N. H. LINDSAY: FOUR CASES OF FRACTURED PELVIS.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 1.—Case I. Symphysis pubis wired. Nothing else to note. The dark shadow to right and above symphysis is due to a drainage tube.

FIG. 2.—Case II. Right acetabulum driven into pelvis. Fracture of right pubic bone below the symphysis.

FIG. 3.—Case III. Fracture of left ischium in three places.

FIG. 4.—Case IV. Double fracture of right pubic bone with upward displacement of right side of pelvis at symphysis pubis and right sacro-iliac joint; also fracture of right ilium adjacent to sacro-iliac joint.

ARNOLD K. HENRY: THE HINGED BONE-GRAFT.

FIG. 1.

FIG. 2a.

FIG. 2b.

FIG. 1.—Child's foot hinge-grafted two and a half years previously for extreme calcaneo-valgus deformity due to paralysis. The arrow points to the hinge in the lateral graft.

FIG. 2a.—Adult foot hinge-grafted fourteen months previously for "dangle-foot." The arrow points to the hinge in the medial graft. The position of the lateral hinge is shown by the broken line.

FIG. 2b.—The same foot, seen from the side, showing the strong development of the two grafts. The hinges are not seen.

imperfect functional result," and "contraindicated in young children." The end-results, too, of tenodesis that I have seen have been mediocre, while other procedures are either mutilating or less simple of performance than the operation of hinge-grafting.

Makers of artificial limbs realize the disadvantage of a foot fixed immovably to the leg, and they provide limbs with a slight degree of movement at the ankle-joint. I believe that some mobility is equally desirable in the living foot, and that while bony fixation at right angles to the leg is good, a stable foot with a few degrees of movement in the vertical plane is better. This can easily be got, in the most unstable feet, by means of hinged grafts.

Figs. 2a and 2b show x-ray pictures of a foot hinge-grafted fourteen months ago; the whole lower limb was paralysed by a stab wound of the cauda equina. The foot is at a right angle to the leg, and the hinge grafts give a range of about 5 degrees of movement in the vertical plane, which allows the leg to rock naturally on the foot when the patient walks. The rest of the limb is stabilized by means of a skeleton splint. It is particularly important in "dangle-foot" to bring the grafts across the mid-tarsal joint.

The Operation.

The following points are worth noting.

The Position of the Patient for Operation.—The prone position is best; this gives access to the backs of both malleoli, and allows the graft to be cut from the opposite tibia after flexing the knee (Fig. 3).

FIG. 3.

Skin Incision.—Time may be saved by making the three skin incisions—one extending to the foot from behind each malleolus, and one over the opposite tibia—in succession at the beginning of the operation. The scalpel is then discarded, and a second scalpel is used for the deep dissections. Side-curtains are fixed to the neighbouring wounds behind the ankle by means of Michel clips, to avoid a double encumbrance of towel forceps.

The Graft Bed.—Medially the tibialis posterior, and laterally the peronei, are displaced from their grooves, which are deepened by a gouge to form beds for the grafts; each groove must cross the mid-tarsal joint. The grafts are held in position by stitching the tendons over them; four stitches suffice for each graft. I do not permit either my own skin or the patient's to come in contact with the outer surface of my gloves. By this precaution I avoid the elaborate game of skill in which wound, graft, and sutures are treated as untouchable, and time is saved.

The Grafts.—I cut the osteo-periosteal strip, which is outlined by a scalpel, with a chisel of the same width as

FIG. 4.

the subcutaneous face of the tibia—entering the chisel, bevel up, to the required depth, and then using it, bevel down, to shave off the strip (see Fig. 4). Then, holding the strip with tissue forceps by the four corners, I divide it longitudinally with straight scissors into two equal grafts. It does not seem to matter whether the graft has the pliability of wet paper or the spring of a hazel twig; the result is the same—a hinge, just distal to the malleolus, is ultimately formed in either case. The patient whose

radiograph is shown in Fig. 2a, where the hinge is clearly seen, was grafted with tough, springy grafts, while in the girl's foot (Fig. 1) the grafts were flaccid.

Skin Closure.—Time is again saved, and contamination from skin is avoided by postponing the closure of all three wounds till the end of the operation. Michel clips are used instead of sutures, since the clips provide no path for infection. Rutherford Morison's invaluable thick layer of sterile boric powder is applied as a dressing.

After-Treatment.

The foot is bandaged for a week at right angles to the leg in an ordinary soft bandage; this permits the small degree of movement that produces the hinge in each graft. The Michel clips are then removed and the bandage reapplied. If there is any tendency to foot-drop or lateral deviation, or if the patient is unlikely to co-operate by remaining in bed, the limb is fastened to a long back splint, with the foot at right angles to the leg. A month after operation a plaster casing that extends above the knee replaces the bandage or the splint, and holds the foot in the same position. The patient is made to stand beside his bed on the plaster casing for increasing periods of time. The casing is removed two months after the date of operation, and the patient is encouraged to walk.

The Advantages of Hinge-Grafting.

1. The stability given by these bony hinge grafts improves with use; they do not stretch like tendons that are fixed or transplanted.
2. The after-treatment is simple: final and satisfactory function is obtained within three months—a time which compares favourably with the long period of care and re-education required after transplanting tendons.
3. If relevant muscles can still contract, the hinges allow movements of dorsiflexion and plantar flexion.
4. Hinge-grafting does not—like astragalectomy—disfigure the ankle.
5. It gives excellent results in "dangle-foot."
6. For talipes calcaneo-valgus it is the method of choice—not, I submit, another poor best among a disheartening array of forlorn hopes; but a thoroughly satisfactory treatment of the deformity.

REFERENCE.

Henry, A. K.: *British Medical Journal*, April 9th, 1927, p. 663.

FOUR CASES OF FRACTURED PELVIS.

BY

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(With Special Plate.)

THE interesting features about the following cases are the manner in which the lesions were produced, illustrating the different types of fracture caused by varying types of violence, and the fact that all four patients were admitted to hospital within a fortnight of each other.

CASE I.

T. D., a railway guard, aged 48, was admitted to hospital on January 17th, 1930, with a fracture through the symphysis pubis with rupture of the bladder. It was an incomplete fracture produced by compression violence. The patient fell from a station platform, and was caught between the platform and the running board of a moving train.

The following symptoms were exhibited. Extreme pain on compressing the iliac crests; inability to move the lower limbs without causing severe pain, but no evidence of nerve lesion; urgent desire for micturition; passage of a catheter withdrew a few drops of blood-stained urine.

The same day, after x-ray examination, the bladder was explored and the pubic symphysis exposed. A linear tear, a quarter to half an inch in length, at the junction of the anterior surface of the neck of the bladder and urethra was found and closed. The left superior ramus of the pubis was displaced downwards and backwards, being separated from the right superior ramus by about two inches. The displacement was corrected by manipulation and the fragments wired in position. A catheter was passed and tied in. Micturition was normal within forty-eight hours.

Further treatment consisted in the application of a stout pelvic binder and nursing on fracture boards.

CASE II.

R. M., a painter, aged 38, was admitted on January 28th, 1930, with a fracture through the floor of the acetabulum and right pubic bone. It was an incomplete fracture produced by compression violence. The patient fell from a ladder on to his right hip. When admitted he was suffering from shock and severe pain in the right hip and groin.

Examination showed that active movement of the right leg was possible but extremely painful. There was no tenderness on pressing the iliac crests together. The right leg was in a position of marked external rotation, full extension, and slight adduction. There was marked flattening over the right great trochanter and relaxation of the ilio-tibial tract, but no palpable abnormality. Shortening to the extent of one inch was present. There was no sign of injury to pelvic organs or nerves.

CASE III.

T. C., a window-cleaner, aged 60, was admitted on January 24th, 1930, with a fracture of the left ischial tuberosity. It was an incomplete pelvic fracture due to direct violence, and was produced by a fall on to the buttocks from an 18-foot ladder.

The lower limbs appeared normal in position and movements, but the latter caused pain in the region of the left sacro-iliac synchondrosis. Marked tenderness was present on pressing over the left sacro-iliac joint, and also per rectum in the region of the left ischial tuberosity. There was no sign of injury to the pelvic viscera, vessels, or nerves.

CASE IV.

B. W., collier, aged 42, was admitted on February 4th, 1930, with a fracture through the superior and inferior rami of the pubis on the right side and through the ilium on the same side, lateral to the sacro-iliac articulation; it was a complete fracture of the pelvic ring.

This patient was caught by his clothes in a revolving shaft, lifted in the air, and then violently dashed to the ground. On examination the right leg was held in a position of slight flexion and external rotation, with some flattening over the greater trochanter on that side. There was severe pain about the pelvis on moving the lower limbs, but no loss of function in the hip-joints. Compression of the iliac crests also caused severe pain, and slight crepitus could be elicited. Shortening of the right leg up to one inch was present.

Treatment of the foregoing cases consisted in proper immobilization of the injured areas by the use of sand-bags, where necessary, and tight binders. In Cases iii and iv extension was applied—in the former to both legs, in the latter to the right leg, counter-extension being maintained by raising the foot of the bed.

I am indebted to Mr. Fuller, Mr. Mumford, and Mr. Terry for permission to publish these cases.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CHLORETONE POISONING.

A RECENT paper by Professor J. J. van Loghem of Amsterdam¹ recalls to my memory the following case of chloretone poisoning which I met in my practice.

One morning about two years ago I was called to attend a Dutch lady who had crossed the Channel the night before and had taken Mothersill's remedy against sea-sickness. Her only complaint was that she had to lie in bed, for when she got up she had a feeling of having lost her balance and was unable to walk straight; when she tried she had a sensation as though she was walking on glass. She had no sickness or any other gastric symptoms. On clinical examination I found dilated pupils, all the well-marked signs of cerebellar disturbance, and the gait typical of a vestibular affection. Owing to her nervous condition she had a rapid pulse, but otherwise there was no evidence that any system except the central nervous system was affected.

After she had rested in bed for about twenty-four hours she was completely restored to her normal health. The only treatment I gave her was to administer a sedative and an aperient.

There was no doubt in my mind that the patient's symptoms had been brought about by an overdose of chloretone, which is the principal ingredient in Mothersill's remedy. I believe that 4 grains of chloretone are present in each powder. The dilatation of the pupils may, I think, have been due to the action of the scopolamine, which, according to Dannenberg,² is present in Mothersill's remedy. Chloretone poisoning is rare. Dr. W. Essex Wynter³ and Dr. Donald Core⁴ described cases in 1913.

¹ *Nederl. Tijdschr. v. Geneesk.*, 1930, 74 1 5, p. 505.

² *Zeit. f. Hals, Nase und Ohren Heilkunde*, 1928-29, 22, 123.

³ *Lancet*, May 17th, 1913, p. 1375.

⁴ *Ibid.*, May 31st, 1913, p. 1557.

Two patients treated by the former showed signs of inco-ordination, vertigo, dullness of sensation, a sense of effort in movement, and mental confusion. The latter treated three patients in whom mental symptoms—incoherence of thought and speech passing to dullness and almost imbecility—supervened.

London, N.W.8.

HERMAN S. N. MENKO.

AUTO-BLOOD-TRANSFUSION.

IN his interesting article in the *Journal* of November 30th, 1929 (p. 1006), on auto-blood-transfusion in two cases of ruptured tubal pregnancy, Mr. H. B. Butler mentions Burch's four personal cases of auto-transfusion, one of which was after splenectomy, when much blood had been lost. The following case came under my observation while house-surgeon in the Glasgow Royal Infirmary in 1925.

A young man, aged about 26, who had been a patient on the medical side suffering from splenomegaly with anaemia, was brought to Mr. Kay's wards for splenectomy. The operation, performed under splanchnic anaesthesia and chloroform, was one of much difficulty owing to adhesions, as well as to the great size of the spleen.

I was instructed to stand by, scrubbed up as for assisting, and when the spleen was removed it was handed to me to invert over a beaker containing some sodium citrate solution. The shrinkage of the spleen as the blood ran out—about 1½ pints—was very marked. By the time it had ceased to run a senior assistant had the preparations ready for transfusing it back to the patient, while the surgeon finished closing the abdomen. The patient made an excellent recovery.

I am indebted to Mr. James Taylor, F.R.C.S.Ed., honorary surgeon, Glasgow Royal Infirmary, who performed the operation, for permission to record this case.

TINA GRAY, M.B., Ch.B.,

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HYPERPYREXIA IN MEASLES.

THE following case of hyperpyrexia in the course of an attack of measles seems to me to be of more than usual interest.

On the morning of March 23rd I was called to see a child, 2 years old, suffering from measles. The rash was developing, and I noticed nothing unusual about the attack. The following morning, however, the father asked me to come at once as he thought the child was in a fit. I accompanied him to the house, and found the child in an apparently dying condition. Her skin had a pale slate colour; she had no convulsions and no rash. Every now and then she emitted a long-drawn sigh. When I took her temperature the mercury went up to 110° F.; it might have gone higher, but that is the limit registered by my thermometer. I at once put the child in a tepid bath and rapidly cooled the water down, letting it get quite cold. The temperature soon came down to 101° F., and I then put the child back in her cot and covered her with a light blanket. The temperature remained under 102° F., and she made an uninterrupted recovery. On the day following the attack of hyperpyrexia the rash appeared again, and a week after the date when I was first called in the temperature was normal and the child seemed well. There were no other complications throughout the illness.

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Reports of Societies.

TREATMENT OF GENITAL PROLAPSE.

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on March 21st, with the president, Mr. ARTHUR GILES, in the chair, Professor FLETCHER SHAW read a paper on the treatment of genital prolapse.

Professor Shaw remarked that there was now general agreement that the uterus was held in position by the pelvic floor, and that prolapse of this organ, or of the vaginal walls, could only occur if the floor tissues were damaged or weakened. The rational treatment for prolapse, therefore, was to repair and strengthen them by colporrhaphy. Professor Shaw gave a short history of the operation, recalling the fact that Donald commenced to treat prolapse of the uterus in this way in 1888, since when the operation had been almost the sole method of treatment of this condition in the Manchester school. As the result of investigating a series of cases treated from