STATED MEETING, HELD MARCH 6, 1911

The President, Dr. Robert G. LeConte, in the Chair.

Dr. Astley P. C. Ashhurst presented four patients, three from the service of Dr. Chas. H. Frazier in the Episcopal Hospital, and one from the service of Dr. R. H. Harte in the Orthopædic Hospital.

I. AMPUTATION OF LEG BY THE METHOD OF BUNGE.

By the usual methods of amputation, in which no attempt is made to secure an end-bearing stump, the patient is compelled to wear an artificial leg with an inner socket, and to bear his weight almost entirely on the tuberosities of the tibia. This results in a certain amount of *give* at each step, producing decided disability from a lack of elasticity in the gait, even if there is no marked limp. To overcome this disability, and to secure a stump on which the patient can bear his entire weight as he does normally on his foot, Bier (*Deutsch. Zeit. f. Chir.*, 1892, xxxiv, 436; *Arch. f. klin. Chir.*, 1895, 1, 356) devised his osteoplastic method, analogous to that of Pirogoff at the ankle, or of Stokes and Gritti at the knee. Bier's method appears to have been practiced by various surgeons in this country, and has found its way into many text-books of operative surgery; but the much simpler method of Bunge, of Königsberg, seems to be little known. This method was described at length in 1905 (*Beit. z. klin. Chir.*, 1905, xlvii, 808), when the histories of twelve patients were reported. It was proposed on the theory that the tenderness of stump is due to little islets of new formed bone, derived from shreds of periosteum or from marrow cells displaced at the time of operation. Bunge argued that if those could be prevented from developing, and if the bones were to be covered only by a flap of skin, conditions closely approaching the physiological would be present. Accordingly, his proposition involved not only discarding the periosteal flap, but even sawing the bones 2 mm. below the level at which the periosteum was divided, and then scraping out the medulla of the bones for several millimetres above the level of section.

This method was used by Dr. Ashhurst in the case of Edward S., aged forty-seven years, who was admitted Nov. 25, 1910, to the service of Dr. Frazier, in the Episcopal Hospital, for crush of the right foot. Amputation was done five hours later, as soon as the moderate shock present on admission had passed off.

An Esmarch band was applied above the knee; long anterior and a short posterior skin flaps were formed, in the lower third of the leg. The muscles were divided circularly down to the bones at the base of the skin flaps. The periosteum was divided circularly at the same level. Then the periosteum and muscles *below* the section were dissected with most meticulous neatness from the shafts of tibia and fibula, thus absolutely denuding these bones of all tissue for a distance of an inch or more below the level at which the muscles and periosteum had been divided circularly. Then the bones were sawed about one-eighth of an inch *below* the line of section of periosteum and muscle, the fibula being sawed off first, and a little higher than the tibia. Then the medulla of both tibia and fibula was scraped out with Volkmann's sharp spoon for about an eighth of an inch. After ligating the vessels, the Esmarch band was removed, and the skin flaps closed with interrupted silkworm gut sutures, a small rubber drain tube emerging at the outer angle of the incision. This tube was removed on the third day, November 28, without disturbing the deep dressing.

November 30: Light tapping on the end of the stump gave no pain. This tapping was gradually increased in force at each daily visit, never causing any pain; the patient merely acknowledged that he felt it, even when the tapping had increased to a severe thumping with the heel of the surgeon's hand.

December 5: First dressing. Sutures removed. Incision completely healed.

December 10: Patient can now bear without any discomfort all the pressure which can be brought to bear by the surgeon's hand directly on the face of the stump, through thin gauze dressings, so long as this pressure is not suddenly applied.

December 16: Three weeks since amputation. Can stand momentarily on stump, without pain, and with only slight support to hands to maintain balance, and with good leg swinging free of the floor.

December 20: Twenty-five days after amputation the patient

was photographed standing on a chair on his stump, balancing himself with his hands on the back of the chair, and his other leg hanging free in the air.

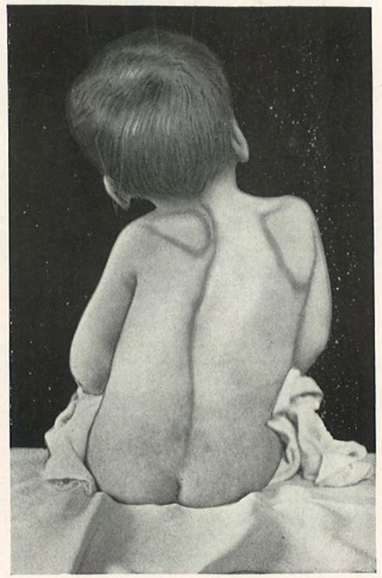
The subsequent conduct of the patient was discouraging. He was discharged from the Episcopal Hospital with directions to apply to the Orthopædic Hospital, where, in the service of Dr. G. G. Davis, it was proposed to have him provided with an artificial leg made to permit use of his end-bearing stump. Within two days, however, of his discharge from the Episcopal, he ordered from another source an ordinary type of artificial leg, with all the weight borne through an inner socket taking its bearing on the head of the tibia; and he merely came to the Orthopædic Hospital to inform his surgeon that the man who made his artificial leg told him that an end-bearing stump was a surgical impossibility; and even though this leg maker had ocular evidence to the contrary, because the patient showed him how he could stand on the end of his stump, yet the leg maker argued that as he had never seen any other stump which could bear the patient's weight, he could not make any other kind of artificial leg than he was in the habit of making.

II. CONGENITAL ELEVATION OF LEFT SCAPULA.

John S., now aged three and a half years, was admitted to Dr. Harte's service at the Orthopædic Hospital Oct. 1, 1908, at the age of 17 months. He was so weakly at this time that it was thought unwise to institute any very active treatment for the deformity, which was very marked. The child could not sit up, but doubled up constantly to the left side. A year later, Oct. 7, 1909, he was admitted to the ward, and kept in bed with head and foot extension for two months, and was discharged Dec. 20, 1909, wearing a scoliosis brace, with head support, and with noticeable improvement in his deformity. He was readmitted for operation when three years old Aug. 4, 1910.

Examination (Aug. 4, 1910).—Head falls to left shoulder, and cannot be brought straight. There is scoliosis, convex to right in dorsal and to left in lumbar region of spine. Skiagraph shows absence of left fourth rib; left third rib is rudimentary, terminating a short distance from the vertebral column. Left second rib is very prominent at costal cartilage, and bends sharply backward across inner wall of axilla. Several skiagraphs

FIG. 1.



Congenital elevation of left scapula, before operation. (Case II.)

FIG. 2.

Congenital elevation of left scapula, three months after operation. (Case II.)

showed no evidence of cervical rib. Left arm is not used properly; supination of forearm is not quite complete; external rotation of humerus is normal in extent. Humerus can be abducted to 90 degrees, and then further elevation is checked by scapula which cannot rotate. Muscles: Pectoralis major, trapezius, and deltoid present; tense band of trapezius runs from occiput to scapula. Left latissimus dorsi apparently is absent. Supra- and infraspinatus present. Left arm can be abducted across patient's back until elbow touches angle of right scapula. Right arm can be abducted across back only until it makes an angle of 10 degrees to left of a sagittal plane passing through right shoulder. Scapulæ: Left scapula is considerably higher than right, which is normal.

Left Scapula.	Right Scapula.
From vertebral border to acromion, 7 cm.	From vertebral border to acromion, 6 cm.
Length of vertebral border, 6 cm.	Length of vertebral border, 8 cm.
Scapula extends from 5th cervical to 2d dorsal vertebra.	Scapula extends from 1st dorsal to 6th dorsal vertebra.

Left scapula is rotated in frontal plane so that lower angle is only 1 cm. from vertebral spine and is immovably fixed there. (The above measurements were made through the soft parts of a chubby child, and therefore are only approximations.)

Operation (Aug. 8, 1910).—Ether, patient prone. Four-inch incision along vertebral border of left scapula; divided trapezius, which contained dense fibrous band running from occiput to upper border of scapula; divided levator anguli scapulæ; divided both rhomboids close to scapula, and excised a cartilaginous band attaching angle of scapula to spine of vertebra (this at once permitted free rotation of scapula in frontal plane); there then remained a few dense bands uniting subscapularis to thorax near angle of scapula, and these were divided. The scapula was then depressed as much as possible, and the rhomboids were resutured to the upper angle of scapula, above its spine, thus rotating its lower angle away from the vertebral column. The wound was closed without drainage. No exostoses or cervical ribs were found.

Recovery was prompt, and improvement in the deformity and function of the left arm very marked. The child still wears his scoliosis brace, with head support; and owing to the congenital absence of two ribs it is not likely that he will ever be very straight. But he now holds his head erect, can put his left hand to his head, to the nape of his neck, and to the back of his waist. He seems to be still improving.

III. EXCISION OF URETHRA, WITH END-TO-END SUTURE.

Frank S., aged nine years, was admitted to Dr. Frazier's service at the Episcopal Hospital Nov. 1, 1909, having passed no urine for ten hours. His bladder was distended above the umbilicus. He gave a history of a fall two months before from a height of 3 or 4 feet, astride an iron bar; this was followed by ecchymosis locally, and temporary passage of blood-clots from the urethra. No further trouble was experienced until three days before admission. On admission a filiform bougie was passed with some difficulty, and by gradual dribbling of urine the bladder was emptied within 24 hours.

Though the filiform remained in place, it never was found possible to pass a Gouley catheter over it. It was therefore decided to operate; and in view of the well-known difficulty of keeping traumatic strictures dilated if they are treated merely by incision, it was determined to excise the strictured portion of the urethra, and to suture the divided ends together; but if this was not possible it was proposed to insert a section of a varicose vein which was removed from another patient about that time and kept in salt solution ready for use.

Operation (Nov. 12, 1909).—A median perineal incision two inches long was made through Colles' fascia, exposing the bulb of the urethra. The bulbocavernosus muscles were then cleared by dissection on each side, until the superficial layer of the triangular ligament was bared. The urethra (still unopened) was then carefully dissected free from the corpora cavernosa, dense cicatricial tissue being encountered close to the urethral canal just in front of the triangular ligament. The urethra was then cut across transversely in front of the strictured area (the filiform remaining in place as a guide), and the distal (bulbous) edges of the urethra were caught in mosquito forceps. The strictured area of the urethra

was then dissected up through the superficial layer of the triangular ligament until healthy tissue was reached, when the urethra walls were again divided transversely, and the proximal (membranous) portion of the urethra was similarly caught in mosquito forceps to prevent its retraction. About one-half or three-fourths of an inch of the urethra was excised in all. To permit of approximation of the severed ends, the distal (bulbous) urethra was dissected loose for about an inch. A catheter was next passed into the bladder through the perineal wound, and the filiform bougie was withdrawn. A Mercier catheter was then introduced through the penile urethra into the bladder, and the first catheter withdrawn. The ends of the urethra were then united (first the roof and then the sides) with four interrupted sutures of chromic gut. A small wick of iodoform gauze was placed against the unsutured chink in the floor of the urethra, and the Mercier catheter was left in place, draining the bladder through the penile urethra. The perineal wound was closed around the gauze drain with interrupted sutures of silkworm gut.

The time of the operation was one hour; owing to the scar tissue and the diminutive size of the parts in a small boy of nine years, it was a rather tedious dissection.

The urine drained well from the penile catheter, but on the fifth day this was found to have prolapsed through the perineal wound, and it was accordingly withdrawn. Thereafter most of the urine passed through the perineal wound, but there was no loss of control. Nine days after operation a No. 14 Fr. steel sound was passed with perfect ease; and this was repeated twice weekly for two or three weeks. Urine ceased to come through the perineum after two weeks, and the perineal wound was entirely healed in four weeks.

During January and February, 1910, Nos. 12, 14, and 16 Fr. steel sounds were passed once weekly; then at intervals of two weeks until April 20, when an interval of six weeks was allowed, until June 1. As Nos. 16 and 18 Fr. passed easily then, an interval of four months was allowed to elapse; and as on October 8, 1910, nearly a year after operation, Nos. 16 and 18 Fr. passed with perfect ease, the patient was discharged. He has had no urinary symptoms since the operation, and to-day seems to be cured of his stricture.

IV. OSTEOTOMY OF RADIUS.

James McP., aged fifteen years, was admitted to the service of Dr. Frazier, in the Episcopal Hospital, Dec. 5, 1910, with very marked silver-fork deformity of the right wrist, following an injury received seven weeks previously, from a fall on the outstretched hand. The wrist had been dressed by his family physician for three weeks on a straight palmar splint with the forearm in full pronation. On admission, in addition to the deformity, supination was possible only to the mid-position, and the boy could not make a fist owing to inability to flex the proximal phalanges, though the distal and middle could be well flexed. There was a large bony mass projecting beneath the flexor tendons above the wrist. A skiagraph showed an unreduced epiphyseal separation of the lower end of the radius.

On December 7, the patient was etherized, and attempts were made to correct the deformity without operation, but without success. Osteotomy of the radius therefore was done about half an inch above the epiphyseal line. Most of the deformity then could be corrected, though the epiphysis of course was still in abnormal relation to the diaphysis. The arm was dressed in full supination on a Bond splint, well padded to maintain the desired position.

The progress of the case was uneventful, and four weeks later the patient could make a good fist; after six weeks all functions were perfect, and only very moderate deformity remained.

ACTINOMYCOSIS.

Dr. J. Chalmers Da Costa presented a patient in an early stage of actinomycosis, or, as he preferred to term it, streptotricosis. Until recently actinomycosis meant disease due to the ray fungus alone. Streptotricosis means a disease of man or animal due to one of the various forms of streptothrix. The manifestations of the disease probably differ in accordance with the forms of causative organism. If organisms of thread form are present the surgeon can be reasonably sure of the diagnosis. If the threads are branched he can be certain of it. The ray fungus is seldom found in humans and is not invariably found in bovine streptotricosis. The appearance of the disease varies with the stage in which it is seen. A description of the surface appearance of an early stage would by no means fit a well-developed or an advanced case. The appearance is greatly changed by mixed

infection with pyogenic bacteria. A severe secondary pyogenic infection may obliterate all appearances suggestive of streptotricosis, and in such a case it may be impossible to demonstrate the streptothrix. Certain persistent abscesses, particularly abscesses connected with the alimentary tract, are due to streptothrix infection and secondary infection with pyogenic bacteria.

Every now and then a surgeon sees a long persisting sinus heal under the administration of iodide of potassium. This event at least suggests that the original cause of the condition was streptothrix infection.

The patient was a man, sixty-two years of age, a native of New Jersey and a resident of that State. Until six weeks ago he was entirely well except for two carious teeth in the left upper jaw. There were no symptoms of antral disease. The teeth were pulled. An area of moderate tenderness developed under the orbit, accompanied by purple red discoloration of the skin. This discoloration spread over the left side of the face, little points formed which contained no "matter," and the lower eyelid became œdematous. The speaker lectured on this man before his class at the Jefferson Hospital and presented him as a case of streptotricosis. This diagnosis was subsequently confirmed by the microscopic findings.

In this patient the stage of sinus formation has not yet been reached. There was no sticky glutinous discharge containing sulphur-yellow granules, in fact there was no discharge at all. The line is irregular and the X-ray pictures which were shown exhibit two foci of disease. There was, in this case, a cutaneous lesion arising secondarily to osseous lesions.

The color of the purple-red area disappeared on pressure, rapidly at the margin, much more slowly at the centre. On the removal of pressure the color rushed back rapidly at the margin and much more slowly at the centre. In other words, there was hyperæmia at the margin and beginning stasis at the centre. The surface may be described as an irregular area of purplish mottling. Each wave-like irregularity or projection was about one-third the size of the little finger-nail. Over the areas of the disease the surface was soft and tender, but individual nodules were not tender. The skin over the nodules was thin and glistening, as though about to vesicate, but there were no sinuses, and no pus ran out on incision.

If this case were not interfered with it would inevitably go on

to sinus formation. Microscopic slides show staphylococci as well as actinomyces, hence sinus formation would be certain to arise. Out of each sinus glutinous purulent material would ooze, and, in a typical case, the material would contain yellow granules. In some cases in which such granules cannot be recognized in the pus they become visible by putting the pus in a test-tube with water and shaking the tube. Then the granules adhere to the side of the tube.

This was the fourth case Dr. Da Costa had seen of human streptotricosis. The first patient was a mattress stuffer, the second a physician, and the third a farmer. The patient shown was a railroad switchman. He had not been in contact with horses or cattle, did not handle hay or straw, and does not go into barns.

In only 10 or 15 per cent. of cases is it possible to trace such a close connection with grains as to make it highly probable that the causative organism was obtained from them.

Dr. JAMES K. YOUNG called attention to a case reported in the American Orthopædic Society Proceedings occurring in a patient of thirty-five years who had actinomycosis of the lumbar vertebra. This began originally in the tonsil, travelled down the backed by a large scapular abscess, and finally involved the vertebra. At the necropsy some of the sections of the vertebræ were removed and given to Dr. Speese for examination. It was at first looked upon as tuberculosis with a mixed infection, but later developments in the skin showed the characteristic yellow-sulphur bodies, and the diagnosis of actinomycosis was confirmed at necropsy.

Dr. CHARLES H. FRAZIER reported a case of actinomycosis in a young man who had been referred to the University Hospital with the diagnosis of acute appendicitis. At the operation two unusual features were observed; a pin was found in the appendix and the whole right iliac fossa was a mass of adhesions and exudate. The appendix was removed only after a tedious dissection and there was so much oozing that drainage was imperative. The drainage tract showed no signs of healing, but suppurated profusely and persistently. A few months later a metastatic abscess was found in the liver and drained, and upon curetting the pus from this collection Dr. B. A. Thomas discovered the actinomycosis. During the course of the next few months the patient developed two attacks of intestinal obstruction relieved by operation under spinal anæsthesia. Bacterin therapy, large doses of iodide of potash, and Röntgen rays were employed, but all to no effect. Neither the abscess in the right iliac fossa nor that in the liver showed any evidence of resolution. Finally the lungs became involved, and the patient died nine months after his admission to the hospital. There was no autopsy.

Dr. ASTLEY P. C. ASHHURST said there had been under his care in the dispensary of the Episcopal Hospital several years ago, a patient in which he made a tentative diagnosis of actinomycosis from the clinical findings. It was an early case, with not much induration. He sent the patient to the laboratory for an examination of the pus, and although the characteristic sulphur-like particles were found, no fungus could be demonstrated, and the pathologist came to the conclusion that it was a case of atypical multiple sebaceous cyst. Some months later in reading a German textbook on surgery he found the statement that sebaceous cysts in the face occasionally assume an actinomycotic appearance, and had been mistaken for this affection by others.

A STUDY OF ACTIVE IMMUNIZATION IN ANIMALS, PARTIALLY AND COMPLETELY THYROIDECTOMIZED

Dr. B. A. THOMAS (by invitation) and Dr. ROBERT H. IVY (by invitation) presented a paper with the above title.

PLASTIC RESTORATION OF LOWER LIP.

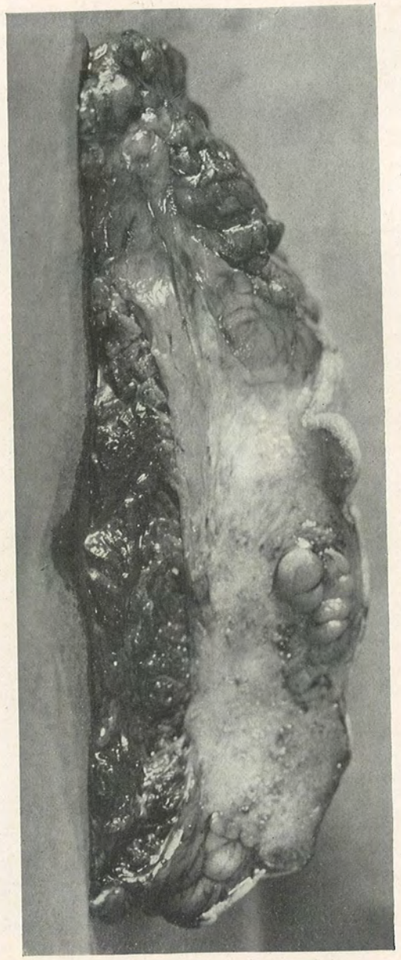
Dr. ADDINELL HEWSON presented illustrations from a case of epithelioma of the lower lip which was submitted to the use of arsenical paste in the hands of a charlatan. When seen by Dr. Hewson this lip was entirely destroyed, and mestastases had taken place in both digastric and both superior carotid triangles, necessitating the removal of the alveolar process of the incisors, canine and first premolar teeth with the involved periosteum on the facial surface of these alveoli and retaining the periosteum on the lingual surface of the alveoli, and finally the removal of four molar teeth and the closing of the wound by the Grant operation. Both facial arteries were ligated in the procedure, and the vestibular surface of the flap on the left side extended as far back as the entrance of Steno's duct. It is needless to say that this was done as a palliative measure and not with any idea of curing the pa-

tient, but to relieve the extensive slobbering which existed. The wound healed rapidly and the man's condition was improved. The use of X-ray, when it was found the recurrences had re-appeared in both sides of the neck, was not beneficial, as marked necrosis in the parts affected appeared.

MULTIPLE DIFFUSED METASTASES FOLLOWING BREAST CARCINOMA.

Dr. Addinell Hewson read the history of a widow, sixty years of age, who was admitted to St. Timothy's Hospital, Jan. 12, 1909, on account of a tumor in her left breast. The patient presented the appearance of a fairly healthy woman with a mass 5 and 8.5 cm. in size, showing signs of skin involvement and about to ulcerate, in the cephalomedian quadrant of the left breast. The necrotic area measured 3 by 2.5 cm. The arteries and veins were prominent in the skin. A small nodule was felt in the left breast beyond the tumor towards the axilla over the course of the long thoracic artery. There was no supra-clavicular involvement; the nipple was retracted in the line of the cephalomedian quadrant, and the area towards the ventral axillary fold was flattened.

On Jan. 30, 1909, a Jabez Jackson operation was performed, removing the breast, both pectoral muscles, and cleaning out the axilla. The connection between the retraction of the nipple and the growth was shown in photograph of the gross specimen (Fig. 3) taken Jan. 31, 1909, immediately after removal. The wound was entirely healed on Feb. 19, 1909, and the patient was discharged to the dispensary for X-ray treatment. X-ray was applied tri-weekly until Oct. 8, 1909, in all seventy-three exposures, on which date the patient reported a small movable nodule about the size of a pea meziad to the mezial line of union, which was hard, movable, elevated, red but not sensitive; was slightly sensitive in the mezial and lateral lines of union. There were no axillary or supraclavicular enlargements palpable. On Oct. 18, 1909, this tumor was removed. On March 8, 1910, the patient, having had in the interval twenty-two X-ray treatments, reported that after a cold her right arm was swollen down to the wrist, and on examination exhibited a small moderately hard tumor about the size of a walnut in the right midaxillary region which was movable. Patient was advised to have this removed but begged off.



Carcinoma. Section at operation of breast (L).

Fig. 3.

FIG. 4.

Rib and femur. Longitudinal section.

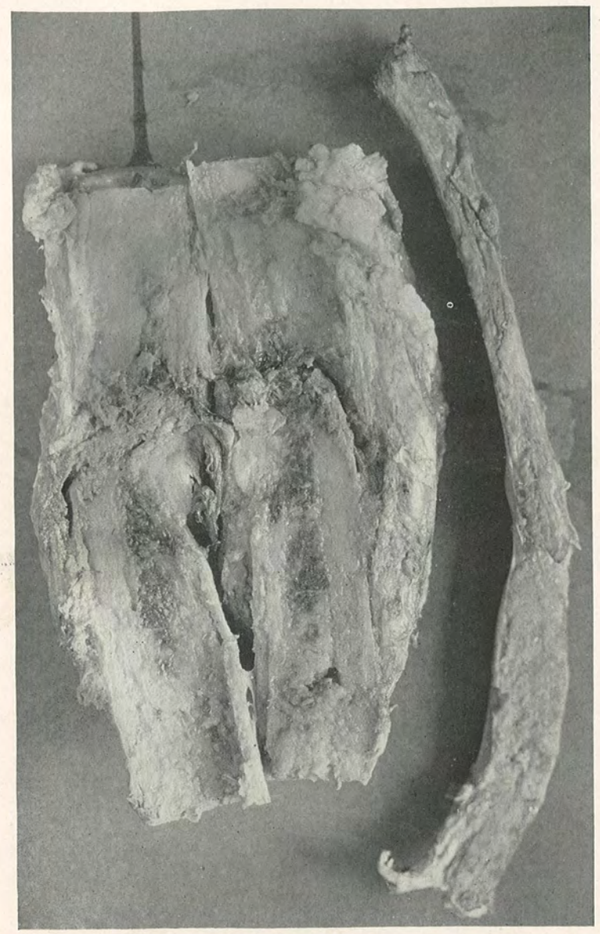
On March 11, 1910, an incision was made over this tumor and the mass enucleated together with the axillary fat, which was submitted to Dr. Swan, the pathologist, for macroscopic and microscopic examination. The diagnosis of soft carcinoma was returned and a Jabez Jackson operation was proceeded with cleaning out the intra-clavicular and axillary spaces. The wound was entirely healed and patient was discharged to the dispensary on April 14, 1910, up to which time the patient had had X-ray alternating each breast seventeen times.

On May 19, 1910, a small nodule showing a tendency to ulcerate at the right extremity of the second operation was noticed and also in the flap of the third operation, *i.e.*, right breast, there was an ulcer about the size of a lima bean with a hardened base but movable on the chest wall, but nevertheless nearer the median line than the ventral axillary fold. The patient was admitted at her request on May 23, 1910, and the fourth operation was performed which enucleated these recurrences.

On May 25, 1910, patient called attention to a hard tumor on dorsal surface of the alveolus of the left first bicuspid tooth. This tumor was fixed, slightly painful, but not inflamed. Patient stated that it had been there ever since the last breast had been removed.

In view of the frequent recurrences it was decided to try a carcinomatous vaccine as prepared by Dr. Coca at H. K. Mulford's laboratory. On May 29, 1910, 12 c.c. of a No. 30 stock solution was introduced into the cellular tissue of both recti abdomini muscles on a level with the umbilicus and over the right external oblique. Patient complained very slightly of pain. There were 24 c.c. in the injections used. On May 30 no complaint from the patient from the injections used. May 31, 1910, all stitches were removed and the wound found entirely healed. There was, however, some slight induration in the cellular tissue over the right rectus muscle as a result of the injection used two days previous. There was nothing however palpable or visible of either of the other injected areas. Sterile dressings were applied over each; the patient was very sensitive about touching the parts and inclined to be fretful. She was discharged to the dispensary on June 9, 1910. Patient was readmitted to the house on June 23 on account of the extreme pain in the back and right side, which was worse on motion. She was given an antirheumatic and reported three days later as free from pain.

FIG. 4.



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Patient was discharged to the dispensary on July 1, 1910.

July 7, 1910, patient reported as having a great deal of pain on the left side dorsally, pain extends to the left of the spine ventrad to the scapulæ and running around to the ventral aspect of the chest. On physical examination there was an area of dulness to the left of the thoracic spine running laterally 5 or 6 inches and starting about on a level with cephal margin of the scapulæ, continuing caudad for a distance of about 10 inches. In this area there was increased vocal resonance, increased tactile fremitus, and bronchial breathing; she was very nervous.

Patient was admitted to the house July 8, 1910.

Sept. 4, 1910, while the nurse was bathing her she noticed a swelling in the middle of the left femur. The leg gave the patient much pain on motion. On examination it was found that the femur was fractured and that there was overlapping with a shortening of 2½ inches. The foot was considerably inverted. Buck's extension with 8 lbs. in weight was applied. This was later supplemented by a Physic splint.

Sept. 10, 1910, patient had been fairly comfortable and the extension had relaxed the tension of the muscle about the fracture, but in the meantime a bed-sore had appeared over the sacrum. Patient had involuntary discharges of urine and fæces.

Sept. 14, 1910: While changing the bed a deformity of the right femur was noticed, and upon investigating it was found that the right femur was spontaneously fractured 4 inches below (pedad) the trochanter. Patient was examined by three physicians and diagnosis confirmed. Patient gradually became weaker and died on Sept. 24, 1910, at 11.40 P.M.

Post-Mortem Report.—Both mammary glands have been removed, the operation having extended into each axilla. Over the sacrum was a large excavating bedsore 20 cm. in diameter, with a thick, gangrenous, foul-smelling sloughing mass within it. The left femur was fractured about its middle. Right femur was fractured 4 inches below the greater trochanter. An incision was made on the external surface of the thigh through the intermuscular septum, the femur was sawed through above and below the fracture, and the specimen was removed—this on the left side. The specimen was cut longitudinally, and there was displayed a mass of tissue at the line of fracture about 3 cm. long and 2 cm. wide, the long diameter lying vertically (Fig. 4). There was some attempt at union in the fracture, there having been laid down scar tissue to such an extent as to mask crepitus. The marrow was red about 3 cm. either side of the line of fracture. Beyond this in either direction the color was normal. For about the same distance either side of the fracture the medulla

of the bone was rarefied. An incision was made through the right hip and the head of the femur was disjointed from the acetabulum. The upper portion of the bone was removed to within 4 inches below the line of fracture. At this point there was a deposition of new tissue, dense and white in character, invading the medulla and marrow cavity. This measured about 2 cm. in diameter. Here, likewise, the marrow was red either side of the fracture but beyond this was normal. Both axillas were opened. In the left was found a small flabby gland 1 cm. and 6 cm. thick. Nothing found in right axilla.

Liver: The common duct was patulous and no enlargement of the glands in this region or within the lesser sack of the peritoneum. The left lobe of the liver on its inferior surface was studded with white dense nodules varying in size from 2 to 8 mm. in diameter and sharply outlined, also slightly elevated. About 30 were present. On the superior surface of the left lobe were about 10 such nodules and about 6 on the spigelian lobe. Only 3 were seen on the inferior surface of the right lobe. About these nodules the liver substance was fatty degenerated, being yellowish in color. Aside from these last mentioned areas, general color of the organ was quite normal. On gross section only three small nodules were found within the right lobe, but the left and spigellian lobes were fairly well occupied by this new tissue. No enlargement of glands in the gastro-hepatic omentum or in the gastric splenic omentum. Stomach contained about 300 c.c. of brownish black material liquid in character. Very little post-mortem digestion had taken place in the mucosa. There was no evidence of old or recent ulceration. Stomach was dilated about one-half. Spleen was normal in size, slate gray in appearance, surface was shriveled, cut with increased resistance, scraped surface bled freely, and there was a slight excess of connective tissue in the trabeculæ. No foreign growth present. Pancreas reached from the spleen well over into the curve of the second portion of the duodenum. It was quite normal in appearance, but felt slightly hardened.

Chest: Heart reached from the second to the fifth interspace in the midclavicular line. Lungs were darkly pigmented. Both lungs were adherent, apices both showed partial solidification, in this region and throughout the substance of each there were old dense calcareous nodules. In the lower lobe of both lungs were several masses, which on pressure exuded from their cut surface caseated material. Specimens were taken from these areas.

Ribs and Vertebræ: The fifth, sixth, seventh and eighth ribs on the left side showed small masses or nodules about 4 mm. in diameter on their anterior surface immediately underneath the periosteum and about 10 cm. from the vertebra. The sixth and seventh ribs were fractured at about this distance from the vertebra. Some of these nodules were soft, and when cut exuded a white pus-like material, and in their neighborhood the rib could easily be cut through with a knife. On the right side the fifth, sixth, seventh, eighth, and ninth ribs had these nodules at about the same location as on the left and similar in size and consistency. Sixth, seventh, and eighth ribs were fractured. There were no masses in the intercostal spaces. Chiseling under the vertebra revealed no foreign growth.

A STUDY OF CARCINOMA MASTITOIDES.

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In examining the very extensive literature of mammary carcinoma, there is occasionally noted a rare and peculiar variety of this neoplasm, designated by various authorities as "mastitis carcinosa," "inflamed cancer," "acute brawny cancer," and other terms. A close analysis of these scattered cases has shown that the tumor described is the same in all of the reports, and that the general characteristics of this growth are, that it is a very rapid, fulminating variety of breast cancer, which by setting up violent irritation, produces a round-cell infiltration closely simulating a primary mastitis. It is to this group or variety that the writer has applied the term carcinoma mastitoides.

The condition appears to have been first described by Volkmann [1] in 1875, and was styled by him mastitis carcinosa. The other later writers have in general dismissed the subject without detail, calling such tumors inflamed or acute cancer. W. R. Williams [2] describes a rare form of cancer, in which the whole of one or both breasts may be simultaneously involved. It arises suddenly, progresses rapidly, and is often accompanied by inflammatory phenomena. No special tumor is formed, but the whole breast becomes enlarged and hard, the skin reddened, œdematous, and adherent, and the subcutaneous veins unduly visible. The adjacent lymph-glands are usually soon invaded, and there is general dissemination of the disease, with death from acute toxæmia, its total duration seldom exceeding a few months. Most cases, but not all, arise in connection with pregnancy and lactation.

The disease usually affects women in the first half of life, and is most frequently associated with late pregnancy or lactation. It spreads with marked rapidity, gives rise to profound toxæmia and early metastasis, death appearing in less than a year from the onset in most of the reported cases.

The growth usually manifests itself as a general, painful, and rapid enlargement of the entire breast, without the presence of any previously noted mass or area of induration. The gland becomes reddened, hot, œdematous, and may present a sense of fluctuation. Appearing, as it most frequently does, shortly after parturition, the similarity to acute mastitis is marked, and many patients have been persistently treated on this basis. The skin shortly becomes infiltrated and brawny, and small areas of necrosis may appear. The nipple may or may not be retracted, and the axillary and supraclavicular glands are early enlarged in the majority of instances. The skin of the thorax immediately surrounding the breast may become indurated and reddened; there is usually some elevation of temperature, and locally the part is hot. A point of interest is, that though small abscesses are occasionally noted, in no case did the breast tissue break down *en masse*. Cachexia is profound and metastasis rapid, death transpiring from toxæmia.

Diagnosis.—The differentiation of this form of carcinoma from an acute purulent mastitis presents the greatest difficulty, and in many cases can only be definitely determined by the microscopic examination of an excised portion of tissue. In general it may be said, that temperature is not so high in carcinoma mastitoides as in mastitis; the skin is usually more brawny and adherent to the underlying tissues, while the early enlargement of the adjacent lymph chain is of no diagnostic value as it may readily appear in both diseases.

On incising such a tumor, there will be found a fairly firm tissue, which may or may not present small abscess cavities. The substance of the growth is usually firm and fibrous, of a purplish red color, and frequently exhibits small, isolated areas of hemorrhage. There are usually scattered throughout the gland small necrotic spots, sometimes abscesses of considerable size. The contiguous skin is markedly indurated and œdematous, the induration extending, in the writer's case, beyond the middle line anteriorly and to the postaxillary line posteriorly.

Prognosis.—The prognosis is uniformly bad, this being one of the most rapidly fatal of all malignant growths. Billroth [3] reports a case in which death from toxæmia occurred within six weeks from the discovery of the tumors.

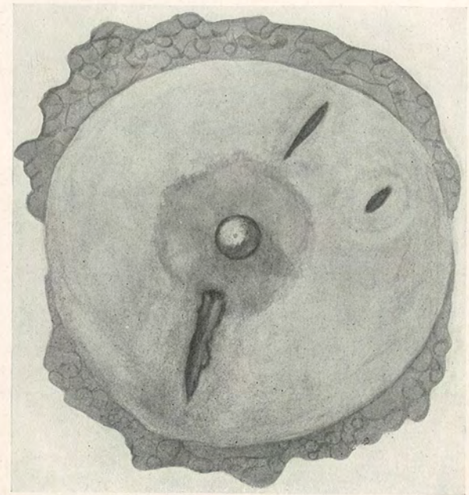
Treatment.—This should, of course, be radical extirpation of the breast and lymph-glands, immediately upon the diagnosis being made. In view of the relatively large number of these cases, it would seem wise to excise for microscopic examination a small portion of the breast in all doubtful cases of acute mastitis which do not yield promptly to antiphlogistic treatment. In the writer's case, the patient had been treated expectantly for three months with a diagnosis of mastitis. The case in detail was as follows:

M. L., thirty-three, married, was referred to me by Dr. R. D. Rhein, Aug. 27, 1910. The family history was irrelevant, and she had previously been a strong, healthy young woman. Five months before, she had been easily delivered of a normal, full-term child. One week after delivery she noticed a "lump" in the left breast, which was treated by the usual rubbings with oils, etc., but steadily increased in size and became hot, tender, reddened, and painful. At this time she had some fever, and the breast was incised without result. She had been seen by several physicians, all of whom confirmed the diagnosis, until she visited Dr. Rhein, who suspected some malignant change.

On examination the patient was found to be a well-nourished young woman, the mucous membranes somewhat pale, chest negative, temperature normal. The right breast was lactating, the abdomen was negative.

The left breast was enlarged to the size of a large grape fruit, was brawny in consistency, purplish red in color. The nipple was somewhat retracted, the skin of the "pig skin" type; the axillary glands appreciably enlarged, and the entire left side of the chest wall indurated and brawny. On palpation there was noticed considerable local heat and a distinct sense of fluctuation deep in the body of the gland. Interstitial mastitis with a deep, small abscess was diagnosed, and under light anæsthesia deep radial incisions were made, to the pectoral muscles. The breast tissue was found to be firm and tense, of a reddish gray color,

FIG. 1.



Carcinoma mastitoides, gross appearance. The diffuse nature of the tumor is shown, with the necrotic radial incisions.

FIG. 2 *B*.

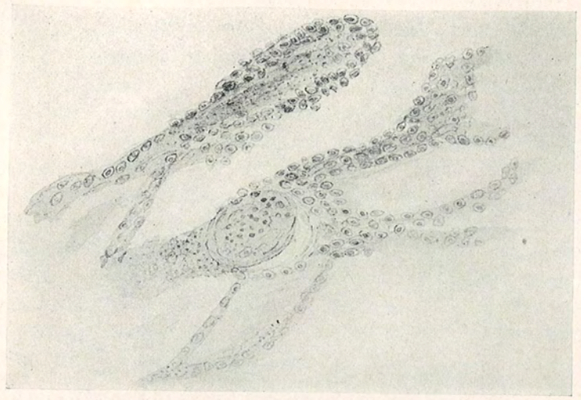
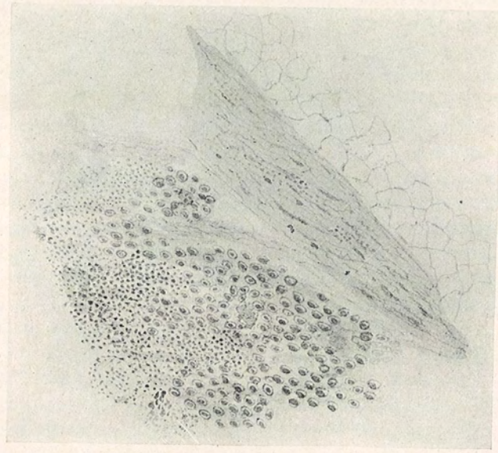


FIG. 2 *A*.



Carcinoma mastitoides. At *A*, is shown the poorly defined nest of cells, invaded and surrounded by a dense round-cell infiltration, with much granular débris. At *B*, is shown one of the papillary growths, a tubule lined with a single layer of carcinoma cells.

FIG. 3 *A*.

FIG. 3 *B*.

A, Dr. McFarland's section of Rodman's case. Notice the absence of stroma. *B*, Dr. McFarland's case. The well-defined cell nests invaded by the infiltrate of leucocytes.

with a few scattered, localized hemorrhagic areas, and several small abscesses. After a few days, the tissue began to break down *en masse,* with a profuse discharge of thick, foul pus. At the expiration of ten days it was found that, though the degenerative process had largely ceased, the breast was, if anything, larger than before and still tense. Accordingly, radical excision was decided upon and performed at the Gynecean Hospital in the presence of several surgeons of prominence, none of whom cared to offer a definite opinion as to the nature of the growth. The enlarged axillary glands were removed together with the breast and the pectoral muscles.

Owing to the induration of the surrounding integument, there was a marked defect in the wound which required skin grafting. The incision healed slowly, and within a week many dark brown, shot-like nodules appeared along the line of the scar. These nodules broke down into shallow ulcers, which healed and were in turn followed by more hard nodules. In November, six weeks following the operation, the patient began to complain of headache, pains in the chest, and a mass in the right breast. She lost considerable flesh, and developed the complexion and weakness of profound cachexia. December 1, the right breast was excised, the mass in its outer lower quadrant having grown to the size of an orange and being somewhat tender on palpation. This breast was unfortunately destroyed by a misunderstanding of the nurse. The wound healed at once and gave no further trouble. December 15 the woman had grown much weaker and suddenly developed very rapid breathing with a left sided pleurisy. About 500 c.c. of clear serous fluid was withdrawn from the left pleural cavity, with some relief. Within a few days she developed a basal meningitis and died in coma December 20, just eight months after the first knowledge of any disease of the breast. Autopsy was refused.

Pathological Examination.—The specimen consists of the left mammary gland. The organ is hemispherical in shape, measures 12 x 12 cm., with a maximum thickness of 6 cm., is hard and indurated, and *in situ* was seated upon a zone of indurated subcutaneous connective tissue, extending from the sternum to the midaxillary line.

The skin is of the "pig skin" variety, of a deep purplish red color, brawny, and thickened. The nipple is retracted and fixed; the areola deeply pigmented and corrugated. Three somewhat broken-down incisions extend from the nipple to the pectoral muscle.

On section, the central portion of the gland is filled with a yellowish necrotic slough. Underlying this is a dense, pink fibrous area, extending throughout the entire depth of the breast. It exudes no juice on section. Areas of fat and small abscess cavities are scattered throughout the tissue. The fascia covering the pectoralis major muscle is much thickened and indurated.

Microscopically, the growth is a somewhat complex one. It has in main the characteristics of a medullary carcinoma, growing with a small amount of connective-tissue stroma, and interspersed with groups of closely packed cell nests of the scirrhus type. In still other areas the field is typical of the carcinoma simplex. The whole picture corresponds closely with that of the latter neoplasm, as described by Rodman.[4] The groups of cells vary greatly in their arrangement, from the dense, almost opaque nest to the long tubule or papillary outgrowth lined with the carcinomatous elements. The important feature of this tumor, however, is the secondary inflammatory reaction evidently set up by its presence. Wherever there is any considerable group of the cancer cells, it is surrounded by dense round-cell infiltration, interspersed with areas of connective-tissue hyperplasia amounting in some fields almost to fibroma. The round cells are mostly of the lymphoid type, and everywhere invade the carcinoma, surrounding isolated cells and separating the various nests from one another by dense masses of cells, granular débris, and broken-down tissue with necrosis. Many small abscesses are scattered throughout the tumor.

Fox [5] in speaking of this specimen lays stress on the fact that the connective tissue is forming but is not at the stage where it could be classified as fibro-adenocarcinoma. He considers the round-cell infiltration secondary and invading the cancer tissue, there being well-marked cell division in the round-cell infiltrate while the cancer cells themselves show no evidence of mitosis. This point is further observed by Gross[6] *q.v.* In a study of the reported cases, this invasion of carcinoma by a round-cell infiltrate, which from its formation appears to have been produced as a result of some action of the cancer cells, is universally noted.

Dr. Joseph McFarland [7] has very kindly loaned the writer two specimens from his collection which are evidently of the variety in question. One of them, a student's slide from one of the German clinics, has no history attached, but the section shows plainly a scirrhus carcinoma growing in well-defined nests, which are separated by thin connective-tissue trabeculæ. Growing in and around the cells is a well-marked round-cell infiltration, which in other fields has entirely replaced the normal breast tissue. This is shown somewhat diagrammatically in Fig. 3 *B*. The second section (Fig. 3 *A*) is from Rodman's case, *q.v.* Here there is a medullary carcinoma, growing without stroma and surrounded and invaded by a dense collection of polymorphonuclear leucocytes. The carcinoma cells are crowded with leucocytes and granular débris.

In the analysis of this special variety of carcinoma, two features are of paramount interest—the pathogenesis and the diagnosis.

It has been seen that morphologically carcinoma mastitoides does not differ from certain forms of carcinoma simplex, and that the marked difference which does exist is due entirely to the interaction of the carcinoma and the profound inflammatory reaction produced by it. It follows, then, that this excessive reaction of these especial cancer cells upon the surrounding tissues—a reaction sufficiently marked to engender a general, diffuse, round-cell infiltrate and connective-tissue hyperplasia so profound as to frequently eventuate in breakdown and abscess formation—must be based either upon some peculiar toxin formed by the cells themselves, or upon a localized loss of resistance to tumor invasion, existent in the breast itself.

Inasmuch as these growths are almost always found in mammæ either in early lactation or the last weeks of pregnancy, when the glands are functionally at the height of their activity, it would seem that this condition is the determining factor. The exact process can only be conclusively described when more complete knowledge of the chemistry, notably the toxin forming power of carcinoma, is attained. It seems a logical deduction, however, that when the essential elements of the mammary gland are in full activity, fulfilling their excessive and occasional function—the secretion of milk—that they must be exceedingly vulnerable to the action of any foreign toxin, as a result of which action the pronounced inflammatory response is a direct sequence. The diagnosis, as has been said, presents the greatest difficulty, and the only scientific pro-

cedure is to excise a small portion of tissue for microscopic examination in all cases of supposed acute mastitis that do not yield to treatment which should ordinarily effect a prompt reduction of the inflammation. The reported cases in brief are as follows:

CASE I (RODMAN [8]).—A woman of forty-five years, who noted a marked retraction of the nipple of the left breast. The entire breast then began to enlarge, the greatest enlargement being in the axillary quadrant, there being, however, no distinct tumor. The process was a diffused and not a discrete one. Three months later a diagnosis of mastitis was made by a prominent surgeon. The gland was vividly red and covered with an eczematous eruption, and, indeed, closely simulated mammary abscess. The axillary and supraclavicular glands were enlarged. The growth proved to be a medullary carcinoma with pockets of pus scattered throughout. Rodman adds in his discussion that many cases of carcinoma and sarcoma may develop in pregnant or lactating women, which, while of rapid growth, cannot be classified as acute cancer, as the inflammatory symptoms are wanting.

CASE II–III (BLOODGOOD [9]).—Two cases of medullary carcinoma, simulating mastitis, with abscess formation are reported. Both of these cases had been treated on a diagnosis of mastitis before being admitted to the clinic.

CASE IV (BILLROTH [8]).—A thin, pale woman aged thirty-six, the mother of seven children, was admitted to the hospital when near the full term of her eighth confinement, with both breasts larger than a child's head and firmly adherent to the overlying skin. The latter was tense, shiny, congested, and marbled by bluish veins. The breast gave no milk or colostrum; there were no obviously enlarged axillary glands. The history she gave was, that five weeks previously hardness set in at the periphery of both breasts, which rapidly spread, with increase of size. The patient died a week later, the total duration of the disease being six weeks. At necropsy, both mammary glands were found invaded by a softish, lobulated reddish growth, from which milky fluid exuded on section. Histological examination revealed epithelial cylinders and alveolar gland-like formations, such as are found in ordinary breast cancers, embedded in a fibrous stroma densly infiltrated with small round cells. Secondary nodules were disseminated in the thyroid, pericardium, etc., but not in the axillary glands.

CASE V (SHEILD [10]).—A woman, aged fifty-two, was admitted to St. George's Hospital. Six months previously the patient struck the right breast, since which she noticed a swelling which steadily increased in size. She lately had much sharp pain and has lost flesh and strength. The right breast was greatly enlarged, the nipple deeply retracted, and the skin marked by the old scars of numerous sinuses, for she had suffered from frequent abscess of the gland. The skin generally was of a deep congested blue color, but over the axillary part of the swelling

it was red and gave the appearance of inflammation. There was considerable local heat, and the axillary glands were not enlarged. The inner part of the right breast contained a hard mass. It was quite uncertain as to whether or not fluctuation existed. Mr. Peck made an exploratory incision, which revealed undoubted cancer. This was hemorrhagic, being infiltrated with blood and breaking down superficially. The whole breast was thereupon removed.

CASE VI (SHEILD).—A healthy looking woman of fifty. The right breast was generally enlarged, skin dusky and red with increase of local heat, nipple retracted and adherent. Exploratory incision with the idea that it was an abscess revealed general carcinoma. The breast was removed, with death following some time after from recurrence.

CASE VII (MORRANT BAKER [11]).—The patient was a lady of thirty-four who had been confined four months before, and who was still nursing her infant. The right breast became large, hot, tense, elastic and painful, and the skin over it was ruddy and œdematous, as if occupied by inflammatory exudation. The surgeon believed that an abscess was forming and had the breast poulticed, and it was not until six months later that the real nature of the case was declared by the appearance of numerous cancerous nodules in the skin and the rapid enlargement of the axillary glands. The mistake here arose because all the circumstances of the case suggested the probability that the breast was the seat of an abscess, and secondly, owing to the youth of the patient and the vascularity of the breast in that patient, the malignant growth was very active and attended with great vascular disturbance, leading to redness, œdema, and heat of the skin.

CASE VIII (BRYANT [12] reports three cases).

A healthy looking single woman of forty-three, with acute disease of her right breast of two months' duration. The whole gland was infiltrated and the skin over it like brawn. The nipple was depressed and lost in the surrounding elevation of the breast. The axillary and supraclavicular glands were enlarged. This patient died in less than three months.

CASE IX (BRYANT).—A married woman of fifty-three, who had borne 11 children, was seen June, 1857. She had an acute brawny infiltration of her right breast and the skin over it, with œdema of the right arm. She had been perfectly well until three months before, when she noticed a swelling in the breast, which rapidly increased and became complicated with pain down the right arm. When seen, the axillary and supraclavicular glands were much enlarged, the breast was like brawn, the skin over it œdematous, and evidently infiltrated with new elements. Death occurred in three months from toxæmia.

CASE X (BRYANT).—A woman of forty-nine who had had six children presented herself with an enormously swollen, œdematous, and indurated left breast of eight weeks' standing. There was severe pain in the part, which was worse at night, and there was at times increase of heat in the gland. The axillary glands were not involved. The integument over the breast was œdematous and pitted on pressure. In

three months the axillary glands became involved, and skin over the breast became tense, reddened, and indurated. Death occurred in nine months, with a development of a similar growth in the right breast.

CASE XI (GROSS[6]).—A sterile, married woman of thirty-nine had a tumor which had acquired the volume of an egg in less than two months and contained an abscess as large as a filbert, filled with greenish pus. The abscess formed at the expense of the infiltrated connective tissue, the epithelial cells themselves not participating in the morbid process.

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STATED MEETING, HELD APRIL 3, 1911

PERFORATING ULCER OF THE SIGMOID FLEXURE OF THE COLON.

DR. GEORGE G. ROSS gave the history of a woman, thirty-five years of age, who was admitted to the Germantown Hospital in a condition of profound shock, with a rigid, tender, and distended abdomen. Symptoms had been developing but a few hours, patient having been awakened during the preceding night by pain in the lower abdomen and nausea.

An incision into the peritoneal cavity was made through the right rectus muscle. As soon as the peritoneum was incised, a gush of rather thick, yellowish fluid came forth, bringing with it lumps of hard fecal matter. There was marked redness over all peritoneal surfaces of the lower abdomen. At this point the etherizer gave notice that the patient's condition was critical. She was cyanosed, pulse uncountable, and respiration suddenly became irregular in both rate and rhythm. The operation was started under primary anæsthetic and had been under way for about five minutes. Ether had to be discontinued on account of the patient's condition. A glass drainage tube was inserted into the pelvis, and the wound closed with three through-and-through silkworm gut sutures. The patient was given an intravenous injection of normal salt solution while still on the operating table. She died about twelve hours later.

Immediately after she died, the stitches were cut, the tube removed, and a search made for perforation of the large intestine. This was considered as necessarily present, as the patient had solid fecal matter free in the peritoneal cavity. Eventually the perforation was found about the middle of the sigmoid flexure of the colon on the inner or the right side, about one inch from the mesosigmoid. The perforation was almost perfectly circular and large enough to admit the thumb of a medium sized hand up to the distal joint.

The entire colon from the ileocæcal valve to the site of the perforation was impacted with fecal matter of the consistency of hard putty. There was no evidence of active tuberculosis, although there was one calcified mesenteric gland found.