TRANSACTIONS
OF THE
PHILADELPHIA ACADEMY OF SURGERY

Stated Meeting, held March 6, 1916

The President, DR. CHARLES H. FRAZIER, in the Chair

IMPROVED METHOD OF CLOSING WIDE CLEFT PALATE MALFORMATIONS

DR. JOHN B. ROBERTS presented an infant to show the result of an operation for closing a cleft palate. He said that cleft palate operations by Brophy's "tie-beam" sutures of the upper jaw had in his work in early infancy cases caused much undesirable suppuration within the mouth, or severe damage to the alveolus. Recently, therefore, he had adopted, as in the case shown, a method by which the wire sutures were introduced from the outside of the cheeks, and were carried through the two upper maxillary bones. The separated portions of the roof of the mouth, being still largely cartilaginous, are drawn closer together by twisting the two wires over corks covered with gauze on the outside of the cheek on each side. Later, these wires are twisted to increase the approximation of the sides of the cleft in the palate and maxillary bones. He had in the two cases buried the twisted ends of the wire beneath the skin, and allowed the cutaneous wounds to have a chance to close, though their union is slow on account of some suppuration. At the time the tie-beams are introduced the cleft in the alveolar process in front is closed by a wire suture, and at a later period the cleft in the lip united by silkworm-gut sutures. The first step in the operation had been done when the infant was about three weeks old, that step being the introduction of the tie-beams and wiring the alveolus. The second step is the closing of the lip at about four weeks and a half of age. The case presented shows the wires introduced and the lip still open. A second patient has had the wires in the jaw for four months with very little irritation, except some slight suppuration of the cheek wounds. The anterior part of the cleft in the roof of the mouth is closed, the alveolus has been brought together, and the upper lip, now united for several weeks, looks very well.

In future he intended to introduce the wires so as to have a twist on one side only, doing this by returning the end of the first wire across

the cleft a second time and having the loop on the second cheek buried at once. He was not sure but that, after taking out the wire tie-beams at the end of five or six months, he would introduce for a considerable period, either another set of wires, or perhaps be satisfied with a heavy kangaroo tendon loop and knot for the two supporting sutures.

He had for a number of years been convinced of the value of Brophy's suggestion to close these wide clefts in early infancy so far as is possible while the upper jawbones are largely cartilaginous. The impact of the mandible against the upper jaw has a tendency to keep the cleft from coming together and, perhaps, widens it. Therefore, early support and approximation of the two sides of the fissure by the prolonged use of tie-beam sutures, and by closure of the upper lip and the alveolus, seem mechanically wise. It seems cruel to make suppurating wounds on the outside of the cheeks of these little patients, but this is of less importance when one thinks of the gravity of the congenital malformation. The dimpled scars in the cheeks, left after healing of the wounds, may easily be made inconspicuous by plastic operation.

BONY UNION OF TRANSVERSE FRACTURE OF BOTH PATELLÆ WITHOUT OPERATIVE SUTURE

Dr. John B. Roberts presented a man aged perhaps 50 years, who last December, while in the Polyclinic Hospital for fractures of the fibula, called his attention to his knees. He stated that Dr. Roberts had treated the left patella with a board splint twenty-two years ago, April 3, 1894, at the Polyclinic, and the right patella for a similar fracture about six years previously with hooks at the Pennsylvania Hospital. On investigation it was found that the man had been in the Pennsylvania Hospital about 1886, when Dr. Roberts, as Out-patient Surgeon, was using the Levis separated Malgaigne's hooks for this fracture, having been taught their value by seeing Dr. R. J. Levis's success in getting close union by means of them. It is possible that his connection with the case at the time was as Dr. Levis's assistant, for he did not remember the patient clearly. The patient still shows evidence of scarring of the skin by the hook points; and the patella is solid, of good shape and the mobility and usefulness of the limb perfect. The left patella is a little larger than its fellow; a shallow transverse groove in it is palpable, and the outline of the periphery is a little distorted. The flexion of this knee is slightly restricted in extent. The man declares that they are both perfectly useful; and, as he is a laborer, this testimony as to absence of disability is worthy of acceptance. The skiagraph plate shows apparently a close, probably an osseous, union of both bones.

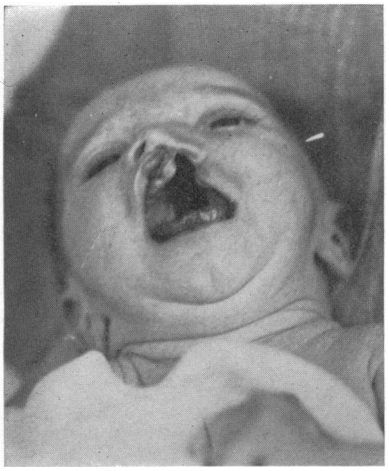

FIG. 1.—Condition before operation (about two weeks old).

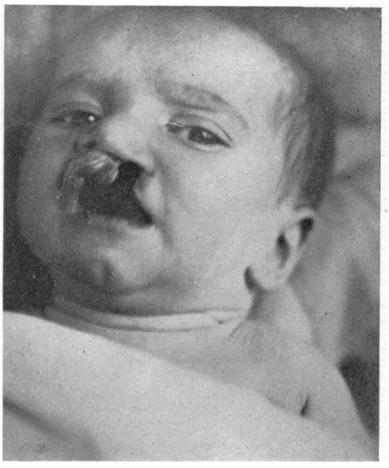

FIG. 2.—Condition when about three weeks old.

FIG. 3.—Condition after first operation (about three weeks old).

At the Pennsylvania Hospital at the time mentioned, about 1880, Malgaigne's hooks were frequently employed during a number of years by T. G. Morton and R. J. Levis, and also by the reporter, following them, with great satisfaction. Since that time he had used adhesive straps to hold the fragments together, and applied a posterior splint of wood or of gypsum and gauze, as was the case in this man's second fracture. At other times he had used a circumferential subcutaneous suture in the coronal plane, or had exposed the bone by incision and sutured the periosteum and muscles. The last has been done as an exception. In all cases the rectus femoris muscle is kept relaxed by flexing the hip-joint during treatment.

He thought this case sufficiently interesting to present to the Academy because of the vigorous opposition of many to the employment of non-open treatment of this fracture. Two united and useful broken patellæ, one of twenty-two years' and the other of about twenty-eight years' standing, giving a laboring man no disability sufficient to attract his attention, are surely eloquent witnesses to the value of subcutaneous or non-operative treatment.

ABSCESS OF BRAIN

DR. J. STEWART RODMAN presented a woman, 30 years of age, who was brought to the Presbyterian Hospital in a dazed condition, having fallen shortly before, striking her head on a wash-tub. The following day, when her history was taken, she was fully conscious, and answered fairly well. The upper part of the left side of the face involving the forehead was swollen and ecchymotic. Fluctuation was obtained over left malar bone. No crepitus—no increased tenderness.

Eyes.—Right, normal. Left eyelid swollen and ecchymotic. Marked subconjunctival swelling. Pupil reacts sluggishly to light. No discharge from ears or nose. Thorax, abdomen and extremities negative; no paralysis; pulse regular, good volume—80.

Spinal puncture, day of admission; 10 c.c. fluid obtained under moderate pressure and slightly blood tinged.

X-ray showed fracture of left malar bone, and fracture (possible) of sphenoid.

During the following three weeks there was gradual absorption of the swelling over malar; irregular type of fever. Mentality good for two weeks, then drowsiness and beginning difficulty in speech, and weakness on right side. Appearance of swelling, giving fluctuation in left temporal region.

Examined by Dr. Cadwalader three weeks after admission.

Result of neurological examination, incomplete paralysis right side face, arm and leg. Reflexes exaggerated left side. No Babinski. Sensation uncertain because of mental condition. Understands what is said to her and recognizes objects. Cranial nerves react normally.

Diagnosis.—Depressed fracture of left temporal bone or hemorrhage without fracture. Possible encephalitis or cerebral abscess from infection travelling from sinuses.

An exploratory craniotomy was done by Dr. Rodman. Vertical incision through the centre of the left temporal swelling. A large collection of pus under scalp was evacuated. A fracture of the left temporal bone was exposed. The fracture opening in skull enlarged by a rongeur and the bulging and tense dura was opened by a criss-cross incision. The brain cortex bulged into wound. Convolutions flattened out. Exploratory puncture: Reached greenish pus about 2½ to 3 cm. below surface of cortex. Incision then made into cortex and about 2 oz. of greenish pus evacuated. Rubber tissue drain to abscess cavity. Scalp incision closed with interrupted silkworm gut.

Postoperative Course.—Temperature remained normal. Could talk following day with some hesitancy; afterwards speech normal. Sixth day following operation, slight convulsion lasting few moments; twitching of face and both hands; pupils dilated; inability to speak; pulse weak; lasted only a few minutes. On the tenth day following operation, slight twitching of facial muscles; lasted ten minutes; fully conscious. After this, recovery entirely uneventful. Original drain undisturbed for three weeks. At that time drainage ceased and drain removed.

Culture of pus from abscess of brain staphylococcus albus.

SARCOMA OF LEFT HUMERUS AND FEMUR

DR. RODMAN presented a woman forty-nine years of age. Had suffered from pain in her left shoulder for three years. Two years ago first noticed a swelling of this shoulder. She thinks swelling is now little if any larger than when first noticed. During this past summer, July, 1915, a swelling developed gradually above her left knee. She tripped and fell in July, 1915. Following this her knee became swollen, but in about a week she was able to get about with the help of a cane and crutch. Fell again one week prior to admission, striking her shoulder and thigh. After this fall, both shoulder and thigh painful. When admitted, she was rather emaciated; her left shoulder was symmetrically enlarged and pulsated. A loud bruit could be heard over the swelling. Systolic murmur heard in left supraclavicular triangle and

also in left suprascapular region. Little, if any, limitation of motion in left shoulder-joint, but some muscular weakness. Just above and including the left knee the diameter of the part was increased by one-half by a symmetrical swelling. Not tender; no apparent pulsation, but a loud systolic murmur heard over entire swollen area. Unable to bear weight on the left leg because of pain. No crepitus nor preternatural mobility.

Diagnosis.—Osteo-angio sarcoma of left humerus (primary) and left femur (secondary).

RICHTER'S HERNIA. ACUTE INTESTINAL OBSTRUCTION

DR. RODMAN presented a third patient, a woman, sixty-eight years of age, who, until two days prior to admission, had been enjoying her usual good health. She then developed sudden severe lower abdominal pain, cramp-like in character. Vomited frequently during the day of onset and also during the following day. Pain also continued. Was given purgatives but was unable to have a bowel movement. Abdomen became distended.

Two hours after her admission to hospital Dr. Rodman made a midline incision between symphysis and umbilicus. On opening the peritoneum, free fluid escaped, and distended coils of small intestine crowded into the wound. On pushing these aside, collapsed small intestine was found which was traced to the left internal ring. There bowel had become caught by a prolapse of one wall into the opening (Richter's hernia). Gentle traction was sufficient to disengage the bowel. The dark area where that bowel had been caught (one wall) was infolded by interrupted Lembert stitches of Pagenstecher. Wound closed without drainage. Recovery uneventful.

HANDLING OF CHILDREN WITH TUBERCULOSIS OF THE SPINE WHILE THEY ARE UNDER THE INLUENCE OF AN ANÆSTHETIC

DR. WALTER G. ELMER read a paper with the above title, for which see page 34.

ELEMENT OF ERROR IN ABDOMINAL DIAGNOSIS

DR. HAROLD L. FOSS read a paper with the above title, for which see page 39.

DR. JOHN H. GIBBON said that anyone who looks upon abdominal diagnosis from a fair point of view, must agree that the surgeon who makes no mistakes is either more or less than a man. Mistakes are

made not often because we do not know the difference between two conditions, but because we do not devote enough time to the study of the case. It is fortunate in many ways that surgeons forget their mistakes, yet it would be a good thing if we had them constantly before us. The speaker presented before this Academy some time since a paper on perforated duodenal and gastric ulcers. Yet within a year he operated upon a case in which he was satisfied with the removal of an appendix that was acutely inflamed and covered with lymph. The man died and an autopsy showed a perforated duodenal ulcer! Surgical judgment and common sense are also absolutely necessary in order to avoid mistakes in surgery. The less a man knows about a thing, often the more confident he is. The man who is overconfident does not recognize his mistakes. Self-satisfaction, carelessness and haste are bad things in surgery. Out of dissatisfaction with one's self will come improvement. That a patient may pass through many hands without a correct diagnosis of his condition being made was illustrated ten days ago in the case of a man who for fifteen years had had attacks of severe pain in the upper abdomen. He had become a "neuro," of course, in that time. One man had passed him on to another, each recommending his favorite treatment; meanwhile the man's neurasthenic symptoms had become very pronounced. He finally fell into the hands of a bright woman physician, who suggested having an X-ray picture taken, and 17 gallstones could be seen in the plate, and were promptly removed. In operating for appendicitis the surgeon has to keep in mind that, even if he is right in his diagnosis of chronic or subacute appendicitis, there may be something else present. The first three or four cases of ureteral stone the speaker operated upon had been diagnosed appendicitis and in two of them the appendix had been removed.

DR. JOHN H. JOPSON said that it is undoubtedly true that many errors in diagnosis in abdominal lesions, as elsewhere, are attributable to haste and carelessness; and, it may be added, sometimes to mental and physical fatigue. Pirogoff emphasized this many years ago in connection with his report of a femoral aneurism which he had opened in mistake for an abscess. It will also seem that the distance between the brilliant diagnostician and the conscientious plodder is being greatly lessened by the general adoption of exact laboratory methods, and especially by the use of the X-ray. It is equally true that the question of judgment in the interpretation of laboratory as well as clinical data, skill in physical diagnosis by personal methods of examination, and the personal equation generally, will never be eliminated by any methods of research.

Regarding gastric and duodenal ulcer, he gathered from Dr. Foss's statistics that in ten cases of his series a diagnosis of ulcer had been mistakenly made where other lesions were proved present at operation. Only three times had ulcer been found when some other pre-operative diagnosis had been arrived at. This bears out his own conviction as to the chances of an obscure lesion being ulcer or something else. When the differential diagnosis between ulcer, gall-stones and appendicitis is puzzling in the absence of certain confirmatory symptoms, the chances are several to one against ulcer being present.

In connection with the diagnosis of gall-stones, he had been much interested in the papers of Cole, who points out that 20 per cent. can be detected with comparative ease by the use of the X-ray, due to the presence in the stones of the calcium salts. In the remaining 80 per cent. the greater density of the bile itself to the X-ray renders it necessary to demonstrate the negative shadow of the stones and the so-called "bunch of grapes" appearance which they present. After much experimentation with gall-bladders removed from the body, immersed in water and bile, Cole arrived at a technic which he thinks fairly reliable, and in fifteen cases in which he made the diagnosis of gall-stones in cases referred to him for the purpose of diagnosis, in twelve his opinion was proven correct when the patient came to operation. It would, however, be interesting to know in how many cases, in which he failed to make the diagnosis, gall-stones were afterward shown to be present.

As regards the percentage of errors, the speaker had been interested in hastily looking over fifty consecutive histories of his own private cases of abdominal operations to determine how many gross blunders in diagnosis he had made. There were six cases in which such an error in diagnosis was demonstrated, or 12 per cent. These errors included a case of acute hæmatosalpinx in early unruptured extra-uterine pregnancy, diagnosed acute appendicitis; appendicitis and general peritonitis diagnosed probable nephritis with complete suppression of urine and abdominal symptoms; a case diagnosed perinephritis, in which nothing definite was found, but the patient improved after appendectomy; a case diagnosed subphrenic abscess, which recovered, no abscess being found; sarcoma of the transverse colon, with perforation and circumscribing adhesions, diagnosed gall-bladder disease; sarcoma of the stomach, diagnosed as ulcer and hour-glass stomach. In the last case there were three separate nodes of sarcomatous tissue in the stomach wall, with irregular contraction of the same between them, producing an X-ray appearance simulating hour-glass stomach.

FRACTURE OF THE FEMUR

DR. W. L. ESTES, of St. Luke's Hospital, South Bethlehem, Pa., read a paper with the above title, for which see page 74.

DR. GEORGE P. MÜLLER said that most of the mistakes one sees in consultation practice are due to the neglect or inability to use the X-ray. Dr. Estes has accurately formulated the indications for operation. In oblique fractures of the femur it is practically impossible to effect satisfactory reduction. Dr. Martin has stated that where a fracture can be reduced and held, there is no necessity of doing anything further, but if it is not held then means should be taken to this end. It is at this point that the speaker became radical in his opinion. There is no use waiting week after week, and trying method after method to reduce and hold a fracture of the femur, humerus, or tibia. At the end of this time there is hopeless shortening with the prospect of a dangerous operation; whereas, if the irreducibility is recognized at the end of the first week, an operation will correct the deformity or displacement, can be easily done, and will give practically perfect results.

Dr. Estes spoke of the bowing of the femur, and he had tried to take advantage of this by proper support during the application of the plate. Dr. Roberts has stated that the ideal method of the future will be the use of some absorbable fixation material which will hold the fragments accurately together, and he mentions the use of fascia and of catgut. Such fixation material is, however, too weak to stand the strain of the force exerted by the leverage action of a long bone. No one has introduced a method superior to the steel plates now in use. He did not believe in the common statements that the plate, *per se,* prevents callus formation, nor that the screws induce necrosis or softening of the ends of the fragments. He had made some very interesting observations upon a small series of cases, carefully studied, which show that it is not the plate but the absolute fixation that prevents callus. As to necrosis, this complication is due to infection and not to the presence of the screws.

DR. JOHN B. ROBERTS discussed the third and fifth propositions of Dr. Estes's paper. The former raises the question of the importance of general management of fractures of the femur; the latter discusses results, period of disability and the relative value of the bloodless (non-operative) and the blood-letting (operative) methods of treatment.

Dr. Roberts said that he had a firm conviction that the serious nature of the mechanico-physiologic problems presented by a broken thigh bone is not realized by those surgeons who leave this portion of the treatment to the discretion of an inexperienced hospital interne,

a nurse, or a hospital orderly. It is largely this negligent attitude of hospital surgeons which has made statistics when collected from many sources so discouraging. These statistics have driven a considerable proportion of surgeons to adopt incision, with direct fixation by means of metal plates, as a routine treatment. The same type of fracture treated by non-operative means in private practice is followed by better cure, because the responsibility is more direct, the pecuniary reward greater, and censorious criticism more likely. The recently enacted Workingman's Compensation Law in Pennsylvania will indubitably improve statistics by fixing the attention of hospital surgeons on this item of fracture treatment.

Dr. Estes's fifth proposition is concerned with the disability after fracture of the femur, and the relative value, as to functional cure, of the non-operative and the operative or open methods of treatment. It comprises, indeed, the most important topic of his admirable address. This phase of the discussion was of supreme interest to him for the reason that of late years he had been compelled to take a stand which would seem to show that his opinion as to fracture treatment had changed on the question of operation. Years ago he was an advocate of the profession operating by incision upon fractures, although few men operated for this lesion of bones. Now, however, he was constantly declaiming against the frequent use in surgery of fixation of fractures of bones of the extremities with metal plates. The fact is that his opinion has differed very little from that which governed his practice in the earlier years mentioned, except that he operates now rather more frequently than he formerly did. The trend of events, or what he might call a curious herd-like or gregarious change of opinion, has caused many practitioners of medicine and surgery to rush into operative treatment of all kinds because of a mistaken view of the part which nature plays in the cure of many medical, and a considerable number of surgical, lesions. The human mind is apt to be so swayed by the shifting winds of popular thought on the one hand, or set like gypsum, by routine and non-appreciation of psychic movements on the other hand, that many cease to grow mentally, or have our mental development actually choked as the vines of a jungle destroy young growing trees. We cease to think in terms of logic, and are either controlled by a stony conservatism, or follow the lead of some great operator with a tarantella-like childishness. Personally, he believed that the furore for operative treatment of fracture of the femur and other long bones is about to lessen, and that within the next decade fewer fractures of long bones, rather than more, will be subjected to

operative attack as a routine of treatment. Scarcely more than 15 or 20 per cent. of closed fractures of long bones need be treated by operative incision for reduction and fixation. The bloodless or subcutaneous treatment is sufficient in skilled hands, with careful general treatment and frequent observation, for about 80 or 85 per cent. of broken bones of the extremities. The essentials on the part of the surgeon are that he, when undertaking to treat a fracture, look at a bare bone, remember the muscular attachments in the neighborhood, compare the limb with the normal limb on the opposite side, give an anæsthetic to determine the presence or absence of fracture, and the probable line of break if one exists, reduce the fragments so that the injured limb looks like the normal one, steady the bones with contour splints or gypsum gauze with or without traction as the case may be, examine the position every day for the first week, and at less frequent intervals later, and use light massage and careful mobilization of joints from the beginning to the end of treatment. A great aid to anæsthesia is the use of the X-ray to prove the existence of fracture and to check up the results of his anatomical examination under ether. Too much reliance, however, must not be put upon this method of examination. The surgeon must have some knowledge of X-ray appearance of bones, and will need to connote his knowledge of anatomy with the radiologist's knowledge of shadow pictures. It is probable that a practitioner with a good knowledge of bare bones and their muscular attachments, and with the mechanical instinct of the carpenter and plasterer, will do better without radiography than a radiographer without a knowledge of the practical side of surgery. The man who has the knowledge of the X-ray expert to help him, will, however, be often benefited. The greatest defects in hospital treatment of fractures of the femur are the sagging spring-mattress on the bed, an ignorant orderly with a douche-pan instead of a bed-pan, and a careless attention to steady traction. The drumhead canvas bed-frame adjustable to the ordinary fracture bed, so as to give counter-traction, used by Dr. E. A. Bryant, of California, is a cheap way of solving some of these difficulties (see Fig. 4). In operations for the exposure and treatment of deformed fractures of the femur, with long-standing contraction of muscles, he knew of no better way for continuing strong traction during application of the metal plate, after the malunion has been cut apart, than the Levis thigh plate and compound pulley (Fig. 5). This gives an easy method for maintaining the extension during the application of the necessary fixation by metal plates.

There is a great need for some form of absorbable mechanical

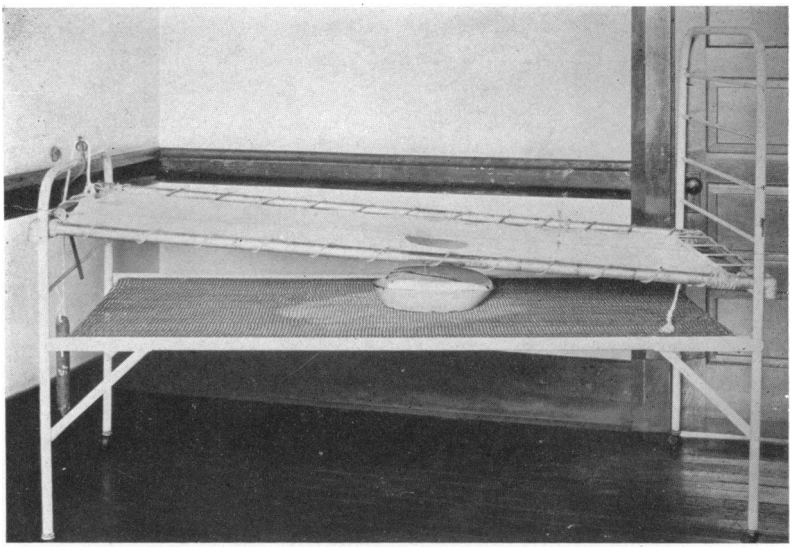

FIG. 4.—Drum-tight canvas and gas-pipe frame used by Dr. E. A. Bryant of Los Angeles, Cal., for reducing countertraction in fractures of the femur. Notice how it is hooked upon the braces of the head and foot pieces of the ordinary metal bed and thus obtains counterextension by the weight of the patient's body. Beneath it on the spring mattress of the bed may be placed any sort of a receptacle for fæces, since the canvas has an opening through which defecation may take place. The Buck's traction apparatus is attached to the limb of the patient by adhesive plaster and a stirrup, in the usual way.

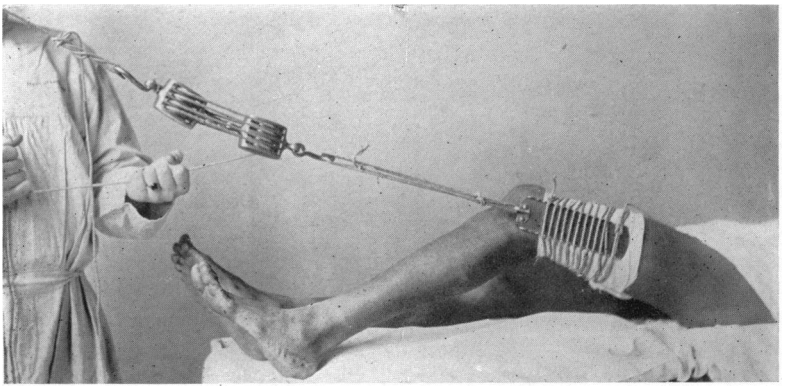

FIG. 5.—Method of reducing overlapping fragments of a fractured femur, when operating for fixation by plate and screws. The Levis traction plate and a set of compound pulleys make the reduction easy.

support applied directly to the broken bone that will give fixation and prevent overlapping as does the metal plate with screws. The osteogenetic inlay of Albee will often be found valuable, particularly in malunited and ununited fractures. He had suggested some variations in shape and material of plates, such as using aluminum instead of steel; and he had applied an artificial periosteum made of a graft or transplant of fascia lata taken from the opposite thigh for maintaining a fracture in reduction. It should be borne in mind that the fixation appliance is to prevent overlapping and rotary or lateral or antero-posterior displacement, rather than to give perfect rigidity. Hardly anyone depends upon the plate to give rigidity, but for that purpose uses the gypsum encasement or some form of rigid external support in addition to the fixation plate. Traction is usually employed after operation to prevent recurrence of overriding in femoral fracture. Another misconception of the problem is a too rigid belief in the value of measuring with tape measure or other standard unit. The shortening of a man's leg may be in the femur, or in the tibia, or in both. If the patient is placed squarely on his back, with legs extended and the line connecting the anterior spinous processes of the two ilia at right angles with the long axis of the body, the surgeon's eyes may readily see whether or not undesirable shortening exists in the femur by comparing the relative positions of the two patellæ. This is as easy as telling whether a large picture hanging on his office wall is horizontal, and throws out of account a possible difference in length of limb due to asymmetry of the tibias.

The surgeon should not forget in reconstructing a femur that the normal femur of muscular individuals is arched forward. This is seen when the shaft is viewed laterally. He was one of those who believe that it is hardly necessary for a man to carry a large amount of steel buried in the muscles of his leg after the bone has united. He saw, therefore, no particular reason against cutting down and taking a steel plate out of a man's thigh after union has been secured. This must be done, of course, with an aseptic technic, and is more necessary in those whose occupation takes them away from surgical observation than in those whose business and residence permit them to have surgical aid at hand in the event of future trouble from the buried metal splint.

DR. A. P. C. ASHHURST regretted that Dr. Estes did not have time to go more fully into the question of fractures of the neck of the femur, a subject which often is overshadowed in interest by fractures of the shaft. In fracture of the neck more emphasis should be placed upon keeping the patients in bed until union occurs; but remaining in bed is

not alone sufficient to secure union. The primary impaction, which results from the accident, often is slight, and if no efficient treatment is instituted these patients will recover, or rather fail to recover, with non-union. In primarily unimpacted fractures Cotton, of Boston, has undertaken to hammer on the trochanter with a wooden mallet until he produces artificial impaction; his reported end-results so far are few, but encouraging. But the idea of a hammer is not very attractive, and for the last five years he had been practising Cotton's artificial impaction in what seemed to him an equally efficient but less theatrical manner: he had found it sufficient to anæsthetize the patients, reduce the fracture in the ordinary way, and then simply abduct the limb until one hears the bones crunch, when the fragments will stay together; they are then held in this position by a gypsum dressing. Now the question arises, what patients will stand all this? His first patient was a lad of fourteen years; he secured an anatomically and functionally perfect result, except for 0.5 cm. shortening, and moderate loss of abduction, which inconveniences him not at all except in gymnastic exercises. Any reasonably healthy patient up to sixty years, perhaps older, will stand this method. Even in the case of impacted fractures with deformity, in such patients, the position of the fragments should be improved by this method.

Next, in the case of patients who cannot endure such radical treatment, the surgeon should not wash his hands of all responsibility for securing a useful limb. If they are abandoned to themselves non-union is inevitable. For these cases no method is so satisfactory as that of Phillips, Maxwell and Ruth. Under this treatment, which can be instituted in every case, no matter how feeble the patient, a certain proportion of fractures, even when entirely intracapsular, will result in union without impaction, *provided one first reduces the fracture.* Attention must be given to flex the hip up to about a right angle, make vertical extension upward, and finally bring the limb down in abduction and inversion; then apply the Phillips dressing, with an apparatus like Volkmann's sliding splint, to prevent outward rotation of the limb.

Old fractures at the hip, with non-union, usually are the result of inefficient treatment when the fracture was recent, as has been repeatedly pointed out here by Dr. G. G. Davis. Such patients deserve to be treated more energetically than heretofore. Many of them are otherwise sound physically. Two operative procedures are open to us: one for patients who will endure long fixation, the other for those who will not. (1) The speaker had done three bone-peg operations for non-union: the first patient was a man of 30 years, and is the only one

with an entirely satisfactory result. He has some shortening and a little limp, but with good solid union was able to return to his work less than a year after operation. The second patient was 42 years old, and though he seems to have solid union, without much shortening, he seems to have no intention of returning to work so long as he can find someone to support him. The third patient, aged 52 years, returned to work (cigarmaker) about six months after operation, and though he uses a crutch on the street, requires no support walking about the house. (2) In patients incapacitated by non-union of neck fractures there is another method of treatment suitable for those who cannot endure long confinement to bed after operation. This is simple excision of the head fragment, as advocated by Lambotte. The patients can then be gotten out of bed in ten days or two weeks, and though walking with a limp, and perhaps requiring a crutch, are said to be markedly relieved of their pain and disability.

Finally, in regard to fractures of the shaft, he inquired of Dr. Estes whether he thought the condition of the soft parts (in simple fractures with much swelling) is improved by early operation, say on the first to third day, or whether it is better to wait until the swelling has subsided of itself, which may be in such cases as late as the fifteenth day. Lambotte claims for the operative treatment of recent fractures, when once the form of the bone has been restored by an absolutely rigid support applied directly to the shaft, that it enables the surgeon to disregard the bone and to take care of the soft parts as if no fracture had existed. He goes so far as to say that he believes that when a femur has been properly plated, it would be possible for the patient to walk on it the next day; but he adds that it is not expedient to make the experiment. This theory (that rigid fixation of the bone enables one to eliminate a fracture as a factor in the subsequent treatment and to pay proper attention to the soft parts) is seductive, but in practice it cannot always be carried out; and in most fracture operations, especially those involving the femur, external retentive apparatus is required, and in difficult femur cases he had seen Lambotte himself apply plaster-of-Paris dressings. Yet he believed that when a plate tears out it is the fault not of the plate but of the surgeon, who did not put it on correctly. In most such cases one or two screws have been used, where there should have been six or eight; or else the plate has not been placed across the obliquity of the fracture, so as to bring the pull of the fragments in a plane at right angles to that in which the screws are inserted. In cases where the fragments are difficult to retain, there need be no limit to the amount of internal fixation appliances employed; several

plates may be used, or the plates and fragments both may be encircled with wire. So long as rigid fixation is secured, so long as the metal is sufficiently covered by the soft parts, and so long as no infection occurs, there is very little likelihood of the plates subsequently requiring removal. Of course a plate *may* work its way out years later. Dr. Edward Martin had told him of a patient who came to him seventeen years after Dr. John Ashhurst had inserted a plate in his leg; only after that long interval did it begin to cause trouble. But even if a plate may remain quiescent for so many years and then begin to work its way out, one does not have to abandon the use of plates on that account. They are in my opinion the most reliable means of fixation for recent shaft fractures.

DR. ESTES in closing, said that the Steinmann nail is being used much abroad at present in the cases of terrible shattering of limbs, and with excellent results. This frequent use is because of its easy application.

In treatment of fractures of the neck of the femur the most satisfactory treatment is by the old Hodgen splint. By this method any degree of abduction desired can be secured. It also carries out the idea of Murphy, by bringing the two fragments of the bone together. He agreed with Dr. Roberts in what he has said concerning the open operation. But the men who treat fractures most, who have the largest clientèle of fracture practice, are doing the open operation more and more. It seemed to him that the revelations of the X-ray have rather disturbed former belief in our excellent results. His paper stated that there was always danger of infection in the open operation and that always should one attempt reduction by the closed conservative procedure before attempting the open method. After proper reduction, proven by skiagram, there is no reason for doing the open operation, provided one can hold the fragments by some apparatus.

The fascia fixation mentioned by Dr. Roberts is excellent in some bones, but is not sufficiently rigid in the large bones.

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