animal is near term. In guinea-pigs the pubic ligaments soften and allow a separation of the bones sometimes to the extent of an inch. The legs may even be laid flat alongside the animal. After labor the joint again becomes firm.

In women, and, to a less extent, in men, there is some movement of the pelvic bones on each other during walking, and during pregnancy there is appreciable softening of the joints. While in these cases there may be no actual enlargement of the pelvis, such dilatation is possible, and, further, this softening of the joints permits movement of the bones on each other, which must be of service in the mechanism of labor.

Matthews Duncan is of this opinion. The writer would refer the readers to this monograph¹ for a further very interesting consideration of this matter, and will allude only briefly in this article to his own researches on this subject.

In the routine examination of pregnant women in the last months of gestation, I have almost always found some tenderness directly over the pubis. Careful palpation showed a long groove between the ends of the bones, and if, while the finger is pressed into the groove, the thigh be abducted and adducted, distinct motion of the bones at the joint will be appreciated. During labor this phenomenon is marked, and even late in the puerperium.

The same findings will be noted on the internal examination. The posterior pubic ligament will have to be pressed between the bones to elicit the groove, and this is somewhat painful. The riding of one end of the pubis on the other is easily felt. These findings are developed to a variable extent, and are, perhaps, a little more marked in multiparae.

It is this softening of the joints which renders the Walcher position of value in the conduct of difficult labors, and the sacro-iliac joints in symphysiotomy are thus enabled to open partly. R. Braun von Fernwald, in 1895, demonstrated the mobility of the pubis in his studies of the after-effects of symphysiotomy. During labor one can, by putting the patient in extreme Walcher position, show a narrowing of the outlet, the tuberosities of the ischii approaching each other; then by changing to the extreme lithotomy the distance between the two tuberosities increases. When the head is passing the outlet it can be held back, and sometimes even be visibly pushed back, by dropping the legs as far as possible towards the floor.

The histologic changes in the joint have been studied on animals more than on the human. The joints partake of the general imbibition of the pelvic tissues, the cartilage is swollen, and there is not seldom a collection of synovial fluid in the sac. The separation of the joints may be actual or latent, developed only during labor.

Ordinarily the patient does not complain, but sometimes this condition is the cause of more or less distress during the pregnancy. These conditions are in line with those which were described in the case of Mrs. B., and the distinction between the normal and the pathologic is not easy to draw. The main symptoms are as follows: Pain in and about the pelvis, referred to the site of the joints, and especially to the particular one involved; difficulty in locomotion; easy tiring, with a general sense of weakness; inability to arise from a sitting posture; relief by walking, followed by pain in the pelvis, necessitating rest; the condition is worse in the morning, better in the day, and worse again in the evening; pain reflected up and down the nerve trunks of the pelvis, simulating

neuralgia, or even pains in the hypogastrium simulating abdominal disorders. When the patient is bedridden the case is decidedly pathologic. On examination no cause for the symptoms can be found till the condition of the pelvic joints is discovered. The tenderness of the pubic cartilage is the most prominent finding. The sides of the joint are painless, but pressure directly over the middle evokes lively expressions of suffering. Then the groove may be found. Deep pressure over the sacro-iliac joints elicits pain, but not over the coccyx. The gait is peculiar, wabbling, "like a duck" as one woman expressed it. A distinct rising and falling of the crests of the ilii can be seen which is not all due to the tilting of the pelvis. The distress in walking may sometimes be a real pain referred to the affected joint or joints.

The diagnosis is easy if the possibility of the condition be kept in mind.

So far as treatment is concerned, I have found nothing of permanent or constant benefit. The bowels should first be gotten into prime condition. The diet should exclude meat as far as possible, and diuresis should be encouraged with milk, buttermilk, water, etc. The patient must refrain from long walks and keep off her feet as much as possible, with a needed amount of exercise. The pelvic girdle has been recommended, but I have found very little, if any, benefit derived from it. Topical applications of stimulating liniments [Lin. chloroformi and ammoniæ, aa] have given temporary partial relief. The condition disappears rapidly after parturition. The patient should be encouraged by the information that the condition, though painful, will render labor easier and will disappear after it.

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Clinical Report.

A CASE OF FATAL VACCINATION INFECTION WHICH RESEMBLED APPENDICITIS.

PERITONITIS FOLLOWING INGUINAL ADENITIS AND RETRO-CECAL PURULENT INFILTRATION.

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On March 12 the patient, a female, age 15 years, was brought into the Presbyterian Hospital, presenting symptoms of acute appendicitis. She was in a state of semi-stupor. Her temperature was 102, and her pulse 120. The abdomen was quite tympanitic and very tender to the touch. There was marked muscular rigidity over the right side. She held her right leg in flexion and any movement of the limb caused intense pain.

Professor Fenger saw the patient in consultation soon after her entrance and decided to operate immediately.

Her stomach was washed out and she was taken to the operating room. After the patient was anesthetized a vaginal examination was made. This proved to be negative. The McBurney incision was made. As soon as the abdominal cavity was opened, some clear serous fluid was found. Cultures were made from this but unfortunately they were subsequently spoiled. The appendix was found free and uninvolved. The walls of the cecum showed quite marked infiltration. Nothing was found to account for the trouble. Farther exploration of the abdomen was not warranted on account of the poor condition of the patient, so the abdomen was closed and the patient put back to bed.

Her condition gradually grew worse. The pulse became more rapid and thready. Early the next morning it was 160 and two hours later it could not be counted. The temperature that night was 102, the next morning it was subnormal. She

1. Researches in Obstetrics, 1868, p. 146.

was restless and delirious after the operation; later she passed into coma and vomited several times. Death took place the next day about noon, twenty hours after the operation.

A complete autopsy was made by Professor Hektoen a few hours after death. The anatomical diagnosis was as follows:

Vaccination wound of the right leg; suppurative adenitis of the right inguinal and iliac glands; purulent inflammation of the retro-cecal tissues; diffuse purulo-fibrinous peritonitis; recent laparotomy; acute splenic swelling and general parenchymatous degeneration; ecchymoses in lungs; hemorrhagic erosions of stomach and right adherent pleuritis.

The vaccination wound, measuring two centimeters in diameter, was located on the outer surface of the right leg below the knee. It was covered by a crust and healing by granulations.

The appendix was lightly imbedded in a fibrinous exudate. Its lumen was patent and its mucous membrane smooth. About it the intestinal coils were bound by slight adhesions and those in the pelvis were deeply congested.

The chief interest in the postmortem centered in the condition found in the right retro-peritoneal region. In the cellular tissue behind the cecum and in front of the muscle was considerable infiltrations of pus extending down toward the inguinal region. The deep inguinal and iliac glands were enlarged and soft; some of them contained small abscesses.

The examination of the generative organs, intestines, and bones of the pelvis and spine was negative.

Cultures from the purulent fluid in the abdominal cavity, from the heart's blood and from the inguinal glands showed a pure culture of the staphylococcus pyogenes albus.

In the histological examination, made by Mr. Johnson, all the internal organs were found intensely congested. In the liver were many areas of focal necrosis. The inguinal lymph glands, stained by Gram's method, showed a few groups of cocci among the closely crowded lymphoid cells. No cocci were found in the tissues surrounding the vaccination wound.

After the postmortem was made, the interest in the case led to further inquiry into the history of her sickness previous to coming to the hospital. This was kindly furnished by Dr. Kearsley, the family physician.

The patient had not menstruated. For some time she had frequently complained of sharp pain in the stomach immediately after eating. This was so severe at times that she would leave the table before finishing her meal. Six weeks before coming to the hospital she was vaccinated at school by the Health Department physician. A large number were vaccinated at the same time. Her previous vaccinations were unsuccessful. This time she became quite sick. Her mother says a large "lump swelled up" in her right groin. For several days previous to her illness she limped, leaning forward and to the right in order to save her right side.

Her sickness began five days before she was brought to the hospital. She was suddenly seized by a very severe chill in the school room. The teacher was alarmed, a carriage was procured, and the principal carried the patient from the room to the carriage. When she reached home her condition was as follows: temperature 104, pulse 130. She had vomited once. She complained of pain in her back, hips and lower part of the abdomen. During the next twenty-four hours she took small doses of calomel, vomited many times and had free evacuations from the bowels.

The second day her condition was much the same as the first, except that her temperature was reduced by antipyretics.

On the third day she complained bitterly of the pain in her right hip. She said the pain radiated from the hip across the lower abdomen. She lay with the right lower extremity fixed in extension. Flexion of the right thigh or any motion in it caused excruciating pain. There was tenderness on pressure over the posterior surface of the right hip. The abdomen was moderately distended and over the lower part there was a board-like rigidity. There was acute tenderness over the lower one-half, most marked on the right side.

Drowsiness amounting at times almost to a stupor was a marked symptom throughout the whole illness. The vomiting

ceased the third day. Her bowels moved each day by an enema and gas was passed. On the fifth day the enema was retained and it was necessary to pass a long rectal tube.

From the beginning of her illness the pain and tenderness gradually increased in the right lower quadrant of the abdomen and the tendency to stupor became more constant.

From a consideration of the facts stated it seems evident that this was a case of infection following vaccination. There was the local infection, and from the clinical history we are justified in assuming that this was followed shortly by an enlargement of the superficial inguinal glands; then proceeding along the anatomical course the infection traveled to the deep inguinal and iliac glands, later producing a purulent condition of the retro-cecal tissues. The close proximity of these tissues to the peritoneum rendered that cavity easy of access for the micro-organisms. A local peritonitis developed, which gradually became general.

Death following vaccination was of quite frequent occurrence for a number of decades following its introduction by Jenner. During the last decade, however, fatal cases have been very rare, owing to our modern antiseptic precautions and to a more careful preparation of our vaccination material.

This case, though, is of more than ordinary interest because it presents one more of the many conditions which must be taken into consideration in making a differential diagnosis of appendicitis. This emphasizes that the surgeon, in making a diagnosis, should have in his possession all the facts which go to make up a complete clinical history of his patient.

Technique for Determining the Freezing-Point of Blood or Urine.—Waldvogel describes his technique as follows in the *Archiv f. Exp. Path.*, xlvi, 1 and 2: About 8 or 10 c.c. of the urine or blood to be examined are poured into a small test-tube with a rubber ring around the top. This tube fits into a larger one with a space of about 1 cm. between the bottoms of the tubes and of 2 or 3 mm. between the walls. Both are then placed together in the freezing ice and salt mixture. The temperature is determined by a small thermometer, graduated in fiftieths of a degree C., with a rubber ring around it also, to keep it from touching the walls or bottom of the tube when inserted in the urine or blood. When it registers -2°C ., the fluid is stirred with the thermometer and it coagulates almost instantaneously into a solid mass of ice. Diluting the fluid a little does not interfere with the determination of the freezing-point. Blood must be placed on ice for 48 hours before it is tested. The zero of the thermometer must correspond to the freezing-point of distilled water as verified from time to time.

Post-Laparotomy Pneumonia.—Henle stated at the recent German Congress of Surgery that pneumonia consecutive to abdominal operations is usually lobular, located in the lower lobe and more common on the right than on the left side. Most cases develop the second day. Their frequency increases with the age. Gastro-enterostomy, on account of carcinoma, is followed by pneumonia in 14 per cent. of the cases with a mortality of 9 per cent. The same intervention, done on account of a non-organic cause, is followed by pneumonia in 9 per cent. of the cases but no mortality. It is rarely observed after the radical treatment of hernia or "cold" appendicectomy, while it is comparatively frequent after celiotomy and incision of an abscess in the appendix region. The Schleich method of narcosis, according to the statistics, predisposes to this complication more than general narcosis. The most important factor is getting chilled, and since warm tables and tincture of soap instead of water have been used at Breslau, the number of cases of pneumonia has materially decreased. Kuemmel has observed 40 cases of pneumonia with 29 deaths in the course of 1070 laparotomies. The patients who succumbed were all cachectic, usually from malignant disease. Stolper proclaims that fatty embolism predisposes to pneumonia. This is liable to occur after any attrition of the adipose tissue, and attrition of this kind is frequent in laparotomies.