PROVINCIAL MEDICAL & SURGICAL JOURNAL.

ON FRACTURES OF THE SPINE.

By G. M. HUMPHRY, Esq., F.R.C.S., Surgeon to Addenbrooke's Hospital, Cambridge.

The following is a brief account of the four specimens of fractured spine produced by me at the recent Anniversary Meeting of the Association in Norwich, and referred to by Mr. Crowfoot, in his relation of the case of Anthony Callow. They are all in the pathological collection belonging to the University of Cambridge:—

1. Six lower dorsal vertebræ. The ninth broken in its articulating processes, and chipped in its body, has been driven forwards upon the vertebræ below, so that the column is bent to an obtuse angle. The fore part of the body of the tenth vertebra is broken in several directions, and its hinder and upper edge projects backwards into the spinal canal, so that the cord must have been compressed between it and the arch of the vertebra above. No attempt at reparation has taken place.

From a man aged 60, who fell from a load of straw, on his back. Immediately after the injury there was slight prominence of one of the lower dorsal spines, with tenderness in this situation, and complete paralysis below the navel. These symptoms continued till his death, three weeks after the injury.

The dura mater opposite the injured part was entire, but the spinal cord was completely divided transversely. The divided ends of the cord had undergone no change of structure, and looked as though the accident were quite recent.

This case was in the Norwich Hospital, and I am indebted to Mr. Thomas Crosse for the specimen.

2. Seven cervical vertebræ. The fourth, together with the upper part of the column, has been thrown forwards in a twisted manner upon the fifth. The displacement has taken place chiefly on the left side, where the articulating processes are separated. The arch of the fifth vertebra is broken through, and a triangular portion of it has been carried forwards beneath the arch of the vertebra above, so as to be almost in contact with the body of its own vertebra. The anterior and posterior vertebral ligaments, as well as the ligaments connecting the arches, remain entire. In the recent state the displaced vertebræ readily resumed their natural position, when the lower part of the neck was raised, and the head allowed to fall a little backwards.

From a man, aged 55, who fell down stairs head first when drunk. There was immediate and complete

paralysis below the neck, the diaphragm alone acting; also irregularity of the cervical spines. Shortly after the injury he had several convulsive fits, in which the arms, and more especially the right, were moved spasmodically. He gradually became insensible, respiration was effected with increased difficulty, from mucus collecting in the air-tubes, and he died fifty hours after the accident.

In the spinal cord between the roots of the fourth and fifth cervical nerves, was a transverse soft space. This was most distinct on the left side, where there was partial division of the cord. The dura mater was not injured.

In this case decided, though slight, temporary relief to the difficulty of breathing was afforded by placing a roll under the lower part of the neck, and allowing the head to fall back upon the bed unsupported by any pillow. The convulsive movements of the arms, associated with those of the face, shewed the injury of the cord not to be sufficient in its whole thickness to prevent the transmission of nervous influence altogether; and the fact of involuntary influences of this kind being transmitted through a portion of nervous structure incapable of conveying the impressions of volition, is an evidence of the greater force of the former as compared with the latter, and corresponds with the amazing power sometimes exerted by muscles acting convulsively.

3. Six lower dorsal vertebræ. The upper and anterior part of the body of the tenth has been broken off and carried downwards and forwards with the body of the vertebra above, the hinder and lower edge of which is lodged upon the fractured surface of this tenth vertebra. In consequence of this displacement the column is bent to an obtuse angle, and the hinder and upper edge of the body of the tenth vertebra projects backwards into the spinal canal, so as almost to touch the arch of the ninth. The articulating processes of both these vertebræ are broken. No callus has been formed about the fractured parts, and their contiguous surfaces are not united by bone.

From a soldier who fell into a deep well. He lived two months after the accident, the lower extremities being paralysed. The specimen is from Chatham, and nothing further is known of the history of the case.

4. Three lower dorsal and two upper lumbar vertebræ. The tenth dorsal vertebra has been driven forwards upon the eleventh, carrying with it the anterior and upper edge of the latter. The spinal column is thus bent to an obtuse angle, and the hinder and upper edge of the body of the eleventh vertebra projects backwards

into the spinal canal, so as at one part to touch the arch of the tenth, and a space only large enough to admit a cedar pencil is left on one side for the spinal cord. The vertebræ are firmly united in this position by abundant bony callus thrown out between the arches, and a bridge of bone has been thrown over the body of the eleventh vertebra, uniting the tenth with the twelfth. Nevertheless, bony union has not taken place between the fractured surfaces of the bodies of the vertebræ.

From a man, aged 28, who lived a year after a blow on the back followed immediately by complete paralysis of the lower extremities and the lower part of the body. There was irregularity of the dorsal spines, consisting in a considerable interval between the tenth and eleventh; the latter also projected backwards. He was brought to Addenbrooke's Hospital, placed upon a water-bed, the ordinary treatment only being adopted. He so far recovered as to be able to sit up, and died, at length, of what seemed to be a slight febrile attack, occurring in an enfeebled state of body. No restoration of nervous power took place either in the body or extremities.

The spinal cord, for about half an inch opposite the fracture, was greatly compressed, firmly adherent to the dura mater, and transformed into a greyish firm glistening structure, composed of indistinct fibres, having a vertical direction. The contiguous part of the cord above and below had a dull grey colour, mottled with yellowish spots, and was tough and fibrous.

In these four specimens, and in all others which I have seen, the displacement has been in the same direction; the upper part of the column has been driven forwards upon the lower, and the spinal cord compressed between the body of the vertebra below and the arch of that above, the dislocation being almost always accompanied by fracture of the body, arch, or articulating processes of one or other of the vertebræ. It is indicated in the living subject by the prominence of one spinous process, and the unusual interval between it and the spine above which has been carried forwards. The knowledge of the direction in which the displacement usually occurs will assist us in regulating the position to be observed in cases of fractured spine, and in directing the extension and manipulations employed with the view of relieving the cord from pressure.

It is remarkable that in specimens one and three no reparation had commenced, though in one instance the patient lived three weeks, and in the other two months after the injury. In case four the union was very slow, several months elapsing before any consolidation of the parts appeared to have taken place. Even a year after the injury, though the bony callus between the arches is abundant, the fractured surfaces of the bodies were united only by fibrous structure, and scarcely any bony deposit has taken place in the cancelli bordering upon the fractured surfaces. This indisposition to the formation of new bone in the cancelli of the bodies of the vertebræ is shared with them, in a degree, by spongy bones generally, and is evidenced by the slow healing of the breaches occasioned in them by ulceration, and in the infrequency of induration, or sclerosis, of them from inflammation. In all displacements of the bodies of the vertebræ, whether they be gradual or sudden, the result of disease or of accident, the arches and

articulating processes necessarily suffer more or less, and bony ankylosis of them is not uncommon under such circumstances. It is sometimes observed in angular curvature from caries, and occasionally results from the slighter and more gradual displacement of lateral curvatures, a fact unobserved or not sufficiently regarded by the advocates of tenotomy in these cases.

The case of Anthony Callow, so successfully treated by Mr. Crowfoot, and recorded by him in the "Transactions" of the Association, is of great practical interest, as showing the advantage occasionally to be derived from the cautious employment of extension in fractures of the spine. The very slow but complete restoration of nervous power in the lower limbs which followed in that instance, is an encouragement to perseverance in the treatment of these hitherto hopeless cases. There really do not appear to be any substantial reasons against the use of mechanical means to restore parts to their proper position, in fractures of the spine attended with paralysis, although it has been so dogmatically opposed by high surgical authorities. If carefully employed it can scarcely make matters worse, inasmuch as the injury to the cord is almost invariably followed by permanent and fatal paralysis when the ordinary negative treatment only is adopted. Of course, it will be impossible to predicate in individual cases, whether benefit is likely to result from this or any other treatment, for we have no means of ascertaining the extent of lesion sustained by the cord, the paralysis of parts below the seat of injury being usually complete, although the condition of the cord is found to vary greatly; sometimes it is divided, at others it is less extensively lacerated, or more softened, or bruised. We should, therefore, give to each case the benefit of the doubt by adopting the treatment which has, in the aggregate, been found to have afforded the best chance of recovery. One cannot but be surprised that the same surgeon* should deprecate as "most highly dangerous and never to be attempted" the simple and apparently harmless proceeding of extension, and should at the same time advocate the difficult and hazardous operation of trephining the spine, which has not a single successful case to recommend it.

The direction in which the displacement of the vertebræ almost invariably occurs, suggests that some benefit may be derived from supporting on a pillow or by other means, the part of the column below the injury, and allowing that above it to fall a little backwards. It was with this view that the roll was placed under the lower part of the neck of the patient from whom specimen No. 2 was taken, and slight temporary relief was afforded by it.

I am scarcely inclined to go full lengths with Mr. Crowfoot, in his estimate of the importance of frequent abstractions of blood from the immediate neighbourhood of the injury, for the following reasons:—1st. The symptoms under which the patients succumb, are usually dependent on the effects of the original injury rather than on any subsequent inflammatory changes in the cord; and the progress of these cases to their fatal termination is more frequently marked by a gradual and general failure of the bodily powers, than by fever or other evidences of inflammatory action, indeed the latter often do not occur at all. We should therefore, as a general rule, be unwilling to adopt

* Chelius' Surgery by South.

a course of treatment which has the effect of reducing the patient's strength, with the view of preventing inflammation, 2nd. The *post-mortem* examination does not commonly reveal much serious inflammatory mischief; sometimes, indeed, as in Case 1, there appears to have been, what the symptoms would lead us to expect, rather a want of reparative force. 3rd. The movement of the patient requisite for the topical abstraction of blood is a serious objection to the practice, and the supine position proposed by Mr. Crowfoot to obviate this difficulty would, I fear, in many cases involve others not less important. These remarks are intended to apply only to the employment of blood-letting as a means of *preventing* inflammation in cases of fractured vertebrae, and have no reference to the treatment necessary, when symptoms of inflammation shall have arisen.

A CASE OF SPONTANEOUS CURE OF HYDROCELE.

By FREDERICK COX, Esq., Surgeon, Welford.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

You will oblige me by inserting the following case, if you think it worthy a place in your Journal:—

Mr. — consulted me in the autumn of last year, for an inflamed testicle, which was treated in the usual way by leeches, cold lotions, &c., and soon got better, a slight enlargement remaining. After a few weeks fluid became perceptible in the tunica vaginalis, and this went on increasing until a tolerably large hydrocele was produced. Early in February last, I removed the fluid by means of the trocar, but took no steps to effect a permanent cure. The fluid, as was to be expected, soon began again to accumulate, and in the month of April at least five or six ounces were in the sac. I saw Mr. — in the months of May and June, and each time found the water had sensibly decreased, and by the middle of July it was entirely gone; the most minute examination failed in detecting the least appearance of fluid, nor has any been effused up to this time. Beyond a slight enlargement of the testis, and a little tenderness and occasional pain of that organ, the parts are now perfectly normal.

The occupation of my patient is of a most active character, requiring his presence in London twice a week, and subjecting him to much horse-exercise every day. He is rather intemperate in his habits. I mention these circumstances because they may be thought to have played a part in causing the absorption of the hydrocele.

Now, I must state, that no *local* remedies whatever had been employed in this case with the view of dispersing the affection; but Mr. — has been taking for more than a year, the jodide of potassium, with decoction of sarsaparilla, for secondary syphilitic symptoms. Whether the exhibition of these medicines had any effect in causing the absorption of the hydrocele, is a point I leave for your readers to speculate upon, merely stating my own opinion, which is, that they were perfectly innocent of the cure. I am not aware that the iodide of potassium administered internally has any influence in causing the absorption of such serous effusions, whatever power it may have in

removing glandular enlargements and the like. I look upon the employment of the remedies, and the absorption of the fluid as a mere coincidence, and not as cause and effect. My patient took the above medicine long before the hydrocele appeared, and during its production, and for some time before the tapping, iodine was freely used externally, as well as taken internally, with a view to its dispersion, but without the least beneficial result; on the other hand, the fluid steadily increased under its use. I should rather look for the cure to have been effected by the active horse-exercise and the over indulgence in stimulants. These combined would doubtless set up a brisk action in the tunica vaginalis and testis generally, and under such a condition of the organ, the absorption might reasonably be looked for, if it might be looked for under *any* circumstances,—of course I mean no remedies being used. Sir Benjamin Brodie has mentioned two unequivocal instances of spontaneous cure of hydrocele from inflammation of the tunica vaginalis accidentally taking place, and Dr. Watson narrates a case where rapid absorption followed a fit of drunkenness.

I cannot think the above an uninteresting case or one unworthy of publication; for at a recent trial, some dozen medical men were examined, (myself among the rest,) and the question was raised, whether hydrocele ever does become spontaneously absorbed. One gentleman of considerable experience and some eminence, declared he had never met with such a case, either in his practice or his reading, and that he had communicated with many of his professional friends, of good practice, but none had ever known of such an instance. Doubtless it is a *rara avis*, but not, I think, so much so as the declaration of the gentleman above alluded to would lead one to infer. I know of one other case of spontaneous absorption in my own neighbourhood, that occurred in the practice of my friend Mr. Marshall, of Moulton. In that instance, the fluid returned after a time, it may of course do so in mine if the sac be not obliterated; but as there has been more or less tenderness, and even pain occasionally for some time, that desirable end may have been attained. However that may be, it is sufficient, in a medico-legal point of view, (in which view it is to me most interesting, from the fact above alluded to,) to be aware that the water, under some rare circumstances, does disappear *per se*, and that it may remain absent for weeks and months.

I remain, Sir,

Yours faithfully,

Welford, Oct. 22, 1846.

FREDERICK COX.

ILLUSTRATIONS OF THE PRACTICE OF LINCOLNSHIRE BONE-SETTERS.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

If you consider the following cases, illustrating the practice of Lincolnshire bone-setters, of sufficient importance, please to insert them in the Journal.

Yours truly,

Long Sutton, Oct. 23, 1846.

HENRY EWEN.

CASE I.

October 22, 1836. I was requested by the Board of