version, and the lodgement of the half-breech of the fetus within the placental girdle (Fig. 3). At 7.15 p.m., two hours after version, the stillborn female child came through the placenta. The fetus and placenta together weighed 6 lb. 13 oz. The patient recovered. The total loss of blood had not been severe.

The prominent incidents of the labour were, first, the delay early in the first stage due to the bulk and area of the placenta within the obstruction zone; and, secondly, the abolition later of obstruction. During the second stage the freely perforated and damaged placenta as a girdle above the pelvic brim permitted the expulsion of the fetus.

The fetal sacrifice involved in this effective method of providing for maternal safety cannot be avoided by the alternative of cervical dilatation by the Champetier de Ribes bag. Cervical dilatation does not abolish placental obstruction and placental damage; these are potent causes of stillbirth, and their effects become vividly apparent in the specimen illustrated in Figs. 4 and 5, which establish the reality and gravity of placental obstruction and placental damage.

Low Lateral and Overlapping Placenta Praevia (Thirty-fifth Week).

A 4-para, aged 29, was admitted into the Maternity Hospital on January 2nd, 1916, at 10.30 a.m., with slight haemorrhage, which gradually increased. At 4.30 p.m. a Champetier de Ribes's bag was inserted after perforation of the membranes; when the bag was placed the separated lower third of the placenta was discovered, thickened and indurated by thrombosis (Fig. 4); it hung down, over and below the promontory in the sacral hollow, diminishing the available conjugate; the head of the fetus remained loose above the brim.

At 5.15 p.m. the cervix was fully dilated; the Champetier de Ribes bag was removed; the head was still lying loose above the brim. Bipolar version was preferable to forceps. Fetal heart then heard, 130. The thick placental mass was clearly an intra-pelvic obstruction, $1\frac{1}{2}$ in. to 1 in. in thickness. At 8.20 p.m. the dead-born male fetus (5 lb. 11 oz.) was spontaneously expelled; also the placenta, 1 lb. 5½ oz. The mother recovered.

Placental obstruction to labour is incontestable. Damage to the placenta occurs.

In the presence of placental obstruction the rupture of the membranes is itself an incomplete step in treatment, to be followed by a usually slow labour and a stillbirth. The latter, as the rule, is even to be expected when the more favourable vertex presentation has been maintained and perhaps an accelerated forceps extraction adopted.

Variations in the bulk and area of the praevial placenta and in the extent of the damage to it are compatible with variations in their effects on the destruction or preservation of fetal life during labour. Major and minor degrees of variation are clinically accessible. Intermediate degrees are likely to introduce confusion.

So far the inquiry has dealt with a viable fetus at the onset of labour. In cases of placenta praevia in which intrauterine death has preceded the onset of labour prolapse of the placenta exerts an insignificant bearing on the conduct and result of the labour.

Two examples may now briefly be alluded to as illustrations of harmless placental obstruction.

Placenta Praevia with Prolapse of the Placenta. (Two Cases.)

Case 1.—In this case the larger part of the placenta was found early in the vagina; the smaller portion still attached anteriorly within the uterus.

Bleeding and labour pains were noted at 10 a.m. on March 29th, 1911; next day the patient was admitted to hospital at 11 a.m. The loss of blood was then free and there was shoulder presentation, right dorso-anterior; internal podalic version was effected. The spontaneous expulsion of the placenta preceded the assisted delivery of the macerated male fetus, which weighed 6 lb. 6 oz.

The patient, aged 30, had had five children and one abortion. The menses had been suppressed since the end of July, 1910.

Case 2.—A multipara, aged 32, with a record of eight previous normal labours, stated that the last menstruation ceased on October 10th, 1914, and that on May 3rd, at twenty-nine and a half weeks, labour pains and bleeding commenced simultaneously at 12.30 p.m. The membranes ruptured at 2.30 p.m.; the haemorrhage gradually lessened, and at 4.45 p.m. it had practically ceased. At 6 p.m. there was almost full dilatation, and the placenta was in the vagina appearing at the vulva. At 6.20 p.m. the fetus was expelled in the membranes; its apparent age was six and a half months. There was not at any time an excessive blood loss. The rupture of the membranes is situated a little more than one inch from the margin of the placenta.

Occasional Difficulties in Diagnosis.

Fig. 6 shows an organized tongue-shaped clot continuous with the placental margin from a case of lateral placenta praevia. The fetus after version was expelled alive and survived. The value of the specimen lies in the connexions and the firmness of the clot, indistinguishable from the thrombosed placenta until the microscope had been used.

Large, Flattened out Encephalo-meningocele.

In this case the condition simulated prolapse of the placenta, and was rare in its extent and conformation. (Fig. 7.)

SUMMARY.

1. The initial haemorrhage is a warning to be taken seriously. Equipment is required, also prompt transference of the patient into a hospital or a nursing home. To quote a current war expression: it is not one man's or one woman's business to stand by whilst delay adds its dangers.

2. The viability of the fetus at or after the thirty-sixth week of gestation is acceptable; induction of premature labour has practically proved this; Caesarean section is unlikely to disprove it.

3. The bulk and area of placenta praevia in the obstruction zone can be approximately estimated by examination. This obstruction may be an important item in directing the management of the labour.

If early opportunities and complete equipments are obtainable, the three particulars I have mentioned are more consistent with maternal and fetal safety by Caesarean section than by any other method of treatment of placenta praevia. Debatable matters have developed amid the large number of Caesarean sections already published. The defects and hazards of the earlier operations have been recognized. Opposition will wane with better selection.

The present obstetrical attitude lacks neither prejudice nor proof. Caution is cherished by the lapses in opportunities and the gaps in equipments yet to be banished by an ever-increasing co-operation.

My thanks are tendered to colleagues and others of my professional friends for their gifts to the teaching equipment of my department. Dr. Hendry, the museum sub-curator, has superintended the preservation of the specimens, and Mr. J. Tenbosch, the laboratory assistant, has taken the photographs. Their efficient services are much appreciated.

THE PREVENTION OF POSTERIOR BOWING IN COMPOUND FRACTURE OF THE FEMUR.

BY

C. BERESFORD ALEXANDER, CAPTAIN R.A.M.C.(T.),
ALDER HEY SPECIAL MILITARY SURGICAL HOSPITAL,
LIVERPOOL.

THOSE who have had considerable experience during the present war of gunshot wounds associated with compound fracture of the femur assert that the most difficult deformity to avoid is posterior bowing.

This is especially the case when there is a suppurating posterior wound which needs frequent dressings. Most are agreed that the best appliance for such cases is the Thomas bed knee splint with extension; in this the thigh is supported with strips of bandage slung across between the two side bars of the splint; it is attempted to correct the tendency for posterior bowing either (a) by tightening the slings under the site of fracture, or (b) by inserting a back splint and pad between the slings and the thigh, or (c) by bending the splint opposite the knee.

In method (a) every time the posterior wound is dressed the bandage slings have to be removed and fresh ones inserted; each step in this procedure, if performed properly, requires special care, is tedious, makes the dressing of the case long, and even when conscientiously done often fails to prevent the occurrence of the backward deformity.

Method (b) is open to the same objections, and, further, the pads and back splint tend to move; the results seen after treatment by this method are, however, more satisfactory than by (a).

Method (c), if one may judge by some of the after-results seen at Alder Hey Hospital, does not always do all that some have claimed for it to correct the deformity.

under discussion, and it requires the same careful adjustment and takes the same length of time for dressings as (a).

In order to eliminate these and other objections I have devised the splint shown in the accompanying drawings. It is suitable for all fractures in the lower two-thirds of the femur.

In effect it is a double Thomas bed knee splint, an outer and an inner. The outer is the ordinary Thomas splint, and to its end the extension is fixed in the usual way. At the junction of the ring with the inner bar, and at the same level on the outer bar, is a pivot, to which is attached another—the inner Thomas splint (minus its ring); it fits easily within the outer, and is bent four inches from its lower end, so as to raise the whole off the bed (Fig. 1).

FIG. 1.

By raising the outer splint by its end the patient's thigh and leg are also raised, but the inner splint turning on the pivots remains resting on the bed (Fig. 2).

FIG. 2.

On this inner splint are metal slings made of the usual perforated zinc, which are held in the proper position by a few turns of narrow strapping wrapped round the bars above and below; if the posterior wound be small, one sling only is necessary. On the sling or slings a large pad of cotton-wool is placed in such a position that when the outer splint is lowered and both are in the same plane, it is under the site of the fracture. The rest of the limb is slung in bandage supports, taking the usual precautions against genu recurvatum by another smaller pad beneath the knee.

It will be seen that all the pads and slings which support the limb are on the inner splint, although in practice it is found useful to have one sling under the knee on the outer splint, not to act as a pad but rather as a support during dressing.

To dress the posterior wound, the outer splint is raised and held by the nurse or orderly; by this means flexion at the thigh is possible to 50 or 60 degrees, and a good view of the wound obtained. The pivoted inner splint with its

FIG. 3.

pad and slings remains on the bed. The pad, if soiled, is removed, and a fresh one of the same size put in its place. If necessary, also, the zinc slings can be removed quickly and boiled or replaced by similar ones already sterilized. The outer splint is then lowered again, and is fastened at the end to the inner by clips or a piece of bandage (Fig. 3). In most cases it is unnecessary to fix the dressings by

bandages, as they are held in place between the pad and the thigh.

It may be argued that while the outer splint is raised the fracture has no support except that which is provided by the extension. This is, however, sufficient for the short period during dressing, and in addition it may be noted that the extra tension put on the hamstrings by flexion of the thigh, the knee being extended, in itself tends to lessen posterior bowing.

I have found by using this arrangement that dressings can be done in less than half the time and with a great deal more ease, that the pads are always in the proper place and remain fixed there, that there is no discomfort to the patient, and that all tendency to posterior bowing is obviated.

It will be obvious that although this splint is primarily designed for cases with a posterior wound it can equally well be applied to those in which there is only an anterior wound which is being chemically sterilized. It is also suitable for those numerous cases met with in this country which are already healed, the bone being recently united with little shortening but posterior bowing and in which there is still tenderness on pressure over the site of fracture. This tenderness is an exceedingly important clinical sign, and indicates, no matter how long since union commenced, that the callus is still soft and can be moulded, and that the patient, even after the deformity is corrected, should only be allowed to walk in a caliper splint.

I would point out also that the method is unnecessary in simple fracture, where perfect results can be obtained by a straight Thomas bed knee splint with fixed extension and coaptation splints.

I am indebted to the Inspector of Special Military Surgery, Major-General Sir Robert Jones, C.B., A.M.S., for permission to describe this splint.

(It will be noticed that the ring of the splint shown in the accompanying drawings is too large for the patient on whom it is being temporarily used. This is a defect which it is important to avoid whenever possible.)

DELAYED PRIMARY SUTURE OF WOUNDS.

BY

H. H. HEPBURN, M.C., TEMP. MAJOR R.A.M.C.

THE medical history of the war will probably acknowledge "delayed primary suture" as the fashionable treatment of wounds for the year 1918. It is a procedure applicable also to casualty work of civilian practice. This method of treating wounds, which came into general use in the British military hospitals in the early summer, was, I believe, first extensively employed by the French surgeons, who proved its worth. There has been a considerable range of variation amongst different surgeons as to the time limit of what should be termed "delayed primary suture" and what "secondary suture." The period for delayed primary suture, hereafter referred to as D.P.S., might be defined as any time up to the appearance in a wound of granulations visible to the naked eye; but the term should, in my opinion, be confined to those cases in which suture is undertaken on the day of removal of the original packing, all others being classed as secondary suture.

The success of delayed primary suture depends largely upon three factors: (a) The thoroughness of the primary operation of cleansing or excision of the wound, (b) careful attention to technique at the operation of suture, and (c) post-operative care, especially as regards rest and splinting. Owing to the necessity for rapid evacuation it has been impossible to follow all my cases of D.P.S. to a conclusion, but for the purpose of obtaining some definite information on the subject I have kept under observation fifty consecutive cases, in each of the three groups referred to below, until the wounds were completely healed, or the degree of failure established beyond doubt.

Before proceeding to a discussion of the second operation, with which we at the base hospitals are most concerned, I will deal briefly with the preparatory or primary operation. The three ideals to be aimed at in the operation are: (1) The removal of all foreign material and disorganized tissue; (2) sterilization; and (3) absolute dryness of the wound.