

TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD NOVEMBER 5, 1928

The President, DR. ASTLEY P. C. ASHHURST, in the Chair

DR. CALVIN M. SMYTH, JR., Recorder

OSTEITIS FIBROSA CYSTICA

DR. HUBLEY R. OWEN and DR. SEARLE LANYON reported the case of a colored man of uncertain age, who was admitted to the Philadelphia General Hospital, February 5, 1928, with an injury to the left leg which he had acquired forty-eight hours before admission. He gave a history of having had a fracture of the right ankle twenty years ago, at which time he was incapacitated for three weeks. He did not have a physician in attendance at that time, but states, "two old colored men fixed" his leg for him and he had no subsequent trouble. He had gonorrhœa fifteen years ago and also had a chancre the same year. About four years ago he complained of pain in the lower end of his spine, which came on suddenly and which was not caused by trauma. He complained of pain on stooping or on walking. He had X-ray studies of his spine in the Germantown Hospital. He remained in this hospital for two weeks. He was then discharged and has had no further trouble with his back.

Examination revealed external rotation of the right foot; pain on motion of the right hip and three quarters of an inch shortening. The blood Wassermann was negative.

X-ray examination resulted in the report of an intertrochanteric fracture of the left femur. The bones of the sacrum, entire pelvis, both femora and proximal fourth of the right fibula, all the lumbar and dorsal vertebræ, both scapular, both humeri, the distal ends of clavicles, proximal fourth of the radius and ulna, the ribs, mandible, cervical vertebræ, and the bones of skull and face showed a peculiar rarefied condition. Numerous trabeculæ were demonstrable particularly, in the lower vertebræ, pelvis, femora and the heads of the humeri. There was a synostosis between the tibia and fibula at the distal fourth of the right tibia. The latter may have been fractured. Whether this is osteomalacia or an osteitis fibrosa cystica is indefinite. Singularly, the distribution of the involvement is analogous to that seen in carcinoma.

Biopsy on a specimen removed from the left femur below the point of fracture showed the following: "Cortex is thin. The surface appears rough. A ragged looking medulla containing several fatty areas. The bone tissue is hard. Microscopically the section shows the cortex of the bone markedly thin. The external surface shows irregular areas of absorption. The inner side as well as the medullary and cancellous portions show areas of absorption and replacement of loose œdematous fibrous tissue. No giant cells are found in these tissues. Primary and metastatic growth can be ruled out. Histologic picture is suggestive, but not absolutely typical of osteitis fibrosa cystica." (Dr. W. B. Belk and Dr. T. J. Jodzie.)

The speaker called attention to the diversity of opinion as to the pathological status of this condition and quoted at some length from numerous

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authorities. The most recent opinion expressed in the Robert Jones Birthday Volume in June, 1928, classifies fibrocystic disease of bones into five groups as follows:

1. Cases with multiple cysts, fibrosis and malacia confined to a few bones, occurring in young people.



FIG. 1.—X-ray showing appearance of bone in case of Osteitis Fibrosa Cystica. The same appearance was noted in pictures of all the long bones of the body.

2. Multiple cysts with fibrosis and predominant general malacia, occurring nearly always in women.

3. Multiple cysts with fibrosis, general malacia and hyperostosis.

4. Cases with cysts, fibrosis and giant cell tumors, but no marked malacia.

5. Cases with cysts, fibrosis and giant cell tumors, with malacia and with or without hyperostosis.

These patients become severely deformed, bedridden and eventually die

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EPSTEIN'S NEPHROSIS (LIPOID NEPHROSIS) SIMULATING TUBERCULOUS PERITONITIS

DR. HUBLEY R. OWEN and DR. HELEN INGLEBY reported the case of a colored boy, aged sixteen years, who was admitted to the Tuberculosis Department of the Philadelphia General Hospital, February 16, 1928, with the chief complaint of swelling of the abdomen. There was nothing in his family history suggestive of tuberculosis or malignancy. He gave the history of having been treated in the Ruth Hospital for Consumptives in 1926 and later sent to a sanatorium for the treatment of tuberculosis. His present illness dates from January 20, 1928, when he became suddenly ill with nausea, vomiting, lassitude and constipation. He complained of a dull pain in the lower part of the abdomen; developed dyspnoea on slight exertion, polyuria and nocturia and swelling of the abdomen. No hæmaturia.

Physical examination showed puffiness of the face; the abdomen distended with fluid and œdema of the ankles. The heart and lungs were clear. Blood pressure 100/50. The temperature was irregular, rising to 102° before death. The pulse ranged from 80 to 150. The respirations which were 24 on admission increased gradually to 60. The urine was dark amber in color. Albumen varied from a trace to a very heavy cloud; leucocytes, epithelial cells and hyaline casts were also found.

Blood analysis.—The blood was old rose in color with colloidal milky appearance. Chemical analysis showed urea 75, uric acid 4.2, cholesterol 700, creatinin 5.6, chlorides 562, sugar 0.107, carbon dioxide 25 per cent. *Cytology.*—Red blood cells 2,080,000, hæmoglobin 11.8 per cent, white blood cells, 97,000, polynuclears 84 per cent, lymphocytes 16 per cent.

The first diagnosis made was that of tuberculous peritonitis and the patient was transferred to the surgical service. Abdominal paracentesis was performed and 4000 cubic centimetres of milky fluid was withdrawn. The patient grew weaker and complained of abdominal pain. He died March 9, 1928.

At autopsy both pleural cavities were found to contain about 200 cubic centimetres of pink milky fluid, apparently a blood-stained transudate. The pericardial sac contained about ten cubic centimetres of yellow opalescent fluid. The abdomen was distended and the peritoneal cavity contained about one-half litre of milky fluid. In the pelvis and behind the ascending colon the fluid contained thick flakes of fibrin. Part of the surface was smooth and glistening. Fibrinous flakes were adherent to the ascending colon and sigmoid. The kidneys were considerably larger than usual. The left measured 15.5 x 8.5 x 5 centimetres and weighed 400 grams. The right was slightly smaller. The capsule was thin and stripped easily. The surface was smooth except for the remains of foetal lobulation. It was mottled red and gray, or grayish-yellow and stippled with gray and yellow points. The substance was soft and œdematous and had a somewhat greasy feel. The cut surface was likewise mottled. The cortex was extremely wide—1.5–2 centimetre—and stippled with gray and yellow. These gray and yellow dots represented dilated tubules. The glomeruli were just visible. The medulla was darker than the cortex, but the distinction between the two was blurred, more so than is usual in this condition. The pelvic fat was not abnormally increased. The vessels were not prominent.

Examination revealed enormous dilatation of the tubules. The dilatation affected chiefly the convoluted tubules. These dilated tubules were lined by flattened cells. Sometimes these cells bore a faint likeness to the normal, but mostly they were flattened beyond recognition. The lumen contained a pink staining substance, sometimes homogeneous, sometimes granular. This substance stained faintly yellow-red with sudan and very faintly with scharlach r. The loops of Henle were a little dilated and contained

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the same kind of substance. The collecting tubules were somewhat dilated; some contained homogeneous material. The glomeruli were scattered owing to the increase in the size of the tubules. They showed multiplication of the nuclei, swelling and granular degeneration of the protoplasm. Sometimes they nearly filled the glomerular space, but more often the space was distended with a homogeneous material resembling that found in the tubules. The interstitial tissue was increased, especially in the medulla; with fat stains this was seen to be due in great part to a deposit of lipoids. Much of the fat was contained in wandering cells. With scharlach r, it stained bright red, with sudan III, yellow-red, and with Nile blue, pink. This is characteristic of cholesterol esters. Apart from the fat-containing cells, round-cells resembling lymphocytes were fairly numerous. Fat-containing cells were found here and there in the lumen of the tubules. The vessels were inconspicuous. When examined carefully, fat-containing cells were found within them, also minute droplets of fat lying in the interstitial spaces between the red cells.

The heart muscle was pale and the left ventricle showed no hypertrophy; microscopically the cells contained fine droplets of fat. The liver showed fatty infiltration and the Kupffer cells contained cholesterol esters. The lungs showed patches of bronchopneumonia, and one of the glands at the hilum of the right lung contained pus. There was no evidence of tuberculosis in any of the organs. Bacteriological examination of the heart's blood, lung, and pelvis showed *B. coli communis*.

Except for the terminal rise of non-protein nitrogen in the blood, this case was a typical one of Epstein's nephrosis. In the kidney, however, the lipid, instead of being chiefly in the tubules, was found in the interstitial tissue. The reason for this was probably that the lipid-containing cells of the tubules had all been shed and had disintegrated. Some of the lipid had been passed in the urine, some carried into the interstitial tissue by wandering cells. The flattened cells which replaced the normal epithelium were apparently not capable of being filled with lipid. One would argue from this that death occurred at a late stage of the disease. It is possible that his sojourn at a sanatorium in 1926 in reality marked the beginning of his nephrosis.

DR. HUBLEY R. OWEN remarked that the condition known as Epstein's nephrosis is closely related to chronic parenchymatous degeneration of the kidney and other organs; the condition is more a medical than a surgical one—the only surgical aspect being the peritonitis which simulates tuberculous peritonitis. The interesting thing about this patient was that he had been in the ward for treatment for tuberculosis and had been in two other hospitals for treatment for this condition; yet the post-mortem showed no tuberculous process.

DR. HELEN INGLEBY said that Epstein believes that the condition is a metabolic disturbance and is due to an abnormal fluid in the kidney, which is excreted just as sugar is excreted in diabetes. Jelwin, however, believes that it is primarily a kidney defect and that the rest of the disturbance follows it. It is sometimes associated with myxœdema, in some cases it may be bad, in others it may be on the border-line, and in still other cases it is much benefited by the administration of thyroid extract. An interesting point is that in the clear-cut cases there should be no nitrogen retention; in this case, there was. However, some time toward the end of the disease it may

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happen. In pure uncomplicated cases apparently the kidney can excrete anything quite easily, and the only reason it may not be excreted is that the fluid goes into the tissues and never reaches the kidneys; if it reaches the kidneys it will be excreted. In the typical case fat should be found in the tubules, but this case was so advanced that the tubules were not capable of holding any more fat. The finding of ascites chylosus in Epstein's nephrosis is a common occurrence. In this case there was no obstruction of the thoracic duct at autopsy.

SPINDLE-CELL SARCOMA OF THE FOOT

DR. WALTER G. ELMER presented a man, twenty-four years of age, who was admitted to the Orthopædic Dispensary of the Graduate Hospital of the University of Pennsylvania, August 4, 1925, complaining of pain in the left foot. He walked with a slight limp. For two months he had noticed a small, firm mass below and in front of the external malleolus which was slowly increasing in size, was tender and caused pain. The ankle-joint motion was normal and the tarsal mobility normal. He was admitted to the hospital and the mass was dissected out without cutting into its capsule. It was imbedded in the soft tissues outside the joint capsule and overlying the joint between the astragalus and os calcis. The pathologist's report on this tumor was spindle-cell sarcoma. The patient was then referred to the X-ray department for treatment. X-ray examination showed no disease of the bone. Later examination, taken in December, 1925, showed such marked absorption taking place in the astragalus and os calcis that the reporter was unable to determine whether this was due to the X-ray treatment or to a return of the growth. The scar tissue seemed to be healthy. An exploratory operation was made. X-ray of the lungs showed no metastases. The scar tissue was dissected out and bone shavings reamed out of the decalcified area. Frozen sections showed no evidence of tumor tissue. The wound was therefore packed with gauze and allowed to heal. The patient has remained in good health, has no symptoms whatever and walks with a natural gait, and tarsal mobility is normal. X-ray examination made May 26, 1927, shows the astragalus and os calcis completely returned to normal.

By way of contrast DOCTOR ELMER presented a man, aged twenty-two years, who was brought to the speaker, October 3, 1928, with the history that in January, 1928, he struck his knee when he fell down several steps, but did not realize he had done himself any injury until a month later, when his knee became swollen and painful. When first seen the region of the right knee was much enlarged—the mass was firm and dense with two discharging sinuses. The knee was flexed about twenty degrees and there was very little joint motion. The patient was thin, pale, and looked very ill. There were firm nodular masses in the right groin. He was admitted to the Graduate Hospital. X-ray showed a tumor mass surrounding the lower end of the femur, the bone had the appearance of an osteomyelitis of the epiphysis and lower portion of the shaft. On the anterior surface of the shaft there was an elevated strip of periosteum. The cartilages of the knee-joint seemed to be normal and the joint itself had not been invaded. Cultures from the sinuses showed staphylococcus aureus and hæmolytic streptococcus. The diagnosis of osteogenetic sarcoma with metastasis to the groin was made. X-ray of the chest showed extensive involvement of both lungs. There was nothing to be done except advise the patient to return to his home.

DR. WILLIAM J. RYAN said that he had had under his care a woman, aged sixty-two years, who, in September, 1926, had struck her knee which

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was followed by the development of a small lump. This was removed and she came under the speaker's care in May, 1927, at which time she had a recurrence of the lump. The mass was situated just below the tibial attachment of the patellar ligament and a biopsy was done—the laboratory report being spindle-cell sarcoma. The mass stripped off the periosteum of the tibia very easily. There did not appear to be any involvement of the bone. Local recurrence occurred within one month's time and the patient refused amputation. It was therefore treated by electrocoagulation and X-ray and removed, but recurred again in two months' time. She refused to have anything done until the mass grew to an enormous size, and because of this, and also because of the odor, she consented to an amputation which was done in July of this year (1928). Repeated X-ray examinations of all the other bones were negative. X-ray of the chest was negative. There seemed to the speaker to be several unusual things in connection with this case—first, the age of the patient, *i.e.*, sixty-two years, and second, the recurrence at the local site with no evidence of metastases anywhere. The patient is now in good general condition.

DR. GEORGE M. DORRANCE said that in his experience with cases of sarcoma of the limbs there is an apparent disposition to metastasis in the opposite extremity. He feels that it is more liable to be to the limbs than to the lungs. In these cases even amputation does not offer a great deal and the speaker thinks the results are better from treatment with the X-ray without operation than with operation.

DR. JOHN H. JOPSON said that fibrosarcomata of the foot have a tendency to recur and that this has always been recognized in the literature. The speaker operated, a number of years ago, when a patient who had been operated upon two or three times, over a period of years, before the final amputation to which he later succumbed. It was Doctor Jopson's recollection that in the literature the consensus of opinion was that cases of this kind and in this region did recur. Spindle-cell sarcoma—not osteogenic sarcoma—arising in the fibrous portion of the periosteum or the fibrous tissue show a prompt tendency to local recurrence in the foot.

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DR. DAMON B. PFEIFFER reported the history of a boy, aged fourteen years, previously healthy, who was admitted to the Presbyterian Hospital May 28, 1928. Three weeks before admission he developed a cough and pain in the right chest. That night he had a chill, followed by nausea and vomiting, and thereafter ran a typical course of severe right-sided lobar pneumonia. In ten days he improved apparently by crisis, but his cough continued and breathing became more difficult. The cough though persistent was unproductive. On the day of admission his temperature ranged between 99° and 101.6°, his pulse between 124 and 148 and his respirations between 40 and 54 per minute. He was extremely pale and obviously very sick. He presented the signs of a massive collection of fluid in the right pleura. The heart seemed to be pushed well over to the left. The sounds were of fair quality and no adventitious sounds were detected. The urine showed a trace of albumin and many granular casts. The leucocytes numbered 11,000 per cubic millimetre with 75 per cent. polymorphonuclears. The X-ray verified the presence of fluid, filling the chest to the line of the second rib. On the

day following admission his condition seemed so grave that it was decided to remove a quantity of the pus by aspiration before attempting a thoracotomy, and 122 cubic centimetres of thick greenish-yellow pus was withdrawn from which a pure culture of pneumococcus was isolated. This was followed by a fall in temperature, pulse and respiration with evident clinical improvement. Two days later, under local anaesthesia, a resection of the ninth rib was made in the mid-axillary line. Following this, although drainage was satisfactory, he failed to improve as might have been expected. The temperature gradually rose, reaching 104° in the evening, three days after operation, and the pulse hovered around 130. The respirations, however, diminished in number, averaging about thirty per minute. Dakinization of the pleural cavity failed to reduce the toxæmia. Physical examination at this time showed an unusually large area of cardiac dulness and the possibility of pericarditis was considered. June 7, the report of an X-ray examination by Doctor Newcomet stated "from the character of the heart shadow it would appear as if there was some fluid in the pericardium. The transverse diameter of the heart at the base is sixteen centimetres while at the base of the auricle it is thirteen centimetres. Right and left diaphragm can be seen, though both are hazy."

The following day pericardiectomy was performed under local anaesthesia. There was no difficulty and the patient did not experience the slightest discomfort. A double curved incision was made, as described by Doctor Pool, beginning over the sternum at the base of the fourth costal cartilage. The skin and superficial fascia were dissected back on each side, exposing the costal cartilages, and from one to one and a half inches of the fifth, sixth and seventh cartilages were resected. The intercostal muscles and posterior perichondrium were then incised, exposing the internal mammary artery which was tied at the upper and lower angles of the incision. The triangularis sternii muscle and the fatty areolar tissues were displaced outward, exposing the pericardium. The pleura was not defined, being covered by and displaced with the above tissues. It is worthy of note here that before incising the intercostal muscles the heart could be felt beating forcibly immediately beneath this layer, and when an exploratory needle was introduced to reinforce the conviction that the pericardium contained fluid, none was obtained. When the pericardium itself was exposed, however, and it was possible to insert the needle obliquely between the membrane and the apex, which was pounding against it, fluid was at once obtained, which was turbid and slightly flaky. Culture subsequently showed the pneumococcus. This illustrates the difficulty which may be experienced in obtaining fluid by simple paracentesis in early cases, before the effusion has attained a large size. The pericardium was then incised and found to contain about 150 cubic centimetres of thin purulent fluid. The serous surfaces were slightly dull, but there was no adherent fibrin. The incision was extended longitudinally for about two inches, its lowermost point being at the extreme diaphragmatic attachment. Two soft rubber tubular (Penrose) drains were then placed in the bottom of the sac and fixed to the pericardial edge. A single stitch was taken through the skin above and below, the pericardium being completely exposed, and dressed with a light gauze pack placed over the wound.

The beneficial effect of this procedure was at once apparent. The signs and symptoms immediately improved. On the second day the wound was dressed with the intention of beginning Dakinization of the sac, but the wound was found to be filled with yellowish, rubbery fibrin, evidently coagulated exudate. The drains were embedded in this mass and it was clear that they were completely isolated from the pericardial sac in the same manner and by

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the same mechanism as abdominal drains after the first few hours. Irrigation with Dakin's solution was, nevertheless, begun hoping to sterilize the sinus and dissolve the exudate. The fibrin, however, failed to dissolve and the temperature after falling for five days again rose and remained between 101° and 103°. This condition was maintained practically without change for several weeks.

June 22, X-ray showed the right lung expanded with no change in either size or shape of the heart. June 27, a blood transfusion was given but with no observable improvement. The persistence of the fever in the absence of blood-stream infection made the reporter fear that the fibrinous exudate in the pericardium was breaking down and forming encapsulated collections, which it would be difficult or impossible to drain. However, about this time, the temperature began to fall gradually and except for an exacerbation due to the formation of a small pocket at the base of the right pleura, which was detected by lipoidal and drained by inserting a longer tube, the patient recovered without further incident. The tube was removed from the pericardial sinus and the patient discharged August 11, 1928, after an illness lasting thirteen weeks from the onset and about eight weeks from the pericardiectomy.

November 5, approximately three months after leaving the hospital, an electrocardiogram by Dr. James Talley showed a flattening of all the "T's" in all of the leads which, in the absence of cardiac medication, is interpreted as being indicative of myocardial change. Aside from a slight rapidity of the pulse, the patient is quite normal, but Doctor Talley advised that he be kept on cardiac rest for some time.

DOCTOR PFEIFFER remarked that of suppurative pericarditis, Osler said "probably no serious disease is so frequently overlooked by the practitioner". As to its frequency, Cutler states that in an analysis of 3683 necropsy records, at the Boston City Hospital, Locke found 150 instances of acute pericarditis, and of these only twenty-seven or 17 per cent. had been diagnosed clinically. Evidently it is not only the general practitioner who overlooks these cases. Stone, in a study of 300 fatal cases of pneumonia, found pericarditis in seventy-two cases, in forty-four of which the fluid was purulent. Suppurative pericarditis should be considered as a possible complication, especially, in pneumonia, osteomyelitis, or other septic states that present a puzzling and otherwise unexplainable toxæmia. Once the diagnosis is reasonably established there should be no hesitation or delay in resorting to surgical treatment, without which the mortality of reported cases, now in the neighborhood of 130, is over 50 per cent. Many of these cases were late and some died of associated lesions. Certain cases, apparently moribund, recovered by release of the pressure of the exudate upon the heart, the so-called cardiac tamponade, which prevents the venous blood from reaching the chambers of the heart. The operation itself is simple and singularly devoid of inherent complications. It lends itself readily to local anæsthesia. Adequate drainage for an adequate period of time is the prime essential. This has been accomplished successfully through a great variety of approaches: (1) through the sternum; (2) to the right of the sternum; (3) to the left of the sternum, (*a*) by intercostal incision, (*b*) by trap-door incision, (*c*) by excision of one, two or three costal cartilages; and (4) by xiphisternal incision. The method employed in this case was that described by Doctor

Pool at the first joint meeting of this Academy with the New York Surgical Society in 1920, and published in the *ANNALS OF SURGERY* in April, 1921. This was a slight modification of the method of Délorme and Mignon. It would seem to be of almost universal applicability in its simplicity, adequacy of exposure and dependence of drainage. The methods, materials and even the necessity of irrigation are not entirely settled. A fair number of cases have recovered without employment of any irrigating fluid. In the case here reported, owing to the rapid formation of fibrinous coagulum, it is doubtful if more than the drainage sinus itself was reached by the Dakin's solution employed. But this was an early case and a strong bodily immunity to the previous pneumococcus infection was undoubtedly present. Cases presenting greatly dilated sacs and heavy exudate would be a different problem and irrigation would seem indicated. It has been established that a large variety of mild antiseptic substances may be tolerated as irrigation materials. Their relation to subsequent pericardial adhesions remains to be demonstrated. While very early cases may do well on simple postural drainage, it is probable that the majority will require the assistance of irrigation to carry off the excess of exudate and prevent subsequent pocketing in the lateral and posterior recesses of the pericardium.

DR. JOHN H. JOPSON remarked that he assumed charge of this patient in Doctor Pfeiffer's absence from the city and pursued his policy of masterly inactivity with continuous amazement that a patient as sick as this young man was—with elevated temperature, etc.—should continue to do so well. He was able to sit up in bed, to eat and to read. No factor was present which necessitated interference. The speaker has been interested in the report on certain cases many years later. One case which Doctor Porter reported before the American Surgical Association last year, was a patient who had been operated upon by Doctor Porter's father. He had been an interne at the Massachusetts General Hospital at the time. He was reported as being alive and in good health, this being many years after operation. The prospect for a good functional and organic recovery is excellent. The pictures which Doctor Pfeiffer showed indicate that there was a change in the angle at which the pericardial shadow appeared in its relation to the diaphragm. As the patient progressed to recovery there was a change in this angle and a diminution of the shadow on the opposite side. The speaker has now at the Graduate Hospital a case in which the patient was operated upon seven weeks ago for a mediastinal dermoid of the right chest, associated with bronchiectasis of the lower portion of the right lung, which led to the diagnosis of pulmonary abscess. She progressed toward recovery until recently when she has had dyspnoea, orthopnoea, and rapid pulse. The heart shadow is still large. At the time of operation Doctor Jopson thought that the pericardium might have been injured. It is important to follow such cases in later years. The eventual result is inclined to be satisfactory.

DR. GEORGE P. MULLER said that shortly after Doctor Pool read his paper on this subject, he had a case of suppurative pericarditis with pleural effusion.

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The patient was nine years of age, had had influenza and pneumonia and was very ill. He also had an area of osteomyelitis of the lower end of the femur. The patient did not do so well with drainage. The diagnosis of suppurative pericarditis was made and the röntgenogram showed abnormal dilatation of the heart. Doctor Muller operated upon him by the method of Pool and removed one pint of pus from the pericardial sac. A Dakin's tube was introduced and the patient made a good recovery. The pleural cavity was aspirated twice for fluid. He was seen three times in the next year and curettement performed for the osteomyelitis. He was then lost sight of until very recently. He is now sixteen years old. He had no dyspnoea, and no heart murmurs, and Doctor Wolferth reported that there was no essential change in the action of the heart as shown by the electrocardiogram. However, the X-ray of the heart showed an aneurysm of the ventricle. He has no signs of such a condition and it may be due to adhesion of a portion of the heart to the pericardial sac. Whether he actually has a hernia of the heart muscle is uncertain and there is some question as to doing an operation for the purpose of severing such an attachment should it exist.

DR. A. P. C. ASHHURST, to illustrate the danger of indiscriminate puncture of the pericardium, referred to the following patient who came under his care.

A boy ten years of age with what his family doctor thought was pericarditis. This physician called, as consultant, a specialist in children's diseases. This specialist concurred in the diagnosis and inserted a needle into the region of the heart in four places, but without finding any fluid. The child went into collapse after the punctures. The consultant withdrew the needle from the pericardium and himself from the consultation. The family physician, finding his patient rapidly growing worse, had him transported to the Episcopal Hospital and asked the speaker to see him. He found the little boy apparently moribund, pale, pulseless, and almost apnoëic and evidently suffering from compression of the heart by a massive effusion. Under local anæsthesia he inserted a needle just to the left of the ensiform and, on the second puncture, dark blood came in spurts on removal of the obturator. The costal cartilages of the sixth and seventh ribs were then resected and the pericardium exposed; it was about two or three millimetres thick. When it was opened, disorganized blood was ejected with great force in spurts, so that it was thought by Doctor Ashhurst's assistants that he had wounded the right ventricle. The patient improved as the blood continued to flow, the pulse and respiration slowing. The boy awoke as if from the dead and asked if he might have some ice-cream—this was given him on return to the ward. The pericardium was drained by a rubber catheter. Almost two litres of old blood were evacuated from the pericardial sac. The child failed to recuperate, however, and died thirty hours after operation. After death, exploration of the wound showed the heart contracted in systole, and a little bloody serum in the pericardium. Evidently the consulting specialist had punctured the heart and it continued to bleed into the pericardium until the outside pressure sealed the opening into the heart.

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DR. HENRY P. BROWN, JR., read a paper with the above title for which see page 209.

DR. CHARLES F. MITCHELL said that his personal experience was that fifteen or twenty years ago there were more perforations than we have today. Patients complaining of indigestion come earlier to treatment. Formerly at

the Pennsylvania Hospital, cases in which a positive diagnosis could not be made were recorded as cases of general peritonitis, but the speaker thinks many of these were perforations into the lesser peritoneal cavity. The speaker took exception to Doctor Brown's remarks on anæsthesia; he still prefers ether in these cases to nitrous oxide and oxygen. It gives greater relaxation and in his experience has not been followed by post-operative pneumonia any oftener than after nitrous oxide or oxygen anæsthesia. The operative procedure depends upon the condition of the patient and the judgment of the surgeon; each case should be a rule unto itself. Doctor Mitchell has never done a resection nor a posterior gastro-enterostomy in a case of perforated ulcer. He believes that these cases should all be drained and a wick of gauze put in a suprapubic stab wound. He had yet to regret putting a drain in anybody.

DR. GEORGE P. MULLER remarked that Doctor Mitchell stated that he has never yet regretted the putting in of a pelvic drain. In ten years the speaker has not used a pelvic drain and has only had cause to regret this once. That patient had to be operated upon three months later for lower abdominal symptoms, at which time a half pint of mucoid material was removed, after which he recovered. Another case of perforated ulcer which was cauterized and sutured and a gastro-enterostomy done, is now suffering from hæmorrhage, evidently with recurrence of the ulcer. Three days ago he operated upon a patient with a perforated duodenal ulcer. This man was familiar with his condition and as soon as he felt the symptoms at once called a taxi and came directly to the hospital. He had had his office telephone his doctor who met him at the hospital and he was operated upon in less than two hours from the onset of the pain. To do a subtotal gastrectomy in perforated duodenal ulcer would be foolish, but the speaker tries to do a gastro-enterostomy in every case. In the little over half of the cases in which it was not done, the patients have come back with trouble and it has had to be done in the end. Some men believe that only the patients who are not very ill should have gastro-enterostomy. Doctor Muller thinks the ones who are sicker seems to do better with gastro-enterostomy and at once get relief from the pounding against the duodenum and thereby have a better chance for recovery.

DR. HUBLEY R. OWEN recalled to Doctor Muller the case of a policeman upon whom operation was performed three-quarters of an hour after perforation, which happened while he was in Doctor Owen's office. The man was taken to St. Agnes Hospital and Doctor Muller operated upon him at once. Two weeks ago a second case of perforation occurred while the man was in the office and he was operated upon within a half hour. This year there have been seven cases of perforated peptic ulcer among the policemen and firemen. The one death occurred in a case in which the ulcer was destroyed by cautery. One case perforated during the course of a suppurative appendicitis and general peritonitis. This patient recovered and is doing traffic duty.

DR. EDWARD J. KLOPP recalled the case of a man operated upon two years

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ago for carcinoma of the tongue and while being treated for this, had a perforated ulcer. A gastro-enterostomy was performed and he recovered. He was seventy years of age. As to the question of drainage, last year, Doctor Gibbon had a patient at the Jefferson Hospital who had been operated upon eighteen years before with a diagnosis of bacterial peritonitis. There was a great deal of pus between the diaphragm and the liver and a drain was placed beneath the liver and also one beneath the diaphragm. The patient died thirty-six hours later and the post-mortem showed a large necrotic area in the diaphragm. About the same time the speaker operated upon a man, fifty years of age, and for the same reason placed a drain beneath the diaphragm. He developed empyema and died from a perforation of the diaphragm, approximately two inches in diameter. Doctor Klopp said that he will never again place a drain beneath the diaphragm following an operation for perforation. He agreed with Doctor Muller that the post-operative results are better when gastro-enterostomy is done, provided, of course, the case will permit of such procedure.

DR. EMORY G. ALEXANDER said that the great majority of medical students seem to have been taught that one gets shock in perforated duodenal ulcer. He had never seen it except late in the case, when peritonitis has occurred. The speaker did not quite agree with Doctor Mitchell that there are not as many perforations recently as there were years ago. He has three cases under his care at the present time. In 1914 or 1915 he reported a series of twenty-five or thirty cases with discussion as to whether or not gastro-enterostomy should be done. Gibson, of New York, had written on that subject. These cases reported to Doctor Alexander's office and were questioned without looking up the histories to see whether or not gastro-enterostomy had been performed. From the end results he was unable to determine which patients had had gastro-enterostomy and which had not. The speaker feels that if the patient has a more or less acute perforation with no induration a gastro-enterostomy need not be performed. Gastro-enterostomy is indicated, however, when the induration is too great to allow satisfactory closure of the ulcer. It is unwise to advocate any one procedure when so many varieties of treatment are possible. He had never seen a recurrence in a perforated duodenal ulcer treated by simple closure, but had seen two cases recur after gastro-enterostomy; one with perforation of a gastrojejunal ulcer and the other with perforation of a jejunal ulcer. Cultures from the ulcer itself, in the upper and lower peritoneal cavity, are usually negative. The speaker believes that it is safer to drain than not. The drainage does no harm and can usually be taken out in a few days.

DR. CHARLES F. NASSAU said that the various opinions as to operative procedure represent a difference in surgical judgment. Whether this judgment is based upon logic or upon the whim of the individual it is hard to say. As to the type of anæsthesia: many use local anæsthesia because they believe it to be a safeguard against pneumonia, yet we must admit that there are a certain definite number of pneumonias following the use of local anæsthesia,

regardless of the type of operation—even outside of the abdominal cavity. Everyone has probably seen a statement made by von Haberer's assistant that, although he operates under splanchnic anæsthesia, just as many pneumonias develop as when he used a general anæsthetic. Of course, there are other reasons for using local anæsthesia. In an elective operation there is no doubt that the patient enjoys an easier convalescence. The speaker agrees with Doctor Alexander that the wisest thing to do in perforation of peptic ulcer is a simple closure of the ulcer. Years ago he did gastro-enterostomy for this condition and it is not a much more difficult procedure, nor does it take a much longer time to perform. However, the length of operation is not the main consideration; there is the matter of extra tissue damage and whether the procedure is necessary. Gastro-enterostomy can always be done later if the post-operative condition shows that something else is needed. This is Doctor Nassau's feeling at the present time, and unless something extraordinary developed and he thought the lumen of the duodenum was in danger of occlusion he would not do gastro-enterostomy.

The question of drainage is interesting. With increasing experience all surgeons use less and less drainage in the so-called "bad" appendix cases. Experience has taught us much about the closure of bad wounds within a few hours, after complete disinfection. The speaker believes that if in perforated duodenal ulcer operation is done within six or eight hours after perforation, drainage is never necessary unless there are some conditions that make it clearly advisable. However, care should be used in teaching this theory to students. In making a decision between gastro-enterostomy and pyloroplasty, a pyloroplasty should not be done in an acute condition. To perform it or a Kocher's gastro-duodenostomy is infinitely more difficult and dangerous than to do gastro-enterostomy.

DR. IRVINE M. BOYKIN said in regards to the closure of abdominal wounds that the catastrophe of having them break open can be avoided by making the incision in more than one plane. In operations on the stomach and epigastrium, a right paramedian incision, whereby the rectus muscle is lifted and retracted outward and the posterior sheath opened beneath, gives an incision in three planes. In the closure of wounds the use of the splint suture of silkworm gut 1 centimetre or 1.5 centimetre apart in support of the catgut sutures is an excellent preventive. Drainage in perforated ulcer cases, at the site of perforation, is seldom necessary. Seepage from the upper abdomen is collected in the pelvis and a drain in the pelvis should be sufficient. Posterior gastro-enterostomy *per se* does not cure ulcers. The speaker thinks that posterior gastro-enterostomy should not be done unless a closure of the ulcer cannot be effected.

DR. A. P. C. ASHHURST said that Doctor Alexander has raised the question as to the existence of shock in any case of gastric or duodenal perforation. Hence it is pertinent to ask the question, "What are the symptoms of shock?" The symptoms of shock are torpidity of mind, paleness or faint cyanosis of the body, and rapid pulse. The speaker once talked to Dr. John

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B. Deaver about the occurrence of symptoms of shock after perforation. Doctor Deaver had just read Moynihan's paper in which he asserted there was no shock in such cases. Doctor Ashhurst wrote to Doctor Deaver outlining the symptoms as he had seen them in a case of perforation: the patient was torpid in mind; pale—almost cyanotic—in body; and indifferent to his surroundings. But his pulse was slow. To this Doctor Deaver replied: "I would say that this was shock." The slowness of the pulse is the only feature which is unusual in typical cases of shock, and is probably due to absorption of duodenal contents from the peritoneal cavity. Bradycardia is not an infrequent symptom in biliary obstruction. It is, however, quite true that shock is very unusual in cases of gastric or duodenal perforation.

No one has mentioned what to do with perforations that one cannot suture. A piece of omentum can be sutured over rather insecure sutures, and usually it will keep the perforation closed. But this plan will not succeed unless some kind of suturing is used. In two patients the perforation occurred in the middle of an indurated sieve-like area where no suture would hold and the speaker was forced to tampon the area. He thought the patients would leak gastric juice and die but both of them recovered.

Regarding gastro-enterostomy the speaker is eclectic. He thinks that it should be done whenever it is justified. If he thinks it will kill the patient he does not do it. No one but the surgeon operating can decide this. Two patients, in whom the perforated pyloric ulcer was closed without gastro-enterostomy primarily, have returned complaining of symptoms of indigestion for which a secondary gastro-enterostomy was done.

DR. WILLIAM J. RYAN said that in two of his cases of perforated ulcer the wounds broke open but smears of them failed to disclose the presence of pathologic bacteria at any time, nor was any gross pus present. He, therefore, concluded that leakage of the gastric contents occurred through the suture lines, causing the wounds to become digested. The wounds were splinted with silkworm-gut sutures about one-half inch apart.

DR. HENRY P. BROWN, JR., added that all three types of ulcers were included. Gas oxygen anæsthesia was used. In 1927 the records show ten cases of perforation and fifty-four cases with other diagnoses. In 1924 the records showed nine cases of perforation and forty-six other diagnoses.