies, and any indications are probably worthless which are derived from less than one thousand skull measurements.

Dr. Charles J. Kipp, of Newark, New Jersey, reported a case of purulent inflammation of the middle ear with double optic neuritis and other symptoms of intra-cranial lesion, but without tenderness of the mastoid process, in which the opening of the mastoid cells was followed by rapid subsidence of the optic neuritis and cure of the disease.

Particular attention was called to the absence of tenderness over mastoid even on percussion, and to the desirability of repeated ophthalmoscopic examination in prolonged middle ear disease.

Dr. C. J. Blake, of Boston, read a paper entitled

MASTOID CASES.

Of 25 cases of mastoid congestion and inflammation seen in the first six months of this year, 3 were treated by continuous gold coil, with excellent effect. The remaining 22 cases came to operation at various stages of the mastoid disease and with various complications. Two cases died, one on the 9th day, complication with pneumonia, and the other on the 10th day with meningitis from extension of the suppurative process from the middle ear through the tegmen tympani.

Dr. H. Knapp, of New York, read a paper entitled

CASE OF CHRONIC PURULENT OTITIS MEDIA, OLD PULMONARY TUBERCULOSIS, OPENING OF MASTOID, DEATH FROM ACUTE BASILAR MENINGITIS. AUTOPSY.

The patient was a healthy looking man, age 35 years. About the middle of April 1892, he began to complain of headache apparently due to neuralgia. This however, was succeeded by slight elevation of temperature, but no change in the pulse, no tenderness over the mastoid, pupils normal. By April 27, there was drowsiness with nervous movements of the hands. Meningitis dependent upon aural disease was diagnosed by the attending physician. The patient was seen by two prominent neurologists who diagnosed cranial abscess from ear disease. The speaker saw the case May 3. There had been discharge from the right ear for three years, which had ceased during the previous week; temperature 102.2. Headache, stupor, incoherent difficult speech, delirium, pupils and fundus normal, no painful spot on percussion of skull. The diagnosis was concurred in and operation urged, which was done next day. The mastoid was found sclerosed throughout. The superficial portion of the bone presented some evidences of disease, but the deeper the bone was exposed, the healthier it appeared. The operation was then suspended. The patient continued to sink and died a few days later.

The autopsy showed marked evidences of basilar meningitis. The lungs were then examined and distinct evidences of pulmonary tuberculosis found. The patient had presented no symptoms suggesting examination of the lungs and all the indications pointed to cranial suppuration following aural disease.