Liston. For the sling loop is so oblique that it does not cross these vessels at all.)

10. Level the stretcher. Tie a bandage round pelvis and stretcher. Lay a rifle, bolt removed, along the outside of the limb to steady it. Bandage it in position. The patient is now ready for his journey.

A SPLINT FOR FRACTURED SHAFT OF THE FEMUR.

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THE apparatus is designed with the two-fold object of keeping the limb at rest—that is, with hip and knee slightly flexed—and of producing an extension which acts in the line of the femur. Such an extension may be brought about by pin transfixion of the lower end of the femur, or preferably of the head of the tibia, for it is to that region that the hamstrings are inserted, the semitendinosus and semimembranosus to the tibia, the biceps to the head of the fibula. These are the muscles which act as the main cause of the shortening, of such frequent occurrence in fractures of the femur.

The apparatus consists of (1) a metal framework (Fig. 1). The limb is slung by flannel bandages, rubber supports,

FIG. 1.

or perforated zinc from the bars ABG , $A'B'C'$, the knee being situated opposite B , and the line of the femur parallel to AB and the line of the tibia parallel to BC . A pulley, c , is fixed in a bar between c and c' . (2) A cradle, D , travelling along the bar, KL , and carrying two pulleys, E and F . (3) A leather collar, lined with thick felt and strengthened on the outer side by bands of thin steel, acting as springs to prevent lateral pressure on the head of the fibula. The collar fits loosely round the leg at the level of the head of the tibia. A metal ring, from which one of the pulls in the limb is taken, is fixed in the upper surface of the collar.

Represented diagrammatically (Fig. 2) the force desired is one, y , acting in the line xoy . By the parallelogram

FIG. 2.

of forces y may be resolved into two forces, x and z , acting in the directions ON and OZ , x and z being proportionate to y as the length of the lines ON and OZ are to the lines OY . The angles are such that, when the resultant force acts in the line OY , z is twice x . The force x is produced by a weight pulling over F and E (Fig. 1) on to the ring attached to the leather collar. The force z is obtained by a weight acting over G on to a stirrup fixed to a strap extension applied along the sides of the leg.

Method of Application.

A strap extension with stirrup is put on the leg in the usual manner a couple of hours or more before it is proposed to put the limb up in the splint. Gauze and glue are better than adhesive strapping. Care must be taken that the strapping be not prolonged downwards below a point 2 in. above the malleoli or upwards on the outer side of the leg above the neck of the fibula.

If the patient has been in a straight splint for any length of time a general anaesthetic will be necessary. The knee and thigh are semiflexed and slung by flannel bandages. The slings are adjusted until the long axis of the thigh lies parallel to AB , and the long axis of the leg parallel to BC , and the knee lies opposite B . The slings may now be replaced by perforated zinc if thought desirable. The leather collar is buckled round the upper part of the leg, so that the ring lies above the head of the tibia. If the felt be too thin a little wool should first be placed round the leg. The greatest care must be exercised to avoid the slightest pressure on the head of the fibula. A cord is fixed by one end to the ring on the collar, and the other end is passed over the pulleys E and F , and attached to a weight. In this way a vertical pull is exercised through the ring. The weight acting over c is now attached to the extension on the leg.

Until the shortening has been overcome a resultant pull of about 25 lb. should be employed—that is, a vertical pull of 12 lb. acting over F and E and a pull of 24 lb. acting over c . These weights will be necessary for about forty-eight hours, after which they may be reduced by 50 per cent. or more. If it be found undesirable to have so large a weight as 12 lb. hanging at F , a system of multiplying pulleys can be attached to the collar, and the weight diminished accordingly.

Any tendency that the whole limb may have to ride forwards, or for the apparatus to press into the groin may be counteracted by placing a counter extension of strapping on to the sides of the upper part of the thigh, fixing it to the posterior end of the splint below A and A' . The foot is kept in position by a sliding foot-piece or a toecap. When the skin is too tender for strapping, the whole leg up to the knee may be put in plaster-of-Paris and the extension incorporated in this. The slings may be removed for dressings without unduly disturbing the position of the limb. The patient may be propped up in bed or allowed to lie flat as may be desired.

Advantages of the Apparatus.

1. Ease of application.
2. The limb is kept in the position of rest.
3. A pull is obtained along the line of the femur which is necessary to secure the best position of the fragments.
4. No open operation is required, and the risk of septic infection of fresh tissues is avoided.
5. The ease with which dressings may be performed.
6. Added comfort to the patient.

Disadvantage.

The possibility of a pressure sore occurring over the head of the fibula. This will not occur if the collar be loose and the springs strong. If the patient makes any complaint, the collar can easily be unbuckled and the part examined, and any readjustment made.

I am indebted to Major L. Bathe Rawling for much helpful criticism. The splints have been made for me by the Kensington War Supply Depot.

P. CARNOT and H. BONDOUY (*Compt. Rend. Soc. de Biol.*, 1918, lxxxi, p. 487) have found by observations on man that the caecum possesses a considerable absorptive power for water, sugars, and albuminoids. Some very soluble substances, such as peptones, do not go as far as the caecum, whereas other very readily reabsorbed substances, as sugars and albuminoids, penetrate the caecum, but are not found in the rectal evacuations. They conclude that the caecum plays a far from negligible part in digestion, that the suggestion of certain biologists and surgeons as to the uselessness of the large intestine does not correspond with physiological facts, and that resection or exclusion of the large intestine leads to a great physiological waste of valuable alimentary substances.