A Mirror

OF

HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

COUNTY ANTRIM INFIRMARY, LISBURN.

TWO CASES OF SPINA BIFIDA TREATED SUCCESSFULLY—
THE FIRST BY INJECTION OF MORTON'S FLUID AND
THE SECOND BY EXCISION.

(Under the care of Mr. G. L. ST. GEORGE.)

THE treatment of spina bifida by the injection of a small quantity of solution of iodine in glycerine was first practised by Morton, and its use was much extended by the strong recommendation which it received from the committee of the Clinical Society of London which was appointed in 1885 to consider the treatment of this malformation.¹ From our knowledge of the pathology we are justified in thinking that injections of iodine and glycerine can only effect a cure in a pure meningocele, and that it can do no good in a meningo-myelocele or in a syringomyelocele. Since, however, it is rarely possible to decide with any certainty that no part of the spinal cord or its nerves is included within the sac, there is nearly always some risk in employing these injections, even if we do not consider the danger arising from a possible infection through the puncture. In consequence of this difficulty of diagnosis many surgeons at the present day are inclined to advise excision of the sac.² In this operation the two chief dangers are sepsis and the sudden escape of the cerebro-spinal fluid which may lead to grave disturbance of the circulation in the nerve-centres. The former danger may be guarded against by scrupulous care and for the latter the surgeon should avoid any rapid evacuation of the fluid. The operation of excision is applicable even in cases in which spinal nerves are contained in the sac, for they may be returned within the bony canal,³ and such an aseptic operation must surely be safer than the indiscriminate injection of an irritant fluid. We congratulate Mr. St. George on his two successful cases.

CASE 1.—A female child, aged seven days, was admitted to the County Antrim Infirmary on Oct. 5th, 1901. She had a spina bifida of the fourth and fifth lumbar vertebræ. The tumour was of about the size of a small orange and was covered for about two-thirds by normal skin, but ended for the upper third in a membrane with a distinct margin. This membrane was beginning to show signs of ulceration. The tumour was markedly distended when the child cried or struggled, but there was no paralysis of the lower limbs or distension of the fontanelles. On Oct. 7th, the tumour having been thoroughly cleansed and made aseptic with sublimate lotion (1 in 2000) and the child having been anæsthetised with chloroform, Mr. St. George punctured the base of the tumour with a fine trocar, and after allowing about two-thirds of the contents to escape injected slowly a drachm of Morton's fluid through the cannula. On withdrawing the cannula the opening was firmly grasped and painted over with a solution of iodoform in flexile collodion in order to close the orifice. The whole tumour sac having been painted with the collodion and iodoform it was covered with iodoform gauze and absorbent wool. The child seemed to suffer greatly from shock after the operation. The temperature rose to 103° F. and remained high for some days. On Oct. 21st the tumour was again tapped and some fluid having been drawn off the sac was injected as before and painted with the iodoform and collodion. The temperature did not rise on this occasion to any appreciable extent, nor did the child seem to suffer so much from shock, but there were great wasting of the limbs and constipation. She was therefore put on cod-liver oil and

malt (Kepler) and Mellin's food. Under this form of food she rapidly improved in weight and appearance. The walls of the sac were now becoming shrivelled and more and more consolidated, except in the centre where a small piece of membrane still remained. On Dec. 21st, having again made the part aseptic, Mr. St. George dissected this piece carefully round expecting to find it communicating with the sac itself, but it did not do so; he therefore closed the flaps of skin over the opening so as to make a firm covering. The child did well and made a rapid recovery, being shown at the meeting of the British Medical Association (North of Ireland Branch) in Belfast on Jan. 23rd, 1902, and was discharged from hospital on Feb. 7th, only a fine cicatrix remaining. Unfortunately, no photograph was taken of this case before operation.

CASE 2.—A male child, aged three weeks, was admitted to the County Antrim Infirmary on Oct. 26th, 1901, suffering

FIG. 1.

Before operation.

FIG. 2.

After operation.

from a spina bifida of the seventh cervical vertebra. In this case the tumour was covered by skin completely. As the child was suffering from boils the operation was deferred for some weeks to allow of there being no chance of septic infection, as there was no urgency from the state of the

¹ Transactions of the Clinical Society of London, vol. xviii., p. 383.

² W. H. A. Jacobson: The Operations of Surgery, third edition, p. 1290.

³ Mayo Robson: Annals of Surgery, 1895, vol. ii., p. 82.

tumour. On Nov. 10th, the child being in good health, the tumour and surrounding skin were thoroughly cleansed and made aseptic and the child was anaesthetised. Mr. St. George made two horizontal flaps of skin, and having carefully raised them from the tumour down to the base, the tumour was punctured and fluid was allowed to escape. The base of the tumour was grasped with forceps and ligatured with catgut and the tumour was cut off. The skin flaps were then laid down and closed by a continuous suture of silkworm gut and all was dressed with iodoform and collodion and gauze. The child showed no signs of shock after the operation. The temperature rose on the 19th to 100.2°F . but never again above normal. The wound healed rapidly and the child was discharged on Dec. 16th, and was shown with the previous case at the meeting of the British Medical Association (North of Ireland Branch) on Jan. 23rd, 1902. The accompanying illustrations show the case before and after operation.

Remarks by Mr. ST. GEORGE.—The treatment of cases by Morton's fluid, though in the first case successful, is fraught with great danger and should be avoided if it be possible to operate by excision. The injection of an irritating fluid into a sac communicating with the spinal canal must lead to serious consequences as evinced by the shock, &c; whereas in excision with proper aseptic precautions the position of nerves can be carefully ascertained beforehand and avoided. However, it is not often that two cases showing the different modes of treatment can be so opportunely contrasted and the results compared.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Clinical and Experimental Observations on the Regeneration of Peripheral Nerves.

A MEETING of this society was held on March 11th, Mr. ALFRED WILLETT, the President, being in the chair.

Professor J. N. LANGLEY (Cambridge) resumed the discussion on the Regeneration of Peripheral Nerves. He remarked that the first and the principal point raised by Mr. C. A. Ballance and Dr. J. Purves Stewart in their opening paper was whether a nerve severed from its central connexions could become regenerated and by what means this was accomplished. In general he agreed that the distal cut end of a nerve could regenerate almost completely by itself, and he mentioned experiments and observations in support. It was, however, very difficult to distinguish for certain non-medullated fibres from strands of connective tissue, and thus unsuspected non-medullated fibres might possibly exist between the central and peripheral ends undiscoverable by the microscope. Histological observations were thus vitiated to a large extent; but by other experiments he had come to the conclusion just mentioned. The degree of repair might be different in animals and in different kinds of nerves, and probably the peripheral end might not recover to the same extent as the central end. As regards the actual manner in which regeneration took place, the view adopted by Mr. Ballance and Dr. Stewart was a new view, but it seemed to him to be perfectly reasonable. He was not, however, quite convinced about the neuroblastic formation of the nerve-fibre. It was difficult in cut sections to follow nerve fibrils. It was necessary to tease specimens if it were desired to follow up the fibrils. The Golgi stain was erratic and osmic stains were preferable to the Weigert stain and the Golgi method. The essential point was that a peripheral nerve could regenerate apart from its central connexions. One point not cleared up by the opening paper was the rapid return of sensation in some cases of secondary suture. This might occur in from one hour to 24 hours, and if recovery of function did not correspond with structural regeneration how was it to be explained? He suggested as a hypothesis that the division of one or more nerve fibrils might happen just between two neuroblasts and thus the two in contact end to end might escape injury and being in anatomical continuity might transmit sensory impulses. In the surgical operations for the repair of a divided facial nerve it was usual partially to divide the spinal accessory nerve and to graft the

facial on to the central portion of the spinal accessory. But he would suggest that it would be better to cut the spinal accessory quite across, to split it, and to unite one portion to the facial and the other portion to the peripheral cut trunk of the spinal accessory. He paid a high compliment to the thoroughness of the opening paper.

Dr. F. W. MOTT also agreed that nerves could regenerate from the periphery. In his own experiments he had cut both sciatic nerves so that the animal was completely paralysed and at rest. Now, the deposition of myelin depended largely on stimuli, such as muscular movement. This stimulus was therefore wanting in his own observations. He had used the method of teasing to trace the nerve fibrils in his specimens, and this was the only successful method. He illustrated his remarks by lantern slides, showing mitosis of the neurilemma cells and the absorption of fat. He discussed the various methods of staining and could not help regarding the Golgi method as a very unreliable one. The passage of a stimulus was, he believed, a very important one in the regeneration. He doubted if the authors of the paper had sufficiently tested the conductivity of the nerves which they had divided above and below the points of section with faradism. The experiments of Dr. Robert Kennedy of Glasgow had made it clear that regeneration of nerves took place from the periphery and this was confirmed by the researches of Mr. Ballance and Dr. Stewart.

A contribution from Mr. A. W. MAYO ROBSON was read, in his unavoidable absence, by the Secretary. Mr. Mayo Robson reminded the society that at the first operation of nerve-grafting performed by himself in 1888 sensation to all the parts supplied by the divided median nerve was good when tested on the day following the operation and remained so, though the motor functions were not restored until later. He suggested that the immediate re-establishment of anatomical continuity of the nerve kept up physiological activity and so prevented degeneration of the distal segment. He also referred to other cases.

Dr. W. ALDREN TURNER wished to comment on that portion of the opening paper bearing on the neural theory and asked, Must that theory be discarded? He believed not. There were too many data in support of it. There was not only Wallerian degeneration on the peripheral side and in the cut end of the central segment, but there were also changes which took place in the whole nerve trunk and in the spinal cord. These changes had not received sufficient attention in the paper of Mr. Ballance and Dr. Stewart. These observers stated: "New fibres never reach maturity until suturing is performed." This very statement went to support the neural theory. Turning to the clinical aspect of the subject, severe destruction of a nerve might occur with very little loss of sensation. Probably a very few fibrils could supply a very large area of skin. Motion was very late in returning after secondary suture. Evidently the whole motor neuron was affected by section and not a small part of it.

Mr. RICKMAN J. GODLEE, adverting to the surgical aspect, said that it was well known how quickly sensation was restored. He also referred to the fact that pressure on a nerve produced disturbed function, as when lying on one's arm or leg. Esmarch's bandage might produce similar effects, lasting weeks or months. What were the changes which took place? Possibly it was an anæmia followed by reactionary congestion. For spasmodic tick he had in a good number of cases crushed the nerve by a pair of forceps, producing temporary paralysis. The nerve ultimately and completely recovered and the result had often been very satisfactory.

Dr. F. E. BATTEN said that while investigating the condition of the muscle-spindle after section of the nerve he had had the opportunity of examining the finer nerves at various periods after division of the sciatic. The operations had been performed by Dr. J. S. Risien Russell and the nerve had been stitched up so as to defeat any possible chance of reunion. The nerves had been examined in the gastrocnemius muscle by the Marchi and Weigert-Pal methods at periods of three weeks, two months, and three months after section. At three weeks the degeneration was marked, at two months there were still evidences of degeneration, and at three months also evidence of degeneration was still present, but at no period was there any evidence of regeneration of the nerve. Now it had been stated by Mr. Ballance and Dr. Stewart that regeneration occurred in the stump of the nerve distal to the section. It would be of extreme