by a condition of brain-cells analogous to that of the growing parts of plants or the cells of the pulvinus, it should be liable at times, under certain circumstances, to great exacerbations. Thus guided, I have taken tracings of the finger-movements of nervous children and of those suffering from chorea. Samples are presented here, and seem to indicate the following results.

Fig. 4.—Tracing of Finger-Movements in Chorea.

1. The movements of chorea are far more frequent and continuous than might be expected from mere inspection of the hands.
2. These movements may be but an exaggeration of the movements of a nervous child, usually present, but often overlooked, tracings of which are given in Figs. 2 and 3.

Fig. 5.—Finger-Tracings i. Chorea. The twitching movements are compound.

3. The twitching movements of chorea may be compound, each visible twitching being compounded of many of the little movements seen in the other tracings. I have never found such compound tracings in tremors as paralysis agitans.

To prove these points with certainty, numerous tracings from many cases would have to be compared.

As to the treatment of the class of children referred to, the following experiments are very suggestive, and the analogy to the case of children hardly appears to require verbal description. Mr. M. Voss of Streatham has kindly communicated to me the results of his investigations.

Three years ago, some seed of the sensitive plant (*Mimosa pudica*) was set to grow, and at a moist heat of about 90° Fahr. it soon germinated. Before the compound foliage growth had commenced, the seedlings were potted off into different earths and sand. Those planted in a soil of two parts of decayed vegetable mould to one of sand grew more vigorously both in height and foliage than the others; and, after two months' growth, they were much less sensitive than others planted in two-thirds of silver sand and only one-third of leaf-mould. One or two plants were grown entirely in silver sand. These showed extreme sensitiveness to the slightest touch; even a breath of air, or the slightest jerk of the pot in which they grew caused all the foliage to shut up. Those plants having no nourishment beyond the gases in the air or sand soon turned yellow and died. The plants in two-thirds sand and one-third decayed vegetable mould were not so robust or strong as those grown in a greater proportion of vegetable mould. They failed to produce any flowers, and died off at the lower temperature to which all the plants were exposed; whilst those planted in two-thirds vegetable mould and one-third sand fully matured their growth, flowering in a temperature of 50° or 60°, the foliage being of that full green colour denoting the fact that the spongioles of the roots had necessarily been supplied with the various chemical gases in the soil (set free by a due amount of moisture) requisite for producing the continued support of the plants. Their sensitiveness had, at the end of August, almost

left them; indeed, after a blow on the leaf with a twig, the foliage would fall, but almost immediately regain its horizontal position.

Many other useful analogies might, I think, be made in this direction; and the subject is one full of interest to all who look upon the conditions of health or disturbance of the system throughout the whole organised world. Among other matters, we might consider the transmission of sensitive impressions from one part of the plant to another; the metamorphosis of parts of a plant according to the functions discharged; the irritability or sensitiveness of plants, which is in some cases far greater than anything seen in man; the production of acid secretions in mobile plants; and numerous other facts easily observed in plants—facts of great interest to the physiologist and pathologist; and in this direction Mr. Darwin's researches, following those of Sachs, are a climax to investigations carried on since the time of Sprengel; facts which Sir James Paget would have us apply to the study of human pathology.

NERVE-STRETCHING IN INFANTILE PARALYSIS.*

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IN bringing the subject of infantile paralysis before this Society, I do not propose to enter at length into the etiology or symptoms of the disease, but, by briefly recording the accepted views as to its pathology and treatment, attempt a justification of the treatment adopted in the case to be brought before you.

Numerous *post mortem* examinations have proved beyond question "that the earliest condition is one of subacute myelitis, with softening and destruction of the nerve-elements of the anterior cornua of the spinal cord exclusively. Some of the nerve-cells of this portion of the cord are sometimes filled with granular pigment-deposits, while others are disintegrated and broken up. The nerve-tubes of the anterior roots are found shrunken, the myeline absent, but the axis-cylinder nearly always intact. In other cases of longer standing, there are evidences of atrophy of the anterior horns, perhaps amyloid degeneration, and sometimes sclerosis. The nerve-cells are found in an atrophied condition or absent altogether" (Hamilton on *Nervous Disease*). However the disease may be caused, the multiple paralysis which may be observed at the beginning soon disappears, leaving behind a paralysis, or rather paresis, of some limb, or more often group of muscles, or perhaps only one muscle. With this paresis are associated a rapid atrophy of the affected muscles, and a lowering of temperature in the paretic part. Unless, as scarcely ever happens, a rapid recovery occur, the atrophy continues, and after a time the muscular tissue becomes replaced by connective tissue and fat. The blood-vessels diminish in size, and the bones do not develop in equal ratio with those of the corresponding limb on the other side of the body, but become friable and thin.

I may, I trust, be excused for recapitulating these trite facts to show the appalling nature of the disease, and the great need of the suggestion of useful treatment. Hitherto, any success attending treatment has been met with from the use of electricity, generally galvanism, to the spine, and faradism of the affected muscles. Success has attended such treatment, but unfortunately in so small a number of cases as to furnish no precedent for favourable prognosis. What the *rationale* of such treatment has been is difficult to understand, as, beyond keeping the muscles in working order by electrical stimulation, no direct benefit from spinal galvanism can, I think, be expected. The atrophied nerve-cells cannot be restored, or nerve-conductivity through the atrophied cornua re-established.

Peyer and Krause have found by experiments on rabbits, that most muscles are supplied by more than one root of a plexus; and Ferrier concludes that there are probably several spinal nuclei for the same muscle. If this be so, it is a possible explanation of the good results of electricity that, by stimulation, the other nerve-nuclei are induced to take on extra action, and supply the deficiency resulting from destruction of those anterior horns more particularly concerned in the government and nourishment of the affected muscles.

With these considerations in my mind, I asked Mr. Chavasse, on August 5th, 1881, to stretch the sciatic nerve of the patient I propose to show you. He is now five years old, and for three years has been under treatment for infantile paralysis affecting the right leg, at the General Hospital, Birmingham.

During the last two years, he has had continuous electrical treatment, with the result that, though the right leg has not kept pace in development with the left, there has resulted no deformity, and the muscles

* Read before the Birmingham and Midland Counties Branch.

of the right leg remain fairly nourished. Tested by the application of forty Leclanché cells, the following results were noticed; free contraction of the gluteus maximus; slight contraction of the muscles of the ham; the tensor vaginæ femoris and rectus femoris contracted readily and well, while the contraction of the sartorius and adductor muscles was slow and feeble. Below the knee, there was free contraction of the gastrocnemii, the peronei, the extensor proprius pollicis, and the muscles of the sole of the foot; while the anterior tibial and the extensor brevis digitorum responded only faintly to the electrical stimulus, and the extensor longus digitorum not at all. It is important to bear in mind from these facts, that the muscles supplied by others than the sciatic nerve were affected.

Though the little boy had not got worse during the last twelve months, he was not improving, and fell easily on coming into contact with slight obstacles. He used to swing the right leg in walking, bringing it down with a jerk, and not moving it straight forward.

The operation was done antiseptically in the out-patient room, without difficulty. Mr. Chavasse raised the sciatic nerve, and pulled it strongly three times. The boy was treated as an out-patient, and made a good recovery from the operation.

Two months later, Mr. Chavasse kindly made a series of measurements for me, and found that there had been a gain of a quarter of an inch in the circumference of the right thigh and calf respectively (owing to a slight diarrhoea and bronchitis, the boy's health had not been good in the interval), and no difference was found between the measurements of the left leg on the two occasions. There seemed to be a slight gain in the length of the limb, but of this I am not sure. However that may be, there was a very decided improvement in the manner of walking; he no longer swung his leg, and I was informed that he rarely fell.

On January 2nd, it was found that, while the sound thigh and calf had gained respectively three-quarters and one-eighth of an inch in circumference, corresponding measurements on the right or affected side showed a gain of one inch and a quarter in the thigh and three-eighths of an inch in the calf, while there was a decided improvement in the manner of walking.

I should not have ventured to bring forward a novel treatment to be judged by its results in a single case, had I many opportunities of seeing such cases; but at a general hospital they are rare, and I have brought this one forward in the hope of inducing others with greater opportunities to put this treatment to the test. It is a procedure at the worst harmless, and it seems to me to be likely to do great good in a class of patients, regarded by many as beyond the hope of improvement, or even outside the pale of treatment.

ON THE TREATMENT OF HYPERTROPHY OF THE TONSILS.

By JOHN BISHOP, M.D., F.R.C.S.E.,
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THE BRITISH MEDICAL JOURNAL for January 28th, 1882, page 130, gives an interesting annotation on various methods of treating hypertrophied tonsils. Probably every practical surgeon will read with satisfaction that the inefficient or dangerous methods for the "removal of diseased tonsils by the help of the finger, ligature, cauterisation by caustics or the actual cautery.....have fallen into disuse"; and many, especially those of the Edinburgh School, will hear without surprise that "the fashionable treatment by the guillotine has given rise to very serious and often fatal hæmorrhages". There must be surprise at the remark that, "in Europe, the bistoury only reckons a few partisans", in view of the fact that, from the beginning of Mr. Syme's practice to the present day, the surgeons of this, the largest medical school of Great Britain, have practised and recommended "the curtailment of enlarged tonsils" by means of the probe-ended curved bistoury and vulsellum.

Though I have served in various capacities under three successive professors of clinical surgery—the late Mr. Syme, his successor Mr. Lister, and the present professor Mr. Annandale—and have seen them operate very frequently, have heard of the work of the other surgeons of the school, at the head of whom stands the venerable professor of surgery Mr. Spence, and have operated frequently myself, yet I have never seen nor heard of any injurious effects from the operation, nor of the use of the guillotine in Edinburgh.

The operation by bistoury causes little pain or bleeding, admits of the removal of much or little of the tonsils; and, being thus safe, easy, and satisfactory, it is not likely that the surgeons who have gone out from this school in such great numbers during the past fifty years have abandoned this simple method in favour of more complicated and less efficient means.

Mr. Syme used to point out that this was an operation "perfected in the first instance, and subsequently impaired through alterations in the mode of its performance proposed by would-be improvers. All other means having failed to remove the swelling, it is the duty of the surgeon, says Celsus, 'hamulo excipere et scalpello excidere'". The operation, as performed by Mr. Syme and others in Edinburgh, may be described as follows. The patient sits opposite the light, with mouth open and tongue depressed by an assistant; the surgeon seizes a tonsil with the vulsellum, and draws it towards the middle line, whilst with a probe-ended curved bistoury, thoroughly sharp, he rapidly cuts from above downwards, so as to remove as large a portion as seems needful. The patient is allowed to rinse the mouth with cold water, and then the process is repeated on the other tonsil, if necessary. It is better to remove the right tonsil first, because to most men the operation is slightly more difficult, on account of the crossing of the hands. Injury of the carotid artery is impossible, because, during the act of cutting, the knife is never allowed to pass further out than the line of the molar teeth. The most useful vulsellum is that designed by Mr. Syme, with a special hook to hold the gland more securely.

The patient is told to stay in the house for two days, and perhaps to gargle with Condy's fluid.

THERAPEUTIC MEMORANDA.

THE TREATMENT OF PEMPHIGUS.

VARIOUS communications have recently appeared in the BRITISH MEDICAL JOURNAL as to the value of arsenic in the treatment of pemphigus. As a contribution to the literature of the subject, I beg, under sanction of Professor MacLagan, in whose ward it was treated, to send the short notes of the following case, illustrating the effects of simple local treatment.

A. C., aged 23, a shepherd, from the neighbourhood of Dunfermline, was admitted to the Royal Infirmary on December 5th, 1881. He was in good condition, and felt perfectly well, except for the annoyance of the skin-eruption. His family history was good, and his circumstances comfortable; but he was often exposed to cold and wet in his occupation. The eruption covered the whole body, and had begun to appear a week before admission, in the form of red spots, on which bullæ soon formed and became rapidly larger, varying in size from a pea to a hen's egg. The bullæ were at first clear, but in a day or two became opaque, and then burst, leaving excoriated surfaces, on which crusts formed. The patient was put to bed; and a layer of cotton-wool was put under the back, to keep the raw surfaces left from being rubbed. In order to soften the crusts which had formed over the rest of the body, a little vaseline was applied to them. The bullæ were punctured at the most depending part, the serum which they contained allowed to escape, and care taken that the raised epidermis was laid down flat on the derma, so as to form a complete covering for it. Around the bullæ, which had become opaque, and their contents puriform, there was a ring of inflammatory redness and a good deal of irritation; but when they were punctured while the contained serum was still clear, there was no such irritation, new epidermis formed beneath quickly, and little or no discoloration of skin remained. The last crop of blebs appeared about a week after the patient was admitted; and a week later he was dismissed quite better, with only a few blains on the site of the bullæ, which had been followed by crusts. No internal treatment by arsenic or other drug was adopted, no medicine being given except a laxative; and the patient was put upon ordinary diet.

At the clinical lecture on the case, Professor MacLagan stated, as the result of his experience, that acute pemphigus in a healthy subject, as in the present instance, needed nothing but the local treatment as described above, which opinion was confirmed by the result of the case; that in chronic pemphigus, as in other forms of skin-disease, arsenic was useful; and that, in pemphigus foliaceus, neither arsenic nor any other treatment was of real avail.

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THE TREATMENT OF DIPHTHERIA.

THERE is little doubt that, if the formation of the membrane go on unchecked, fresh absorption of the poison takes place, and the disease becomes more intractable. I believe that the application of caustics to the throat is in all cases harmful, except where there is distinct *syphilitic ulceration*; and, as we have in boracic acid a powerful non-irritant antiseptic, I most certainly prefer this in cases of diphtheria. The formula I adopt is twenty or thirty grains of the acid to a drachm