

TRANSACTIONS
OF THE
PHILADELPHIA ACADEMY OF SURGERY

Stated Meeting held November 1, 1920

The President, DR. GEORGE G. ROSS, in the Chair

BONE TRANSPLANT FROM CREST OF ILIUM TO MANDIBLE

DR. ROBERT H. IVY presented a man, aged twenty-seven years, who when seven years of age had a large section of the left side of the mandible removed, comprising the full thickness of the bone, for a large growth which a well-known surgeon diagnosed as sarcoma, this diagnosis being confirmed pathologically. Since that time he has worn a prosthetic appliance which partially overcame the deformity and enabled him to masticate food fairly well. Of late years, however, changes in the shape of the jaw and in position of the teeth affected the fit of the appliance, so that it was rapidly becoming useless. Examination revealed (Fig. 1) an absence of something over two inches of the left side of the mandible from the canine region to the angle. A small portion of the ascending ramus with coronoid and condyloid processes was present, this fragment being movable at the joint. The remainder of the mandible showed great instability and a marked tendency to swing over to the left side, with consequent loss of facial balance and interference with function. The success attending bone grafting in cases of ununited gunshot fracture of the mandible during the recent war led him to attempt a bone transplant in this case. Cast silver splints were made by Dr. J. E. Aiguier, fixing the right side of the mandible in proper relation with the upper jaw. On March 17, 1920, at St. Agnes' Hospital, under ether intrapharyngeal anæsthesia, an incision was made over the region of lost substance, the ends of the fragments were exposed and freshened, and a graft $2\frac{1}{2}$ inches long was removed from the crest of the ilium and inserted to fill the gap, being attached to the fragments by means of silver wire. The wound was closed in two layers. Some suppuration occurred, part of the surface of the graft being exposed for several weeks, but the wound eventually closed, and the vitality of the graft was not interfered with. At the present time there is firm union at both ends of the graft, and the jaw is in good position (Fig. 2). An artificial denture will shortly be prepared. The operation left a depressed scar, adherent to the bone. On October 15, 1920, at the Medico-Chirurgical Hospital, the scar was excised, the edges were undermined for some distance, and after complete hæmostasis a strip of fascia lata from the left thigh was inserted into the pocket under the skin, being retained in place with a few catgut

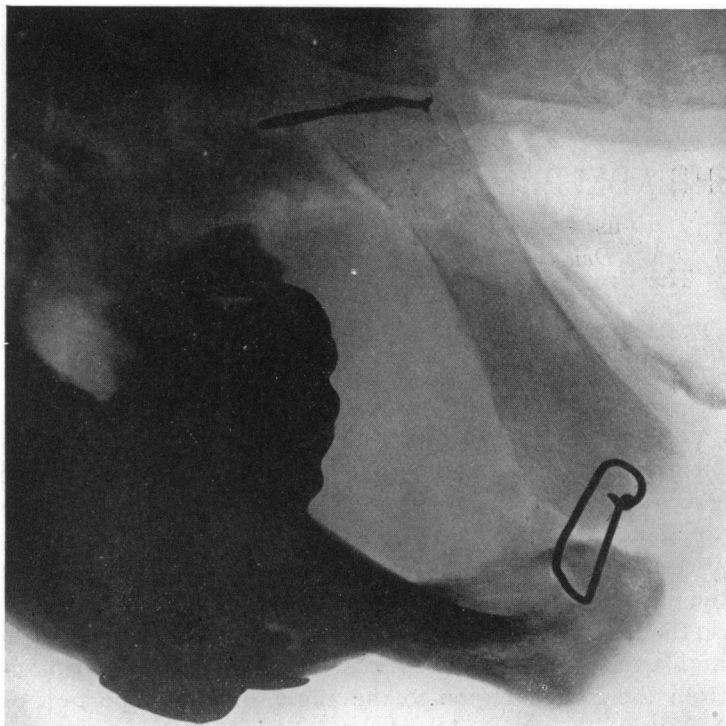


FIG. 2.—Radiograph made by Dr. H. K. Pancoast, showing graft in place. Clinically, firm union is present, although this is not altogether apparent in the radiograph as far as the anterior end of the graft is concerned.



FIG. 1.—Radiograph made by Dr. H. K. Pancoast, showing loss of substance in the lower jaw.

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sutures. The wound was closed with interrupted sutures of horsehair. In this manner the depression was obliterated. The wound healed without complications, the sutures were removed on the sixth day, and in ten days the patient was up and about.

Payr, of Griefswald (*Zeitschr. f. Chir.*, September 5, 1908), employed a piece of rib to replace loss of substance of the mandible. Opper, of Petrograd, in 1910 used osteo-periosteal fragments from the clavicle. Vorschütz, of Cologne (*Deutsch. Zeitschr. für Chir.*, September, 1911), reports two cases in which a graft was taken from the crest of the tibia. In both cases the transplanted bone was extruded, but sufficient periosteum remained for regeneration to occur. Abadie, of Oran (*Bull. et mém. Soc. de Chir. de Paris*, 1912, xxxviii, 649), records the use of a free rib graft following resection of the mandible for follicular cyst. The functional and cosmetic results were good, although the bone was apparently absorbed and replaced by dense fibrous tissue.

CALCULUS IN WHARTON'S DUCT

DR. ROBERT H. IVY presented a man who for six days had complained of pain and swelling beneath the tongue on the right side of the mouth, and a swelling in the right submaxillary region of the neck, all of which symptoms gradually grew worse. The swelling in the neck

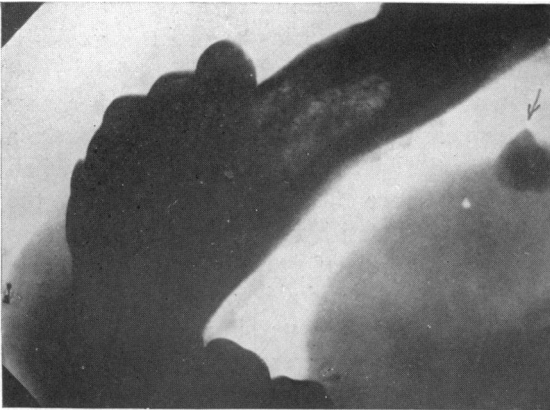


FIG. 3.—Large dental X-ray film placed horizontally between teeth showing calculus. Made by Dr. L. M. Ennis.

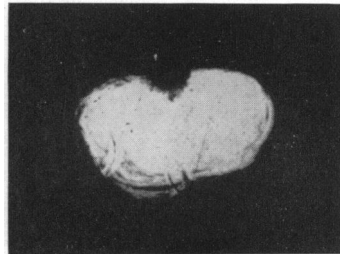


FIG. 4.—Calculus.

partly subsided after two days, but again increased. The patient stated that he had had the same symptoms nine years before, but that they had passed away gradually without treatment. Examination revealed a small hard, tender lump just beneath the mucous membrane on the right side of the floor of the mouth opposite the second molar tooth. There was also a circumscribed, oval, rather soft, slightly tender swelling just beneath the angle of the jaw on the same side. Upward pressure on this made the lump in the mouth more prominent. At first radiographic examination was negative, but a second film placed well back horizontally between the teeth showed a large opaque body (Fig. 3) in the region of Wharton's

duct. Through an incision in the floor of the mouth a large oval calculus, 2.3 by 1.9 by 1.4 cm. in size and weighing 0.9 grm., was exposed and removed (Fig. 4). A small iodoform gauze drain was placed in the wound, which healed in a few days without complications.

Erdman has recently reported (*Jour. A. M. A.*, May 22, 1920, p. 1447) five cases of calculus in salivary ducts, and states that about three hundred cases have been recorded altogether. It is probable, however, that the condition is commoner than these figures would indicate, many cases occurring without being reported. About two-thirds of the cases involve Wharton's duct, 20 per cent. Stenson's duct, while in a small number the sublingual gland is involved. The largest stone in Erdman's series was 1.3 cm. in length. The principal component of salivary calculi is calcium phosphate, other substances being calcium carbonate and organic matter.

Important points in the diagnosis are the presence of a hard, tender swelling in the floor of the mouth associated with submaxillary enlargement which varies in size from time to time, and the radiographic findings. Combined internal and external palpation is of great value. Radiographic findings are frequently negative, owing to faulty technic. A large dental film placed horizontally between the teeth, as far back in the mouth as possible, and the rays directed from beneath the chin, will usually reveal the calculus. The commonest condition causing error in diagnosis is dento-alveolar infection with enlarged submaxillary lymph-nodes.

DR. EDWARD B. HODGE reported that he had had four or five cases; the youngest, a colored child nine years of age. Another case was in a nurse, who refused operation and suffered for a year and a half, when suppuration forced her to operation. Here the stone was found in the submaxillary gland, where it had been located by previous X-ray.

DR. JOHN B. CARNETT said that eight or ten years ago he saw three cases of stone in Wharton's duct in the course of a few months. In none of them was the stone nearly as large as the one shown. Skiagraphs taken of two of them were negative. There were four stones in the three patients, and in all three patients there was a characteristic mild colic while partaking of food. The submaxillary gland on the affected side enlarged in all three during meals, and in one case pain was so severe that the patient left the table frequently before completing the meal. In all three patients simple incision over the stone allowed its easy evacuation. The incisions closed up without trouble. All the patients were young adults and none had had any further trouble a year later, and one seen during past month has had no further difficulty.

FRACTURES INVOLVING JOINTS

DR. W. E. LEE and DR. WALTER LEVERING presented three fracture cases from the service of Doctor Lee, the first two treated at the Pennsylvania Hospital, and the last at the Germantown Hospital. Although

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the fractures are of different regions, namely, just above the elbow, the knee and the ankle, respectively, there are certain points of similarity about them which are worth considering. (1) In all there was a history of violent trauma. (2) In all there was considerable displacement of the fragments. (3) In all a joint was involved either directly or indirectly. (4) The treatment was somewhat the same, namely, by reduction under general anæsthesia, and fixation with extreme flexion. (5) The end-results in all were satisfactory.

The first case, Miss J. W., aged twenty-one years, on March 11, 1920,

FIG. 5.

FIG. 6.

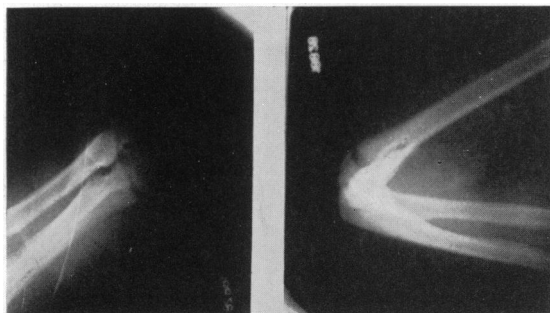
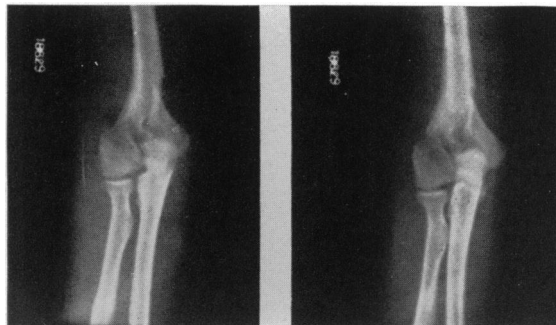


FIG. 7.

FIG. 8.

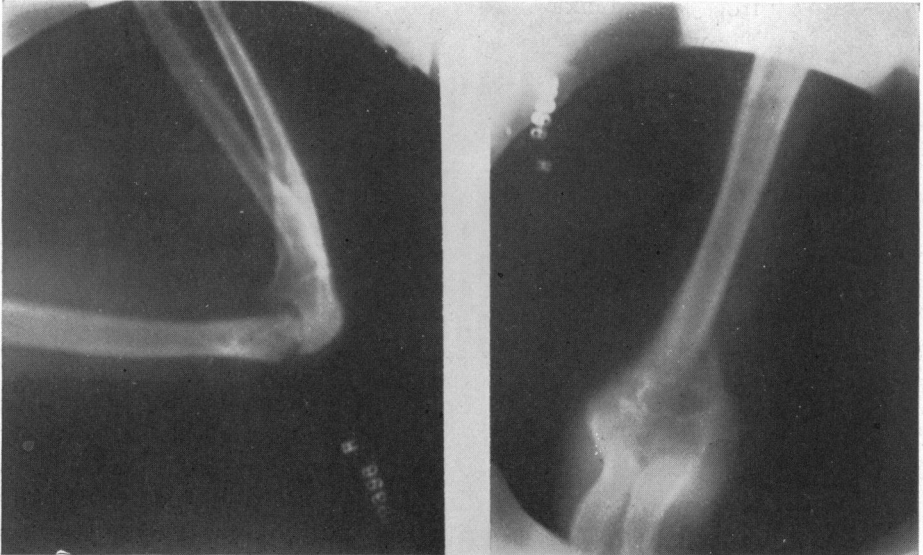
FIGS. 5, 6, 7, 8.—Supracondylar fracture of humerus extending into elbow joint.

while working at a bookbinding machine got her right arm caught and was drawn forward. The pain was so intense that she could not explain the manner in which her arm was twisted. She was brought to the hospital at once, and was dressed in the receiving ward on an anterior straight splint. Arm in extension. Receiving ward diagnosis, supracondylar fracture of humerus. She returned the following day, was X-rayed and admitted to the ward. The X-ray (Figs. 5 and 6) showed a supracondylar fracture of the humerus comminuted, of the T-shape variety, involving the trochlear surface of the joint. There was complete displacement, the lower fragments being anterior. At the end of a week she was dis-

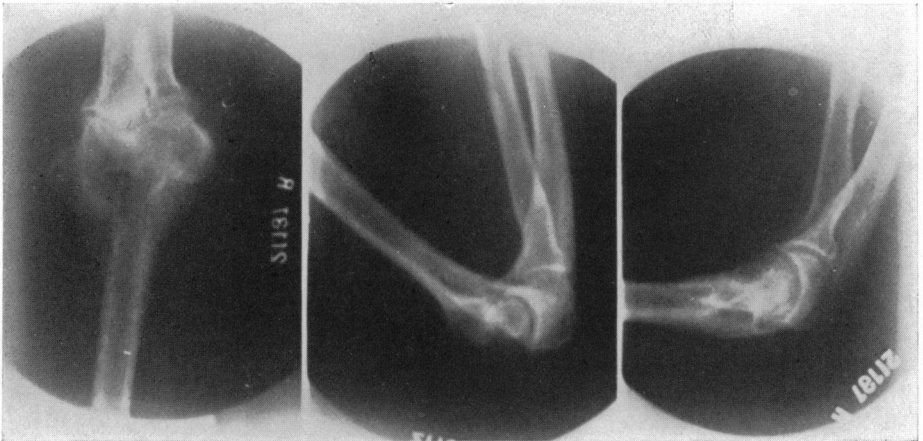
charged from the hospital and sent to the dispensary. Here it was found that the deformity had not been corrected and she was returned to the hospital. On March 25th, fourteen days from the time of the injury, under ether anæsthesia, Doctor Lee reduced the deformity and dressed

FIG. 9.

FIG. 10.



FIGS. 9, 10.—Ankylosis imminent.



FIGS. 11, 12.—Range of motion on completion of treatment in case shown in Figs. 5 and 6.

the arm in Jones position. X-ray examination (Figs. 7 and 8) then showed excellent position of the fragments. Patient was then treated in the dispensary. X-ray examination on May 14th showed some absorption of the articular cartilages, and the röntgenologist suggested that ankylosis was imminent (Figs. 9 and 10). Massage and active and passive motion was

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kept up, and a final X-ray taken October 30th shows what appears to be a perfect joint (Figs. 11 and 12). The patient has complete flexion, 170 degrees extension, and complete pronation and supination. She has returned to her original work and her earning power has not been reduced.

The second case, Mrs. E. B., aged thirty-one years, on March 6th was thrown from an automobile, landed on her feet and turned her ankle under her. She was brought to the hospital immediately, a diagnosis of Pott's fracture made, dressed in a Thomas splint, with a stocking extension. X-ray (Fig. 13) examination showed comminuted fracture of the right fibula, a short distance above the malleolus. There was also a fracture

FIG. 13.

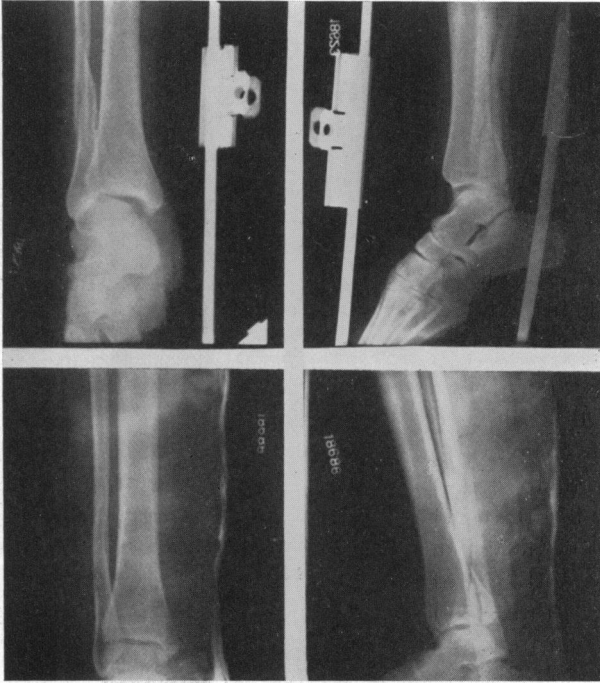


FIG. 14.

FIG. 13.—Fracture of fibula and tibia involving ankle joint.
FIG. 14.—Result after operative correction of deformity.

of the tibia, at the tibiofibular articulation. There was marked backward displacement of the foot and distal fragment of the fibula. On March 12th, six days after the injury, under nitrous oxide anæsthesia, tenotomy of the tendon of Achilles was done, the deformity reduced, and the foot put in a plaster case in extreme flexion and internal rotation. X-ray examination (Fig. 14) showed excellent position of the fragments. The end-results at time of reporting this case show complete function and no deformity about the ankle.

The third case, a boy, A. Mc., aged eleven years, on July 18, 1920, fell from a hay loft a distance of about eleven feet. His left leg went into a post hole, and he was thrown forward. He was brought to the hospital

at once. Examination showed swelling and crepitus just above the left knee. The leg in hyperextension. X-ray examination showed an epiphyseal fracture of the femur and complete backward displacement of the upper fragment (Fig. 15); under ether anæsthesia the deformity was reduced and the knee dressed in acute flexion (Fig. 16). Patient was left in this position until the thirty-fifth day, when it was found he had contraction of the hamstring tendons and could not extend the leg. He was again anæsthetized and the adhesions broken up, the leg being dressed on a posterior splint and considerable pressure put on the knee to promote extension. After three weeks of this it was found the boy

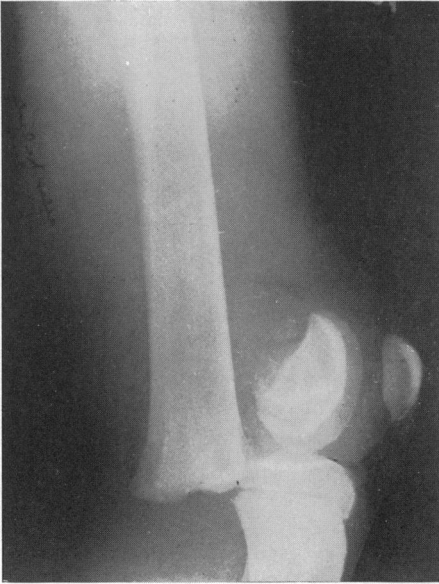


FIG. 15.—Separation of the lower epiphysis of femur. FIG. 16.—Separated epiphysis restored to place by acute flexion of knee.

had a toe-drop, due probably to pressure of bandage on a nerve. He was discharged from the hospital in September and sent to the dispensary. At the time of his discharge X-ray (Fig. 17) shows good union and excellent position of the fragments. Function of the knee was complete; he still, however, has slight toe-drop. This is undergoing rapid improvement.

DR. A. BRUCE GILL said that orthopædic surgeons are frequently called upon to examine or treat cases of fractures in the neighborhood of joints, because the patients present a disability of the extremity which persists oftentimes many months after the fracture. This is particularly true of fractures at the wrist and the elbow. If a fracture at the wrist is succeeded by swelling of the hand and fingers which persists, not infrequently a condition of fibrous ankylosis of the joints of the fingers, particularly of the metacarpophalangeal joints, results. This ankylosis is due particularly to the swelling; that is, to the interference with circulation. The

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disability which results from a Colles fracture is nearly always due to the ankylosis of the fingers rather than to any interference with the function of the wrist joint. If the fracture is properly reduced and proper dressing is applied, either the swelling does not occur, or if it has occurred, it subsides quickly after complete reduction is accomplished. If the swelling persists after a week or longer it should be considered as an indication that the fracture has not been reduced.

The surgeon cannot rely entirely on the X-ray examination. Sometimes the X-ray shows fairly good reduction of the fracture, but the swelling persists. At other times there is fairly marked displacement of the fracture, but there is no swelling of the hand, and the patient has no loss of function as a result of the fracture. The persistence of swelling should be a chief guide in the treatment of the fracture.

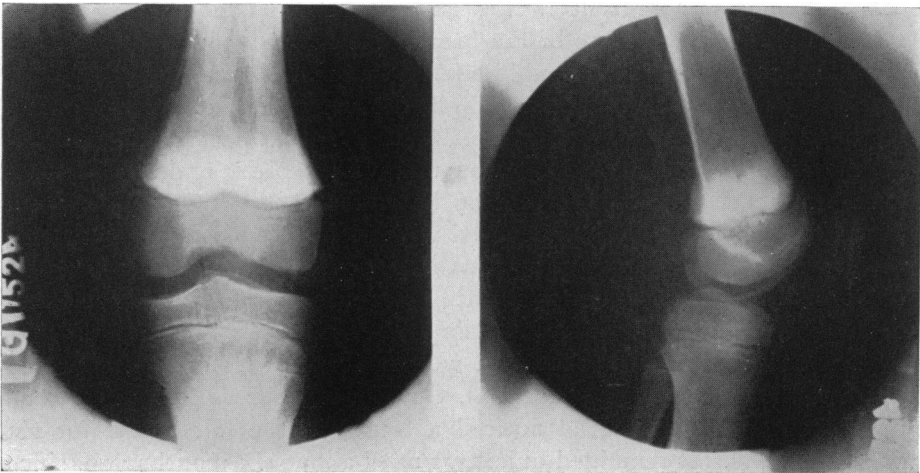


FIG. 17.—Ultimate result from treatment of case shown in Figs. 15 and 16.

In a similar manner, fracture of the lower end of the humerus may lead to long-continued disability or even permanent disability of the hand because of ischæmic paralysis, or Volkmann's contracture; or because of ankylosis of the fingers which has been caused by the persistent swelling of the hand. A proper reduction of the fracture before the first dressing will eliminate any danger of such untoward results. To dress the elbow in acute flexion without complete reduction of the fragments tends to produce a constriction of the vessels at the elbow, which may cause a Volkmann's contracture, or fibrous ankylosis of the joints of the hand.

He had seen cases of fracture of the upper end of the humerus or dislocations of the shoulder produce a long-continued disability of the hand which was due to this same fibrous ankylosis of the joints of the fingers. In practically all of these cases can be obtained a history that the hand remained swollen for a period of weeks during the treatment of the fracture or dislocation. One cannot emphasize too strongly the

necessity of watching carefully for circulatory disturbances, for such disturbances usually indicate an incomplete reduction of the fracture, or, less commonly, an improper dressing.

PAPILLARY CYSTADENOMA OF THE BREAST

DR. JOHN H. GIBBON reported two cases of papillary cystadenoma of the breast and exhibited the specimens. Both cases had been operated upon within a week. The first was that of a woman, sixty-five years of age, operated upon at the Jefferson Hospital, October 26, 1920. She had had ten children and two miscarriages. Mass in the breast first noticed ten years ago. Other masses developed and about two years ago one of them was incised by her physician and a quantity of blood and pus evacuated. The breast contained several masses, the largest about the size of an egg, covered by thin skin and evidently containing dark fluid. Translucency was present in the largest mass. The swellings were grouped around the centre of the breast, the nipple was contracted and considerable fibrous tissue could be felt between the tumors. The breast was freely movable but an enlarged gland could be palpated in the axilla. Through a Stewart incision the breast with the great pectoral muscle and all the axillary glands and fat was removed. The glandular involvement was much more extensive than he had expected. On opening one of the cysts it was found to be filled with bloody fluid and at one point there was marked papillary outgrowth. A part of the cyst wall was calcareous. Microscopic diagnosis in this case was "papillary cystic adenocarcinoma of mamma with metastasis to the axillary lymph-nodes."

The second case was that of a woman forty years of age, operated upon at the Pennsylvania Hospital, October 27, 1920. This patient had never been pregnant. Had noticed a tumor in the left breast for six or seven years. It remained quiescent until about six months ago, since when it has progressively increased in size. Examination showed a multilocular, freely movable, fluctuating tumor in the outer and lower quadrant of the left breast. No glandular enlargement was detected. Through a Stewart incision the breast, with the sheath of the pectoral muscle and the axillary glands and fat, was removed. On opening one of the cysts, which presented on the posterior surface of the gland, it was found to be filled with a papillary outgrowth. Thinking that the condition was probably malignant, the great pectoral muscle was then removed and a more complete dissection of the axillary glands and fat made. The microscopic diagnosis in this case was "papillary intracystic fibro-adenoma." The lymph-glands in this case showed no evidence of metastasis.

The incidence of papillary cystadenoma of the far-advanced type represented in the cases shown is rather rare nowadays, because all cases of tumor of the breast are receiving much earlier treatment. The condition has been described by many writers under many names. It is the hydatid disease of Sir Astley Cooper, the serocystic sarcoma of

Brodie, the cystosarcoma phylloides of Müller, and the proliferous cyst of Paget. Paget's description of the condition in his "Lectures on Pathology," 1853, is a most complete one, and he describes the clinical course of the disease in a very thorough manner.

During the past ten years the reporter had operated upon six cases of papillary cystadenoma and twenty-eight of fibrocystadenoma, which shows that the condition is not very rare. Of course, during this same period the cases of subinvolution-cysts of the breasts have been much more numerous than the two other types combined.

The classification of these cases has always been confusing because of the association of the fibrous and epithelial elements in the tumors. Collins Warren, however, in his "Surgical Oration" before the A. M. A., in Portland, 1905, clarified the difficulty by proposing the two terms, fibrocystadenoma and papillary cystadenoma. He reported twelve cases of the latter condition from the Massachusetts General Hospital and his own practice.

This disease is seen in women usually past forty-five and who have borne a great many children. The tumors grow slowly for years and are then apt to take on rapid growth. Rupture by ulceration took place quite frequently in the cases reported fifty years ago, and the growth taking on a fungoid character was considered sarcoma.

The skin in the later stages becomes thin, the cysts stand up prominently and are often translucent, as in one of the cases here reported. The tumors usually form about the nipple and much fibrous tissue can be felt between them. Fluctuation is distinct. Glandular involvement is rare. Paget reports a case in which there was glandular metastasis and recurrence, and in one of the speaker's own cases malignant glandular involvement was present. Bleeding from the nipple is considered one of the common symptoms, but it was present in neither of the cases, specimens of which he was exhibiting.

Clinically the condition must be looked upon as malignant, although in its early stages it is only mildly so. The differentiation from fibrocystadenoma, or what is commonly called cystic adenoma, can be made by macroscopic inspection of the cyst wall, which in the one case is smooth and in the other contains papillary outgrowth.

The treatment of this condition, of course, is amputation of the breast together with the removal of the axillary glands and fat, as it is impossible to tell whether or not an epitheliomatous change has occurred. He did not think that the absence of palpable glands in these cases is sufficient to justify one in omitting the dissection of the axilla.

RATIONAL TREATMENT OF FRACTURES OF THE TUBULAR BONES

DR. JOHN B. ROBERTS said that a gratifying sequel of the European war has been to dispel the delusion that a great group of closed fractures of the long bones must be subjected to adjustment of fragments by blood-spilling operations; as a consequence, the ability to obtain good results in such fractures, without resort to incisions for inspecting and fixing frag-

ments, has been secured by many medical men. Thus the former craze for operative reduction has been much lessened. The treatment of open, contaminated and infected fractures, moreover, has been greatly improved by the investigation and experience of military surgeons. A rational study by the inductive method seems to him to establish these propositions:

The majority of closed fractures of long bones may be cured with good function and good anatomical result without exposing the bone by operation. Some open fractures of these bones, if kept aseptic, may be properly cured without exposing the bone by operation.

A moderate proportion of closed fractures only will need operative exposure of bone, to correct malposition of fragments; and some of these should have direct fixation.

Many open fractures, especially gunshot injuries, will require operation to convert contaminated fractures into aseptic fractures, and to permit primary closure of the wounds. Some of these open fractures will also need readjustment of fragments and possibly direct fixation of fragments.

Conversion of contaminated fractures into aseptic fractures should be done within the first eight or ten hours by removal of foreign bodies, excision of debatable soft parts and perhaps of the small fragments; whenever practicable, the wound then should be closed by primary suture and the bones given external rigid support.

Closed fractures needing exposure of bone for readjustment of fragments probably do better, in respect of freedom from sepsis, if operated upon about seven days after injury.

Comminution of bone in closed fractures does not add much to the severity of the injury, but it requires that the external support and the accuracy of coaptation receive vigilant attention.

Comminuted open fractures, if kept aseptic or early rendered aseptic, do well, because the small fragments may furnish many centres of callus deposition.

Nearly all closed fractures and many open ones of the upper limb may be successfully treated as to functional ability and anatomical integrity by means of ambulatory dressings.

Nearly all fractures of the lower extremity, whether open or closed, do better when treated in bed with suspension of the limb and more or less continuous traction. An exception to the rule of treating fractures of the lower limb in bed may be made in fractures of the fibula and of bones of the foot.

Most fractures of the femur, and a considerable number of the tibia, must have strong traction added to suspension of the external fixation apparatus.

A few fractures of the upper limb, closed and open, require suspension with traction. This is particularly true in fractures of the upper end of the humerus, and is more frequently needed for infected fractures in this site.

RATIONAL TREATMENT OF FRACTURES

Fixation by external splinting is best given to the upper limb by using the thorax as a splint for the humerus; some form of plastic material moulded to the surface is usually best for the bones of the forearm. Encircling the arm or forearm is dangerous in the early stages of the treatment; it is liable to cause ischæmic myositis or gangrene.

When suspension and traction are required for upper limb fractures the patient should be kept in bed for a time; and external splinting should usually be obtained by steel rods used in similar form to the braces and splints advised in fractures of the lower limb or by a modified Buck's traction apparatus.

The suspension and traction so valuable in fractures of the femur may best be obtained by the N. R. Smith or Hodgen anterior heavy wire splint, the modified Thomas splint, or by traction with the Buck's extension method, with or without suspension, or by adoption of the Bradford frame. The Thomas splint is probably the best of these methods in adults with great overriding of the fragments. It is particularly valuable if the patient must be subjected to transportation.

The joints, muscles and skin in fracture cases should be given attention from beginning to end of treatment, if the best results are to be obtained.

Joints should not be kept immobile longer than one or two days. Careful passive and active movements usually should be allowed within the first few days, and frequently repeated during the course of the treatment.

It is a common practice to permit weight bearing on fractures of the lower extremity too soon. Secondary deformity is frequently caused by this error. Crutches and braces and other devices should be used to prevent such deformities.

No special form of splint or apparatus can be substituted with safety for that knowledge of anatomy, pathology and mechanical intelligence which constitutes a surgical grasp of the particular fracture needing professional care.

• DR. JOHN H. GIBBON remarked upon the change that has taken place in the last five years regarding the treatment of fractures. A question of the utmost importance mentioned by Doctor Roberts is that of mobilization. Movement, both passive and active, is that which is most needed to-day in the treatment of fractures in civil life. In fractures of the thigh he had taken out more plates than he had put on. He recently saw the case of a boy operated on eight years ago for fracture of the thigh; it was plated with a good result. The boy suffered a refracture three weeks ago at the site of the last screw. Traction to overcome the deformity was unsuccessful. There was nothing to do but to operate, and he found a lot of blood serum, with pus, around the plate. There was no fever. He took away the plate, but could get only partial reduction. The wound was closed without drainage. This was three weeks ago. There is a good deal of union at this time.