existing compression, and could have waited without much anxiety until further skiagraphs localising the bullet had been prepared, when I should have performed a second operation for its removal.

Operation.—The whole area of damage was exposed by turning down a large flap, beginning in front at the margin of the hair and ending posteriorly about 2 inches above and behind the mastoid. The fracture proved to be of the gutter variety—glancing impact; a number of fragments of the outer table were adherent to the flap, and a small quantity of blood clot and broken-down brain substance was found beneath the flap; on removing this, the outer table was seen to be splintered at the anterior part, while posteriorly the whole thickness of the bone had been ploughed up. The splintered fragments were removed and a large rent in the dura through which protruded brain substance was exposed, in which splinters were embedded. It was during the removal of the splinters that I touched metal, and on seizing this I withdrew the bullet; the projectile, which was embedded vertically, was split open from end to end, and a portion of the mantle was turned backwards and projected near the surface of the brain, and it was this projecting piece which I had touched. After careful exploration to ensure that all embedded fragments of bone had been removed, the wound was closely sutured and dressing applied. There was considerable shock during the operation, but this rapidly passed off.

After-History.—The convalescence was most satisfactory; at no time were there any symptoms to cause anxiety. The headache subsided within twenty-four hours, as also did the facial paralysis. On the fourth day the power of flexion at the elbow had returned; three days later the wrist could be extended, and on the eighth day flexion at the wrist was possible, then followed extension and flexion of the fingers, the movements of the thumb being the last to return. On the fourteenth day the stitches were removed and the wound was healed. The patient was kept in bed for three weeks; at the end of this period all but the finer movements of the hand could be performed but they required considerable effort. When I last saw the patient early in October the improvement was marked, the grip of the left hand was strong, and the execution of the more delicate and complex movements of the hand had to a great extent recovered.

EXCISION OF SPINA BIFIDA AND ENCEPHALOCELE.

By JOHN LITHGOW, M.D.,
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WITHIN the last few years the old method of treatment of spina bifida and encephalocele by injection of Morton's fluid has been almost discarded for the newer, and certainly more surgical, treatment by excision. There have now been no doubt a considerable number excised, but the few cases published, and the meagre information given as to the details of the operation, suggest that it has only met with a limited degree of success. Even the newer textbook dismiss the discussion of the treatment of these cysts by excision with the statement that such has been attempted and the bare suggestion that it may be feasible.

The following cases occurring and treated in general practice may therefore be of some interest:

CASE I.

In the month of November, 1893, my attention was directed by my assistant to a tumour on the back of a child which he had delivered a few days previous. The child was a male, well developed, and except for the tumour seemed in perfect health. The tumour, situated in the lumbar region, was about the size of a small hen's egg; the skin over it was healthy though thin, and it was sparsely covered with hairs at the base, while the attachment to the spine was narrow. The tumour was diagnosed as spina bifida of the meningocele variety and as there appeared to be no urgency it was supported with collodion and wadding.

When two and a-half months old he had, as described by the mother, slight convulsive seizures which passed off after administration of calomel; there was never any trouble with the tumour, the skin covering it retaining its healthy conditions. I advised the parents to take him to the Glasgow Royal Infirmary in order to have something done to it in the way of operative treatment, and when three and a-half months old he was taken to that institution when the surgeon offered to inject Morton's fluid. Owing to the unfavourable prognosis given the parents refused to have this done, and the child was brought home with them. Shortly after this he had a sharp attack of whooping cough, and so great was the tension on the sac during the spasms that there was great danger of it giving way. The parents then gave their consent to me to try anything I choose in the way of operation, but it was not till the child was fully ten months old that I considered him free enough from the whooping-cough to attempt the removal of the tumour by excision.

Operation.—Dr. Wotherspoon gave chloroform. After disinfecting the skin well over the tumour I marked out and dissected two flaps as follows: Commencing the incision from a point over the spine, about half-an-inch above the insertion of the tumour, it was carried over the side of the tumour near its base to a similar point over the spine, about half an inch below it. This was done on both sides, and the flaps dissected well clear of the base. By this means I was able to thoroughly lay bare all round the insertion of the tumour into the spine. Owing to the almost membranous state of the more prominent part of the cyst, great care had to be taken not to open into the cavity. When the base was thoroughly laid bare a pair of phimoses forceps, the jaws of which had been previously guarded, was passed with a blade on either side. The tumour was now pierced at its apex, and while it was slowly emptying itself the screw of the forceps was sent home, keeping the blades pressed

towards the spine as much as possible. Further escape of the cerebro-spinal fluid was thus prevented by the phimoses forceps, which now acted as an effectual clamp. Using catgut I stitched with continuous suture and small catches that part of the pedicle which was between the clamp and the spine; when satisfied it was watertight I cut with curved scissors close to the clamp all the membranes which lay on the top of it. The clamp was now removed, the stump washed, and the flaps brought over and stitched. In bringing the flaps together the stitches were made to include the stump lying underneath them, thus forming a much stronger buttress than would otherwise have been the case. During the operation no trace of any nerve substance was seen in the sac, which was composed of skin and membranes distended with fluid, which communicated with the spinal canal by an opening in the vertebrae, into which the tip of the finger easily fitted. There were no after-effects from the operation, and no after-treatment in connection with it, the child in a few days making a perfect recovery. The operation was done in a collier's house of one apartment, with no assistance save that of the chloroformist. A short time after the operation this family left the district, returning at the beginning of this year, when I found the boy had talipes equinovarus. My partner, Dr. Robertson, cut the tendo-Achillis, with a satisfactory result.

Since operating on the above case I have delivered three children (two of them cousins) afflicted with spina bifida. These three were almost identical; the opening was in the lower lumbar region, involving more than one vertebra; the covering of the tumour, which had a broad base, was like mucous membrane, and was eroded from birth. Owing to the soft nature of the covering, and the fact of the most of it being involved in the erosion, I thought they could stand nothing in the way of operation. All three died of convulsions within a few days of birth.

CASE II.

On August 27th, 1901, my *locum tenens* asked me to see a child he had delivered during that day. I found the child had an enormous tumour arising from the back of the head. The tumour was almost the size of the child's head, was slightly translucent at the apex, had a narrow attachment at the occipital region. This attachment was felt to contain between the skin something more than fluid. The whole tumour was covered with healthy skin. Diagnosis of encephalocele was made, and permission obtained to excise it.

Operation.—On September 8th, when the child was 12 days old, Dr. Robertson administered chloroform, and I proceeded to remove the growth. The details of the operation were the same as in excising the spina bifida. Flaps were dissected from the sides of the tumour; these flaps were well retracted all round, phimoses forceps clamping the attachment. I unfortunately removed the tumour before I stitched the pedicle: this made it much more difficult to do, as the brain substance on the pedicle collapsing between the jaws of the forceps, tended to throw them off; they could not therefore be utilised in steadying the part. After satisfying myself that there was no leakage, I stitched the flaps together, including the stump. The child was so much collapsed after the operation that we did not expect it to revive; however, on a rectal injection of brandy being given, the collapsed condition passed off. There was no trouble with the wound afterwards, healing took place by first intention, and all dressings were removed on the twelfth day, the scar and adjacent tissue being firm and normal. On the fourteenth day after the operation, when all danger was considered to be past, the child unfortunately had some convulsive seizures, and died.

In this case, owing to the difficulty in handling the child, and the fear of ulceration or accidental rupture, the operation had to be performed at an exceedingly tender age, and no hope was entertained that it would survive the initial stage of collapse. On the third and fourth days the mother reported that it had slight convulsions; after this, till the fatal seizure, there was no indication of brain disturbance. Owing to the rapidity with which the operation was performed, no time was spent in minutely examining the relations of the parts at the base of the skull; but an opening about the size of the point of the finger communicated with the interior. The tumour was lined throughout with brain substance. The whole was distended with fluid. This operation was also carried out in a collier's house of one apartment, and with no assistance save the chloroformist.

A POSSIBLE PREDISPOSING CAUSE OF CANCER.

By HAROLD MASON, M.B. LOND.,
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THAT cancer and malignant diseases generally have been for some time past on the increase is, I believe, an undisputed fact, the reason for it being one which has not yet been conclusively determined, and the investigation is naturally surrounded by a great many difficulties. The increase has become more marked during about the last sixty years.

I have collected from the death returns of the registrar upwards of 400 cases occurring in the Leamington district,