

carefully cleaned, and a drop of oil applied to the leather discs which cover them.

If preferred, a two-water-way stop-cock (Fig. 6) may be substituted for the vent-piece; and it possesses the great advantage that with it the operator can pump either in or out, while the valves permit the fluid to flow only from within outwards.

The most important advantages claimed by Dr. Rasmussen for his instrument are briefly the following:—

1. The operation with it is perfectly free from danger.
2. With it the fluid can be completely drawn off or nearly so, if desired, without the entrance of any air into the pleural cavity.
3. It is possible to remove even the smallest collections of fluid, whether such exist free in the pleura or are encysted.
4. The fluid can be drawn off slowly or quickly, at pleasure.
5. Relapses are far less frequent than after the performance of the ordinary operation of thoracentesis.
6. The instrument is so small that it does not frighten the patient, and the method of using it is so simple that the operator can almost dispense with any assistance.

NOTE.—The instrument above described may be had of Nyrop, the eminent mechanician of Copenhagen, case included, for a sum of 12 rix-dollars, *i.e.* 27 shillings of our money.

#### ART. VII.—*On a New Apparatus for the Treatment of Fractures.*

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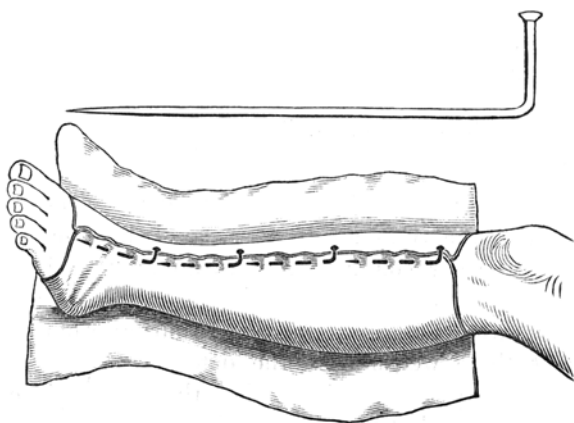
IN describing and bringing under the notice of the profession a new mode of using plaster of Paris in the treatment of fractures, I lay no claim to originality. I merely wish to give the publicity which the pages of this Journal afford to a method of treatment which I have found convenient and efficient. A more extended trial will, I am sure, demonstrate its advantages, and that trial I now ask for it.

We are accustomed to summarize the treatment of fractures of the extremities in the four words: *Extension*, *Counter-extension*, *Co-aptation*, and *Retention*. Every practical surgeon knows and appreciates the difficulty of fulfilling the last of these indications. The variety and multiplicity of splints, bandages, and other means

of retaining the fractured ends in apposition, sufficiently testify to the importance of the object to be secured and the attention bestowed on it. In Jervis-street Hospital, where patients with fractured limbs are admitted almost daily, it is a matter of necessity to practise some method of treatment which will do full justice to the sufferer, whilst involving the least trouble and loss of time to the surgeon. Since the introduction of starch and plaster of Paris bandages, the benefits conferred by these have been freely taken advantage of, but their use in the ordinary way is attended with very serious objections. The first of these is the trouble and time spent in their application; and the next, a still stronger argument against them, is the difficulty of *taking them off*. Even with the facilities afforded by Sentin's Pliers and other resources, the removal of the rigid apparatus is a work of much difficulty. This makes the surgeon unwilling to apply it until the fracture is so far consolidated as to no longer require frequent inspection. In the institution named, neither starch nor gypsum is ever used until about three weeks from the date of the accident, and in most cases during that entire period the patient is confined to one position. Starch bandages, &c., have the great disadvantage of requiring some days to harden, and unless the fractured bone be tolerably well united, or the most constant attention be paid during the time of drying, the ultimate removal of the apparatus may disclose a deformity which is for the remainder of the patient's life a practical illustration of careless surgery. Gypsum hardens at once, but has the same defect in difficulty of removal, and cannot therefore be applied until the period before referred to. The irksomeness and even danger attendant on confinement to a constrained position can scarcely be over-rated, especially in old people, and the chief advantages of the apparatus which I am about to describe are, that it can be used at a much earlier period, and that when applied the patient may lie in almost any position.

In the appendix to the *Army Medical Report* for 1869 (just published), it is described, with an illustration, by Staff-Assistant Surgeon Moffitt, who states that it is used by the Bavarian Ambulance Corps. To make my description more plain, I submit the accompanying engraving by Mr. Oldham, in which some mistakes in the original cut are avoided. Two pieces of flannel, suited to the length of the limb, are cut sufficiently wide to overlap slightly in front. When so prepared they resemble the leg of a stocking cut vertically. One is now laid over the other, and

they are stitched together from top to bottom, down the mesial line, like two sheets of note paper stitched at the fold. They must now be spread out under the injured limb so that the line of stitching corresponds to the back of the calf. The two inner leaves, so to speak, are now brought together over the shin and fastened by long pins, the heads of which are bent as represented by the



full sized one in the illustration. The leg being held firmly, an assistant mixes the plaster with about an equal bulk of water and rapidly applies it, partly with a spoon and partly pouring over the outer surface of flannel *covering the limb*. The two portions of the second layer are then quickly brought over, so as to meet, and the inequalities in the distribution of the plaster are removed before it hardens, by smoothing with the hand. In about three minutes the gypsum sets and the limb is encased in a strong, rigid covering, which gives uniform pressure and support to every part. The edges of the flannel in front can now be trimmed, and the pins withdrawn from the inner layer by seizing their bent heads. A couple of straps or a few turns of a roller make all secure. In order to take the apparatus off it is only necessary to remove the straps, and separate the edges of the flannel, when the two sides will fall asunder, the line of stitching behind acting as a hinge.

The application takes less than ten minutes, the removal about two. Thus, from day to day if necessary, the limb can be inspected, and the splints (for they are no less) re-applied. In cases of compound fracture an opening suitable to the wound may easily

be made. In most cases it is desirable to make a number of perforations with a gimlet, so as to prevent unnecessary heat. The following cases treated within the last month, or still under treatment, illustrate its efficiency:—

CASE No. 1.—Simple fracture of fibula immediately above the malleolus. In this case the patient, a restless, uneasy, middle-aged man, could not be induced to keep his leg in a box or splints, but when the plaster and flannel were applied he expressed the greatest satisfaction. As he was a tailor by trade, and not requiring to stand or walk, I allowed him to leave the hospital at the end of a fortnight, with instructions to wear the plaster for a month.

CASE No. 2.—Fracture of fibula about its centre in a young boy. Apparatus applied at the end of a week, and in a few days he was able to walk with crutches.

CASE No. 3.—Oblique fracture of both bones of leg in lower third, much shortening, rotatory deformity, ecchymosis and swelling. This last sign was so marked that it was not deemed judicious to apply the Bavarian apparatus until the 15th day. The patient, a man about forty years of age, experienced much relief, could keep the limb in any position, and move it so freely that he complained of the weight of the apparatus interfering with his movements.

CASE No. 4.—Fracture of both bones of leg immediately above ankle-joint, with much twisting inwards of the foot. For the same reason as in the last case the plaster was not applied until the twelfth day. While the plaster was setting the foot was kept turned in the requisite direction, and in hardening the correct position was retained. The patient, a young girl, felt quite comfortable in a few minutes.

Two of the above cases, with others since admitted, are still under treatment. In conclusion, I believe it will be found that the thanks of the profession are due to Dr. Moffitt for introducing such a valuable adjunct to surgical appliances.