being quite content to make the result certain, even at the expense of a week or two longer. Passive movements are begun in the ankle during the first week, and during the second the patient is made to move his toes and ankles, thus causing slight movement of the knee itself. On the fourth week slight movement of the knee is begun.

When both limbs have been operated on, a bed is arranged with a sliding middle portion opposite the gluteal region, so as to facilitate the use of the bed-pan, &c. This answers well, the limbs remaining undisturbed. The splint used is a modification of the half-box, with the outer part carried up as a long splint and fixed to the patient's body if he is restless. A bandage is applied from an inch or two below the knee to the upper part of the thigh. The lower limb is left free and the external malleolus is well padded with a thick fold of lint, so as to throw the ankle inwards.

The results, as I have stated, have been very satisfactory, the patients being able to walk with straight limbs, supple joints, and most of them can walk to a considerable distance without fatigue. The first patient operated on, now over eighteen months, could neither walk nor stand for more than five minutes before the operation, and was in a very delicate state of health. When put on his back, and his knees placed together in bed so that they touched, there was a distance of nineteen inches between the internal malleoli. You now see him here, a strong, healthy-looking lad, who informs me that he walked one day lately from Glasgow to Uddingston and back, a distance he reckoned of about fourteen miles, and that without undue fatigue. Another lad, the most weak of the whole, walks a distance of four miles daily from and to his work. The greater majority of the patients operated on have been about fifteen to eighteen years, and in choosing patients for the operation the most suitable age is from eight or nine to twenty years. Of course the deformity may be rectified at an earlier as well as at a later age, but I think that patients from eight to twenty will give the best results.

Reference has been made to the fact that in some instances there is a turning of the foot on its outer side, causing an awkward gait, the toes tending to clutch the floor. After the knock-knee has been corrected, this, as a rule, passes gradually off, especially on exercise—walking and moving the toes. For some time after getting up, after both limbs have been straightened, some state that they feel as if on stilts. This soon passes off. Most patients are rendered several inches higher by the operation.

This paper has already extended to such a length that it leaves little room to do more than mention one or two facts regarding the other deformities included in the heading. I have had five cases of bow-legs, all of which presented the point of greatest curvature just at the lower part of the tibial spine. In these I have divided the tibia on its outer side, and, after doing so, made a simple fracture of the fibula. In four of these the results leave nothing to be desired. One case, has, however, been unfortunate, and ended in amputation, gangrene having set in in the toes. The causes which led to this I do not feel myself justified in mentioning at present, but this I will add, that it had nothing to do with the mechanism of the operation.

There are three of those who had been operated on for genu varum here this evening, and all of these can use their limbs freely and walk and work perfectly.

A number of cases have been operated on for ankylosis and rickety deformities; in some of the latter wedges had to be removed, in others the simple incision was sufficient. On one occasion six osteotomies were performed at once on one limb. This patient had a rectal temperature of 102° the first night, the second 100·5°, and afterwards it averaged between 99° and 100° for the first week. The wounds all healed without pus being formed, and the patient recovered with a strong limb. (This patient was shown.)

Altogether I have operated by osteotomy on forty limbs, and have performed over fifty osteotomies without a single fatal case.

Before concluding I would like to make one or two observations regarding Mr. Barwell's paper in the *British Medical Journal* for May 25th, 1878, in which he refers to the first operation described by me, but takes no notice of the second procedure, published in the same paper—that of simple osseous incision; although he advances a very similar operation. Not only so, but, in reply to a note sent by Mr. Barwell prior to the publication of his paper, there is the following sentence: "Under some circumstances I remove a wedge of bone; under others I only make an incision

with graduated chisels." Though Mr. Barwell quotes from this letter in a foot-note in his paper, he yet does not mention the above sentence. In the same note, which is dated May 12th, 1878, the following is stated: "When making the oblique incision, I do so in the line indicated for Ogston's operation; but I obviate the serious objection to Ogston's operation by removing a wedge from the inner condyle, and only bending the part of the bone next the articular surface. In this way the sharp angular projection of the upper part of the inner condyle—which is formed after it has been severed across, as Ogston describes—is taken away; and, what is equally important, the joint is not opened into, and the articular surface is not interfered with." The operation referred to here was done on May 10th, 1878; Mr. Reeve's operation of simple division of the internal condyle by a chisel was performed on May 17th, 1878.

In THE LANCET for March 30th, 1878, I stated that the first osteotomy performed by me was the first antiseptic osteotomy performed in Britain; this has been accepted. But I believe that the second antiseptic osteotomy and the first for knock-knee were performed by Lister during the winter session 1875-76. This latter fact was previously stated in my paper.

ON THE TREATMENT OF DIPHTHERIA.

By D. DE BERDT HOVELL.

THE importance of giving a brisk calomel purge at the outset of diphtheria is, perhaps, not sufficiently recognised and acted on. Local applications are certainly useful, and the favourable effects of tonic medicines are a strong contrast to the very unfavourable, I had almost said disastrous, consequences of any contra-stimulant medicine. The necessity for the liberal and frequent administration of nourishment and stimulants is indicated by the great tolerance, or rather capacity, of the system to receive them; but, all said and done, we are still fighting an unseen and treacherous enemy, and are face to face with the fact that, until the expiration of twelve or more days, we are not secure from the fatal effects of a fresh deposit.

The late Mr. John Scott used to treat severe cases of cynanche with "a scavenger"—viz., calomel, jalap, and scammony, after which they usually got well. Looking at a diphtheritic throat one day, I said to myself, Why should I not give this patient a scavenger? I did so, and remarked that the subsequent course of the disease was certainly cut short. I have since adopted the plan, and invariably found that the same good results have followed; the tendency to fresh deposits has much diminished, and in many cases is wholly prevented. I can call to mind more than one case in which the attempt at a fresh deposit was clear, but very feeble.

Unhappily I have seen a good deal of diphtheria at different times since its appearance in this country about twenty-two years ago, and have treated it, on the whole, not unsuccessfully, but it was only about a year ago that the above circumstances almost accidentally forced the conviction on my mind that *elimination of the poison* ought to be the first object in treatment.

How this elimination takes place through the bowels, I know not, but diphtheria is a disease of blood-poisoning, and there is no reason why the poison should not be eliminated through the bowels any less or more than in enteric fever—in throat fever than in bowel fever. I cannot refuse the evidence of my experience that since I have adopted the practice of purging at the outset the course of the disease has been invariably more favourable, nor the testimony of those who declare that the dejections thus produced are abominably offensive. At any rate, the practical effect of "the scavenger" recommends itself to my mind in a much higher degree than the scientific inaction of temporising and waiting till the disease has run its course, however masterly such inaction may appear; or than the inferior, but by no means futile plan, of trying to neutralise the effects of the poison. Invaluable as the scientific knowledge is, it ought not to stop short, nor rest content, without improvement in practice.

Elimination, then, (1) through the bowels, (2) through the kidneys. Chlorate of potash drinks should be given frequently, incessantly. Where the nose is affected, the

same solution or that of permanganate of potash should be drawn up frequently through the nostrils, so as thoroughly to cleanse them. When the patient cannot swallow, nutrient enemata should be given four times a day; not too frequently if they are to be retained. For this, nothing is better than Dr. Munk's mixture, a tumblerful of milk gruel, a new-laid egg, a tablespoonful of brandy. By following this plan a boy under the joint care of my partner, Dr. C. Kingsford, and myself, twenty years ago, recovered, although he swallowed nothing for sixteen days, and severe paralysis, or rather paresis, ensued. He is now a fine, strong man.

Possibly the adverse effect of depletory treatment has tended to deter from the administration of an aperient; but in this, as in many other instances, debility is a bugbear. In one severe case I had to give three doses of calomel and jalapin, and follow each dose with a black draught, and even then it was necessary to add one ounce of castor oil. The relief was as marked as the amount of aperients required to obtain it. The nourishment, stimulants, and tonics given subsequently seemed to be all the more thankfully received and gratefully recorded.

The tendency to rheumatism after even a slight attack of diphtheria should never be lost sight of. Possibly this is due to excess of fibrin in the blood; but of the fact I have certain experience.

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THE TREATMENT OF POTT'S DISEASE OF THE SPINE.

By THOMAS JAMES WALKER, M.D. LOND.,
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IN a communication on the treatment of Pott's disease of the spine by a gutta-percha jacket, applied in the recumbent posture, published in THE LANCET of July 7th, 1877, I suggested the possibility of applying a casing of gum and chalk on a many-tailed bandage. The suggestion of this material requires correction, as gum and chalk, taking many hours to set, is not adapted for such a purpose. Since writing that communication I have, however, proved by experience, and have on several occasions demonstrated to large numbers of my medical brethren, the facility with which, on the principle then proposed, a plaster-of-Paris jacket may be applied in the recumbent posture, giving all the advantages of Sayre's method, and avoiding the serious dangers and inconveniences of suspension. I have devised the little apparatus here figured (Fig. 1) for charging the

FIG. 1.

bandage with plaster. The trough is filled with plaster-of-Paris mixed with water, to which gum has been added, to retard the setting long enough to admit of the necessary manipulation. For a full-grown child, five pounds of plaster-of-Paris, forty ounces of water, and five ounces of mucilage (B.P.), are about the quantities required, and whatever may be the amounts, these are the proportions in which the materials should be used. About forty yards of Victoria lawn bandage will be required. Three bandages,

each nine or ten yards long, may be placed at the same time on the spindle, *a, a*. The ends are carried through the plaster under the fan roller, *b, b, b*, to the spindle, *c, c*, on to which the bandages are wound, causing the roller to turn, stirring the plaster, and splashing it over the bandages, so that they become thickly charged. A bandage thus charged is removed from the machine by withdrawing the spindle, *c, c*. It is laid out in slips cut to a suitable length on the bed; each slip overlapping the one below it two-thirds of its width. When a sufficient number of such slips have been laid down to form a jacket reaching from the hips to the axillæ of the patient, another similar layer is laid on the top of it; and for a very strong jacket a third stratum may be superimposed. The patient, clothed in a close-fitting knitted or merino shirt, lies down on the slips, which are then folded over the front of the body, seriatim, as usual with a many-tailed bandage—first the layer last laid down, the last slip to be folded over being, of course, the first laid on the bed. In consequence of the addition of gum, ample time is afforded for these manipulations before the jacket becomes hard. There is time to turn up the edges, to cut and turn over a portion under the axilla, and in other ways to adapt the shell to the requirements of the case. The slips may be laid so as to modify the form of the jacket to an extent which is not possible when the bandage is wound round the patient.

This figure (Fig. 2) is from a photograph of S. W.—, aged

FIG. 2.

twenty, the subject of angular curvature, the fifth dorsal being the most prominent vertebra. The jacket was applied as I have described, and the ends of the slips crossing over and being brought as high as the top of the sternum, the jacket is of double thickness down the front, thus giving a strong anterior splint, reaching the whole length of the trunk as high as the top of the sternum, and making it absolutely impossible for further bowing of the dorsal spine. No pads were used over either abdomen or breasts in the application of this shell, nor do I ever find them necessary; and the patient, who has worn the casing for two months, tells me that she is comfortable, and that she is not conscious of wearing any apparatus except from her inability to bend her back in stooping.

The illustration shows the special applicability of my method of making the rigid shell to cases in which the curvature is situated high up in the spine. Where the disease is seated in the cervical vertebræ the jacket may be applied in the same manner, two iron eyes being fixed in front in the middle line, into which is slipped the leg of a Y-shaped splint, the upper arms of which, directed up on either side of the neck, are perforated at their extremities so as to allow an elastic band to be stretched across. On this the chin rests so as to carry the weight of the head, taking the place of the hands of the patient, which are so con-