

the more completely does it oscillate and exhaust any motor power communicated to the limb; in other words, the fragments of a suspended broken limb, once perfectly adjusted, can be kept at rest in direct proportion to the perfection of the swing.

Another form of suspension, different in principle and mode of application, but still very useful, is that of suspending a weight to a limb. It overcomes muscular contraction by steadily exhausting it, and alone, or in combination with moulds and pressure to an injured part, is of great service in maintaining immobility. Assuming so much conceded for the treatment of a simple fracture, agreement would probably be less complete, if a fracture complicated with swelling, sanguineous or inflammatory, were in question. But in such a case, no less than in the simple one, should reduction be immediate, with elastic compression, absolute immobility, and oscillatory suspension. Digital compression of the main artery will assist in promoting absorption. In a very few hours the outside of the apparatus becomes loose, and its elastic construction admits of fresh padding and compressive bandage, without disturbance of parts, and with unfailing benefit in promoting absorption, checking inflammation, and consolidating repair. The additional complication of a wound or a bleb makes no substantial difference; given a compound fracture, only let the fragments be immediately and accurately adjusted, the wound closed with all necessary provision for perfect drainage, the limb immobilised compressed and swung, and, in the vast majority of cases, the fundamental indication will have been carried out, reducing the compound to a simple fracture, and treating both on identical principles.

If a simple fracture, say of the clavicle because it admits of easy observation, be not at once immobilised, material is thrown out between and around the broken ends of the bone the deposit thickens, the part becomes hot and painful. Such a condition is best seen in those, happily, rare cases in which a fracture of the clavicle goes for some days undiagnosed. Immobilise the limb and the callus vanishes, all the more rapidly if compressed under an elastic pad. Given a flesh wound in most parts of the body; if the edges be at once accurately brought together, and kept so, provision made for deep and surface drainage, and immobility maintained, direct union takes place, all the more surely if the part be kept in a position to favour venous return and prevent arterial afflux. Here, again, perfectly smooth elastic compression is of the greatest service, not merely in maintaining contact of the deeper, as well as of the superficial, lesion, but in restoring the balance between elastic resistance and blood pressure, which is the normal condition of living parts. Let a flesh wound, like the one we have just been considering, not be accurately adjusted; let it be treated with water dressing or a poultice, with the limb dependent and not immobilised. The edges become tumid, the wounded surface discharges and stinks, the surrounding skin is red, tumid, and painful. In this state, raise the limb to empty it of its blood, approximate the edges, resort to elastic compression and immobilisation, swelling and pain vanish as if by magic, and healing proceeds, just as in the case of the fracture with swelling which we were considering a few minutes ago. A fracture with a wound complicating it, the condition generally known as compound fracture, will be found amenable to treatment on the principles enunciated with the happiest results.

My remarks have hitherto been directed to injuries of the limbs. Their truth and practical value are equally well, if not better, illustrated in injuries of the head, with some modifications rendered necessary by the condition of parts. In a fracture of the vault of the cranium without wound, the great indications of rest and prevention of extravasation are fulfilled by keeping the patient in comparative darkness, in the horizontal position, with an ice-cap. No wounds do better than scalp wounds under dry dressings, elastic compression, and a minimum of subsequent interference. An adaptation of the same principles, according to the exigencies of particular cases, will ensure success in the treatment of a large proportion of compound fractures of the skull. The question of trephining is one of special and exceptional interest, to which it would be here impossible to do justice. But as I have no wish to shun difficulties, and to restrict the scope of discussion, I may briefly state that there are very few cases in which I consider trephining justifiable in fractures of the skull. I have practised it, and seen others do it, with happy result; and I can conceive of cases in

which I should not only trephine, but be prepared to incise the membranes and the substance of the brain, to fulfil local indications of effusion and compression. But if we go back to the early days of this controversy, and trace it down to our own time, I am clearly of opinion that more people have owed their death, than their life, to the trephine.

To ensure absolute rest in wounds and fractures, immobility should be secured to the utmost practicable extent, while the reparative process is going on; but no longer. Every surgeon knows how much mischief results from rest too long persisted in. The experience only affords another illustration of almost every truth, physical and physical; carried to extremes it becomes a vice. With this reservation, the practical application of which must depend upon the exigencies of particular cases, immobility is one of the most powerful factors in surgical therapeutics. A corollary of that proposition is infrequent dressing. On this point the agreement of surgeons at home and abroad has grown very manifestly during the last few years. Whatever the nature of the injury, it is scarcely possible to be too accurate and complete in first dressings. Then watch the thermometer and the pulse, the patient's expression and the state of the skin; and so long as those cardinal indications point to safety, dress as infrequently as possible. To this end absorbent dressings contribute materially, and if they be not sufficient to ensure perfect drainage, one or more tubes may be employed for the purpose. By keeping them long, and carrying them out through the pads, it is easy to collect the discharge in a pad lightly placed over the end of the tube, so as to combine frequent removal of discharges with immobility of the apparatus.

Experience proves that the more absolute the immobility, the more evenly the limb is compressed, the closer attention is paid to position, proportionately less are irritation, vascular turgescence, and consequent effusion. The healing part shrinks as it consolidates, and dries in direct proportion as its nervous and vascular life is controlled. "That under dry and infrequent dressings, absolute rest, physiological position, and elastic pressure, most wounds and fractures heal," is a proposition which I have striven to defend since I formulated it years ago. The argument so far has been in the same direction, and that because experience only confirms its soundness.

(To be concluded.)

NOTE ON THE USE OF BOROGLYCERIDE IN THE TREATMENT OF WOUNDS.

By HENRY A. LEDIARD, F.R.C.S. ENG. & M.D. ED.,
SURGEON TO THE CUMBERLAND INFIRMARY.

ON March 19th of this year I was some distance from home, consulting with Dr. Walker, of Stapleton, in this county, and he mentioned to me that a new antiseptic (boroglyceride) was creating some stir in Germany, and offered to provide me with some if I would use it and record my experience. Accordingly a few weeks later I received four ounces, which were dissolved in water and used in the strength of 1 to 20 and 1 to 40. In appearance boroglyceride is like large cakes of isinglass, of the colour of gum acacia, sticky as toffee, and has a slightly warm taste of indefinite and transient character. In solution it is colourless and almost tasteless.

We are now in possession of a few facts in reference to the use of this new antiseptic as applied to wounds, many of which have been treated with it, but owing to the supply from Dr. Walker having scarcely kept pace with the demand, the trial has not been as complete as could have been desired. A case of Syme's amputation for ankle-joint disease was treated with boroglyceride from the first—i.e., the flaps were washed with the solution, and the stump wrapped in lint steeped in 1 to 40 solution; the subsequent dressing consisted in washing out the cavity and using lint as before, the result being as excellent as, but not more excellent than, I have seen in similar cases treated with dry lint. The stump kept sweet to the nose, but the drainage-tube and pus squeezed from the stump were not so. It is probable that we used the solution

too sparingly; and allowance must be made for this, for occasionally we had to wait for the arrival of a fresh supply. Another case of railway smash of the foot (Syme's amputation also) which was not healing kindly (Listerism having been relinquished on account of putrefaction), was treated with boroglyceride, and although healing was neither interfered with nor accelerated, yet smell was unquestionably kept down. Several wounds, the result of either accident or surgical operation, have also been treated with boroglyceride with satisfactory results, and the conclusions I have arrived at so far are as follows: For open wounds or wounds with open cavities boroglyceride in solution will be found to be a non-irritating and powerful antiseptic, in no way interfering with natural healing processes, and in no degree troubling the skin around a wound; but where shut cavities exist, as in stumps after amputation, although syringing with the solution be adopted, yet the discharge collecting within is not kept sweet. I feel sure that much remains to be done to develop the use of this new antiseptic, which, on account of its non-irritating properties, will prove of much value in the treatment of wounds. To claim for any antiseptic a value beyond one's experience would be to court distrust, and I prefer to speak hopefully rather than positively.

Mr. Barwell's paper in THE LANCET of May 13th certainly supports our experience of the value of boroglyceride, but we have not succeeded in preventing rises of temperature, any more than we have succeeded in obtaining union without one drop of pus, neither have we seen remarkable results as to healing by first intention; in fact, the results may seem to be *nil*. I think the use of stronger solution than 1 to 40 or 1 to 20 may be tried, and the lint around the wound should be kept constantly moistened with the solution. As far as I am aware boroglyceride is innocuous, a matter of great moment, when one recollects how many patients have been poisoned by doses of carbolic acid by inadvertence, how many untoward symptoms have been put down to the use of the carbolic spray and absorption of carbolic acid.

I hope on a future occasion to add more to this brief note, which must conclude with an acknowledgment of thanks to Dr. Walker, who manufactured the boroglyceride himself.

Carlisle.

THE DIFFERENTIAL DIAGNOSIS BETWEEN HYSTERICAL PARALYSIS AND POLIO-MYELITIS ANTERIOR.

By A. HUGHES BENNETT, M.D.,

PHYSICIAN TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, REGENT'S-PARK; AND ASSISTANT-PHYSICIAN TO THE WESTMINSTER HOSPITAL.

IN the experience of every practitioner there must have occurred cases of paralysis in women upon which he has been called upon to decide whether the affection was due to serious organic disease of the nervous system, or to that more protean disorder to which we give the name of hysteria. In many such instances there is often the greatest possible difficulty in arriving at a satisfactory conclusion, and the perplexity of the medical attendant is proportionate to the responsibility he assumes in expressing an opinion, and the important issues upon which his verdict depends. That grave errors in judgment on this complicated problem have frequently been made, must be within the knowledge of all, resulting in misfortune to the patient, discredit to the profession, and a triumphant harvest to the charlatan.

Polio-myelitis anterior, or, as it is more commonly called, "infantile paralysis," is more especially liable to be confounded with hysteria, as the symptoms and progress of the case are very similar in both. The paralysis resulting from this serious organic disease of the cord attacks the adult, both in its acute and chronic forms, much more frequently than is generally believed. It is obvious that to make a clear distinction between these two disorders is of the highest importance, as the treatment suitable for the benefit of the one would be useless, or even injurious, if applied to the other. A consideration of this question appears at the present time to be worthy of discussion, as recently there has been a revival of certain energetic measures in the treatment of paralysis of a supposed func-

tional and emotional origin; and Drs. Weir Mitchell, Playfair, and others have recorded successful cases of great interest and importance. Although it is admitted that certain procedures were followed by the most satisfactory results when employed by competent physicians, in properly selected cases, it must equally be granted that the same treatment would in different instances be followed by the most disastrous effects. The writer has not infrequently seen young women condemned to a couch for years, supposed to be suffering from spinal or uterine affection, which a little energy and determination on the part of the physician would have cured in a few weeks. On the other hand, not less often has he met with unfortunates who were scoffed at and otherwise ill-treated as being nervous and hysterical, or imagined to be exaggerating or feigning disease, when in reality they were suffering from an organic lesion of the nervous system. This confusion has arisen from the extreme difficulty in many cases of accurately diagnosing between paralysis, arising on the one hand from organic degeneration of nervous structure, and on the other as a result of emotional or so-called hysterical causes. It is assumed in text-books and by the profession generally that the differentiation between these is easily defined, but as a matter of fact even when the greatest care is taken this is not always the case, and after the fullest investigation much doubt remains.

With the view of illustrating this position let us take a case which not infrequently occurs in practice. A young woman suddenly or gradually becomes paralysed in the lower extremities. This may, in a few days, weeks, or months, in different cases, become complete or may remain partial. There is no loss of sensation, no muscular rigidity, no cerebral disturbances, or any affection of the bladder or rectum. The patient's general health may be robust, or it may be delicate. She may be of emotional and hysterical temperament, or, on the contrary, of a calm and well-balanced disposition. At first there is no muscular wasting, but as the disease becomes chronic the limbs may, or may not, diminish in size. The entire extremity may be affected, or only certain groups of muscles. Finally, the disease may partially or entirely recover, or may remain almost unchanged for years.

With such a clinical picture before us we have to ask, What is the diagnosis of such a paralysis? The description applies with equal fidelity to either hysteria or polio-myelitis, and by depending on symptoms alone it is in such doubtful cases that the decision of the question seems to depend on the accidental fancy of the medical attendant, and which so frequently results in an erroneous view being taken of the case. It is granted that the problem is a difficult one, and even a careful analysis of the symptoms does not appear greatly to assist its solution. The patient when attacked with the paralysis may be in perfect health, or the reverse; she may, or may not, be hysterical; there may be some assignable cause, or not. In all these circumstances the loss of motion may be either due to polio-myelitis or hysteria, as the former occurs with equal frequency in the robust and in the delicate, and the latter as often appears in apparently the most healthy persons as in the most nervous; the first is as likely to be present in hysterical subjects as in the reverse, and the second may follow a cold, injury, or other supposed origin of organic disease. In short, although it is true that hysterical paralysis frequently occurs in persons evidencing other nervous or emotional symptoms, these are by no means necessary to establish the diagnosis, as some of the most intractable forms of this affection have occurred in women of apparently phlegmatic temperament and well-balanced minds. Again, polio-myelitis is as likely to attack the hysterical subject as any other, and thus further complicate the inquiry. The paralysis appearing suddenly, or very gradually, applies equally to polio-myelitis or hysteria. As in the acute form of the first, the loss of motion may ensue in a few hours, and in its chronic form it may proceed very slowly and insidiously. In both the process may be partial or complete. It may attack one or more limbs, or only part of an extremity; indeed, special muscles, or irregular groups of these alone, may be affected. All these particulars equally apply to both forms of paralysis under consideration. In each the sensibility may be intact, the intelligence and special senses unimpaired, and the functions of the rectum, bladder, and other organs of the body healthy. If muscular atrophy existed to a marked extent at an early period of the disease we might exclude hysteria, but in many instances in this respect there is